9.0 RESPONSES TO COMMENTS

The Moreno Valley General Plan Draft EIR was circulated for public review for a period of 45 days extending from June 16, 2005 to August 1, 2005. The Draft EIR was distributed to a variety of public agencies and individuals.

In accordance with CEQA Guidelines Section 15088, the City of Moreno Valley has evaluated the comments on environmental issues received from those agencies/parties and has prepared written responses to each pertinent comment relating to the adequacy of the environmental analysis contained in the Draft EIR. There has been good faith, reasoned analysis in response to comments, rather than conclusionary statements unsupported by factual information.

The agencies, organizations, and interested persons listed on the "Response to Comments Index" submitted comments on the Draft EIR during the public review period. Each comment submitted in writing is included, along with a written response where determined necessary. Each comment letter is identified with a letter in the upper right corner of the first page of the letter. The individual comments have been given reference numbers, which appear in the right margin next to the bracketed comment. For example, Letter A will have comment numbers A1, A2, etc.

In response to comments received, certain revisions have been made in the EIR. These revisions to the EIR are generally minor text changes that do not constitute significant additional information that changes the outcome of the environmental analysis or require recirculation of the document (Guidelines Section 15088.5). All such changes are noted in the responses to comments. Very minor text changes are generally noted and summarized, while more involved textual changes are reproduced in these responses to comments in ~~strikeout~~/<u>underline</u> format as a courtesy to the commenter.

The agencies, organizations, and individuals that submitted comments on the Draft EIR are identified in Table 9-1 Responses to Comments Index. The comment letters and responses are provided on the following pages.

Table 9-1
Responses to Comments Index

Name	Address	Letter Date	Letter Descriptor	Comment References
Southern California Gas Company	1981 W. Lugonia Avenue, Redlands, California 92374-9720	June 23, 2005	A	A1
State of California Health and Human Services Agency Department of Health Services	1616 Capitol Avenue, MS 7418, P.O. Box 997413, Sacramento, California 95899-7413	June 28, 2005	B	B1
Morongo Band of Mission Indians	245 N. Murray Street, Suite C, Banning, California 92220	August 16, 2005	C	C1-C8
Friends of the Northern San Jacinto Valley (Letter 1)	P.O. Box 9097, Moreno Valley, California, 92552-9097	July 14, 2005	D	D1-D2
Sierra Club, San Gorgonio Chapter (Letter 1)	4079 Mission Inn Avenue, Riverside, California, 92501	July 15, 2005	E	E1-E4
Riverside County Flood Control and Water Conservation District	1995 Market Street, Riverside, California, 92501	July 18, 2005	F	F1-F10
Riverside County Transportation Commission (RCTC)	4080 Lemon Street, 3rd Floor, Riverside, California, 92502	July 19, 2005	G	G1-G7
Department of Conservation California Geological Survey	801 K Street, MS 12-32, Sacramento, California 95814-3531	July 29, 2005	H	H1-H15
Center for Biological Diversity	1095 Market Street, Suite 511, San Francisco, CA 94103	August 1, 2005	I	I1-I24
Friends of the Northern San Jacinto Valley (Letter 2)	P.O. Box 9097, Moreno Valley, California, 92552-9097	August 1, 2005	J	J1-J7
Southern California Association of Governments (SCAG)	818 West Seventh Street, 12th Floor, Los Angeles, California, 90017-3435	July 27, 2005	K	K1
State of California Department of Fish and Game, Eastern Sierra-Inland Deserts Region	3602 Inland Empire Blvd., Suite C-220, Ontario, California 91764	August 1, 2005	L	L1-l7
Gerald M. Budlong (Letter 1)	24821 Metric Drive, Moreno Valley, California 92557	July 27, 2005	M	M1-M6
Gerald M. Budlong (Letter 2)	24821 Metric Drive, Moreno Valley, California 92557	August 1, 2005	N	N1-N21
San Bernardino Valley Audubon Society	P.O. Box 10973 San Bernardino, California 92423	July 27, 2005	O	O1-O4
State of California Department of Parks and Recreation, Inland Empire District	17801 Lake Perris Drive, Perris, California, 92571	August 1, 2005	P	P1
California Regional Water Quality Control Board, Santa Ana Region	3737 Main Street, Suite 500 Riverside, California, 92501	July 29, 2005	Q	Q1-Q9
City of Riverside	3900 Main Street, Riverside, California, 92522	July 27, 2005	R	R1-R3
Sierra Club, San Gorgonio Chapter (Letter 2)	4079 Mission Inn Avenue, Riverside, California, 92501	July 25, 2005	S	S1-S29

Table 9-1
Responses to Comments Index

Riverside Transit Agency	1825 Third Street, P.O. Box 59968, Riverside, California, 92517	July 27, 2005	T	T1-T20
Pete and Arlene Weaver	11630 Redlands Blvd., Moreno Valley, California, 92555	July 25, 2005	U	U1
Margie Breitkreuz	None given	July 27, 2005	V	V1-V7
Michael A. McKibben, Ph.	23296 Sonnet Drive, Moreno Valley, California, 92557	July 28, 2005	W	W1-W12
State of California Governor's Office of Planning and Research	1400 Tenth Street, P.O. Box 3044, Sacramento, California 95812	August 2, 2005	X	X1
Department of California Highway Patrol, Riverside Area	8118 Lincoln Avenue, Riverside, California, 92504	July 21, 2005	Y	Y1

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Letter A

RECEIVED
JUL 05 2005
CEDD

The Gas Company

A Sempra Energy company

Southern California Gas Company
1981 W. Lugonia Avenue
Redlands, CA 92374-9720

Mailing Address:
PO Box 3003, SC8031
Redlands, CA 92373-0306

June 23, 2005

City of Moreno Valley
14177 Frederick Street
Moreno Valley, CA 92552

Attention: Cynthia Kinser

Re: City of Moreno Valley General Plan – Northwest Riverside County
City of Moreno Valley

Thank you for the opportunity to respond to the above-referenced project. Please note that Southern California Gas Company has facilities in the area where the above named project is proposed. Gas service to the project could be provided without any significant impact on the environment. The service would be in accordance with the Company's policies and extension rules on file with the California Public Utilities Commission at the time contractual arrangements are made.

A-1

You should be aware that this letter is not to be interpreted as a contractual commitment to serve the proposed project, but only as an informational service. The availability of natural gas service, as set forth in this letter, is based upon present conditions of gas supply and regulatory policies. As a public utility, The Southern California Gas Company is under the jurisdiction of the California Public Utilities Commission. We can also be affected by actions of federal regulatory agencies. Should these agencies take any action, which affects gas supply, or the conditions under which service is available, gas service will be provided in accordance with revised conditions.

Typical demand use for:

a.	Residential	(System Area Average/Use Per Meter) Yearly
	Single Family	799 therms/year dwelling unit
	Multi-Family 4 or less units	482 therms/year dwelling unit
	Multi-Family 5 or more units	483 therms/year dwelling unit

These averages are based on total gas consumption in residential units served by Southern California Gas Company, and it should not be implied that any particular home, apartment or tract of homes will use these amounts of energy.

A-1
(cont.)

b. Commercial

Due to the fact that construction varies so widely (a glass building vs. a heavily insulated building) and there is such a wide variation in types of materials and , a typical demand figure is not available for this type of construction. Calculations would need to be made after the building has been designed.

We have Demand Side Management programs available to commercial/industrial customers to provide assistance in selecting the most effective applications of energy of our energy conservation programs, please contact our Commercial/Industrial Support Center at 1-800-GAS-2000.

Sincerely,

Bryan P. Wilkie
Technical Supervisor

DW/ocf

State of California—Health and Human Services Agency
Department of Health Services

California Department of Health Services

SANDRA SHEWRY
Director

ARNOLD SCHWARZENEGGER
Governor

Letter B

CEDD
JUL 06 2005
RECEIVED

June 28, 2005

City of Moreno Valley
Ms. Cynthia Kinser
14177 Frederick Street
Moreno Valley, CA 92553

RE: Moreno Valley General Plan Update

The California Department of Health Services (CDHS) is in receipt of the Draft Environmental Impact Report for the above project.

B-1 If the City of Moreno plans to develop a new water supply well or make modifications to the existing domestic water treatment system to serve the Moreno Valley General Plan project, an application to amend the water system permit must be reviewed and approved by the CDHS Riverside District Office. These future developments may be subject to separate environmental review.

Please contact Steve Williams of the Riverside office at (619) 525-4159 for further information.

Sincerely,

Bridget Binning

Bridget Binning
California Department of Health Services
Environmental Review Unit

Division of Drinking Water and Environmental Management
Environmental Review Unit/State Revolving Fund/Prop 50
1616 Capitol Avenue, MS 7418, P.O. Box 997413, Sacramento CA 95899-7413
(916) 449-5600 Fax: (916) 446-5656
Internet Address: www.dhs.ca.gov/ps/ddwem

cc:

Steve Williams, District Engineer
CDHS Riverside
1350 Front Street, Room 2050
San Diego, CA 92101

State Clearinghouse
P.O. Box 3044
Sacramento, CA 95812-3044

MORONGO BAND OF MISSION INDIANS

A SOVEREIGN NATION

August 16, 2005

Ms. Cynthia Kinser
Principal Planner
City of Moreno Valley
14177 Frederick St.
Moreno Valley, CA 92553

Re: Draft EIR, Moreno Valley General Plan Update

Dear Cynthia,

Thank you for sending the Notice of Availability on the above referenced project and taking the time to speak with me today concerning it.

As we discussed, because this action started before the SB18 March 1, 2005 "trigger date", the Tribe will not be formally consulting on the city's general plan update (although the law is somewhat confusing – it reads: Prior to the adoption....of a city...general plan, proposed on or after March 1, 2005, the city shall conduct consultations..." One could argue that Moreno Valley is proposing to adopt a general plan after March 1, 2005 and, therefore, subject to SB18. At this point, absent case law, nobody knows what "proposed" means in the legislation. The law, unfortunately, provides no further clarification.) The Tribe would, however, like to provide the following comments on the draft EIR:

- Executive Summary, Page 2-12: Consider adding the following Mitigation Measures (or similar language):
  - "Pursuant to Government Code §65352.3, the city will be consulting with Native American Heritage Commission identified tribes, on all future general plan or specific plan actions. This action will ensure that Native American interests are considered in those type of applications." **C-1**
  - "The City shall require cultural resource reports/surveys in the "prehistoric site complex" areas of the city for development proposals." (perhaps this is covered under the City proposed mitigation measure that states the "City will assess potential impacts to significant historic, prehistoric archaeological....." ; however a positive statement that cultural resource surveys will be required is preferable to the Tribe.)
- Section 5.10, Cultural Resources:
  - Page 5.10-1: First paragraph under "History of Moreno Valley" states that the Luiseño most recently held the territory that is now Moreno Valley. I think most archaeologists also consider it Cahuilla territory (see page 5-10-6, Prehistoric Archaeology, that mentions Cahuilla people). The Tribe suggests that you add Cahuilla people to the "History of Moreno Valley" section; or at least a statement **C-2**

RECEIVED
AUG 18 2005
CITY OF MORENO VALLEY

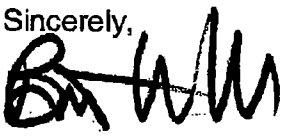
245 N. MURRAY STREET, SUITE C - BANNING, CA 92220 - 951-849-8807 - FAX: 951-922-8146

C-2 (cont.) that other groups (e.g. Serrano, Cahuilla) were also in the area (see page 2 of the Cultural Resources Analysis, Appendix F).

- C-3 Page 5-10-7: Concerning the Pigeon Pass Valley Complex, please revise the last sentence of that paragraph to read: "The camp lies about half way up the valley."
- C-4 Page 5.10-9, last paragraph, Lasselle & Brodiaea: The Tribe requests that the sentence be revised to read: "Located near the intersection of Lasselle St. and Brodiaea Ave....."
- C-5 Page 5.10-10, Human Remains: Suggest adding statement that in accordance with State law, the County Coroner will be contacted if human remains are inadvertently discovered.
- C-6 Page 5.10-15, Middle of page paragraph, beneath bullets, begins with "Implementation of any of the .....": The end of the sentence appears to be a clerical error in that it refers to "buildings and structures". The Tribe recommends that that language be removed and the following language inserted: "prehistoric archaeological sites in the city" which is consistent with the topic of this section.
- C-7 Page 5.10-16, Mitigation Measures: As noted above in the comment about the Executive Summary, the Tribe recommends adding language regarding SB18 (Govt. Code §65352.3) and requiring cultural resources reports/surveys in high sensitivity areas.
- C-8 The Tribe asks that Appendix F, Cultural Resource Analysis, be removed from public viewing/access.

Thank you for the opportunity to provide comments on the Draft EIR. If you have any questions or need any further information, please contact me at (951) 755-5206 or Britt_wilson@morongo.org

Sincerely,



Britt W. Wilson
Project Manager & Cultural Resources Coordinator

c. Ernest H. Siva, Tribal Historian, MBMI
Thomas E. Linton, Director, Planning & Econ. Dev. Dept., MBMI

Letter D

FRIENDS OF THE NORTHERN SAN JACINTO VALLEY
P.O. Box 9097
Moreno Valley, CA 92552-9097

July 14, 2005

RECEIVED
JUL 18
CITY OF MORENO VALLEY

Cynthia Kinser, Principal Planner
Planning Division
City of Moreno Valley
P.O. Box 88005
Moreno Valley, CA 92552-0805

State Clearinghouse
P.O. Box 3044
Sacramento, CA 95812-3044

Re: Draft Environmental Impact Report for the proposed Moreno Valley General Plan Update, SCH Number 2000091075

Dear Ms. Kinser:

D-1

Since its formation in 1991, the Friends of the Northern San Jacinto Valley have worked to protect the San Jacinto Wildlife Area. One of its first acts was as a plaintiff in a lawsuit against the city regarding the Moreno Highlands Specific Plan (MHSP). Since that time, the State of California Department of Fish and Game has acquired about 1,000 acres of the original 3,000 acre MHSP area. The lands acquired by the state were included within the boundary of the 10,000 acre Davis Road Unit of the SJWA. We have requested several times that the maps in the DEIR for the Moreno Valley General Plan Update reflect this acquisition. However, in the DEIR issued in June of 2005, only one map out of the over twenty maps reflects that the MHSP has been significantly reduced in size and altered.

We are once again requesting that all the maps and text in the DEIR reflect that approximately 1,000 acres of the Moreno Highlands Specific Plan area is now under state ownership. <u>All land in state ownership for wildlife habitat must immediately be re-zoned as "Open Space, Wildlife Conservation".</u>

All of the maps and text must reflect the state ownership so the public can make accurate and rational comments on the DEIR. In addition, this significant change in the Moreno Highlands Specific Plan requires that the City of Moreno Valley do new traffic, air, water, jobs/housing ratio studies and other analysis reflecting the removal of these 1,000 acres from the MHSP.

D-2

We are formally requesting that the city:

1) Redraft the DEIR for the Update of the Moreno Valley General Plan
2) All maps need to reflect state ownership of the above mentioned 1,000 acres acquired by the State of California, Department of Fish and Game.
3) A new document with accurate text and maps needs to be reissued and distributed to all interested parties
4) Once the new document is issued the Formal Comment Period needs to be extended to reflect a new 30 day comment period.

Unless these vital changes are made to the draft document, the final environmental impact report will be inaccurate and invalid.

Sincerely,

Susan L. Nash

Susan L. Nash
Board Member
Tel: 951-928-3698
e-mail: snash22@earthlink.net

Copies to:

Mayor Richard Stewart
Councilmember William H. Batey, II
Councilmember Bonnie Flickinger
Councilmember Frank West
Councilmember Charles R. White
Linda Guillis, Director, Community & Economic Development
Gene Rogers, City Manager

SIERRA CLUB
FOUNDED 1892

SAN GORGONIO CHAPTER

4079 Mission Inn Avenue, Riverside, CA 92501 (909) 684-6203
Membership/Outings (909) 686-6112 Fax (909) 684-6172

Regional Groups Serving Riverside and San Bernardino Counties: Big Bear, Los Serranos, Mojave, Moreno Valley, Mountains, Tahquitz.

Letter E

July 15, 2005

RECEIVED
JUL 15 2005
CITY OF MORENO VALLEY

Ms. Cynthia Kinser
Principal Planner
Community Development Department
14177 Frederick Street
Moreno Valley, California 92553

Dear Ms. Kinser:

Re: Adequacies of the Draft Environmental Impact Report (DEIR)
for the City of Moreno Valley's General Plan (June 2005)

It appears throughout the document that much of it was written four or five years ago, when you first began the process – at least the data/maps used reflect this concern.

E-1 As indicated in newspaper articles as well as Sierra Club letters to and conversations with you and other sources, the City is well aware that the Department of Fish and Game purchased 1,000 acres of the original Moreno Highlands project. I believe San Diego Gas and Electric also bought a large number of acres. In spite of this, the City's maps for Alternatives 1, 2 and 3 (Figures 3-2, 3-3, 3-4) keep the high density housing on these 1000+ acres. In addition it appears that, with the exception of one map in the biological section (Figure 5.9-4), all other (more than 20) maps also misinform the public and agencies about these acres. I also believe that the disks with no hard copy of the maps such as Figure 5.9-4 make adequate analysis and valid comments too difficult.

E-2 There are also problems with old data, like Tables 5.2-2 and 5.2-3 concerning traffic in the year 2000 and the 1988 data on potential earthquakes (Table 5.6-1). You do not even acknowledge the Casa Loma fault or the Old Farm Road fault, which was included in a ten-year-old University of California paper. You have been told about the Old Farm Road fault several times since its location was identified in the eastern part of our city. If you take the time, you will find other areas where old data is used.

E-3 It appears that the EIR process was begun five year ago then stopped or significantly slowed so different projects could be approved which would prejudice the outcome of the approved alternative. The City then failed to update much of the data/maps – such as the purchase of 1000+ acres for open space instead of high-density housing -- while the process was on hold. The analysis, which should be revised throughout the documents for all three alternatives, appears to be lacking such information as circulation and is therefore misleading for all readers, which in turn will produce an inadequate Final EIR.

E-4 The Sierra Club therefore strongly recommends that the Draft EIR be revised and updated with the appropriate maps for all alternatives, or we will be left to believe that you are deliberately misleading all responders or potential responders about the true impacts and thus also misleading them about the best alternative.

Sincerely,

George Hague
Conservation Chair
Moreno Valley Group of the Sierra Club
26711 Ironwood Avenue
Moreno Valley, California 92555-1906
Phone: 951-924-0816
Fax: 951-924-4185

P.S. Where, within this document, do you fully address the environmetal justice issues of transit-oriented development and sustainable development? We believe this also must be included in your revised Draft EIR so those commenting have an adequate document on which to base their decision regarding the three alternatives.

WARREN D. WILLIAMS
ieneral Manager-Chief Engineer

1995 MARKET STREET
RIVERSIDE, CA 92501
951.955.1200
951.788.9965 FAX
www.floodcontrol.co.riverside.ca.us

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

July 18, 2005

Letter F

RECEIVED
JUL 21 2005
CITY OF MORENO VALLEY

Ms. Cynthia Kinser, Principal Planner
City of Moreno Valley
Community Development Department
14177 Frederick Street
Moreno Valley, CA 92553

Dear Ms. Kinser:

Re: Notice of Availability of a Draft Environmental Impact Report for the Moreno Valley General Plan Update

F-1 This letter is written in response to the Notice of Availability of a Draft Environmental Impact Report (DEIR) for the Moreno Valley General Plan Update. The General Plan is a comprehensive plan for the physical development of the City that contains maps, goals, objectives, policies and programs covering a range of topics, including land use, circulation, safety, conservation, economic development, housing, noise, open space and public facilities. The proposed project area is located in northwestern Riverside County, east of the city of Riverside and north of the city of Perris, and includes the city of Moreno Valley's sphere of influence in addition to its corporate boundaries.

The Riverside County Flood Control and Water Conservation District (District) has the following comments/concerns that should be addressed in the DEIR:

F-2 1. Under "Master Drainage Plans" on Page 5.5-6 of the DEIR, it is correctly stated that portions of the planning area are located within the District's Master Drainage Plans (MDPs) for the West End, Sunnymead and Moreno Valley areas; however, it incorrectly states that the District has prepared MDPs for "all cities in Riverside County". Please be advised that the District's jurisdiction does not include the eastern portion of Riverside County. Generally, MDPs are prepared either at the request of cities or in unincorporated areas where drainage infrastructure is necessary for existing and planned development. Additionally, MDPs boundaries are based on watershed areas rather than city limits. Consequently, it is common that MDP boundaries do not cover entire city areas or extend beyond city limits and into unincorporated areas. The DEIR should be revised accordingly.

F-3 It should also be noted in the DEIR that a portion of the planning area is within the District's MDP for the Perris Valley area. When fully implemented, MDP facilities will provide adequate drainage outlets and will relieve those areas within the MDP boundaries of the most serious flooding problems. The District's MDP facility maps can be viewed online at http://www.floodcontrol.co.riverside.ca.us/mdp.asp. To obtain further information on the MDPs and proposed District facilities, contact Art Diaz of the District's Planning Section at 951.955.1345.

F-4

2. Under "Flooding" on Page 5.5-12, a reference is made to a program with the District for ensuring regularly scheduled maintenance and repair of flood control facilities within the City. It should be clarified in the DEIR that the District generally maintains and operates only those facilities under District ownership. Further, the maintenance and repair schedule for District facilities proceeds on an as needed basis as determined by the District.

F-5

3. Under "Environmental Setting" on Page 5.13-27, the following statement is made: "Several portions of the planning area are subject to a 100-year flood, meaning a flood that might occur once in one hundred years; in other words, a flood with a one percent chance of occurring in any given year." It should be clarified in the DEIR that the 100-year flood designation in no way reflects potential frequency outside of any single given year, as it is correctly stated in the second half of the statement above. The reference to "a flood that might occur once in one hundred years" should be deleted from the DEIR.

F-6

Further in this section it is noted that a MDP has not been developed for the planning area east of Theodore Street and that development can not occur there until one is adopted. Please be advised that the District does not currently have plans to develop a MDP for this area. However, it should be clarified that development is not precluded based solely on the absence of a MDP, though any development that may occur should be coordinated with the District.

F-7

4. Under "Existing Laws and Regulations" on Page 5.13-27, it is stated that flood control improvements in stream channels would require permits from the U.S. Army Corps of Engineers and the California Department of Fish and Game. Additionally, it should be noted that a Section 401 Water Quality Certification from the State Water Resources Control Board (SWRCB) may also be required for flood control improvements in stream channels.

F-8

5. In general, connections of new stormwater facilities to existing District facilities should be included as part of the CEQA analysis, review and approval process for the associated development. Any work that involves District right of way, easements or facilities will require an encroachment permit from the District. The construction of facilities within road right of way that may impact District storm drains should also be coordinated with us. To obtain further information on encroachment permits or existing facilities, contact Ed Lotz of the District's Encroachment Permit Section at 951.955.1266.

F-9

6. Construction projects that result in the disturbance of one or more acre of land (or less than one acre if part of an overall plan of common development) may require coverage under the SWRCB's National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction Activity (Construction Activity General Permit). Additionally, development in portions of the planning area within the San Jacinto River Watershed may be required to obtain coverage under the Watershed-Wide Waste Discharge Requirements for Storm Water Discharges in the San Jacinto Watershed (Order No. 01-34) issued by the Regional Water Quality Control Board - Santa Ana Region. More information regarding these permits may be obtained on the SWRCB website at www.swrcb.ca.gov.

F-10

Thank you for the opportunity to review the DEIR. Please forward any subsequent environmental documents regarding the project to my attention at this office. Any further questions concerning this letter may be referred to Marc Mintz at 951.955.4643 or me at 951.955.1233.

Very truly yours,

TERESA TUNG
Senior Civil Engineer

c: David Mares
Steve Thomas
Art Diaz
Ed Lotz

MAM:mcv
P8\100376

Riverside County
Transportation Commission

Riverside County Regional Complex
4080 Lemon Street, 3rd Floor • Riverside, California
Mailing Address: Post Office Box 12008 • Riverside, California 92502-2208
Phone (951) 787-7141 • Fax (951) 787-7920 • www.rctc.org

Letter G

July 19, 2005

RECEIVED
JUL 22 2005
CITY OF MORENO VALLEY

Ms. Cynthia Kinser
Principal Planner
City of Moreno Valley
14177 Frederick Street
Moreno Valley, CA 92553

Subject: Comments to the City of Moreno Valley Draft Environmental Impact Report (DEIR) for General Plan Update

Dear Ms. Kinser:

Thank you for the opportunity to comment on the Draft Environmental Impact Report (DEIR) for the City of Moreno Valley General Plan (GP) (SCH# 2000091075). The Riverside County Transportation Commission (RCTC) has the following comments concerning the GP Update DEIR:

G-1 1. State Route 60 (SR-60) is an extremely important highway recently widened through the City of Moreno Valley, by RCTC and Caltrans. A new High Occupancy Vehicle (HOV) was constructed in each direction. Improvements to Interstate 215 (I-215) are also currently being developed by RCTC and Caltrans. RCTC is concerned about any additional traffic increases generated by the GP that might affect these facilities. Please ensure that all necessary measures are included in the GP DEIR that would mitigate any traffic impact.

G-2 2. Theodore Street has an Interchange (IC) with SR-60 and provides north-south access within the easterly portion of the Moreno Valley GP area. Table 5.2-4 shows Theodore Street as being downsized from a Divided Major Arterial (6-lanes) to a Minor Arterial (4-lanes). No further mention of Theodore Street is found within the Traffic & Circulation (T&C) text. Why was Theodore Street downsized? Won't a larger Theodore Street become necessary as development within Moreno Valley expands easterly? It is logical to assume that traffic using Theodore Street would only increase because of its IC with SR-60.

G-3 3. On page 5.3-31 the T&C mentions that one of the goals (Goal #2) is to "provide alternatives to Single Occupancy Vehicles (SOV)". In the GP DEIR text, on page 5.2-14 a "Transit Oasis" system concept is described as supporting a "Transit Center" being developed by the March JPA at Alessandro Blvd. Is the Transit Oasis concept an integral part of the Moreno Valley GP and how might it reduce SOV use and support a Transit Center? Also, is the March JPA site the only Transit Center being considered for the Moreno Valley area? T&C Goal #2 is the only

G-3 (cont.) transportation goal mentioned in the GP DEIR. Do other T&C goals promote the development of transit?

4. RCTC owns the rail line mentioned on page 5.2-14. Please refer to the existing facility as the San Jacinto Branch Line (SJBL). The SJBL currently provides Burlington Northern & Santa Fe (BNSF) freight service to the region. Also, the commuter rail serving the future Alessandro Blvd. train station should be identified as the Metrolink Perris Valley Line (PVL). **G-4**

5. Section 7 Cumulative Impact, page 7-2, states that the "combined effect (GP Amendments and mitigation measures) would reduce traffic volumes on most freeway and major arterial facilities within the City of Moreno Valley". Please explain how volumes would be reduced on freeways (SR-60 & I-215). Implementation of signalization, lane widening, turning lanes and channelization might provide some congestion relief on City arterials but mainline freeway volumes for SR-60 & I-215 are projected to increase significantly by 2025 due to overall region wide growth. **G-5**

6. RCTC supports the City of Moreno Valley's commitment to the Traffic Uniform Mitigation Fee (TUMF) and Development Impact Fee (DIF) programs as described in the GP DEIR. RCTC would like the GP to also emphasize preservation of corridors and locations for future roadways and transit facilities. **G-6**

7. Only one Mitigation Measure (TR-1) is listed on the last page of the T&C section. TR-1 requires "Study of roadways to determine if additional improvements are necessary to maintain Level-of-Service (LOS)". With the implementation of the GP Amendments and mitigation measures, including TR-1, the GP DEIR acknowledges that traffic impacts would be significant even after mitigation. What other mitigation measures are being considered to reduce traffic impacts? **G-7**

This concludes RCTC's comments concerning the City of Moreno Valley GP Update DEIR. Thank you for your consideration. Should you have any questions or require additional information, please contact Gustavo Quintero at (951) 787-7935.

Sincerely,

Hideo Sugita, Deputy Executive Director
Riverside County Transportation Commission

cc: Cathy Bechtel (RCTC)
Bill Hughes, Mike Davis, Gustavo Quintero (Bechtel)
Project Files

Department of Conservation

CALIFORNIA GEOLOGICAL SURVEY

801 K Street • Mail Stop 12-32 • Sacramento, CA 95814-3531

telephone 916-323-4399 • TDD 916-324-2555 • Web Site: conservation.ca.gov/cgs

Letter H

Ms. Cynthia S. Kinser, *Principal Planner*
Community Development Department
City of Moreno Valley
14177 Frederick Street cynthiak@moval.org
Moreno Valley, CA 92553 ☎ 951-413-3222

July 29, 2005

Subject: Geology & Seismology Review of draft Safety Element within the draft General Plan & its draft Environmental Impact Report
City of Moreno Valley **State Clearinghouse #2000-091075**

Dear Ms. Kinser:

The California Geological Survey has performed a review of the draft Safety Element within the proposed update of the General Plan for Moreno Valley, Riverside County. This is in accordance with §65302g of the Government Code, which instructs the California Geological Survey to review draft Safety Elements of local governments.

There are several significant difficulties with the geologic hazards section within the draft Safety Element. Basically, this draft does *not* reflect current seismology and geology work that has been published in the past two decades years by the California Geological Survey and the U.S. Geological Survey (with offices on the UC Riverside campus). This draft should *not* go forward to final edition; there are many scientific errors. **H-1**

It is understood that Moreno Valley is undergoing rapid growth of residential tracts, with perhaps 10,000 future homes. However, the geologic hazards in Moreno Valley are among the highest of the 476 cities in California. These geologic hazards include: active faulting, severe to violent earthquake shaking, landslides, liquefaction, subsidence, and coseismic deformation of the ground during earthquakes.

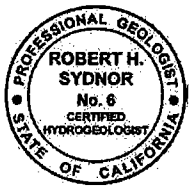
In 1993, the California Geological Survey prepared CGS Special Publication 102, an earthquake planning scenario for the Moreno Valley –Riverside-San Bernardino area. We are concerned that this 219-page publication was not even used or referenced by your consulting planning firm.

On the attached pages, please find a complete geology and seismology bibliography for Moreno Valley, the computation of the earthquake ground motion for Moreno Valley, and detailed commentary why the draft Safety Element does not currently meet minimum state standards. Because Moreno Valley has significant geologic hazards, it is recommended to be prepared by a professional geologist (a California Certified Engineering Geologist).

The California Geological Survey is available to review the second edition of the City's Safety Element. We will provide useful scientific counsel within the seismic-safety planning process.

Please telephone me at 916-323-4399 for further assistance. We look forward to working with you and other officials of the City of Moreno Valley for seismic safety planning.

Respectfully submitted,



Robert H. Sydnor, PG 3267, CHG 6, CPG 4496, CEG 968
LM-AEG, LM-AGU, M-EERI, LM-SSA, M-ASCE, M-GSA, LM-AGI
Senior Engineering Geologist
California Geological Survey

attachments

Geologic Review Comments and Suggestions
by the California Geological Survey
California Department of Conservation, The Resources Agency
regarding the draft Safety Element
within the draft General Plan for the City of Moreno Valley
July 29, 2005
State Clearinghouse # 2000-091075

H-2

Lack of citation and use of CGS Special Publication 102.

In 1993, the California Geological Survey prepared a comprehensive 219-page seismic-safety planning document for the Inland Empire (Riverside-San Bernardino greater metropolitan area). The fast-growing Inland Empire has significant geologic hazards that adversely affect all of the infrastructure. This comprehensive earthquake planning scenario was publicly released to all the cities and county governments. We previously sent you copies of SP-102 in 1993. Your sub-consulting planners can purchase additional copies from our website www.conservation.ca.gov/cgs

In the past 12 years, it has been widely used by dozens of cities in the Inland Empire for seismic-safety planning within their respective Safety Elements. It contains extensive colored plates and a good bibliography of geology and seismology.

CGS Recommendation: Moreno Valley extract and adapt as much information as possible from CGS Special Publication 102.

H-3

Lack of Geology and Seismology Bibliography for Moreno Valley

The current draft documents lack proper references to published seismology and geology reports and maps. Citizens of Moreno Valley, city officials, consulting planners for various future EIRs, developers, and consulting geologists: all of these rely on comprehensive and up-to-date geologic maps regarding seismic hazards. The USGS geologic map of the Sunnymead Quadrangle (Morton, 2001, USGS OFR 01-450) was not used or referenced. The page-sized geologic map that was provided has numerous graphic errors and cannot be read or used.

CGS Recommendation: a comprehensive 14-page bibliography has been prepared by this reviewer to assist the City of Moreno Valley. It is meant to be used unchanged in the Appendix of the Safety Element (not retyped, not parsed, not edited for brevity by sub-consultants).

The new 14-page bibliography is divided into convenient sections: ① Regional Geology of Moreno Valley; ②Landslides; ③Seismic Safety, Land-Use Planning, Building Codes; ④Homeowner Information on Seismic Safety; ⑤ Seismology & Earthquake Engineering; ⑥ Geotechnical Engineering (including liquefaction) & ASTM tests for earthwork, and ⑦ Lifelines.

The purpose of a comprehensive bibliography is to convey this body of scientific knowledge to a wide spectrum of users, to keep the Safety Element in a concise format, and lastly, to set a minimum threshold for "adequacy" of future planning documents and consulting geologic reports for subsequent residential tract development.

H-4

Lack of Description of Geologic Units

The geologic units and formations of Moreno Valley are entirely omitted. Instead the planning documents confuse agricultural soils with geologic formations. Future earthquakes will shake the granitic rocks of the Lakeview Pluton much differently from sedimentary rocks of the San Timoteo Badlands, and the deep soft alluvium of the San Jacinto graben. Agricultural soils maps should be used for farmland mapping, not seismic safety.

H-4 (cont.)

CGS Recommendations: The text of the Safety Element should use the geologic formations shown in Morton (2001, Sunnymead Quadrangle); and Morton (1999, Santa Ana 30×60 minute Quadrangle, a beautiful regional geologic map at 1:100,000-scale. Dr. Douglas Morton, USGS emeritus, can be occasionally reached at his US Geological Survey offices in the Department of Earth Sciences, University of California at Riverside. He is honorably retired after 40 years of dedicated service, but still visits his USGS office from time-to-time. His USGS geologic maps can be freely downloaded from the Internet www.usgs.gov and consultants are expected to obtain their own digital versions, which then can be printed on-demand by a local vendor. Reference copies can be viewed at the Physical Sciences Library of the University of California, Riverside.

Improper Evaluation of Earthquake Ground-Motion

H-5

Moreno Valley is situated astride the active San Jacinto Fault, and nearby active seismogenic faults include the San Andreas Fault and the Elsinore Fault. The Safety Element and the draft EIR dismiss the exposure to earthquake shaking. Modern comprehensive maps, such as CGS Map Sheet 48, are not even referenced or extracted. The draft EIR (written by unqualified persons; not professional geologists or seismologists) is greatly mistaken that earthquake shaking is "not significant." On the contrary, the earthquake shaking for Moreno Valley is among the highest in California.

To correct this misinformation, the California Geological Survey has performed a complete seismology calculation of the earthquake ground motion for Moreno Valley. We selected an arbitrary centroid of the city at the corner of Alessandro Boulevard and Redlands Boulevard. This intersection of two major boulevards is well-known to residents of Moreno Valley. The calculated ground motion will be higher in the eastward direction towards the San Jacinto Fault, and slightly lower in the westward direction (towards March Air Force Base).

The results of our CGS seismology calculations are attached in three pages: a spectral diagram, a table of spectral values, and a table that shows Moreno Valley in relation to other levels of shaking, acceleration, and intensity. These pages are suggested to be included in the text of the Safety Element.

If ordinary default values from the Building Code are used, then the ground motion is taken at Peak Ground Acceleration, **PGA 0.55*g*** at this location. If Moreno Valley is like other California cities in Seismic Zone 4, it can be inferred that the City Building Official is possibly accepting these low default values --- without realizing that the *computed* earthquake ground-motion is actually *much higher:* **PGA ≈ 0.86*g*** for the Design Basis Earthquake ground-motion. It is a "significant" difference for the Structural Engineer to design buildings (such as residential tract homes) to PGA ≈ 0.86*g*. In the northeastern area of Moreno Valley, the ground-motion near the San Jacinto Fault zone is even higher.

CGS Recommendations: Include the 3 pages of calculated ground motion in the Safety Element. Change the CEQA finding in the EIR for earthquake shaking to "significant." It is recommended that the City retain a consulting Certified Engineering Geologist who is experienced in seismic hazards to plan-check the in-coming geologic reports for various residential and commercial structures. This would be a "significant" new cost for the city — hiring additional technical staff — but the costs would be passed through from incoming building-permit fees. Ten-thousand new homes should not be built in a city with high exposure to severe geologic hazards — without adequate oversight and scrutiny from a California Certified Engineering

H-5 (cont.)

Geologist retained by the city. The city plan-check counter is "where-the-rubber-meets-the-road" for seismic safety planning and effective Code enforcement.

Note that earthquake ground-motion can also be readily calculated for a dozen other locations in Moreno Valley that would be representative of different geologic subgrade. This new seismology information could then be used for smaller projects (such as a garage or patio), and voluntary seismic retrofit upgrades for existing older homes.

Alquist-Priolo Earthquake Fault Zoning Act

H-6

The existing draft Safety Element and draft EIR mistakenly uses the older name of this act. The name was changed 11 years ago in 1994 by Senator Alfred Alquist. Your consulting planners have evidently not kept abreast in the past decade. Dozens of references to the "special studies" zones should be editorially changed to the new legal name. Extracts of the Alquist-Priolo Earthquake Fault Zones should be shown at full scale 1:24,000 (as a strip map) in the text of the Safety Element, not reduced or stylized. The three official quadrangles are Sunnymead (1974), El Casco (revised 1995), and Lakeview (revised 1988). It is recommended that the Safety Element state that citizens can obtain ozalid copies of the official quadrangles from the City of Moreno Community Planning Department. The California Geological Survey has not yet zoned the "Farm Road strand" of Park and others (1995) as an active fault. As an interim measure, the Safety Element of Moreno Valley can emulate the work of Riverside County and show this secondary fault on the city planning map. Consulting Engineering Geologists for various residential developers should continue to evaluate the "Farm Road strand" because there is reported evidence from Dr. Douglas M. Morton, USGS @ UCR, of tectonic bulging (uplift) on Alessandro Boulevard.

Liquefaction and Seismic Settlement

H-7

The draft Safety Element and the draft EIR dismisses any potential for seismically-induced liquefaction in the City of Moreno Valley and its extended sphere of influence. This is not correct. The California Geological Survey has zoned about 120+ quadrangles for seismically-induced liquefaction in southern California and the Bay Area. Unfortunately, we were restricted by provisions of the Stafford Act to use the FEMA funding only in counties that had suffered damage from the 1994 Northridge Earthquake and the 1989 Loma Prieta Earthquake. We have recently begun work in the Inland Empire and are presently zoning liquefaction potential along the nearby Elsinore Fault.

CGS Recommendations: The Moreno Valley Safety Element should cite and reference Special Publication 117 and 118 (see attached bibliography). Historic-high water table will be used for zonation purposes. The city should follow the liquefaction zoning that is outlined in the Riverside County Safety Element. A complete list of current liquefaction references is provided in the attached bibliography (under Geotechnical Engineering). The city should begin requiring calculations for seismic settlement for all alluvial sites, regardless of the depth of the water table.

Lack of congruence with the new 2003 General Plan of Riverside County.

H-8 The new Safety Element for Moreno Valley is significantly different from the new Safety Element for Riverside County (legally adopted October 7, 2003). The new County Safety Element took a professional consulting geology firm several years to compile using GIS mapping for geologic hazards. It is a wealth of reliable scientific information regarding active faults, basic geologic mapping, landslides, liquefaction, and earthquake shaking. The geologic consulting firm who prepared the suite of geologic hazard maps for Riverside County Planning Department was Earth Consultants International, Tustin (Tania Gonzalez, CEG 1859, ☎714-412-2654).

CGS Recommendation: It is recommended that the consulting planners for Moreno Valley obtain the new 2003 Riverside County General Plan. Much of this can be readily adapted for Moreno Valley, with the same format and the same analysis for the city's Safety Element.

Subsidence and Fissuring in the San Jacinto Graben

H-9 Mapping by USGS geologist Dr. Douglas Morton indicates a zone of fissuring and surface deformation. He first published this in 1977, with subsequent mapping in 1999 (see attached references). This subsidence and fissuring is apparently due to a combination of ground-water conditions and tectonic faulting. This information should be faithfully copied to the base maps of the City of Moreno Valley, and incorporated into the planning process as a geologic hazard

CGS Recommendation: Prudent city zoning would create a green-belt along this zone of subsidence and fissuring, with emphasis on parks, open-space, athletic fields, hiking trails, and equestrian stables. This deformation zone would also have required investigations by the consulting Certified Engineering Geologist for residential tract developers. The City Building Official might inspect existing homes and confer with homeowners for a voluntary seismic retrofit and strengthening (underpinning) of structural foundations.

Landslides

H-10 Landslides are abundant in the San Timoteo Badlands in the northeastern sector of the sphere of influence of the City of Moreno Valley. Refer to extensive landslide publications in the attached bibliography. The landslide hazard in Moreno Valley includes both debris-flows and mudslides (particularly after wildfires and intense rains), and seismically-induced landslides. The current draft of the Safety Element incorrectly downplays the hazard of landslides. They are significant, but can be mitigated — provided a Certified Engineering Geologist and Registered Geotechnical Engineer utilizes procedures outlined in CGS Special Publication 117; and Blake, Hollingsworth, and Stewart (2002) as shown in attached references.

CGS Recommendation: The Safety Element should show existing landslides and designate areas of steep terrain within weak sedimentary rocks that are susceptible to landslides.

Lifelines

H-11 Moreno Valley is highly unusual inasmuch as numerous lifelines cross the San Jacinto Fault in an east-west direction (roughly parallel to Highway 60) and bisect the city. These lifelines include high-pressure natural gas transmission lines that are expected to explode and burn from 3 to 4 meters of direct rupture on the plane of the San Jacinto Fault. Natural gas-transmission lines have automatic shut-off valves planned for these fault crossings, but it is important for the fault crossing area to be a permanent green-belt. Green belts only happen if adroit planning is undertaken by the City of Moreno Valley.

A relevant example of a fault-crossing is the Questar Southern Trails natural gas-transmission line that brings gas from the Four-Corners area across Utah and Arizona, and then into California. It cuts across the San Jacinto Fault south of Highway 60, through Moreno Valley, north of March AFB, then through Santa Ana Canyon where it crosses the active Elsinore-Whittier Fault. The western terminus of Quester Southern Trails pipeline is Long Beach. For further information, refer to Map Sheets 6 and 7 of the Questar Southern Trails pipeline atlas; this is found in FERC Docket CP99-163-00 and California State Clearinghouse # 99041103 The Final EIR was certified by the State Lands Commission in July 2000 after extensive hearings. There were adverse geologic review comments by the California Geological Survey regarding crossings of active faults. To resolve the impasse, Utah-based Questar subsequently hired an excellent Tustin-based consulting engineering geology firm (with California Certified Engineering Geologists) to re-evaluate their pipeline where it crossed active faults 17 times through Southern California.

H-11 (cont.)

CGS Recommendation: The Moreno Valley Safety Element should have a special map atlas of all lifelines in relation to known geologic hazards (fault crossings, landslides, co-seismic deformation, fissuring, subsidence). Appropriate prudent zoning should be undertaken by the city (depending on the type of lifeline). City planners should confer with the major utilities; then using GIS methods, convert utility lifeline atlas pages to the city basemap. Underground Service Alert (USA) signs should be posted along sensitive lifelines (such as natural-gas transmission lines).

Please note that CCR Title 5, Education Code, §17213 prohibits the acquisition of a school site by a school district if the site "contains one or more pipelines, situated underground or above ground, which carried hazardous substances, acutely hazardous materials, or hazardous wastes, unless the pipeline is a natural gas line which is used only to supply natural gas to that school or neighborhood." The California Public Resources Code §21151.8 uses the same language about gas pipelines with reference to approval of environmental impact reports or negative declarations. (See CCR Title 5, §14010h.). Natural gas transmission lines (with >80 psi) should not be within a 1,500 foot radius of any public school campus. Prudent advance zoning by the City of Moreno Valley can preclude these kinds of predicaments. It is suggested that both the school district and the utility companies work with the Moreno Valley planners for appropriate zonation of lifeline corridors.

City Geologist for the City of Moreno Valley

The current draft Safety Element and the remainder of the General Plan does not consider the full impact of the addition of ±10,000 homes to the workload of the staff of the city. Moreno Valley has significant geologic hazards. It is inferred that current plan-check officials within the Building Department and the Community Development Department do not have a scientific background in seismology, engineering geology, and geotechnical engineering.

H-12

CGS Recommendation: The City of Moreno Valley should plan for the internal addition of a California Certified Engineering Geologist to be part of the plan-check process for grading permits and residential development of extensive new tracts. This could either be a part-time consultant, and evolve gradually into a full-time civil servant position (depending on the growth rate of the city). The City Geologist would be in close professional contact with the Riverside County Geologist, the California Geological Survey, the U.S. Geological Survey, and the geology department at the University of California, Riverside. It would be a win-win situation for both the citizens of Moreno Valley and the developers — effective implementation of prudent seismic safety planning, with proper earthwork and grading.

Seismic Retrofit for Homeowners

H-13 The draft Safety Element does not adequately address the problem of existing older structures in Moreno Valley. Many of these probably need seismic retrofit for the coming earthquake, and prudent owners would voluntarily do so — if they only knew the specifics.

CGS Recommendation: Our bibliography provides the new retrofit booklet for homeowners written by the California Seismic Safety Commission. Copies can be made available in Moreno City offices, and at local building suppliers and public libraries. Citizens can freely download this from the internet. www.seismic.ca.gov

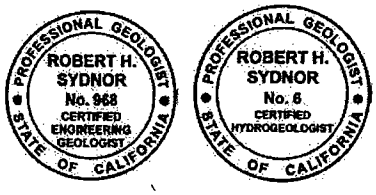
Closure

H-14 The California Geological Survey appreciates this opportunity to comment on the draft Safety Element within the draft General Plan for the City of Moreno Valley. We have performed this review under authority of §65302g of the Government Code. The current draft does not meet minimum standards, but we are optimistic that it can be properly rewritten by a professional geologist. When you have prepared the subsequent draft of the Safety Element, please send it directly to us at the address below. There is a substantial time-delay if it is sent through the State Clearinghouse.

The trend in Safety Elements is to provide a concise summary of geologic hazards, then lead the reader to the proper geologic maps, appropriate Code sections, and hyperlinks to technical engineering geology and seismology information (often free or low-cost).

The California Geological Survey is pleased to provide assistance to the 476 cities and 58 counties in California to achieve our mutual goal of seismic safety planning and reduction of losses due to earthquakes and related geologic hazards. Please call me if there are any questions about this geologic review.

Respectfully submitted,



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Senior Engineering Geologist
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M-EERI, M-GSA, M-ASCE, M-ASTM, M-NAGT, M-NGWA, M-IAEG

California Geological Survey
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Sacramento, CA 95814-3531

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office hours: 9:00 AM to 6 PM, Monday-Friday
e-mail: Robert.Sydnor@conservation.ca.gov
CGS homepage: www.conservation.ca.gov/cgs

APPENDIX TO LETTER H

Earthquake Ground Motion

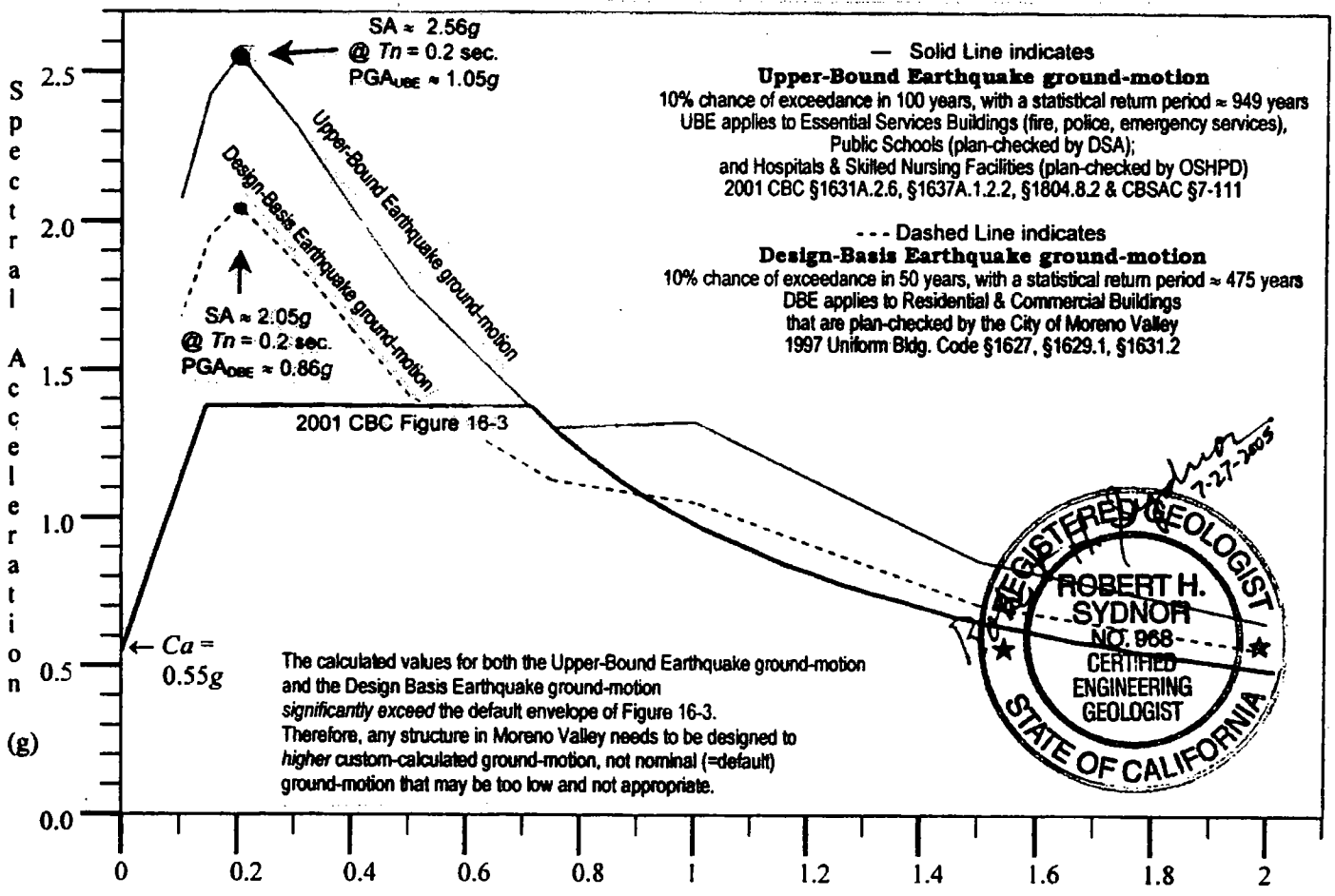
for the City of Moreno Valley

July 2005

Normalized Response Spectra

Seismic Zone 4

Site Coordinates: **33.9175°N** Latitude and **117.1566° W** Longitude
Approximately the intersection of Alessandro Boulevard and Redlands Boulevard,
near the center of the City of Moreno Valley.
Coordinates are from the Sunnymead USGS 7½-minute Quadrangle, Riverside County



Quaternary alluvium of Moreno Valley
Geologic Subgrade Type S_D, stiff soil

2001 CBC Site Class S_D geologic subgrade is defined in Code as
Shear-Wave Velocity, *Vs* = 180 to 360 meters/second or 590 to 1181 feet/second for upper 30 meters.
Reference: 2001 CBC Table 16A-J and §1636A.

Prepared July 27, 2005 in cooperation with the City of Moreno Valley
by Robert H. Sydnor, RG 3267, CHG 6, CPG 4496, CEG 968, *Senior Engineering Geologist*
California Geological Survey
www.conservation.ca.gov/cgs

using the 2002 CGS state-wide ground-motion model
with $\zeta = 5$ percent viscous damping for spectral acceleration

Relationships Between Peak Ground Acceleration, Peak Ground Velocity, and Instrumental Intensity

for the City of Moreno Valley, Riverside County

a summary table prepared July 27, 2005 by the California Geological Survey for the seismic safety portion of the Safety Element within the General Plan of Moreno Valley

adapted from a seismology publication by USGS and Caltech seismologists David J. Wald, V. Quintoriano, Thomas H. Heaton, & H. Kanamori published in EERI *Earthquake Spectra*, vol. 15, no. 3, Aug. 1999, p. 557-564; Earthquake Engineering Research Institute < www.eeri.org >

Perceived Shaking	Not Felt	Weak	Light	Moderate	Strong	Very Strong	Severe	**Violent**	Extreme
Damage Potential	None	None	None	Very Light	Light	Moderate	Moderate to Heavy	**Heavy**	Very Heavy
Peak Acceleration (*g* = gravity)	<0.0017*g*	0.0017*g* – 0.014*g*	0.014g – 0.039*g*	0.039*g* – 0.092*g*	0.092*g* –0.18*g*	0.18*g* – 0.34*g*	0.34*g* – 0.65*g*	**0.65*g* – 1.24*g***	> 1.24*g*
Peak Velocity (cm/sec)	< 0.1	0.1 to 1.1	1.1 to 3.4	3.4 to 8.1	8.1 to 16	16 to 31	31 to 60	**60 to 116**	>116
Instrumental Intensity	I	II-III	IV	V	VI	VII	VIII	**IX Moreno Valley**	X

Design-Basis Earthquake Ground Motion for "regular" commercial and residential structures. Defined in 1997 UBC §1627 as 10 percent chance of exceedance in 50 years, with a statistical return period of 475 years.

For Residential and Commercial Buildings — Peak Ground Acceleration, **PGA ≈ 0.86*g***; Instrumental Intensity ≈ **IX**

Upper-Bound Earthquake Ground Motion for public schools, hospitals, skilled nursing facilities, essential services buildings (police stations, fire stations, city hall, emergency communication centers). Defined in 2001 CBC §1631A.2.6 as 10 percent chance of exceedance in 100 years, with a statistical return period of 949 years.

For Public Schools and Hospitals — Peak Ground Acceleration, **PGA ≈ 1.05*g***; Instrumental Intensity ≈ **IX**

Moreno Valley is located in **Seismic Zone 4** (reference : 1997 Uniform Bldg Code, Figure 16-2). Ground motion will be highest in sandy alluvium and slightly lower on hills underlain by granitic rock. The earthquake ground-motion shown is calculated alluvial subgrade at the intersection of Alessandro and Redlands Boulevards, near the center of Moreno Valley. Earthquake ground-motion will increase eastward — in the direction toward the active San Jacinto Fault.

Prepared July 27, 2005 under provisions of California Government Code § 65302(g)
by Robert H. Sydnor, *Senior Engineering Geologist,* RG 3267, CHG 6, CEG 968, CPG 4496 Robert.Sydnor@conservation.ca.gov
California Geological Survey, 801 K Street, M.S. 12-32, Sacramento, CA 95814-3531

For public information from the state's geological survey, geologic maps, Alquist-Priolo earthquake fault zone maps, seismic hazards zone maps, landslide maps, mineral resource maps, and geologic reports, telephone **(916) 445-5716**. Please visit our homepage for geologic information, down-loadable maps, and a list of geology publications:
www.conservation.ca.gov/cgs

Spectra Values of Earthquake Ground Motion

City of Moreno Valley

Riverside County

33.9175° North Latitude, -117.1566° West Longitude
taken at the corner of Alessandro & Redlands Boulevards
Sunnymead 7½-minute USGS Quadrangle
ζ = 5 percent viscous damping
Seismic Zone 4, so coefficient $Z = 0.4$
Geologic Subgrade from Table 16-J: Type $S_D \approx$ alluvium

Oscillator Period *in seconds*	**Design-Basis Earthquake Ground Motion** 10% chance of exceedance in 50 years Statistical Return Period ≅ 475 years *for Residential & Commercial Buildings*	**Upper-Bound Earthquake Ground Motion** 10% chance of exceedance in 100 years Statistical Return Period ≅ 949 years *for Hospitals and Public Schools*
0.10	1.68*g*	2.08*g*
0.15	1.95*g*	2.42*g*
0.20	**2.05*g*** *peak SA*	**2.56*g*** *peak SA*
0.30	1.86*g*	2.32*g*
0.40	1.64*g*	2.04*g*
0.50	1.41*g*	1.77*g*
0.75	1.12*g*	1.32*g*
1.00	1.05*g*	1.30*g*
1.50	0.71*g*	0.86*g*
2.00	0.55*g*	0.65*g*
Peak Ground Acceleration	**0.86*g***	**1.05*g***

Computed in July 2005 by Robert H. Sydnor, CEG 968, *Senior Engineering Geologist*
California Geological Survey
using the CGS state-wide seismology model of 2002.
The CGS state-wide model may be downloaded at: < www.conservation.ca.gov/cgs >

APPENDIX TO LETTER H (cont.)

Engineering Geology and Seismic Safety Bibliography for the City of Moreno Valley

Riverside County, California

Compilation on July 29, 2005 by the

California Geological Survey

California Department of Conservation, The Resources Agency of California

in cooperation with the City of Moreno Valley

for use within the Safety Element of the General Plan

This is an abbreviated list with concise focus on newer publications in engineering geology, seismology, geotechnical engineering, and seismic safety planning for the City of Moreno Valley. This bibliography has been parsed and adapted for the geology of City of Moreno Valley, so it is not appropriate to extrapolate it for other cities in Riverside County that have different geologic conditions.

It is recommended to use GeoRef and GeoScience World bibliographic search engines for a comprehensive bibliography, including unpublished thesis work from the University of California at Riverside. Numerous unpublished consulting geology reports for individual parcels and residences cannot be included since they have never been submitted to GeoRef for formal indexing in library science and are not publicly available. Refer to archives of city building permits for geological reports on specific projects.

Especially useful published references are marked with a star ★ symbol to assist the reader. Inclusion within this bibliography does not imply official endorsement, and omission from this concise list does not imply lack of suitability. This abbreviated list will need to be updated periodically to include new publications in engineering geology and seismic safety for the City of Moreno Valley.

Regional Geology for Moreno Valley

★Albright, L. Barry, 1997, Magnetostratigraphy and biochronology of the San Timoteo badlands, southern California, with implications for local Pliocene–Pleistocene tectonic and depositional patterns: *Geological Society of America Bulletin*, vol. 111, p. 1265–1293.
This geologic mapping is within the sphere of influence for the City of Moreno Valley, so it is considered an essential reference. Dr. Albright received his PhD on the geology and paleontology of the San Timoteo badlands from the University of California at Riverside.

Albright, L. Barry, 1999, Biostratigraphy and vertebrate paleontology of the San Timoteo Badlands, Southern California: *University of California Publications in the Geological Sciences*, vol. 144, 121 p. *This is the northeastern portion of the City of Moreno Valley sphere of influence on the El Casco Quadrangle.*

Anderson, Megan, Matti, Jonathan C., and Jachens, Robert, 2004, Structural model of the San Bernardino basin, California, from analysis of gravity, aeromagnetic, and seismicity data: AGU *Journal of Geophysical Research*, vol. 109, B04404, published on–line April 6, 2004.

Apoian, Mark D., 1997 Spatial variability in hydrochemistry in the Moreno, Perris, and San Jacinto valleys, western Riverside County, California: University of California, Riverside, unpublished Master of Science thesis, 110 p.

Bennett, Richard A., Friedrich, Anke M., and Furlong, Kevin P., 2004, Codependent histories of the San Andreas and San Jacinto fault zones from inversion of fault displacement rates: *Geology*, vol. 32, no. 11, November 2004 issue, p. 961-964.

Bent, Allison L., and Helmberger, Donald V., 1991, A reexamination of historic earthquakes in the San Jacinto fault zone, California: *Bulletin of the Seismological Society of America*, vol. 81, no. 6, p. 2289-2309.

Biasi, Glenn P., Weldon, Ray J., Fumal, Thomas E., and Seitz, Gordon G., 2002, Paleoseismic event dating and the conditional probability of large earthquakes on the southern San Andreas Fault, California: *Bulletin of the Seismological Society of America*, vol. 92, no. 7, October 2002 issue.

Blythe, Ann E., House, Martha A., and Spotila, James A., 2002, Low–temperature thermochronology of the San Gabriel and San Bernardino Mountains, southern California: constraining structural evolution, *in* Barth, Andrew, *editor*, Contributions to Crustal Evolution of the Southwestern United States – the Perry Lawrence Ehlig memorial volume: Geological Society of America, Special Paper 365, p. 231–250.

Cao, Tianqing, Bryant, William A., Rowshandel, B., Branum, David, and Wills, Christopher J., 2003, The revised 2002 California probabilistic seismic hazards maps: California Geological Survey, posted as .pdf on CGS website, June 2003: www.conservation.ca.gov/cgs/rghm/psha

- Report, 11 p., with Appendix A (Type A, B, C faults):
- Table of Type A Faults, 2 p.
- Table of Type B Faults, 15 p.
- Table of Type C Faults (= area sources), 1 p.
- References for 2002 California Fault Parameters, 9 p.

This is the new 2002 statewide seismotectonic model used in probabilistic seismic hazard analysis by the California Geological Survey. CCR Title 24 projects (hospitals and schools) will be measured and evaluated against this PSHA model and its fault data–base that reflects a broad consensus of the seismology and engineering geology profession. This report updates and supersedes Petersen and others, CGS Open–File Report 96–08, which was the 1996 statewide consensus model. CGS OFR 96–08 contains 33 pages of text that remains as a pertinent explanation of PSHA methodology for California. The notable upgrade from 1996 to 2002 is the revised database of seismogenic faults (particularly slip–rates, Mmax, recurrence intervals, and fault segmentation).

Cotton, William R., Dickey, Robert H., and Edwards, S., 1973, Activity of the Reiche Canyon Fault, Moreno Valley, Riverside County: Association of Engineering Geologists, *AEG Bulletin*, vol. 16, p. 30 (annual meeting abstract).

Eppes, Martha C., McFadden, Leslie D., Matti, Jonathan C., and Powell, Robert, 2002, Influence of soil development on the geomorphic evolution of landscapes — an example from the Transverse Ranges of California: *Geology*, vol. 30, p. 195-198.

Fumal, Thomas E., and Tinsley, John C., III, 1985, Mapping Quaternary sedimentary deposits for areal variations in shaking response, *in* Ziony, J.I., *editor*, 1985, Evaluating earthquake hazards in the Los Angeles region: U. S. Geological Survey Professional Paper 1360, 505 p. *Refer to p. 111 for Moreno Valley*

Harden, Jennifer W., and Matti, Jonathan C., 1989, Holocene and Pleistocene slip–rates on the San Andreas Fault in Yucaipa, California using displaced alluvial–fan deposits and soil chronology: *Geological Society of American Bulletin*, vol. 101, no. 9, p. 1107–1117.

Hart, Earl W., and Bryant, William A., 1997, Fault–rupture hazard zones in California: California Geological Survey, Special Publication 42, 1997 edition with 1999 supplements, 38 p. *The active San Jacinto Fault has been legally zoned under the Alquist-Priolo Earthquake Fault Zoning Act. SP-42 is the definitive official CGS publication to cite for the Sunnymead, El Casco, and Lakeview Quadrangles that are covered by the City of Moreno Valley and its sphere of influence. Do not confuse Alquist-Priolo Earthquake Fault Zoning Act with the Seismic Hazards Zoning Act (landslides and liquefaction).*

Jennings, C.W., 1994, Fault activity map of California and adjacent areas: California Division of Mines and Geology, Geologic Data Map No. 6, scale 1:750,000.

Kendrick, Katherine J., and McFadden, Leslie D., 1996, Comparison and contrast of processes of soil formation in the San Timoteo Badlands with chronosequences in California: *Quaternary Research*, vol. 46, no. 2, p. 149-160.

★Kendrick, Katherine J., and Graham, Robert C., 2004, Pedogenic silica accumulation in chronosequence soils, southern California: *Soil Science Society of America Journal*, vol. 68, p. 1295-1303. *The field localities are the San Timoteo Badlands and Cajon Pass. These geologists are at the US Geological Survey and University of California Riverside.*

★Kendrick, Katherine J., Morton, Douglas M., Wells, Stephen G., and Simpson, Robert W., 2002, Spatial and temporal deformation along the northern San Jacinto Fault, southern California: implications for slip rates: *Bulletin of the Seismological Society of America*, vol. 92, no. 7, October 2002 issue, p. 2782–2802.

Kendrick, Kathryn J., McFadden, Les, and Morton, D.M., 1994, Soils and slip rates along the northern San Jacinto Fault, *in* McGill, Sally F., and Ross, Timothy M., *editors*, Geological Investigations of an Active Margin: Geological Society of America, Cordilleran Section Guidebook, 27th Annual Meeting, San Bernardino, pages 146-151.

Magistrale, Harold, and Sanders, C., 1996, Evidence from precise earthquake hypocenters for segmentation of the San Andreas Fault in San Gorgonio Pass: *Journal of Geophysical Research*, vol. 101, p. 3031–3044.

Marquis, Samuel A., Jr., and Stewart, Edward, 1994, The delineation of wellhead protection areas in fractured bedrock terrains using groundwater flow models: Proceedings of the 8th National Outdoor Action Conference & Exposition, *Ground Water Management*, vol. 18, p. 327-343. *The study area is the Moreno Valley.*

Matti, Jonathan C., Morton, Douglas M., Cox, Brett F., Carson, Scott E., and Yetter, T.J., 2003, Geologic map and digital database of the Yucaipa 7½–minute quadrangle, San Bernardino and Riverside Counties, California: U.S. Geological Survey, Open File Report 03–301, map scale 1:24,000.

Matti, Jonathan C., Morton, Douglas M. and Cox, Brett F., 1992, The San Andreas fault system in the vicinity of the central Transverse Ranges province, southern California: U.S. Geological Survey Open–File Report 92–354, 62 p.

May, Steven R., and Repenning, Charles A., 1982, New evidence for the age of the Mount Eden fauna, southern California: *Journal of Vertebrate Paleontology*, vol. 2, no. 1, p. 109-113.

Merrifield, Paul M., and Lamar, Donald L., 1984, Possible strain events reflected in water-levels in wells along the San Jacinto Fault zone, southern California: Pure and Applied Geophysics, vol. 122, no. 2-4, p. 245-254. *Dr. Merrifield and Dr. Lamar spent many years in the late 1970s and early 1980s carefully monitoring water wells in the Moreno Valley-San Jacinto graben. They prepared annual reports of their studies (as Open-File Reports by the USGS). This published journal article conveniently summarizes their entire project.*

★Morton, Douglas M., 2001, Geologic map of the **Sunnymead 7½-minute Quadrangle**, Riverside County, California: U.S. Geological Survey Open-File Report 01-450, map scale 1:24,000. www.usgs.gov

★Morton, Douglas M., 1999, Preliminary digital geologic map of the Santa Ana 30×60–minute quadrangle, southern California: U.S. Geological Survey Open–File Report 99–172, map scale 1:100,000. *Covers the City of Moreno Valley — this geologic map should be used for a page-sized regional planning map that is then keyed to the Sunnymead Quadrangle at 1:24,000-scale.*

★Morton, Douglas M., 1977, Surface deformation in part of the San Jacinto Valley, southern California: *Journal of Research of the U.S. Geological Survey*, vol. 5, no. 1, p. 117-124.

★Morton, Douglas M., and Matti, Jonathan C., 1993, Extension and contraction within an evolving divergent strike-slip fault complex: the San Andreas and San Jacinto fault zones at their convergence in southern California, *in* Powell, R.E., Weldon, R.J.II, and Matti, J.C., *editors*, The San Andreas fault system: displacement, palinspastic reconstruction, and geologic evolution: Geological Society of America, Memoir 178, p. 217-230.

Morton, Douglas M., and Matti, Jonathan C., 1989, A vanished late Pliocene to early Pleistocene alluvial-fan complex in the northern Perris Block, southern California, *in* Colburn, I.P., Abbott, P.L., and Minch, J.A., *editors*, Conglomerates in Basin Analysis, the A.O. Woodford memorial volume: Society of Economic Paleontologists and Mineralogists, Pacific Section SEPM, vol. 62, p. 73-80.

Morton, Douglas M., Alvarez, R.M., and Campbell, Russell H., 2003, Preliminary soil–slip susceptibility maps, southwestern California: U.S. Geological Survey, Open–File Report 03–17.

Nicholson, C., Seeber, L., Williams, P., and Sykes, L.R., 1986, Seismicity and fault kinematics through the eastern Transverse Ranges, California: block rotation, strike-slip faulting, and low-angle thrusting: *Journal of Geophysical Research*, v. 91, p. 4891-4908.

Norton-Hehn, Victoria, MacFadden, Bruce J., Albright, L.Barry, and Woodburne, Michael O., 1996, Magnetic polarity, stratigraphy, and possible differential tectonic rotation of the Miocene-Pliocene mammal-bearing San Timoteo Badlands, southern California: *Earth & Planetary Science Letters*, vol. 141, no. 1-4, p. 35-49.

★Park, Stephen K., Pendergraft, Darin, Stephenson, William J., Shedlock, Kaye M., and Lee, Tien Chang, 1995, Delineation of intrabasin structure in a dilational jog of the San Jacinto Fault Zone, southern California: *Journal of Geophysical Research*, vol. 100, no. B-1, p. 691-702.

★Petersen, Mark D., Beeby, D.J., Bryant, W.A., Cao, C., Cramer, C.H., Davis, J.F., Reichle, M., Saucedo, G., Tan, S., Taylor, G., Toppozada, T., Treiman, J., and Wills, C.J., 1999, Seismic shaking hazard maps of California: California Geological Survey, Map Sheet 48, published July 1, 1999, approximate scale ≅ 1:2,127,600 www.conservation.ca.gov/cgs

This statewide shaking map is recommended for use by the Moreno Valley Planning Department. It shows that the ground-motion within Moreno Valley is among the highest in California.

Powell, Robert E., Weldon, Ray J., II, and Matti, Jonathan C., *editors*, 1993, The San Andreas fault system: displacement, palinspastic reconstruction, and geologic evolution: Geological Society of America, *Memoir 178*, 10 papers, 8 plates in map case, 332 p.

Proctor, Richard James, Geologic features of a section across the Casa Loma Fault (a branch of the San Jacinto Fault), exposed in an aqueduct trench near San Jacinto, California: *Bulletin of the Geological Society of America*, vol. 73, no. 10, p. 1293-1295.

Reynolds, Robert E., and Reeder, Wessly A., 1986, Age and fossil assemblages of the San Timoteo Formation, Riverside County, California, *in* Kooser, M.A., and Reynolds, R.E., *editors*, Geology around the Margins of the eastern San Bernardino Mountains: *Publications of the Inland Geological Society*, vol. 1, p. 51-56.
The San Timoteo Badlands on the northeastern side of Moreno Valley contain a rich faunal assemblage. Also refer to the paleontology report by Albright (1999). Because the fossils may affect land-use development, they need to be discussed and evaluated in the General Plan for the City of Moreno Valley.

Sadler, Peter M., Kooser, Marilyn A., Renfrew, James M., Hillenbrand, John M., 1989, Conglomerates and the reconstruction of strike-slip fault zones; lessons from the Transverse Ranges, southern California, *in* Colburn, I.P., Abbott, P.L., and Minch, J.A., *editors*, Conglomerates in Basin Analysis, the A.O. Woodford memorial volume: Society of Economic Paleontologists and Mineralogists, Pacific Section SEPM, vol. 62, p. 33-52.

★Sadler, Peter M., and Morton, Douglas M., *editors*, 1989, Landslides in a semi-arid environment, with emphasis on the inland valleys of southern California: University of California, Riverside, *Publications of the Inland Geological Society*, vol. 2, 386 pages.

★Sanders, Christopher, and Magistrale, Harold, 1997, Segmentation of the northern San Jacinto fault zone, southern California: Journal of Geophysical Research, v. 102, no. B-12, p. 27,453 - 27,467.

Schlehuber, Michael J., Lee, Tien Chang, and Hall, Bradley S., 1989, Groundwater level and hydrochemistry in the San Jacinto Basin, Riverside County, California: *Journal of Hydrology*, vol. 106, no. 1-2, p. 79-98.

Seeber, Leonardo and Armbruster, J.G., 1995, The San Andreas Fault system through the Transverse Ranges as illuminated by earthquakes: *Journal of Geophysical Research*, v. 100, no. B5, p. 8285–8310.

Sharp, Robert Victor, 1967, San Jacinto fault zone in the Peninsular Ranges of southern California: *Bulletin of the Geological Society of America*, vol. 78, no. 6, p. 705-729. *This Caltech PhD dissertation is the seminal work on the San Jacinto Fault.*

Sieh, Kerry E., 1996, The repetition of large-earthquake ruptures, *in* Knopoff, L., Aki, K., Allen, C.R., Rice, J.R., and Sykes, L.R., *convenors*, Earthquake Prediction – the scientific challenge: *Proceedings of the National Academy of Sciences*, v. 93, p. 3764-3771, April 1996.

Sieh, Kerry E., and Matti, Jonathan C., 1992, Earthquake geology, San Andreas Fault System, Palm Springs to Palmdale: Association of Engineering Geologists, 35th Annual Mtg. in Long Beach, field trip guidebook & reprint volume published by So. Calif. Section of AEG, 165 pages of reprinted papers.

Spotila, James A. and Sieh, Kerry E., 2000, Architecture of transpressional thrust faulting in the San Bernardino Mountains, southern California, from deformation of a deeply weathered surface: *Tectonics*, vol. 19, no. 4, p. 589–615.

Spotila, James A., House, Martha A., Blythe, Ann E., Niemi, Nathan A., and Bank, Gregory C., 2002, Controls on the erosion and geomorphic evolution of the San Bernardino and San Gabriel Mountains, southern California, *in* Barth, Andrew, *editor*, Contributions to Crustal Evolution of the Southwestern United States — *the Perry Lawrence Ehlig memorial volume:* Geological Society of America, Special Paper 365, p. 205–230.

Spotila, James A., Farley, Kenneth A., and Sieh, Kerry E., 1998, Uplift and erosion of the San Bernardino Mountains, associated with transpression along the San Andreas Fault, California, as constrained by radiogenic helium thermochronometry: *Tectonics*, vol. 17, p. 360–378.

Spotila, James A., Farley, Kenneth A., Yule, J. Douglas, and Reiners, Peter W., 2001, Near–field transpressive deformation along the San Andreas fault zone in southern California, based on exhumation constrained by (U–Th) / He dating: *Journal of Geophysical Research*, vol. 106, no. B–12, p. 30909 to 30922.
Indicates vertical exhumation of Yucaipa Ridge at rate of ≈ 5 to 7 mm/year and total exhumation of ≈ 3 to 6 km since 1.8 Ma.

Stephenson, William J., Odum, J.K., Williams, R.A., and Anderson, M.L., 2002, Delineation of faulting and basin geometry along a seismic reflection transect in urbanized San Bernardino Valley, California: *Bulletin of the Seismological Society of America*, vol. 92, no. 6, August 2002 issue, p. 2504–2520.

Streit, Jürgen E., 1999, Conditions for earthquake surface rupture along the San Andreas Fault system, California: *Journal of Geophysical Research*, vol. 104, no. B–8, August 10, 1999 issue, p. 17,929 to 17,939. *Emphasis on the bends in the fault azimuth in the San Bernardino Valley-Moreno Valley area as the probable location for future large earthquakes.*

★Toppozada, T.R., Borchardt, G., Hallstrom, C., Johnson, C., Per, R., and Lagario, H. 1993, Planning scenario for a major earthquake on the San Jacinto fault, Riverside and San Bernardino Counties, California: California Geological Survey, Special Publication 102, 219 p. *An essential reference for seismic safety planning in Moreno Valley.*

Wallace, Robert E., *editor,* 1990, The San Andreas Fault System, California: U.S. Geological Survey Prof. Paper 1515, 283 pages.

Weldon, Ray J., Fumal, Thomas E., Biasi, Glenn P., and Scharer, Katherine M., 2005, Past and future earthquakes on the San Andreas Fault: AAAS *Science*, vol. 308, issue #5724, 13 May 2005, p. 966-967.

Wells, Stephen G., Connell, S.D., and Williamson, T.N., 1994, Soil development in valley floor deposits along the southern margin of the San Timoteo Badlands, Riverside County, California, *in* McGill, S.F., and Ross, T.M., *editors*, Geological Society of America, Cordilleran Section annual meeting, Guidebook 27, p. 140-146.

Williams, Kirk D., 1998, Groundwater modeling in the Moreno and Perris valleys, Riverside County, California: University of California, Riverside, unpublished Master of Science thesis, 178 p.

Williams, Patrick L, Sykes, Lynn R., Nicholson, Craig, and Seeber, Leonardo, 1990, Seismotectonics of the easternmost Transverse Ranges, California: relevance for seismic potential of the southern San Andreas Fault: *Tectonics:* vol. 9, p. 185–204.

Wills, Christopher J., and Silva, Walter, 1998, Shear–wave velocity characteristics of geologic units in California: EERI *Earthquake Spectra*, v. 14, no. 3, August 1998, p. 533-556.

Working Group on California Earthquake Probabilities, 1995, Seismic hazards in southern California: probable earthquakes, 1994 to 2024: *Bulletin of the Seismological Society of America*, v. 85, no. 2, p. 379-439. *(available as a reprinted booklet from SCEC)*

Yule, J. Douglas, Fumal, Thomas, McGill, Sally F., and Seitz, Gordon G., 2001, Active tectonics and paleosiesmic record of the San Andreas Fault, Wrightwood to Indio, *in* Dunne, George, and Cooper, John, *editors,* 2001, Geologic excursions in the California deserts and adjacent Transverse Ranges: Society for Sedimentary Geology, SEPM Pacific Section, Book #88, 126 p.; field trip #4, p. 91–126.

Yule, J. Douglas, and Sieh, Kerry E., 2003, Complexities of the San Andreas fault near San Gorgonio Pass: implications for large earthquakes: AGU *Journal of Geophysical Research*, vol. 108, no. B–11, published on the web November 29, 2003, p. 2545; www.agu.org doi: 10.1029/2001JB00451, 2003.

Landslides

(particularly in northeastern Moreno Valley with abundant debris-flows and acute erosion)

Abramson, L.W., Lee, T.S., Sharma, S., and Boyce, G.M., 2001, Slope stability and stabilization methods, 2nd edition: John Wiley & Sons, Inc., 736 p.

★Blake, Thomas F., Hollingsworth, Robert A., and Stewart, Jonathan P., *editors*, 2002, Recommended procedures for implementation of CDMG Special Publication 117, *Guidelines for Analyzing and Mitigating Landslide Hazards in California:* Southern California Earthquake Center, 110 p., plus 17 p. appendix, edition of 6–20–2002; CD–ROM and paper text. < www.scec.org >

★California Geological Survey, 1997, *Guidelines for evaluating and mitigating seismic hazards in California:* California Geological Survey, Special Publication 117, 74 p., 7 chapters, Appendix A, B, C, and D. *Appendix A includes the full text of the Seismic Hazards Mapping Act of 1990.* < www.conservation.ca.gov/cgs >
SP-117 has been officially adopted by both the California Board of Geologists & Geophysicists and the California State Mining & Geology Board, so the criteria have legal president; consulting engineering geologists that perform work in Moreno Valley must meet minimum criteria outlined in SP-117. This is the reason why SP-117 needs to be cited and used in the Safety Element.

California Geological Survey, 1999, *Recommended criteria for delineating Seismic Hazards Zones in California:* California Geological Survey, Special Publication 118, 12 p.

Cornforth, Derek, 2005, Landslides in practice: investigation, analysis, and remedial / preventative options in soils:

John Wiley & Sons, Inc., 624 p., $150 list price; 23 chapters, 12 case histories.

Cruden, David M., and Varnes, David J., 1996, Landslide types and processes, *in* Turner, A.Keith, and Schuster, Robert L., *editors,* Landslides – investigation and mitigation: National Academy Press, Transportation Research Board Special Report 247, chap.3, p. 36–75.

Duncan, J. Michael, and Wright, Stephen G., 2005, Soil strength and slope stability: John Wiley & Sons, Inc., 312 p.

Fifield, Jerald S., 2001, Designing for effective sediment and erosion control on construction sites: Forester Press, 318 p. < www.foresterpress.com >

Fifield, Jerald S., 2001, Field manual on sediment and erosion control best management practices for contractors and inspectors: Forester Press, 160 p. *(spiral–wire bound field–manual)* < www.foresterpress.com >

Forrester, Kevin, 2001, Subsurface drainage for slope stabilization: American Society of Civil Engineers, ASCE Press, 208 p. www.asce.org

Ghilardi, P., Natale, L., and Savi, F., 2000, Debris-flow propagation on urbanized alluvial fans, *in* Wieczorek, Gerald F., and Naeser, Nancy D., *editors*, Debris-flow hazards mitigation: mechanics, prediction, and assessment: A.A. Balkema Publishers, Rotterdam; *Proceedings of the Second International Conference on Debris Flows*, p. 471-478.

Glade, Thomas, Anderson, Malcolm G., and Crozier, Michael J., *editors*, 2005, Landslide hazard and risk: John Wiley & Sons, Inc., 832 p.

Gray, Donald H., and Sotir, Robbin B., 1996, Biotechnical and soil bioengineering slope stabilization — a practical guide for erosion control: John Wiley & Sons, Inc., 378 p. *Dr. Gray is professor of geotechnical engineering at the University of Michigan and a pioneer in the use of plants and geosynthetics for erosion control and surficial slope stability. This excellent textbook presents ecologically sound alternatives to conventional reinforced concrete retaining walls.*

Keefer, Robert F., 2000, Handbook of soils for landscape architects: Oxford University Press, 272 p.

Keller, Edward A., and Pinter, Nicholas, 1996, Active tectonics — earthquakes, uplift, and landscape: Prentice-Hall, 338 pages

Kruckeberg, Arthur R., 2002, Geology and plant life: the effects of landforms and rock types on plants: University of Washington Press., 304 p., 98 photos, 47 tables, 21 figures. *Geobotany with application to engineering geology.*

Lee, Tien Chang, Biehler, Shawn, Park, Stephen K., and Stephenson, William J., 1996, A seismic refraction and reflection study across the central San Jacinto Basin, southern California: Geophysics, vol. 61, no. 5, p. 1258-1268.

Mitchell, James K., and Soga, K., 2005, Fundamentals of soil behavior, 3rd edition: John Wiley & Sons, Inc., 608 p.

★Morton, Douglas M., Distribution and frequency of storm-generated soil slips on burned and unburned slopes, San Timoteo Badlands, southern California, *in* Sadler, P.M., and Morton, D.M., *editors*, Landslides in a Semi-Arid Environment: Inland Geological Society and the University of California, Riverside, vol. 2, p. 279-284.

★Morton, Douglas M., and Sadler, Peter M., 1989, Landslides flanking the northeastern Peninsular Ranges and in the San Gorgonio Pass area of southern California, *in* Sadler, P.M., and Morton, D.M., *editors*, Landslides in a Semi-Arid Environment: Inland Geological Society and the University of California, Riverside, vol. 2, p. 338-355.

Morton, Douglas M., Alvarez, R.M., and Campbell, Russell H., 2003, Preliminary soil–slip susceptibility maps, southwestern California: U.S. Geological Survey Open–File Report 03–17.

★Morton, Douglas M., 1994, Subsidence and ground fissures in the San Jacinto Basin area, southern California, *in* U.S. Geological Survey Subsidence Interest Group Conference: U.S. Geological Survey Open-File Report 94-532, p. 29-31. *This is a key report for the City of Moreno Valley Safety Element because it shows the locations of severe ground fissures and acute subsidence. In the past decade, the fissures have increased. This information needs to be plotted on maps within the Safety Element, so that consulting engineering geologists , developers, and city officials are aware of the extent of the fissuring.*

Ortigao, Jose A.R., and Sayao, Alberto S.F.J., *editors*, 2004, Handbook of slope stabilization engineering: Springer–Verlag Publishers, 800 p.

★Sadler, Peter M., and Morton, Douglas M., *editors,* 1989, Landslides in a semi-arid environment, with emphasis on the inland valleys of southern California: University of California, Riverside, *Publications of the Inland Geological Society*, vol. 2, 386 pages.

Schumm, Stanley A., *chairman,* and 7 others, 1996, Alluvial fan flooding: National Academy of Sciences, National Academy Press, Commission on Geosciences, Environment, and Resources, 172 p.

Shanklin, D.W., Rademacher, K.R., and Talbot, J.R., *editors*, 2000, Construction and controlling compaction of earth fills, ASTM Special Technical Publication STP–1384, 336 p. www,astm.org

Toy, Terrence J., Foster, George R., and Renard, Kenneth G., 2002, Soil erosion: processes, prediction, measurement, and control: John Wiley & Sons, Inc., 352 p., 100 photographs, drawings, and tables.

Turner, A.K., and Schuster, Robert L., *editors,* 1996, Landslides — investigation and mitigation: National Academy Press, Transportation Research Board Special Report 247, 673 p. *The national treatise on landslides with 25 chapters by a team of geologists and geotechnical engineers.*

Varnes, David J., 1974, The logic of geological maps, with reference to their interpretation and use for engineering purposes: U.S. Geological Survey Professional Paper 837, 48 p. *(a classic treatise on the preparation of engineering geology maps)*

Vaughn, Diane M., Real, Charles R., McGuire, Terilee, Swift, Jennifer, Peters, Alexi , and Moskovitz, Robert, 2004, An e–government web portal for dissemination of geotechnical data, *in* Yegan, M.K, and Kavazanjian, Edward, *editors*, Geotechnical Engineering for Transportation Projects: American Society of Civil Engineers, *Proceedings of Geo–Trans*, held in Los Angeles in July 2004; ASCE Geotechnical Special Publication 126, p. 851–859.

Wills, Chris J., and McCrink, Timothy P., 2002, Comparing landslide inventories: the map depends on the method: *Environmental & Engineering Geoscience*, AEG–GSA, vol. 8, no. 4, November 2002 issue, p. 279–293.

Wyllie, Duncan C., and Mah, Christopher W., 2004, Rock slope engineering, 4th edition: Spon Press, a division of Taylor & Francis Publishers, 431 p. *This new fourth edition is based on the third edition by Hoek & Bray (1981). This textbook has direct application to rock slopes on the margins of Moreno Valley.*

Seismic Safety, Land-Use Planning, and Building Codes

★California Department of Water Resources, 2003, Guidebook for implementation of Senate Bill 610 and Senate Bill 221 of 2001 to assist water suppliers, cities, and counties in integrating water and land–use planning: CDWR, 130 p. www.owue.water.ca.gov
The City of Moreno Valley must comply with the new requirements of Senate Bills 201 and 610 so that adequate water supplies are *demonstrated* prior to zoning and development.

★California Geological Survey, 1997, *Guidelines for evaluating and mitigating seismic hazards in California:* California Geological Survey, Special Publication 117, 74 p., 7 chapters, Appendix A, B, C, and D. *(Appendix A includes the full text of the Seismic Hazards Mapping Act of 1990)* SP–117 is downloadable from the CGS website: < www.conservation.ca.gov/cgs >
SP-117 has been officially adopted by both the California Board of Geologists and Geophysicists and the California State Mining & Geology Board, so the criteria have legal president; consulting engineering geologists that perform work in Moreno Valley must meet minimum criteria outlined in SP-117.

California Geological Survey, 1998, Maps of known active fault near-source zones in California and adjacent portions of Nevada: International Conference of Building Officials, Whittier, California, 11 × 17 atlas format.

California Geological Survey, 1999, *Recommended criteria for delineating Seismic Hazards Zones in California:* California Geological Survey, Special Publication 118, 12 p.

California Seismic Safety Commission, 1998, The commercial property owner's guide to earthquake safety: SSC Publication 98-01, 40 p. CSSC, 1755 Creekside Oaks Drive, Suite 100, Sacramento, CA 95833, ☎ 916-263-5505. *download from* www.seismic.ca.gov

California Seismic Safety Commission, 2002, The homeowner's guide to earthquake safety: SSC Publication 2002-01, 30 p. CSSC, 1755 Creekside Oaks Drive, Suite 100, Sacramento, CA 95833, ☎ 916-263-5505. *download from* www.seismic.ca.gov
This practical and useful booklet is highly recommended for residents of Moreno Valley.

California Seismic Safety Commission, 2004, A safer, more resilient California — the state plan for earthquake research: SSC Publication 2004-03, 11 p. CSSC, 1755 Creekside Oaks Drive, Suite 100, Sacramento, CA 95833, ☎ 916-263-5505. *download from* www.seismic.ca.gov

California Seismic Safety Commission, 2004, Seismic safety in California's schools: SSC Publication 04-04, 15 p. CSSC, 1755 Creekside Oaks Drive, Suite 100, Sacramento, CA 95833, ☎ 916-263-5505. *download from* www.seismic.ca.gov

Cao, Tianqing, Bryant, William A., Rowshandel, B., Branum, David, and Wills, Christopher J., 2003, The revised 2002 California probabilistic seismic hazards maps: California Geological Survey, posted as .pdf on CGS website, June 2003: www.conservation.ca.gov/cgs/rghm/psha

- Report, 11 p., with Appendix A (Type A, B, C faults):
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- References for 2002 California Fault Parameters, 9 p.

This is the new 2002 statewide seismotectonic model used in probabilistic seismic hazard analysis by the California Geological Survey. CCR Title 24 projects (hospitals and schools) will be measured and evaluated against this PSHA model and its fault data–base that reflects a broad consensus of the seismology and engineering geology profession. This report updates and supersedes Petersen and others, CGS Open–File Report 96–08, which was the 1996 statewide consensus model. CGS OFR 96–08 contains 33 pages of text that remains as a pertinent explanation of PSHA methodology for California. The notable upgrade from 1996 to 2002 is the revised database of seismogenic faults (particularly slip–rates, Mmax, recurrence intervals, and fault segmentation).

Curtin, Daniel J., and Talbert, Cecily T., 2004, Curtin's California land use and planning law, 24th edition: Solano Press, 22 chap.

Dewberry, S.O., *editor*, 2002, Land development handbook, 2nd edition: McGraw–Hill Publishing Co., 1,124 p., 700 illustrations *(a ten–year effort by two dozen specialists resulted in a comprehensive handbook on development)*

Fulton, William, 2003, Guide to California planning, 2nd edition: Solano Press, 23 chap., 375 p.

GeoScience World, 2005, A comprehensive Internet resource for research and communications in the geosciences, built on an aggregation of 30 peer-reviewed journals indexed, linked, and inter-operable with *GeoRef* debuted in February 2005 www.geoscienceworld.org

Governor's Office of Planning and Research, 2004, CEQA, California Environmental Quality Act Statutes and Guidelines: OPR, 1400 Tenth Street, Sacramento, CA 95814, ☎ 916–322–4245 < www.opr.gov > PRC §§15000 — 15387

Hart, Earl W., and Bryant, William A., 1997, Fault–rupture hazard zones in California: California Geological Survey, Special Publication 42, 1997 edition with 1999 supplements, 38 p. *The active San Jacinto Fault has been legally zoned under the Alquist-Priolo Earthquake Fault Zoning Act. SP-42 is the definitive official CGS publication to cite. Do not confuse this with the Seismic Hazards Zoning Act (landslides and liquefaction).*

Jones, Lucile M., 2004, Putting down roots in earthquake country, second edition: Southern California Earthquake Center, 30 p. *(An excellent color booklet for the public in earthquake safety written by a USGS seismologist. Available from SCEC at 213-740-5843 or visit homepage at* www.scec.org)

Martin, G.R., and Lew, M., *editors*, 1999, Recommended procedures for implementation of CDMG Special Publication 117 Guidelines for Analyzing and Mitigating Liquefaction in California: Southern California Earthquake Center, 63 pages, ☎ 213-740-5843 or homepages: www.scec.org or www.conservation.ca.gov/cgs

Real, Charles R., 1998, Reducing future earthquake losses in California – action begins with knowing where the problems are: *California Geology*, vol. 51, no. 2, March/April 1998 issue, p. 10–14. *(explains the Seismic Hazards Mapping Act of 1990)*

Real, Charles R., 2002, California's Seismic Hazards Mapping Act – geoscience and public policy, *in* Bobrowsky, Peter T., *editor*, Geoenvironmental mapping – methods, theory, and practice: A.A. Balkema Publishers, p. 93–120.

Smith, Theodore C., and McKamey, Bea, 2000, Summary of outreach activities for California's Seismic Hazards Mapping Program: California Geological Survey, Special Publication 121, 38 p. *Contains five appendixes of brochures, fliers, and notices that were used in the CGS outreach program of the California Geological Survey to cities.*

Stern, Paul C., and Fineberg, H.V., *editors*, and 17 members of the Committee on Risk Characterization, 1996, Understanding risk – informed decisions in a democratic society: National Academy Press, 249 p. *(contains definitions of risk terminology from the authoritative National Academy of Sciences)*

Sydnor, Robert H., 2004, Checklist for the review of engineering geology and seismology reports for California public schools, hospitals, and essential services buildings: California Geological Survey Note 48, two pages, dated January 1, 2004. *Available on-line at:* www.conservation.ca.gov/cgs/information/publications/cgs_notes/

Sydnor, Robert H., 2005, Engineering geology and seismology for public schools and hospitals in California: California Geological Survey, 303 p., 4 MB .pdf edition dated May 14, 2005. *(explains and accompanies Note 48 checklist listed below)*

★Toppozada, T.R., Borchardt, G., Hallstrom, C., Johnson, C., Per, R., and Lagario, H. 1993, Planning scenario for a major earthquake on the San Jacinto fault, Riverside and San Bernardino Counties, California: California Geological Survey, Special Publication 102, 219 p. *An essential reference for seismic safety planning in Moreno Valley.*

Yeats, Robert S., 2001, Living with earthquakes in California: Oregon State University Press, 406 p. *Recommended for citizens of Moreno Valley for background information in seismic safety.*

Yeats, Robert S., and Gath, Eldon M., 2004, The role of geology in seismic hazard mitigation, chapter 3, *in* Bozorgnia, Y., and Bertero, V.V., *editors*, Earthquake Engineering: CRC Press, a division of Taylor & Francis Publishers, 952 p. < www.crcpress.com >

Homeowner Information

regarding Seismic Safety & Foundation Problems for Residents of the City of Moreno Valley

Audel, Harry S., 2004, Field guide to crack patterns in buildings — a guide to residential building cracks caused by geologic hazards: Association of Engineering Geologists, Special Publication 16.

Boone, S.J., 1996, Ground-movement-related building damage: *Journal of Geotechnical Engineering*, American Society of Civil Engineers, vol. 122, no. 11, November 1996, p. 886-896 and vol. 124, p. 462-465.

California Seismic Safety Commission, 2002, The homeowner's guide to earthquake safety: SSC Publication 2002-01, 30 p. CSSC, 1755 Creekside Oaks Drive, Suite 100, Sacramento, CA 95833, ☎ 916-263-5505. *download from* www.seismic.ca.gov *This practical and useful booklet is highly recommended for residents of Moreno Valley.*

Freeman, T.J., Driscoll, R.M.C., and Littlejohn, G.S., 2003, Has your house got cracks? – a homeowner's guide to subsidence and heave damage, 2nd edition: American Society of Civil Engineers & Thomas Telford, Ltd., 128 p. www.asce.org *This is written as a practical guide for homeowners, but may also be a collateral reference for schools and hospitals — for communicating to the superintendent or owner regarding expansive soils and subsidence.*

Handy, Richard L., 1995, The day the house fell — homeowner soil problems from landslides to expansive clays and wet basements: American Society of Civil Engineers, ASCE Press, 230 p.

★Jones, Lucile M., 2004, Putting down roots in earthquake country, second edition: Southern California Earthquake Center, 30 p. *(An excellent color booklet for the public in earthquake safety written by a USGS seismologist. Available from SCEC at 213-740-5843 or visit homepage at* www.scec.org

Nelson, John D., and Miller, Deborah J., 1997, Expansive soils, 2nd edition: problems and practice in foundation engineering and pavement engineering: John Wiley & Sons, Inc., 288 p.

St. John, D.A., Poole, A.B., and Sims, I., 1998, Concrete petrography: a handbook of investigative techniques: John Wiley & Sons, Inc., 474 p.

Yeats, Robert S., 2001, Living with earthquakes in California: Oregon State University Press, 406 p. *Recommended for citizens of Moreno Valley for background information in seismic safety*

Seismology & Earthquake Engineering

Bent, Alison L., and Helmberger, Donald V., 1991, A re-examination of historic earthquakes in the San Jacinto Fault zone, California: *Bulletin of the Seismological Society of America*, vol. 81, no. 6, p. 2289 — 2309.

Bolt, Bruce A., 1999, Earthquakes, 4th edition: W.H. Freeman & Company, New York, 366 pages.

Bolt, Bruce A., 2001, The nature of earthquake ground motion, *in* Naeim, F., *editor*, The seismic design handbook, 2nd edition: Kluwer Academic Publishers, p. 1–45.

Bolt, Bruce A., and Abrahamson, Norman A., 2003, Estimation of strong seismic ground motions, Chapter 59 *in* Lee, William H.K., Kanamori, Hiroo, Jennings, Paul C., and Kisslinger, Carl, *editors*, International handbook of earthquake and engineering seismology: Academic Press, a division of Elsevier: vol. 81–B, June 2003, p. 983–1001.

California Geological Survey, 1998, Maps of known active fault near-source zones in California and adjacent portions of Nevada: International Conference of Building Officials, Whittier, California, 11 × 17 atlas format.

California Geological Survey, 1999, *Recommended criteria for delineating Seismic Hazards Zones in California:* California Geological Survey, Special Publication 118, 12 p.

Campbell, Kenneth W., 1983, Bayesian analysis of extreme earthquake occurrences, Part II, Application to the San Jacinto Fault zone of southern California: *Bulletin of the Seismological Society of America*, vol. 73, no. 4, p. 1099-1115.

Cao, Tianqing, Bryant, William A., Rowshandel, B., Branum, David, and Wills, Christopher J., 2003, The revised 2002 California probabilistic seismic hazards maps: California Geological Survey, posted as .pdf on CGS website, June 2003: www.conservation.ca.gov/cgs/rghm/psha

- Report, 11 p., with Appendix A (Type A, B, C faults):
- Table of Type A Faults, 2 p.
- Table of Type B Faults, 15 p.
- Table of Type C Faults (= area sources), 1 p.
- References for 2002 California Fault Parameters, 9 p.

This is the new 2002 statewide seismotectonic model used in probabilistic seismic hazard analysis by the California Geological Survey. CCR Title 24 projects (hospitals and schools) will be measured and evaluated against this PSHA model and its fault data–base that reflects a broad consensus of the seismology and engineering geology profession. This report updates and supersedes Petersen and others, CGS Open–File Report 96–08, which was the 1996 statewide consensus model. CGS OFR 96–08 contains 33 pages of text that remains as a pertinent explanation of PSHA methodology for California. The notable upgrade from 1996 to 2002 is the revised database of seismogenic faults (particularly slip–rates, Mmax, recurrence intervals, and fault segmentation).

Doser, Diane I., 1992, Historic earthquakes (1918 to 1923) and an assessment of source parameters along the San Jacinto Fault system: *Bulletin of the Seismological Society of America*, vol. 82, no. 4, p. 1786 — 1801.

Frankel, Arthur D., 1999, How does the ground shake? — perspectives in earthquake ground motion: *Science*, v. 283, p. 2032–2033, March 26, 1999 issue. *An excellent concise paper by a USGS seismologist on the nature of earthquake ground-motion.*

Hamburger, Ronald O., 2003, Building code provisions for seismic resistance, *in* Chen, W.F., and Scawthorn, C., *editors*, Earthquake Engineering Handbook: CRC Press, a division of Taylor & Francis Publishers, chap. 11, p. 11–1 to 11–28.

★Jordan, Thomas H., *chairman*, Beroza, Gregory, Cornell, C. Allin, Crouse, C.B, Dieterich, James, Frankel, Arthur, Jackson, David D., Johnston, A., Kanamori, H., Langer, James, McNutt, Marcia, Rice, James R., Romanowicz, Barbara A., Sieh, Kerry E., and Somerville, Paul G, 2003, Living on an active Earth: perspectives on earthquake science: National Academy of Sciences, National Academy Press, 418 p. *This is an authoritative and comprehensive treatise in seismology by a blue-ribbon panel of seismologists, including Professor Kerry E. Sieh of Caltech, who is an alumnus of the University of California, Riverside.*

McGuire, Robin K., 2004, Seismic hazard and risk analysis: Earthquake Engineering Research Institute, EERI Monograph No. 10, 240 p. *This monograph explains probabilistic seismic hazard analysis and strong–motion seismology.* www.eeri.org

Milsom, John, 2003, Field geophysics, 3rd edition: John Wiley & Sons, 244 p.

Mori, James J., 1993, Fault plane determinations for three small earthquakes along the San Jacinto Fault, California; search for cross faults: *AGU Journal of Geophysical Research*, vol. 98, no. 10, p. 17,711 — 17,722.

Petersen, Mark D., Beeby, D.J., Bryant, W.A., Cao, C., Cramer, C.H., Davis, J.F., Reichle, M., Saucedo, G., Tan, S., Taylor, G., Toppozada, T., Treiman, J., and Wills, C.J., 1999, Seismic shaking hazard maps of California: California Geological Survey, Map Sheet 48, published July 1, 1999, approximate scale ≅ 1:2,127,600 www.conservation.ca.gov/cgs

Reiter, Leon, 1990, Earthquake hazard analysis: Columbia University Press, 254 pages.

Sieh, Kerry E., 1996, The repetition of large-earthquake ruptures, *in* Knopoff, L., Aki, K., Allen, C.R., Rice, J.R., and Sykes, L.R., *convenors*, Earthquake Prediction – the scientific challenge: *Proceedings of the National Academy of Sciences*, v. 93, p. 3764-3771, April 1996.

Somerville, Paul G., and Moriwaki, Yoshiharu, 2003, Seismic hazards and risk assessment in engineering practice, Chapter 65 *in* Lee, William H.K., Kanamori, Hiroo, Jennings, Paul C., and Kisslinger, Carl, *editors*, International handbook of earthquake and engineering seismology: Academic Press, a division of Elsevier: vol. 81–B, June 2003, p. 1065–1095.

Stewart, Jonathan P., Chiou, S.J., Bray, Jonathan D., Graves, Robert W., Somerville, Paul G., and Abrahamson, Norman A., 2001, Ground motion evaluation procedures for performance–based design: University of California, Berkeley; Pacific Earthquake Engineering Research Center, Report PEER 2001–09, 8 chapters, 229 p. *To be published in International Journal of Soil Dynamics and Earthquake Engineering in 2005. A significant new monograph in applied seismology funded by NSF written by an interdisciplinary California team of 4 seismologists and 3 geotechnical engineers.* Download pdf from: < http://peer.berkeley.edu >

★Toppozada, T.R., Borchardt, G., Hallstrom, C., Johnson, C., Per, R., and Lagario, H. 1993, Planning scenario for a major earthquake on the San Jacinto fault, Riverside and San Bernardino Counties, California: California Geological Survey, Special Publication 102, 219 p. *An essential reference for seismic safety planning in Moreno Valley.*

Wald, David J., Quitoriano, V., Heaton, Thomas H., and Kanamori, H., 1999, Relationships between peak ground acceleration, peak ground velocity, and Modified Mercalli Intensity in California: EERI *Earthquake Spectra*, v. 15, no. 3, pages 557-564.

Wallace, Robert E., *editor*, 1990, The San Andreas Fault System, California: U.S. Geological Survey Prof. Paper 1515, 283 pages.

Weldon, Ray J., Fumal, Thomas E., Biasi, Glenn P., and Scharer, Katherine M., 2005, Past and future earthquakes on the San Andreas Fault: AAAS *Science*, vol. 308, issue #5724, 13 May 2005, p. 966-967.

Wills, Christopher J., and Silva, Walter, 1998, Shear–wave velocity characteristics of geologic units in California: EERI *Earthquake Spectra*, v. 14, no. 3, August 1998, p. 533-556.

Yeats, Robert S., 2001, Living with earthquakes in California: Oregon State University Press, 406 p. *Recommended for citizens of Moreno Valley for background information in seismic safety.*

Yeats, Robert S., and Gath, Eldon M., 2004, The role of geology in seismic hazard mitigation, chapter 3, *in* Bozorgnia, Y., and Bertero, V.V., *editors*, Earthquake Engineering: CRC Press, a division of Taylor & Francis Publishers, 952 p. < www.crcpress.com >

Yeats, Robert S., Sieh, Kerry E., and Allen, Clarence R., 1997, The geology of earthquakes: Oxford University Press, 568 p. (especially Chapter 13, *Seismic Hazard Assessment*, p. 447–472).

Geotechnical Engineering & ASTM tests for earthwork

ASTM, 2002, *Standards on environmental site characterization, 2nd edition:* American Society for Testing and Materials, 1,827 p., 163 tests methods, practices, guides; available in book format (paper copy, 8½x11 size) or CD–ROM. < www.astm.org >

ASTM, 2004, ASTM Standards in Building Codes, 41st edition: American Society for Testing & Materials, International, 4 volume set on one CD–ROM with 1,350 standards that are searchable < www.astm.org >

ASTM, 2004, ASTM Standards on soil and rock: Geosynthetics: American Society for Testing & Materials, 508 p. This ASTM volume 4.13, published May 2004, contains 100 standards in geosynthetics formerly printed in vol. 4.09, Soil & Rock II. www.astm.org

★California Department of Water Resources, 2003, Guidebook for implementation of Senate Bill 610 and Senate Bill 221 of 2001 to assist water suppliers, cities, and counties in integrating water and land–use planning: CDWR, 130 p. www.owue.water.ca.gov

Coduto, Donald P., 1999, Geotechnical engineering – principles and practice: Prentice–Hall Publishers, 759 p. *Widely used college textbook in geotechnical engineering.*

Coduto, Donald P., 2001, Foundation design – principles and practices, 2nd edition: Prentice–Hall Publishers, 883 p.

Gray, Donald H., and Sotir, Robbin B., 1996, Biotechnical and soil bioengineering slope stabilization — a practical guide for erosion control: John Wiley & Sons, Inc., 378 p. *Dr. Gray is professor of geotechnical engineering at the University of Michigan and a pioneer in the use of plants and geosynthetics for erosion control and surficial slope stability. This excellent textbook presents ecologically sound alternatives to conventional reinforced concrete retaining walls.*

Kramer, Steven L., 1996, Geotechnical earthquake engineering: Prentice–Hall Publishers, 653 p.

Kramer, Steven L., and Stewart, Jonathan P., 2004, Geotechnical aspects of seismic hazards, chapter 4, *in* Bozorgnia, Y., and Bertero, V.V., *editors*, Earthquake Engineering: CRC Press, a division of Taylor & Francis Publishers, 952 p. < www.crcpress.com >

Martin, G.R., and Lew, M., *editors,* 1999, Recommended procedures for implementation of CDMG Special Publication 117 Guidelines for Analyzing and Mitigating Liquefaction in California: Southern California Earthquake Center, 63 pages, ☎ 213-740-5843 or homepages: www.scec.org or www.conservation.ca.gov/cgs

Milsom, John, 2003, Field geophysics, 3rd edition: John Wiley & Sons, 244 p.

Mitchell, James K., and Soga, K., 2005, Fundamentals of soil behavior, 3nd edition: John Wiley & Sons, Inc., 608 p.

Nelson, John D., and Miller, Deborah J., 1997, Expansive soils, 2nd edition: problems and practice in foundation engineering and pavement engineering: John Wiley & Sons, Inc., 288 p.

Oriard, Lewis L., 2002, Explosives engineering, construction vibrations, and geotechnology: International Society of Explosives Engineers, 680 p. hardcover, $88.00 www.isee.org
Lewis Oriard, engineering geologist, is based in Orange County, California. He has over 40 years of experience in engineering geophysics with emphasis on minimizing effects of blasting of basement excavations on adjacent existing structures. Some excavations in granitic rock in the Lakeview Mountains for structural foundations may need specialized blasting techniques outlined in this textbook.

Seed, Raymond B., Cetin, K.O., Moss, Robb E.S., Kammerer, Ann Marie, Wu, J., Pestana, J.M., Riemer, M.F., Sancio, R.B., Bray, Jonathan D., Kayen, Robert E., and Faris, A., 2003, Recent advances in soil liquefaction engineering — a unified and consistent framework: University of California, Earthquake Engineering Research Center Report 2003–06, 71 p. *Liquefaction analysis within the City of Moreno Valley should be performed in accordance with this milestone paper that was presented to hundreds of geotechnical engineers at the ASCE conference held on The Queen Mary. Download 10MB file from:*
http://www.ce.berkeley.edu/~kammerer/files/seed_et_al_2003.pdf

Shanklin, D.W., Rademacher, K.R., and Talbot, J.R., *editors*, 2000, Construction and controlling compaction of earth fills, ASTM Special Technical Publication STP–1384, 336 p. www.astm.org

Shlemon, Roy J., 1985, Application of soil–stratigraphic techniques to engineering geology*: Bulletin of the Association of Engineering Geologists*, vol. 22, no 2, p. 129–142.

Lifelines that may be ruptured by the active San Jacinto Fault in eastern Moreno Valley

Natural Gas Transmission – Colorado Aqueduct – Highway 60
Water Mains – Electric Power Pylons – Telecommunications
Fiber Optics Cable – Sewage

The City of Moreno Valley is unusually vulnerable to explosions, fires, and loss of lifelines because a large number of lifelines cross the active San Jacinto Fault on the eastern side of Moreno Valley. New housing tracts and developments on the eastern and northeastern side of Moreno Valley need safe and reliable lifelines that have shut-off valves and minimize the number of active fault crossings. Proper greenbelts for utility corridors, automatic shut-off valves, and structural set-backs of homes from the location of likely fault rupture are recommended. These references will assist with seismic safety planning by the City of Moreno Valley.

API, 1997, Effects of smooth and rock dents on liquid petroleum pipelines, Phase I and Phase II: API Publication 1156 and 1156-A, 242 pages, American Petroleum Institute, 1220 L St., N.W., Washington, D.C., 20005-4070 www.api.org

API, 1993, Steel pipeline crossing railroads and highways, 6th edition, April 1993: API Research Publication 1102, 39 pages, $63.00, American Petroleum Institute, 1220 L St., N.W., Washington, D.C., 20005-4070 www.api.org

API, 1997, Pressure testing of liquid petroleum pipelines, 4th edition, March 1997: API Research Publication 1110, 13 pages, $37.00, American Petroleum Institute, 1220 L St., N.W., Washington, D.C., 20005-4070 www.api.org

API, 1996, Assurance of hazardous liquid pipeline system integrity, 1st edition, August 1996: API Research Publication 1129, 54 pages, $95.00, American Petroleum Institute, 1220 L St., N.W., Washington, D.C., 20005-4070 www.api.org

API, 1995, Risk management within the liquid pipeline industry: a report from the Joint Government/Industry Risk Assessment Quality Team, final report, June 1995: API Report D90600, 87 pages, $5.00, American Petroleum Institute, 1220 L St., N.W., Washington, D.C., 20005-4070 www.api.org *A cooperative joint venture between the Office of Pipeline Safety of the U.S. Department of Transportation and API's General Committee on Pipelines.*

API, 1996, Development of public awareness programs by hazardous liquid pipeline operators: API Research Report 1123, 2nd edition, August 1996, 9 pages, $37.00, American Petroleum Institute, 1220 L Street, NW, Washington, D.C., 20005-0470, phone 202-682-8000

www.api.org

Ariman, T., and B.J. Lee, 1991, Tension/bending behavior of buried pipelines under large ground deformations in active faults, *in* Cassaro, M.A., *editor,* 1991, Lifeline Earthquake Engineering: American Society of Civil Engineers, Technical Council on Lifeline Earthquake Engineering Monograph No. 4, pages 226-233.

ASCE, 1999, Earthquake-actuated automatic gas shutoff devices: American Society of Civil Engineers, ASCE Standard No. ASCE 25-97, 11 pages, $24.00.

ASCE, 1998, Pipeline route selection for rural and cross-country pipelines: American Society of Civil Engineers, ASCE Manuals and Reports on Engineering Practice No. 46, 95 pages, $49.00.

ASCE, 1996, Pipeline crossings: *ASCE Manuals and Reports on Engineering Practice No. 89*, American Society of Civil Engineers, 140 pages, $39.00. www.asce.org

ASCE, 1983, Seismic response of buried pipes and structural components: American Society of Civil Engineers, 56 pages, $14.00. www.asce.org

ASCE, 1984, Guidelines for the seismic design of oil and gas pipeline systems: American Society of Civil Engineers, Reston, Virginia. www.asce.org

ATC, 1991, Seismic vulnerability and impact of disruption of lifelines in the conterminous United States: Applied Technology Council, Redwood City, California, Report ATC-25, 440 pages, $60.00; www.atcouncil.org

California Joint Legislative Staff, 1998, Aging Pipelines – California's Forgotten Infrastructure: California Legislature, Task Force on Government Oversight, prepared for Assemblyman Ted Lempert, 13 p.

Cassaro, Michael A., *editor*, 1991, Lifeline earthquake engineering: American Society of Civil Engineers, Technical Council on Lifeline Earthquake Engineering Monograph No. 4, 1,189 pages. www.asce.org

Castronovo, Jospeh P., and James A. Clark, *editors*, 1998, Pipelines in the constructed environment: American Society of Civil Engineers, 810 pages, $89.00.

Catalano, Lawrence F., *editor*, 1996, Pipeline crossings 1996: American Society of Civil Engineers, 510 pages, $54.00.

★Clark, J.A., C.H. Lee, and Woodrow U. Savage, 1991, Seismic/geologic risks as factors in prioritizing gas pipeline system replacement, *in* Cassaro, Michael A., *editor*, 1991, Lifeline Earthquake Engineering: American Society of Civil Engineers, Technical Council on Lifeline Earthquake Engineering Monograph No. 4, p. 206-215.

★CSFM-PSE, 1993, Hazardous Liquid Pipeline Risk Assessment: California Department of Forestry & Fire Protection, Office of the California State Fire Marshal, Pipeline Safety & Enforcement, 1131 S Street, Sacramento, CA 94244-2460, ☎ 916-445-8477; Southern Calif. Field Office ☎ 818-337-9999.

Doeing, Brian J., Williams, David T., and Bradley, Jeffrey B., 1997, Gas pipeline erosions failures: January 1993 floods, Gila River Basin, Arizona, *in* Larson, R.A., and Slosson, J.E., *editors*, Storm-Induced Geologic Hazards – case histories from the 1992-1993 winter in southern California and Arizona: Geological Society of America, *Reviews in Engineering Geology*, vol. 11, p. 25-38.

FEMA & ASCE, 2001, Seismic fragility formulations for water systems: American Lifelines Alliance, a joint FEMA and ASCE organization; part 1, Guidelines, 96 p.; part 2, Appendices, 101 p. download from: < www.americalifelinesalliance.org >

FEMA, 1987, Abatement of seismic hazards to lifelines: proceedings of a workshop on development of an action plan, volume 5, papers on gas and liquid fuel lifelines and special workshop presentations: Federal Emergency Management Agency: FEMA Report 139, July 1987, 134 pages, available free from FEMA at (800) 480-2520 or e-mail to: www.fema.gov

FEMA, 1992, Earthquake resistant construction of gas and liquid fuel pipeline systems serving, or regulated by, the federal government: Federal Emergency Management Agency: numbered as both FEMA Report 233 and NISTIR Report 4795, July 1992, 68 pages, available free from FEMA at (800) 480-2520 or e-mail to: www.fema.gov

Goetz, Christopher, Brainard, Ray, Carlson, Jill, Cato, Kerry, Holst, Norman, Johnson, Dan, Riley, Don, and Siem, Martin, 1999, Geology of the Eastside Reservoir Project, Riverside County, California, *in* Cranham, Greg T., *editor*, Water for Southern California – water resources development at the close of the century: San Diego Association of Geologists, p. 41-56.

★Keaton, Jeffrey R., R.M. Robison, G.H. Beckwith, and D.B. Slemmons, 1991, Philosophy of treatment of high-pressure natural gas pipelines at active fault crossings, *in* Cassaro, Michael A., *editor*, 1991, Lifeline Earthquake Engineering: American Society of Civil Engineers, Technical Council on Lifeline Earthquake Engineering Monograph No. 4, pages 898-906. www.asce.org

Lindell, Michael K., and Perry, Ronald W., 1998, Earthquake impacts and hazard adjustment by acutely hazardous materials facilities following the Northridge Earthquake: EERI *Earthquake Spectra*, v. 14, no. 2, p. 285-299.

★McDonough, Peter W., *editor*, 1995, Seismic design guide for natural gas distributors: ASCE Technical Council on Lifeline Earthquake Engineering , Monograph No. 9, 96 pages, $26.00. www.asce.org

Ogawa, Y., and Koike, T., 2001, Structural design of buried pipelines for severe earthquakes: *Soil Dynamics & Earthquake Engineering*, vol. 21, p. 199-209.

★O'Rourke, Michael J., and X. Liu, 1999, Response of Buried Pipelines Subject to Earthquake Effects: Multidisciplinary Center for Earthquake Engineering Research, SUNY Buffalo, New York; MCEER Monograph #3, 249 pages, $25.00 http://mceer.eng.buffalo.edu

O'Rourke, Michael J., *editor*, 1995, Lifeline Earthquake Engineering: American Society of Civil Engineers, Proceedings of the Fourth U.S. Conference, San Francisco, August 1995, 813 pages, $78.00 www.asce.org

O'Rourke, Thomas D., and William J. Hall, 1991, Seismic behavior and vulnerability of pipelines, *in* Cassaro, M.A., *editor*, 1991, Lifeline Earthquake Engineering: American Society of Civil Engineers, Technical Council on Lifeline Earthquake Engineering Monograph No. 4, p. 761-773 www.asce.org

Perlmulder, S.D., and Ronald T. Eguchi, 1991, Regional risk assessment of environment contamination from oil pipelines, *in* Cassaro, M. A., *editor*, 1991, Lifeline Earthquake Engineering: American Society of Civil Engineers, Technical Council on Lifeline Earthquake Engineering., Monograph No. 4, p. 216-225 www.asce.org

Proctor, Richard James, Geologic features of a section across the Casa Loma Fault (a branch of the San Jacinto Fault), exposed in an aqueduct trench near San Jacinto, California: *Bulletin of the Geological Society of America*, vol. 73, no. 10, p. 1293-1295.

Seligson, Hope A., Eguchi, Ronald T., and Tierney, Kathleen J., 1991, A methodology for assessing the risk of hazardous materials release following earthquakes — a demonstration study for the Los Angeles area, *in* Cassaro, Michael A., *editor*, 1991, Lifeline Earthquake Engineering: American Society of Civil Engineers, Technical Council on Lifeline Earthquake Engineering Monograph No. 4, p. 805-816. www.asce.org

★Schiff, Ansel J., editor, 1995, Northridge Earthquake: lifeline performance and post-earthquake response: ASCE Technical Council on Lifeline Earthquake Engineering, Monograph No. 8, 340 p., $39.00. www.asce.org

★Taylor, Craig, and VanMarcke, Erik, *editors*, Acceptable risk processes: lifelines and natural hazards: American Society of Civil Engineers, Technical Council on Lifeline Earthquake Engineering, Monograph 21, 248 p.

TRB, 1988, Pipelines and public safety: Transportation Research Board, National Research Council, TRB Special Report 219.

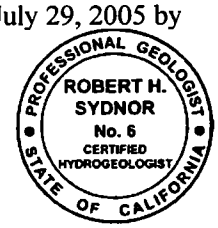
URS, 2002, Proposed Standard Protocol for Pipeline Risk Analysis: unpublished consulting report (*working draft* dated May 13, 2002) for California Department of Education, School Facilities Planning Division, Sacramento, 6 chapters, appendix A to F.

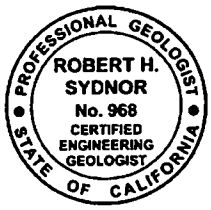
★Watkins, R.K., and Anderson, Loren R., 2000, Structural Mechanics of Buried Pipes: CRC Press, 464 p.

Wells, Donald L., and Coppersmith, Kevin J, 1994, New empirical relationships among magnitude, rupture length, rupture width, rupture area, and surface displacement: Bulletin of the Seismological Society of America, vol. 84, no. 4, August 1994, pages 974-1002. www.seismosoc.org
This paper is used to calculate fault displacement for the natural gas pipeline for the maximum moment magnitude, Mmax, of a particular active fault.

Youd, T.Leslie., Hansen, Corbett M., and Bartlett, Steven F., 2002, Revised multilinear regression equations for prediction of lateral spread displacement: *ASCE Journal of Geotechnical and Geoenvironmental Engineering*, vol. 128, no. 12, December 2002 issue, p. 1007-1017. *This paper contains the current formulas used to evaluate lateral spreading during liquefaction with application to displacement of natural gas pipelines.*

Compilation on July 29, 2005 by





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Letter I

CENTER FOR BIOLOGICAL DIVERSITY

CALIFORNIA AND PACIFIC OFFICE

protecting and restoring natural ecosystems and imperiled species through science, education, policy, and environmental law

RECEIVED
AUG 04 2005
CITY OF MORENO VALLEY

August 1, 2005

VIA ELECTRONIC MAIL (without exhibits) and CERTIFIED MAIL (with exhibits)

Ms. Cynthia Kinser
Principal Planner
Community Development Department
14177 Frederick Street
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generalplan@moval.org

RE: General Plan Update Draft Program Environmental Impact Report for the City of Moreno Valley

Dear Ms. Kinser,

I. INTRODUCTION

These comments are submitted on behalf of the Center for Biological Diversity ("Center") on the Draft Program Environmental Impact Report ("DEIR") for the City of Moreno Valley General Plan ("the project"). The Center is a non-profit environmental organization dedicated to the protection of native species and their habitats through science, policy, and environmental law. The Center has over 14,000 members throughout California and the western United States, including in Riverside County where the project is located. The Center submits the following comments on behalf of our members, staff, and members of the public with an interest in protecting the native species and habitats of the project area.

I-1

The Center has numerous concerns regarding the inadequacy of the current environmental documentation for the project. The DEIR has failed to identify and adequately analyze several potential environmental impacts of the project, including impacts to biological and agricultural resources and air quality, and has failed to fully analyze a range of alternatives, including alternatives that would avoid significant impacts or include enforceable mitigation measures to minimize those impacts. The DEIR also fails to provide an updated, accurate

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I-1 (cont.) environmental baseline. The EIR for the Moreno Valley General Plan update can only be adopted when adequate environmental review is completed. The Center hopes and expects that the City of Moreno Valley will give full consideration to all comments submitted regarding this project.

II. THE DEIR FAILS TO MEET THE REQUIREMENTS OF THE CALIFORNIA ENVIRONMENTAL QUALITY ACT

I-2 An EIR is a detailed statement, prepared under the California Environmental Quality Act, Public Resources Code §§ 21000-21178 ("CEQA"), describing and analyzing the significant environmental effects of a project and discussing ways of avoiding or mitigating those effects. 14 Cal Code Regs § 15362. The purposes of an EIR are to provide decision-making bodies and the public with detailed information about the effects a proposed project is likely to have on the environment, to list ways in which the significant effects of a project might be minimized, and to indicate alternatives to the project. Pub. Res. Code § 21061; 14 Cal Code Regs. § 15002. The following purposes have also been enumerated by California Courts: an EIR should provide disclosure of all relevant facts; should provide a balancing mechanism whereby decision makers and the public can weigh the costs and benefits of a project; should provide a means for public participation; should provide increased public awareness of environmental issues; should provide for agency accountability; and should provide substantive environmental protection. Because of the shortcomings discussed below, the DEIR for the project is inadequate to meet both the procedural and substantive mandates of CEQA.

A. The DEIR Fails To Analyze A Meaningful Range of Feasible Alternatives.

I-3 An EIR must describe a range of reasonable alternatives to the project, which would feasibly attain most of its basic objectives but would avoid or substantially lessen its significant environmental effects. Cal. Code Regs § 15126.6(a). The City has a substantive duty to adopt feasible, environmentally superior alternatives. Pub. Res. Code § 21002, Cal. Code Regs §§ 15002(a)(3), 15021(a)(2). A lead agency cannot abdicate this duty unless substantial evidence supports a finding that the alternative is infeasible. *See, e.g., Citizens of Goleta Valley v. Board of Supervisors*, 197 Cal. App. 3d 1167, 1181 (1988). The DEIR analyzes only two action alternatives aside from the No Project/Existing General Plan alternative, and while each alternative would entail a different *level* of development, all three alternatives (including the existing General Plan) provide for the development of the *same* 18,800 acres of vacant lands. DEIR at 5.7-11. Thus, the DEIR fails to include a reasonable range of alternatives because it does not analyze an alternative that reduces the absolute amount of acreage to be subject to urban development (below the levels of urbanization authorized in the existing general plan). The DEIR also considers but impermissibly rejects one alternative that was environmentally superior to all the other action alternatives: the Increased Preservation of Agricultural Lands (6.2). The DEIR concludes that this alternative could result in fewer local impacts but more regional impacts on traffic and circulation and air quality because more urban development would be built elsewhere, leading to increased sprawl in more remote areas. This reasoning is based on the

entirely speculative assumption that development actually would be authorized in those remote areas, rather than located in infill within existing cities such as Riverside. The DEIR also implies that development within Moreno Valley is not itself "sprawl." Much of the land within the boundaries of the City of Moreno Valley has extremely high biological and agricultural value, particularly that abutting large blocks of open space such as Lake Perris/San Jacinto Wildlife Area and the Badlands. Locating tract housing and industrial parks in these areas (as proposed in General Plan Alternatives 1,2, and 3) is the very definition of urban sprawl.

I-3 (cont.)

The DEIR discloses that the impacts of all the General Plan Land Use alternatives on agricultural resources are significant and unavoidable. DEIR at 5.8-10. The DEIR admits that the Increased Preservation of Agricultural Lands alternative would have fewer impacts than the General Plan Land Use alternatives on agricultural and biological resources, as well as on local air quality and traffic, but concludes that the impacts would still be significant and therefore this alternative adds nothing to conservation. Because the DEIR claims that this alternative would generate less economic activity, it was rejected from further analysis. However, the DEIR utterly fails to take into account the vast economic *benefits* of open space and agricultural uses when considering this alternative (see Exhibit A, Bank of America 1996; *Beyond Sprawl: New Patterns of Growth to Fit the New California* and Exhibit B, Hanak and Baldassare 2005; *California 2025: Taking on the Future*). Because the DEIR clearly shows that the Increased Preservation of Agricultural Lands alternative actually is a feasible and environmentally superior alternative, this alternative should have been thoroughly analyzed alongside the General Plan Land Use alternatives.

I-4

Additionally, the DEIR failed to analyze an alternative that would avoid significant impacts to the San Jacinto Wildlife Area. In fact, each of the General Plan Land Use alternatives would include commercial designation along the eastern boundary of the San Jacinto Core Reserve. DEIR at 5.9-87. The San Jacinto Wildlife Area is a world-class ecological reserve supporting a rich diversity of plant and animal species, including important populations of Stephen's kangaroo rat, Los Angeles little pocket mouse, San Jacinto Valley crownscale, thread-leaved brodiaea, and other federally and state protected species. It is a Core Reserve under the Western Riverside Multiple Species Habitat Conservation Plan ("MSHCP") whose purpose is to authorize take in exchange for creating a conservation plan that would support viable populations of covered species and contribute to the recovery of those species. The San Jacinto reserve was established as mitigation for take of federally protected plants and animals throughout the Riverside County, and to compromise the biotic integrity of this reserve would violate the stipulations of prior plans. The DEIR should analyze a feasible alternative that avoids significant impacts to the San Jacinto Core Reserve by zoning the lands surrounding the reserve as open space and/or agricultural, among other protections.

I-5

The DEIR acknowledges that the project will result in significant unavoidable effects including loss of open space, degradation of air quality, fragmentation and loss of extensive areas of natural habitats and associated biological resources (including harm to listed species such as the Stephens' kangaroo rat and Nevin's barberry, and other sensitive plants and animals),

I-6

impacts to water resource availability, and increased traffic and congestion. DEIR Table 2-2. Nevertheless, the DEIR fails to identify and/or analyze feasible alternatives to the proposed project that would focus on protection of biological and agricultural resources, including building town houses and clustered development around shopping and transportation hubs without sacrificing the high-ecological-value agricultural lands and open space within the planning area. Such transit-based, high-density development could go a long way towards mitigating the impacts of the project to both air quality and biological and agricultural resources and providing a high quality of life for the residents of Moreno Valley.

I-6 (cont.)

B. The DEIR's Description of the Environmental Setting and Environmental Baseline are Inadequate.

The DEIR relies on the use of outdated information, thus precluding the ability of decision-makers to adequately weigh the costs and benefits of the project. For example, the map of existing land uses (Figure 5-1) is based on data from the year 2000, and the latest data on air quality are from the year 2002 (DEIR at 5.3-6 to 5.3-9). Furthermore, the DEIR's biological resources analysis is not based on current species-specific surveys for any of the threatened, endangered and sensitive plants and animals in the planning area. The only information provided in the analysis on biological resources include broad, general descriptions of species and their habitats taken from the Western Riverside MSHCP (see Tables Table 5.9-5 and 5.9-8.), rather than updated species-specific surveys and locational data within the planning area. In fact, the DEIR provides literally no data on the population status of any threatened, endangered and sensitive species within the planning area. This lack of critical information ensures that the DEIR fails to provide even a basic foundation on which to properly quantify how urban development will impact biological resources and precludes informed decision-making. Unless and until the EIR provides adequate data regarding the current status of threatened, endangered, and sensitive species in the planning area, based on current surveys, it is premature to discuss how development will impact these species.

I-7

C. The DEIR Improperly Defers CEQA Mandated Environmental Review and Mitigation.

Many of the inadequacies of the DEIR identified in these comments can be attributed to the fact that the DEIR improperly defers analysis of many of the project's impacts, as well as formulation of mitigation measures, to a later time when development of specific projects is considered. This deferral frustrates informed decision-making and violates CEQA. "An EIR should be prepared with a sufficient degree of analysis to provide decision-makers with information which enables them to make a decision which intelligently takes account of environmental consequences." CEQA Guidelines § 15151. *See Concerned Citizens of Costa Mesa, Inc. v. 32nd District Agricultural Association*, 42 Cal. 3d 929 (1986) ("the EIR must contain facts and analysis, not just the agency's bare conclusions or opinions."); *Berkeley Keep Jets Over the Bay Committee v. Board of Port Commissioners*, 91 Cal.App.4th 1344 (2001); *Stanislaus Natural Heritage Project v. County of Stanislaus*, 48 Cal. App. 4th 182 (1996). While

I-8

I-8 (cont.) the level of detail required in a program-level EIR is not the same as that required in an EIR for a specific development project, a lead agency is required to "use its best efforts to find out and disclose all it reasonably can." CEQA Guidelines §15144. In addition, "[a]n EIR on a project such as the adoption or amendment of a comprehensive zoning ordinance or a local general plan should focus on the secondary effects that can be expected to follow from the adoption or amendment." CEQA Guidelines §15146. The DEIR fails on both counts.

I-9 The DEIR has impermissibly deferred analysis of a number of environmental impacts, perhaps most egregiously with respect to biological resources. Despite the inclusion of page after page of general, unspecific, descriptive information about the biological resources of the planning area (*see* DEIR section 5.9), it is clear that the DEIR ultimately defers *all* analysis of impacts to threatened, endangered, and sensitive species and habitats to the implementation of the SKR HCP and Western Riverside MSHCP. The DEIR provides only four "mitigation" measures for biological resources that would ostensibly reduce impacts to less than significant. One mitigation measure is to state that, *where feasible*, projects will be designed to avoid sensitive habitat, and another is to require that alterations of watercourses and wetlands obtain all required permits. DEIR at 5.9-90. These general measures are already required by law, and are essentially meaningless in the context of CEQA in this case, as they defer all analyses and mitigation to a future time, with no assurance that sensitive habitats actually will be protected.

The remaining two mitigation measures for biological resources identified in the DEIR entail simply complying with the SKR HCP and the MSHCP. However, the MSHCP itself requires site-specific analyses of impacts – the very analyses that this DEIR is attempting to direct back to the MSHCP. This circular reasoning ensures that virtually no meaningful analysis of the impacts of development on biological resources of the planning area will ever be conducted. Basing the analyses of the project's impacts to threatened, endangered, and sensitive species on analyses from the MSHCP poses two major problems: 1) the MSHCP does not legally substitute for project-level CEQA review, avoidance, minimization, and mitigation of impacts, and 2) the MSHCP's species analyses themselves were fundamentally flawed.

First, the analysis of environmental impacts in the MSHCP was programmatic, and as such the implementation of the MSHCP does not eliminate the requirement under CEQA to conduct and disclose project-level, species-specific analyses in an EIR. The Endangered Species Act ("ESA") standards and definitions are not analogous to the CEQA standards for review, public disclosure, analysis of alternatives, and analysis of cumulative impacts. As the Center has pointed out in our comments to Riverside County, the MSHCP cannot substitute for CEQA review or provide assurances to agencies or project applicants that disclosure, analysis, avoidance, and mitigation will not be required for direct, indirect, and cumulative impacts under CEQA.

I-10 Secondly, the DEIR's analyses of impacts to biological resources – and implementation of mitigation measures – rely on fundamentally flawed analyses contained in the MSHCP. As such, the EIR's reliance upon implementation of the MSHCP to satisfy its requirements to avoid,

minimize, and mitigate impacts to special-status species will not ensure the conservation of these species in the planning area during project-level analyses. The MSHCP contains numerous deficiencies, including but not limited to: (1) failure to adequately describe the environmental baseline; (2) failure to adequately disclose and analyze the project's direct, indirect, and cumulative impacts to biological and other resources; (3) failure to incorporate all feasible mitigation (and inadequacy of proposed mitigation measures, including reserve design, size and funding); and (4) failure to analyze and adopt feasible environmentally-superior alternatives, such as an alternative with a larger reserve system or an alternative with an assured reserve. As detailed in the Center's many previous comment letters to Riverside County, the MSHCP is not biologically or legally adequate to conserve species or fulfill its functions under the ESA. Nor is the MSHCP biologically or legally adequate to "substitute" for CEQA disclosure, analysis, avoidance, and mitigation of impacts. The MSHCP does not even meet the most rudimentary requirements for environmental review that would be required by CEQA. In essence, the levels of take outlined in the MSHCP's Species Conservation Analyses could be severely underestimated, whereas CEQA requires analysis at the project-by-project level and, therefore, if adequate CEQA review is provided, the take of the species would be known. In the MSHCP, levels of take are truly unknown.

I-10 (cont.)

The deferral of analysis and mitigation in the DEIR constitutes a serious evasion of the thorough, quantitative analysis of impacts to plant and animal populations within the planning area that is required by CEQA. Site-specific impacts must be disclosed and analyzed and adequate mitigation measures proposed before the General Plan update is approved:

> By deferring environmental assessment to a future date, the conditions run counter to that policy of CEQA which requires environmental review at the earliest feasible stage in the planning process....Environmental problems should be considered at a point in the planning process where "genuine flexibility remains." A study conducted after approval of a project will inevitably have a diminished influence on decisionmaking. Even if the study is subject to administrative approval, it is analogous to the sort of post hoc rationalization of agency actions that has been repeatedly condemned in decisions construing CEQA.

I-11

Sundstrom v. County of Mendocino (1988) 202 Cal. App. 3d 296, 306-7 (emphasis added).

The DEIR also has not demonstrated that the formulation of mitigation measures now for the project as a whole is infeasible. Nor has the City adopted specific design criteria or performance standards as mitigation measures for this project and ensured no environmental harm will occur until such design criteria are met. *See, e.g., Sacramento Old City Association et al. v. City Council of Sacramento,* 229 Cal. App. 3d 1011, 1028-9 (1991); *Laurel Heights Improvement Assn. v. Regents of University of California,* 47 Cal. 3d 375, 418 (1988). This lack of analysis and deferral is contrary to CEQA.

I-12

Unfortunately, the DEIR contains numerous examples of impacts that are mentioned in only the most cursory fashion, and subsequently left both unanalyzed and unmitigated. For example, Table 5.9-8 lists the species with potential to occur in the project area, and potential impacts to the species are described typically in one or two sentences in an extremely general manner, but any actual quantitative analyses of those impacts are left to future EIRs, and discussion of mitigation for lost habitat is likewise limited. The DEIR will allow development adjacent to the Badlands and the San Jacinto Wildlife Area Core Reserve, resulting in fragmentation of open space that provides movement habitat to many species as wildlife corridors, but completely fails to adopt any specific feasible mitigation measures or design criteria that will ensure continuous wildlife corridors are preserved or that direct, indirect, and cumulative impacts to rare, threatened and endangered species and their habitat will be adequately mitigated (other than to referring to the MSHCP).

Feasible mitigation measures that should be discussed in the EIR include but are not limited to: (1) buffer zones between housing, streets, driveways and open space to reduce noise and light impacts; (2) limits on outdoor night lighting and street lighting to reduce impacts, including specific criteria for positioning, directing, and shielding lighting to avoid light spill into open space and sensitive habitat; (3) restrictions on off-leash dogs in open spaces; (4) walls or fences that will inhibit domestic animals from harassing and harming native species including "cat-proof" fencing to prevent house cats from accessing sensitive habitat; (5) identification and purchase of mitigation habitat of equal or greater quality *before* any grading or construction may begin on any project within natural open spaces including but not limited to construction of any infrastructure, streets, or housing; (6) securing adequate dedicated wildlife corridors throughout the planning area *before* any site specific approvals can be considered including, but not limited to, construction of any infrastructure, streets, or housing; (7) mitigation of at least 3:1 for all habitat loss to reflect the cumulative impacts of the loss of a large contiguous area of open space and habitat; (8) erecting educational signs that indicate the importance of the open space and sensitive habitat areas, prohibiting pet access, motorized vehicle use, and all activities that may harm or significantly disturb wildlife; (9) providing educational materials to all local schools regarding the importance of the open space and sensitive habitat areas and the connection between species survival and habitat conservation; (10) requiring gates to restrict access to lands set aside for habitat preservation by animals and motorized vehicles; (11) requiring the use of native vegetation for all development adjacent to Core Reserves in the planning area, and requiring that native seeds be collected on-site prior to grading and used for landscaping; and (12) buffering the lands adjacent to the Core Reserves by zoning them agricultural or open space.

I-13

Deferral of detailed environmental analysis to project-specific EIRs fails to understand the significance of a Program EIR. In this instance, well over 1,000 acres of grassland and agricultural lands will be opened to development under all the General Plan Land Use alternatives, including lands adjacent to Core Reserves. DEIR at 5.9-64. The City's duty to provide a detailed analysis of environmental impacts of the proposed project and to impose enforceable mitigation measures cannot be shifted to the future, therefore the DEIR's repeated

reliance on general background law, general plan standards, and other local planning standards is misplaced.

I-13 (cont.)

The City's duty to provide as much detail as possible in its environmental review, including identification and analysis of the direct, indirect, and cumulative impacts of the proposed project as a whole, identification and analysis of alternatives that will avoid those impacts, and adoption of enforceable mitigation measures, must be met before the general plan can be amended or updated.

D. The FEIR Fails To Properly Identify The Full Range Of Direct, Indirect, And Cumulative Impacts To Biological Resources And to Avoid or Mitigate Those Impacts.

I-14

As described elsewhere in this comment letter, the DEIR does not provide baseline data on the population status of species within the planning area, and refers to the MSHCP as mitigation for impacts without providing any site-specific information on local populations. Thus, it is very nearly impossible to adequately assess the environmental impacts of the project on special-status species. The DEIR admits that all the General Plan Land Use alternatives would result in significant impacts to numerous species including the Stephens' kangaroo rat, Los Angeles pocket mouse, San Diego pocket mouse, tricolored blackbird, mountain lion, slender-horned spineflower, San Diego thorn mint, Munz's onion, Nevin's barberry, and others. Table 5.9-8. However all "analyses" were entirely descriptive and qualitative. The DEIR only makes brief mention of potential impacts such as loss of habitat connectivity, edge effects due to noise, lighting, etc., and direct loss of habitat, and provides literally no measurable quantitative analyses of the effects of the project.

The DEIR does not fully analyze how the proposed zoning changes will contribute to habitat fragmentation and destruction. The DEIR also fails to require that all mitigation lands be secured *before* and grading or destruction of habitat. Mitigation that is delayed by months or years is *not* of equal quality and value to the species that depend on it, this is particularly true for nesting habitat and other breeding areas for special-status species. Where terrestrial species such as the Stephens' kangaroo rat may be found, the DEIR provides no measures for preservation of individuals or any requirements that grading and other land disturbing activities avoid breeding seasons. For migratory species such as Least Bell's vireo which return to the same area to nest each year, the DEIR provides no measures to avoid breeding season or ensure that any replacement habitat to mitigate lost occupied habitat is secured before the next breeding season.

Unfortunately the DEIR improperly defers identification and analysis of these impacts. The Program DEIR is precisely the stage at which the City is required to consider landscape-wide impacts from the potential loss of critical habitat and fragmentation of large areas of contiguous habitat.

E. The FEIR Fails To Identify And Analyze The Full Range Of Direct, Indirect, And Cumulative Impacts To Water Resources and Water Quality And To Avoid or Mitigate Those Impacts.

Surface waters in the planning area drain into the Santa Ana River, San Jacinto River, Canyon Lake Reservoir, and Lake Elsinore. The DEIR acknowledges that the project will cause significant impacts to these water resources but utterly fails to adequately identify or analyze the actual impacts that may occur. DEIR at 5.7-11. The DEIR simply notes that pollutants will be introduced into the water supply, without quantifying the potential amounts of such pollutants and their effects on biological resources within the drainage system. The DEIR concludes that that merely incorporating Best Management Practices and complying with permit provisions pursuant to the National Pollutant Discharge Elimination System ("NPDES") permit, and maintaining a storm system that conforms to Riverside County Flood Control and Water Conservation District drainage master plans, will reduce the impacts on water resources to less than significant. *Id.* However, NPDES permitting does not account for all potential pollutants that may impact water quality, and nothing in the NPDES permitting requirements provides an exemption from CEQA's requirements that all potential impacts of the project be identified, analyzed, and avoided or mitigated.

I-15

Another glaring omission in the DEIR is the complete failure to identify or analyze the direct, indirect, and cumulative impacts to the biological resources dependent on the surface water, in either the water resources section or the biological resources section. Because the DEIR fails to properly identify, analyze, avoid or mitigate impacts to water resources with respect to biological resources, the EIR must be revised. For example, the DEIR fails to properly identify and analyze the direct, indirect, and cumulative impacts from increased run-off created by development and increased impermeable surfaces in the area. Build-out of the project will also decrease recharge of native groundwater basins and reduce water available to plants and animals in the planning area, but the DEIR completely fails discuss these impacts.

I-16

CEQA requires that the City identify the source of water for development allowed by the project and examine the environmental impacts that may result if that water supply is tapped for the build-out of the project. *See Santiago County Water Dist. v. County of Orange*, 118 Cal. App. 3d 818 (1981); *Stanislaus Natural Heritage Project v. County of Stanislaus*, 48 Cal. App. 4th 182 (1996). Nowhere is this information divulged in the DEIR. Moreover, where the water supply is uncertain and a shortfall in those supplies theoretically available is likely, the EIR must evaluate that issue, identify other potential sources, and identify and analyze the environmental consequences of tapping those resources. *Santa Clarita Org. for Planning the Environment v. County of Los Angeles*, 106 Cal. App. 4th 715 (2003); *Napa Citizens for Honest Government v. Napa County Bd. Of Supervisors*, 91 Cal. App. 4th 342, 371 (2001). Where there is remaining uncertainty that the water supply will be available, the EIR must provide mitigation measures that will prevent development until water supply is secured. *See Napa Citizens*, 91 Cal. App. 4th at 374. The DEIR fails on all counts.

I-17

F. The FEIR Fails to Adequately Identify And Analyze Impacts to Air Quality, and To Avoid or Mitigate Those Impacts.

The DEIR's air quality section falls far short of CEQA's requirements. The project is located in the South Coast Air Basin ("SoCAB"), which has one of the most severe air quality problems in California and the nation. The DEIR discusses in detail the impacts of various pollutants and explains the state and federal Clean Air Act regulatory framework at some length, but then fails to conduct a complete analysis of the project's air quality impacts. The fact that
I-18 other agencies have regulatory control over some aspects of air pollution pursuant to other statutes in no way lessens the City's responsibility to fully disclose, analyze, avoid, minimize, and mitigate all air quality impacts of the proposed project. The past failure of many agencies to do so has been a major contributing factor to the SoCAB's current air quality crisis.

The DEIR looks at several criteria pollutants that are regulated by the California Air Resources Board (CARB) under the California Clean Air Act, including carbon monoxide (CO), oxides of nitrogen (NOx), oxides of sulfur (SOx), ozone (O_3), particulate matter (PM), sulfates, lead, vinyl chloride, hydrogen sulfide, and visibility (a measure of air quality rather than a pollutant). DEIR Table 5.3-1. However a range of other Hazardous Air Pollutants (HAPs), also called Toxic Air Pollutants (TACs) under California law should also be evaluated. The federal Clean Air Act requires the U.S. EPA to develop new regulations for 189 such toxic substances, in an effort to protect human health and decrease cancer risk. The U.S. EPA considers that an "acceptable" cancer risk caused by HAPs is a one-in-one million chance of contracting cancer over the course of an average person's lifetime. The CARB currently monitors and assesses the health risks of 10 HAPs in California, including Acetaldehyde, Benzene, 1,3 Butadiene, Carbon Tetrachloride, Chromium (Hexavalent), para-Dichlorobenzen, Formaldehyde, Methylene chloride, Perchloroethylene, and diesel particulates. The DEIR contains no description of these HAPs and no analysis of the project's impacts. The project's generation of HAPs during both the construction and operation phases of the project must be fully disclosed, analyzed, avoided, minimized, and mitigated in an EIR.

A wealth of information on the environmental and health ramifications of the SoCAB's poor air quality is readily available. These reports contain critical information on the serious health and environmental impacts of poor air quality. One study found that in San Bernardino County alone, 486 deaths per year are due to current $PM_{2.5}$ levels, and 231 deaths and 34,127 asthma attacks per year are due to current PM_{10} levels. Exhibit C, *Particle Civics, How Cleaner Air in California Will Save Lives and Save Money*, at 19. The DEIR's failure to include even the most basic information on the link between air quality, health impacts, and impacts to biological resources, let alone avoid and mitigate these impacts, renders it inadequate and is nothing short of a travesty in our highly polluted region.

I-19 The Air Quality Section of Appendix G of the CEQA Guidelines (Environmental Checklist Form) specifically calls out a project's potential to conflict with or obstruct implementation of any applicable air quality plan as an impact to be discussed. The DEIR

I-19 (cont.) contains no discussion of the proposed project's contribution to this problem. Failure to meet regulatory deadlines have serious economic, environmental, and health ramifications for the SoCAB, all of which should be discussed.

I-20 The DEIR also fails to address the proposed project's contribution to excess nitrogen deposition. This phenomenon is impacting vegetation in southern California and in particular causing losses of coastal sage scrub, a rare and threatened plant community that supports many threatened, endangered, and sensitive species. Exhibit C, Allen, et al., *Nitrogen Deposition Effects on Coastal Sage Vegetation of Southern California*, 1998. This impact must be disclosed and analyzed in a revised EIR.

I-21 The DEIR does not adequately explore mitigation measures to reduce air quality impacts. The DEIR finds that the project will have significant long-term impacts on air quality but fails to avoid or mitigate those impacts below the level of significance. Most of the measures relate only to construction impacts to air quality and none of the long-term operational mitigation measures identified are enforceable conditions of the project approval other than those measures which require adherence to existing laws and regulations—which is already required by law. DEIR at 5.3-17 to 5.3-18. Most of the operational mitigation measures are entirely voluntary, rely on implementation strategies of other agencies, and "encourage" changes in energy use and alternative materials rather than require such measures. None of the measures adequately address vehicular traffic or alternative transportation. The City's duty cannot be shifted onto other agencies, therefore its reliance on federal, state, or regional planning standards is misplaced. For example, the DEIR fails to adequately identify and analyze the direct, indirect and cumulative impacts to water and air quality that may occur due to build-out of housing within the planning area. Rather, the DEIR attempts to rely on standard conditions, such as conforming to SCAQMD rules during construction to fully mitigate any impacts from project construction (policy 6.7.4) and "encouraging" use of mass transit. As the City is well aware, mitigation measures should be *required* in order for the City to rely on them to reduce a project's impacts to the environment.

I-22 The DEIR has also essentially omitted any meaningful discussion of the project's long term cumulative air quality impacts. Air quality is an area where the always important cumulative impacts analysis is particularly crucial, because major air quality problems are created by a vast number of small sources which may appear individually insignificant. A revised EIR must be circulated that contains an adequate cumulative impacts analysis for each criteria pollutant and HAP and addresses topics including human health, and impacts to biological resources, including nitrogen deposition.

III. THE EIR SHOULD BE REVISED AND RECIRCULATED FOR PUBLIC REVIEW AND COMMENT.

I-23 A lead agency must recirculate an EIR for further public comment under any of four circumstances:

(1) When the new information shows a new, substantial environmental impact resulting either from the project or from a mitigation measure;

(2) When the new information shows a substantial increase in the severity of an environmental impact, except that recirculation would not be required if mitigation that reduces the impact to insignificance is adopted;

I-23 (cont.)

(3) When the new information shows a feasible alternative or mitigation measure that clearly would lessen the environmental impacts of a project and the project proponent declines to adopt the mitigation measure; or

(4) When the draft EIR was "so fundamentally and basically inadequate and conclusory in nature" that public comment on the draft EIR was essentially meaningless.

Guidelines §15088.5.

Based on the comments above, it is clear that the EIR must be re-drafted and recirculated. Conditions (1), (2) and (3) above will be met by meaningful and adequate discussion of the project description, impacts, mitigation measures, and cumulative impacts. The combined effect of these omissions makes it clear that the fourth condition has also been met.

IV. CONCLUSION

The Draft Program EIR for the Moreno Valley General Plan Update fails to adequately disclose, analyze, avoid, minimize, and mitigate the environmental impacts of the proposed general plan update. As detailed above, the DEIR fails to comply with CEQA and fails to provide necessary information about the impacts of the project in many areas including biological resources, open space, and air and water quality.

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Neither decision makers nor the public can make informed decisions about the costs to the environment of the proposed general plan update based on this fundamentally flawed and cursory environmental review. The DEIR must address these issues and conduct adequate environmental review. The Center looks forward to reviewing a revised Draft EIR that takes into account the issues raised in this comment letter and in letters provided by the Sierra Club and others.

Sincerely,

Monica L. Bond

Monica Bond, M.S.
Center for Biological Diversity

List of Exhibits

Exhibit A: Bank of America, 1996; *Beyond Sprawl: New Patterns of Growth to Fit the New California.*

Exhibit B: Hanak, E. and M. Baldassare. 2005. *California 2025: Taking on the Future.*

Exhibit C: Sharp and Walker, *Particle Civics, How Cleaner Air in California Will Save Lives and Save Money*, Environmental Working Group.

Exhibit C: Allen, E.B, A. Bytnerowocz, R. Minnich, P.E. Padgett, *Nitrogen Deposition Effects on Coastal Sage Vegetation of Southern California,* USDA Forest Service Gen. Tech. Rep. PSW-GTR-166, 1998.

CC: (via U.S. mail, without exhibits)

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APPENDICES TO LETTER I

Beyond Sprawl: New Patterns of Growth to Fit the New California

Table of Contents:

Sponsor's Note:

This report suggests new ideas about how California can continue to grow while still fostering the economic vitality and quality of life that makes it such a vibrant place to live and work. It is sponsored by a diverse coalition—the California Resources Agency, a government conservation agency; Bank of America, California's largest bank; Greenbelt Alliance, the Bay Area's citizen conservation and planning organization; and the Low Income Housing Fund, a non-profit organization dedicated to low-income housing.

The fact that such a diverse group has reached consensus on the ideas in this report reflects how important the issue of growth is to all Californians. We hope this report will make a meaningful contribution to the public dialogue about the quality and direction of California's growth in the 21st century.

EXECUTIVE SUMMARY

California is at a unique and unprecedented point in its history—a point at which we face profound questions about our future growth that will determine the state's economic vitality and quality of life for the next generation and beyond.

One of the most fundamental questions we face is whether California can afford to support the pattern of urban and suburban development, often referred to as "sprawl," that has characterized its growth since World War II.

There is no question that this pattern of growth has helped fuel California's unparalleled economic and population boom, and that it has enabled millions of Californians to realize the enduring dream of home ownership. But as we approach the 21st century, it is clear that sprawl has created enormous costs that California can no longer afford. Ironically, unchecked sprawl has shifted from an engine of California's growth to a force that now threatens to inhibit growth and degrade the quality of our life.

This report, sponsored by a diverse coalition of organizations, is meant to serve as a call for California to move beyond sprawl and rethink the way we will grow in the future. This is not a new idea, but it is one that has never been more critical or urgent.

Despite dramatic changes in California over the last decade, traditional development patterns have accelerated. Urban job centres have decentralized to the suburbs. New housing tracts have moved even deeper into agricultural and environmentally sensitive areas. Private auto use continues to rise.

This acceleration of sprawl has surfaced enormous social, environmental and economic costs, which until now have been hidden, ignored, or quietly borne by society. The burden of these costs is becoming very clear. Businesses suffer from higher costs, a loss in worker productivity, and under-utilised investments in older communities.

California's business climate becomes less attractive than surrounding states. Suburban residents pay a heavy price in taxation and automobile expenses, while residents of older cities and suburbs lose access to jobs, social stability, and political power. Agriculture and ecosystems also suffer.

There is a fundamental dynamic to growth, whether it be the growth of a community or a corporation, that evolves from expansion to maturity. The early stages of growth are often exuberant and unchecked—that has certainly been the case in post-World War II California. But unchecked growth cannot be sustained forever. At some point this initial surge must mature into more managed, strategic growth. This is the point where we now stand in California.

We can no longer afford the luxury of sprawl. Our demographics are shifting in dramatic ways. Our economy is restructuring. Our environment is under increasing stress. We cannot shape California's future successfully unless we move beyond sprawl.

This is not a call for limiting growth, but a call for California to be smarter about how it grows—to invent ways we can create compact and efficient growth patterns that are responsive to the needs of people at all income levels, and also help maintain California's quality of life and economic competitiveness.

It is a tall order—one that calls for us to rise above our occasional isolation as individuals and interest groups, and address these profound challenges as a community. All of us—government agencies, businesses, community organizations and citizens—play a role. Our actions should be guided by the following goals:

- To provide more certainty in determining where new development should and should not occur.
- To make more efficient use of land that has already been developed, including a strong focus on job creation and housing in established urban areas.
- To establish a legal and procedural framework that will create the desired certainty and send the right economic signals to investors.
- To build a broad-based constituency to combat sprawl that includes environmentalists, community organizations, businesses, farmers, government leaders and others.

Californians are already taking some of these steps. We have attempted in this report to not only point out the obstacles to sustained growth, but also to highlight the positive actions that are occurring to better manage growth. Our fundamental message is that we must build on these early successes and take more comprehensive and decisive steps over the next few years to meet this challenge. To build a strong, vibrant economy and ensure a high quality of life for the 21st century, we must move beyond sprawl in the few remaining years of the 20th century.

INTRODUCTION

California is at the crossroads of change.

Our economy is emerging from its worst downturn in 60 years—a downturn that has required nearly all of the state's major industries to retool for greater competitiveness in a global marketplace. Our demographic profile is changing dramatically. New racial and immigration patterns are rapidly producing a truly multicultural society, creating a variety of related social and economic issues. At the same time, California has emerged as one of the most urbanized states in the union, as our metropolitan areas continue to grow in population and scale.

In the face of this change, California remains shackled to costly patterns of suburban sprawl. Even as our economy and our society are being reinvented daily, we continue to abandon people and investments in older communities as development leapfrogs out to fringe areas to accommodate another generation of low-density living. And we continue to create communities that rely almost exclusively on automobiles for transportation. In short, the "new" California—with 32 million people and counting—is using land and other resources in much the same fashion as the "old" California, with only 10 million people.

We cannot afford another generation of sprawl. As the Governor's Growth Management Council stated in a recent report: "What may have been possible with 10 or even 20 million people is simply not sustainable for a population of twice that much in the same space." Continued sprawl may seem inexpensive for a new homebuyer or a growing business on the suburban fringe, but the ultimate cost—to those homeowners, to the government, and to society at large—is potentially crippling. Allowing sprawl may be politically expedient in the short run, but in the long run it will make California economically uncompetitive and create social, environmental and political problems we may not be able to solve.

At a time when economic growth is slow and social tensions are high, it is easy to dismiss an issue like suburban sprawl as superfluous. Yet it lies at the heart of the very economic, social and environmental issues that we face today. Rapid population growth and economic change are occurring in a state increasingly characterized by a limited supply of developable land, environmental stress at the metropolitan fringe, and older communities in transition. With the onset of economic recovery, the next few years will give rise to land-use decisions of fundamental importance. They will help determine whether our state can succeed in re-establishing the economic and social vitality that have made it such a successful place to live and work for more than 140 years.

Suburban Sprawl and the "Old" California

In the decades after World War II, California emerged as an economic and political powerhouse, providing jobs, housing and prosperity for most of its rapidly growing population.

Underlying this success was a development pattern that emphasized expanding metropolitan areas, conversion of farmland and natural areas to residential use, and heavy use of the automobile. In the postwar era, this way of life worked for California. With a prosperous and land-rich state, most families were able to rise to the middle class and achieve the dream of home ownership. Government agencies and private businesses were able to provide the infrastructure of growth—new homes, roads, schools, water systems, sewage treatment facilities, and extensions of gas and electric distribution.

Within the last generation, however, this post-war formula for success has become overwhelmed by its own consequences. Since the 1970s, housing has become more expensive, roads have become more congested, the supply of developable land has dwindled, and, because of increasing costs, government agencies have not been able to keep up with the demand for public services.

Since the late 1970s, several efforts have been initiated to address the question of how to manage California's growth, but all have failed—some for lack of consensus, some for lack of engaged constituency, some simply because of bad timing.

The Challenge of the "New" California

In the 1990s, California is undergoing change of such scale and significance that it will literally redefine the state. To succeed, the new California must recognize and build upon the following changes in positive ways.

Population Growth

California's population continues to grow at a remarkably fast pace. Today's total of approximately 32 million people represents a doubling of the population since the mid-1960s, when California became the nation's most populous state.

During the boom years of the 1980s, California added more than 6 million new residents, a population larger than all but a few of the 49 other states. Even during the bust years of the early 1990s, the state's population grew at a rate of almost a half-million people per year—in effect, adding another Oakland or Fresno every year—even as we have suffered a net loss in the number of jobs.

This continuing surge in population puts pressure on both existing communities and on the remaining supply of undeveloped land, making it extremely difficult for traditional suburban patterns to accommodate more people.

Changing Demographics

While growing rapidly, California's population is also changing in significant ways. The demographic changes are well documented. Latinos—whose roots extend to Mexico, Central America, South America, and the Caribbean—are growing rapidly in number and may outnumber Anglos a generation from now. Californians of Asian ancestry now make up almost 10 percent of the population. African-Americans remain an important racial group, and the state's mosaic is rounded out by Native Americans, immigrants from South Asia and

the Middle East, and others wh[redacted]ing great diversity to the state. California [redacted]uly one of the world's most multicultural societies.

Underneath the racial diversity lies another important change in the state's population patterns that will have a profound effect on California's attitudes toward growth over the next generation.

Traditionally, the popular perception has been that California's population grows because of migration from other parts of the United States. However popular, this perception is no longer true. Most new Californians now come from other countries, principally in Latin America and Asia.

The birth rate is also an increasing source of population growth. During the 1990s recession, "natural increase"—the net total of births over deaths—has accounted for almost 400,000 new people each year. Tomorrow's California will include—for the first time—a vast pool of people who are Californians from birth. They will want what Californians before them have wanted—education, jobs and housing. Most will expect the state to find a way to accommodate them. But their numbers are so huge that they probably cannot be sustained by traditional suburban development patterns.

Economic Change

During the recession, California has undergone an unprecedented economic restructuring. The state has lost 400,000 manufacturing jobs since 1990, causing businesses and workers alike to rethink old assumptions about how to ensure prosperity.

Traditional foundations of the state's economy, such as aerospace and defence, have been drastically reduced and will probably never return, at least not in their previous form. Others—such as entertainment, technology, the garment industry and agriculture—remain just as important as ever. But they too have undergone tremendous change, becoming leaner and more efficient in response to global competition. And small businesses remain the largest source of new job creation. In the near future, the impact of the North American Free Trade Agreement will begin to be felt.

These economic changes are also putting pressure on the state's land-use patterns. The loss of manufacturing jobs is emptying out the state's long-established industrial areas, usually located in older communities. Downsizing and technological change in other industries is also rendering older buildings obsolete and creating a demand for new buildings—often in new suburbs—that are both inexpensive and flexible. The closure of many military bases is bringing a huge amount of land to the real estate market that will either extend sprawl or encourage new development patterns, depending on how that land is used.

Spreading Urbanization

In response to both demographic and economic pressure, California has become the most urbanized state in the union. According to the 1990 Census, more than 80 percent of all Californians live in metropolitan areas of 1 million people or more, with 30 percent of the state's population living in Los Angeles County alone.

This large-scale urbanization means that California's people and businesses compete intensely with each other for space to live and work. The edges of metropolitan areas continue to grow to accommodate expansion of population and economic activity, while some neglected inner-city areas are left behind. These patterns increase the stress of daily life while, at the same time, put more pressure on land and environmental resources at the metropolitan fringe.

SPRAWL AND ITS CAUSES

All of these factors—a growing population, a changing economy, and increased urbanization—have been present in California for many years. But they have accelerated in the 1990s, while traditional suburban development patterns have continued. In a state with such powerful growth dynamics, the results are astonishing. The following trends are typical of the effects of sprawl over the last 10 to 20 years:

- Employment centres have decentralized dramatically. While jobs used to be concentrated in central cities, most are now created in the newer suburbs. For example, the complex of office centres

around John Wayne Airport in Orange County—built on land that was until a generation ago, cultivated for lima beans—recently surpassed downtown San Francisco as the second-largest employment centre in the state.

- New housing tracts have pushed deeper into agricultural and environmentally sensitive areas. Job centres in suburban San Jose and the East Bay area have opened up Tracy, Manteca, Modesto, and other Central Valley towns as "bedroom suburbs," while job growth in the San Fernando Valley has stimulated housing construction 40 miles to the north in the Antelope Valley. This development has created metropolises virtually unmanageable in size.
- Dependence on the automobile has increased. According to the California Energy Commission, between 1970 and 1990 the state's population grew by 50 percent, but the total number of miles travelled by cars and trucks grew by 100 percent.
- Isolation of older communities, including central cities and "first wave" suburbs built in the 1940s and 1950s, has increased. Easy mobility for the middle class has caused them to abandon many older neighbourhoods, disrupting social stability and increasing the economic disparity between older communities and newer suburbs. The decentralization of jobs has hit older neighbourhoods especially hard, because new jobs are now virtually inaccessible to the poor and the working class. Also left behind are infrastructure investments, which are tremendously expensive to replicate in new suburbs.

Even though the consequences of sprawl have been understood for at least two decades, attempts to combat it have been fragmented and ineffective. The engine of sprawl is fuelled by a mix of individual choices, market forces, and government policies, most of which have only become more entrenched over time. These forces include:

- A perception that new suburbs are safer and more desirable than existing communities. Many people believe that suburbs provide them with good value—safe streets, neighbourhood schools, a "small-town" atmosphere, close proximity to their local governments, and new (though not necessarily better) community infrastructure.
- A perception that suburbs are cheaper than urban alternatives. Owning a starter home in a distant new suburb is still within the financial reach of a typical family, despite the increased commuting costs. The family's financial equation, however, does not take into account the larger cost to society of far-flung suburbs—a cost the family will eventually share in paying.
- A belief that suburban communities will give businesses more flexibility to grow. Businesses welcome the tax incentives and freedom from heavy regulation that are often provided in newer suburban communities trying to develop a strong business base. Businesses also view suburban locations as safer—a view reflected in the cost of insurance—and they perceive they will have access to a better-educated work force.
- Technological changes that have decentralized employment away from traditional centres. This phenomenon permits dispersal of both jobs and houses across a huge area. The emergence of the "information superhighway" may accelerate this trend.
- Highway and automobile subsidies that have traditionally fuelled suburban growth remain in place today. Since the 1950s, automobile use has been encouraged by government-financed road-building programs, and for the most part the "external costs" of automobile use (i.e., air pollution) have not been the direct financial responsibility of the individual motorist.
- Local land-use policies that inadvertently cause sprawl. In many older suburban communities, "slow-growth" attitudes restrict new development, pushing employment and housing growth to the metropolitan fringe. With a lack of regional planning, each community pursues its own self-interests, regardless of costs imposed on other communities.
- Fiscal incentives that encourage local governments to "cherry-pick" land uses based on tax considerations. Under Proposition 13's property-tax limitations, there is little fiscal incentive for many communities to accept affordable housing—and when such housing is built, developers must usually pay heavy development fees. Meanwhile, because communities must raise revenues to provide mandated services, auto dealers and retailers, both big sales-tax producers, receive subsidies to locate in communities.

The result of all these factors is a severe regional imbalance. Housing, jobs, shopping, and other activities are scattered across a huge area and long auto trips are often required to connect them. Such a development pattern imposes a considerable cost on all who use it, though the costs are often hidden and those who pay them are not always aware of it.

THE COST OF SPRAWL

The cost and consequences of sprawl have been documented among academics and planning experts for more than two decades. In the early 1970s, planning consultants Lawrence Livingston and John Blayney produced a landmark study showing that in some cases, a California community would be better off financially if it used a combination of zoning and land acquisition instead of permitting development of low-density subdivisions. A few years later, the U. S. Council on Environmental Quality produced its landmark report, The Cost of Sprawl—the first comprehensive analysis of sprawl's true expense to society. As fiscal and cost-benefit analysis techniques have become more refined, the true cost of sprawl has become much more apparent.

Today, no one in California is unaffected by the cost of sprawl. Its consequences spread across all groups, regardless of geography, race, income, or political status.

Taxpayers

Sprawling suburbs may be cheaper in the short-term for individuals and families who buy houses in new communities, but their "hidden" costs may ultimately be passed on to taxpayers in a variety of ways.

- The cost of building and maintaining highways and other major infrastructure improvements to serve distant suburbs.
- The cost of dealing with social problems that fester in older neighbourhoods when they are neglected or abandoned.
- The cost of solving environmental problems (wetlands, endangered species, air pollution, water pollution) caused by development of virgin land on the metropolitan fringe.
  Taken together, it is clear that all these costs have contributed to California s dire fiscal situation during the 1990s, which has strained state and local government budgets to the breaking point.

Businesses

Many businesses benefit from suburban locations. But all businesses, both small and large, also bear many of the following costs.

- Adverse impacts on the state's business climate. By reducing the quality of life, sprawl has made California a less desirable location for business owners and potential employees. By increasing suburban resistance to further growth, sprawl has made it difficult for businesses to relocate and expand in California. Both these trends increase the attractiveness of neighbouring states such as Arizona, Nevada, and Utah. For example, a major film studio recently decided to relocate its animation facility to Arizona, principally because of lower housing prices and less traffic congestion.
- Higher direct business costs and taxes to offset the side effects of sprawl. This can include the cost of new business infrastructure or of mitigating transportation and environmental problems. For example, in many metropolitan areas, air-quality regulators have forced businesses to take the lead in fighting air pollution by initiating carpooling programs for their employees.
- A geographical mismatch between workers and jobs, leading to higher labour costs and a loss in worker productivity. Many workers must now commute long distances to their jobs, which takes a significant toll on their personal, family and professional life. Many other workers are removed from large portions of the job market simply because they cannot get to where the new jobs are.
- Abandoned investments in older communities, which become economically uncompetitive because of sprawl and its associated subsidies. This is especially true of the state's utility companies, whose investments in gas, electric and water infrastructure are literally rooted in established communities.

Residents of New Suburbs

There is no question that new suburban residents are, in many ways, the principal beneficiaries of suburban sprawl. They often live in new and affordable neighbourhoods which they perceive as safe and prosperous. Yet many suburban residents are becoming increasingly aware that they pay a high price for these benefits in the following ways.

- The cost of automobiles. The average Californian spends one dollar out of every five on buying and maintaining their cars. As a consequence they have less to invest or spend on other items.
- Time lost commuting to work and other destinations. A huge number of Californians now spend an hour or more per day in their car, and the number continues to rise. A recent survey by the Walnut Creek-based Contra Costa Times showed that the commute times for residents of 10 cities in Alameda and Contra Costa counties had increased an average of 13 percent between 1980 and 1990.
- The cost of new suburban infrastructure. Suburbs are often perceived as "low-tax" locations, when, in fact, most new suburban homebuyers in California must pay additional taxes (usually Mello-Roos taxes) to cover the massive cost of new roads, schools, and other infrastructure required in new communities. These additional taxes often have the effect of doubling a new homeowner's property tax bill.

Residents of Central Cities and Older Suburbs

Residents of central cities and older suburbs are among the biggest losers in the sprawl process. Once they were among the most fortunate of metropolitan dwellers, because their central location provided access to jobs, shopping, and other amenities. However, sprawl has penalized them by creating or accelerating the following trends:

- Loss of jobs and access to jobs. Residents of older neighbourhoods no longer have convenient access to most jobs. This is especially difficult for poor and working-class citizens who must rely on public transportation, because it is difficult to commute to most suburban jobs without a car.
- Economic segregation and loss of social stability. By luring middle-class residents from older neighbourhoods, sprawl creates destructive economic segregation and robs those neighbourhoods of the social stability that will keep them viable. The distribution of income becomes more skewed, and it becomes increasingly difficult for low-income people to escape poverty.
- Under-utilised or abandoned investments. Businesses are not the only entities whose investments can become stranded when city neighbourhoods decline. Individual homeowners and small shop owners can also see a stagnation or decline in property values. And this trend is not only visible in the inner city. Huge investments in older suburban shopping centres, for example, are now threatened because these centres are perceived as uncompetitive.
- Shifts in political power and government services. By removing the middle class of all races from older communities, sprawl makes it easier for that middle class to ignore the political and social problems left behind. Thus, revenues fall and it becomes more difficult for older neighbourhoods—urban or suburban—to maintain government services, and the incentive for home ownership required to provide the foundation for prosperity.

Farmers

Agriculture remains one of California's leading industries. Yet sprawl continues to take a heavy toll on California agriculture in the following ways.

- A permanent loss of agricultural land. Between 1982 and 1987, the Central Valley—California's leading agricultural region—lost almost a half-million acres of productive farmland. Some of this land can be replaced by bringing new land into agricultural production, but often at a high economic and environmental cost. Also, many of California's microclimates support unique agricultural products that cannot be replaced by land in other areas. Highly productive coastal agricultural lands lost to sprawl cannot be replaced at any cost.
- A loss in productivity due to pollution. Sprawl-induced ozone pollution alone can reduce crop yields by as much as 30 percent. According to the Agricultural Issues Center at UC Davis, pollution-induced costs to agriculture exceed $200 million per year.
- A decline in farm communities. As sprawl has eroded agricultural production, the effect on farm communities has been devastating. In some cases, rural communities have been transformed into bedroom suburbs, creating destructive commuting patterns while destroying agriculture infrastructure and productivity.
- Long-term uncertainty. Sprawl destabilizes agriculture by creating the temptation to "sell out." The prospect of eventual sale to a developer reduces incentives for farmers to make long-term capital investments. In many cases, farmers stay afloat financially only by borrowing against the speculative

value of their farm for development—creating a self-fulfilling prophecy of sprawl. Another uncertainty for farmers arises from increased demand for water for urban uses driven by sprawl patterns.

The Environment

Traditional development patterns have taken a massive toll on all three basic elements of the natural environment: land, air, and water.

- Land: After 50 years of sprawl, California's metropolitan areas are enormous, reaching deep into natural ecosystems that were thriving even a generation ago. Some 95 percent of the state's wetlands have been destroyed over the last 200 years, and the few wetlands that remain are threatened. Also, California now has the highest number of candidate and listed endangered species of any state—partly because sprawl is affecting the state's unmatched diversity of biological systems. Sprawl makes it more difficult to resolve these land conservation issues by putting tremendous development pressure on the supply of remaining open land. Finally, sprawl compromises one of the most essential assets of California—the beauty and drama of its landscape. Far from being just a luxury, this value of open space is an important component in the state's ability to attract and hold workers and investors.
- Air: California has the worst air quality in the nation, and air pollution experts estimate that a third of all air pollution emissions are traceable to car and truck emissions exacerbated by longer commutes and higher auto use. The South Coast Air Quality Management District, which has the strictest air-pollution regulations in the country, estimates that air pollution in the four-county Los Angeles area costs $7.4 billion per year, or about $600 per resident. Dramatic gains in pollution technology are likely to be offset by further sprawl. According to air pollution expert J. V. Hall, "The benefits of pollution-reduction technology can easily be overwhelmed by our choices about where to live and work, about modes of travel, and about how many miles we drive."
- Water: Sprawl takes a serious toll on California's water supply. Forty of the state's 350 groundwater basins are seriously over drafted, and water planners predict that by 2020 the state will face a water supply deficit of between 2 million and 8 million acre-feet. Though not the sole cause, fringe development does make the water issue more expensive and complicated to manage.

BEYOND SPRAWL

In the post-war era, the continuous cycle of suburban sprawl—counterproductive as it was in many ways—actually helped to fuel California's prosperity, as consumption of new houses and new cars became one of the bases of our prosperity. It is clear, however, that the new California cannot sustain old patterns of urban development, if the state is to prosper in the future.

The sponsors of this report—Bank of America, the California Resources Agency, Greenbelt Alliance, and the Low Income Housing Fund—firmly believe that California cannot succeed unless the state moves beyond sprawl. Strong policy direction from our political leaders on both the state and local level is essential. But government policies alone will not help California move forward. Our businesses, our community groups, and our citizens must also take the initiative. We must understand how sprawl affects each of us individually, how it impedes the state's progress, and how it could make a prosperous future more difficult to achieve.

Population growth will require some degree of development on the suburban fringe. The question is whether we will be able to use existing urban and suburban land more efficiently in order to minimize sprawl and protect valuable open spaces. The answers will lie in our ability to attract housing and businesses to older urban and suburban areas and to channel development on the fringe to achieve the desired protection and economic benefits.

California businesses cannot compete globally when they are burdened with the costs of sprawl. An attractive business climate cannot be sustained if the quality of life continues to decline and the cost of financing real estate development escalates. People in central cities and older suburbs cannot become part of the broader economy if sprawl continues to encourage disinvestment, and the state can neither afford to ignore nor fully subsidize these neglected areas.

California must find a new development model. We must create more compact and efficient development patterns that accommodate growth, yet help maintain California's environmental balance and its economic competitiveness. And we must encourage everyone in California to propose and create solutions to sprawl.

A do-nothing approach, in effect, constitutes a policy decision in favour of the status quo. This, in fact, has been the de facto direction for the last generation. While the state and the regions have created a leadership void in this area, many local governments have stepped in with their own policies, which often have served to promote sprawl rather than prevent it. Recent research has shown that individual local growth-control policies do not stop development, but merely deflect it—often to another area further out on the metropolitan fringe, where the cost of development is even greater. The question is not whether to address sprawl. The question is how to address it.

In the early 1990's, the California Legislature convened a consensus project on growth management, and in 1991 Governor Wilson formed a cabinet-level council charged with developing a plan on how the state should address the challenge. A great deal of good work was done and agreement was reached in some areas. These processes did not result in legislative action, but a good foundation of understanding has been established.

As was stated at the outset, this report is not meant to be a manual or a tactical "how-to" on changing development patterns in California. Rather, it is meant as a wake-up call to all Californians that the sprawl issue has a new urgency in the state, and that all of us can play a role in addressing the problem.

To succeed, we will have to set aside individual interests, build on the foundation that has been laid, and work for the good of the whole. We need to address sprawl through community action, public policy, private business practices, and individual behaviour. It is our intent that the ideas and examples that follow will be used as a basis for further refinement and concerted action.

First, more certainty is needed in delineating where new development should and should not occur. Sprawl occurs partly because current policy constrains the real estate market by rewarding "leapfrog" development driven by cheaper and more easily developed land on the metropolitan and suburban fringe. The alternative is to be more explicit about conservation and development priorities, targeting actions and policies for better integration of the two.

Using this approach means utilizing land at the suburban fringe more efficiently and encouraging the reuse of land and other development opportunities in already developed areas. It does not mean stopping growth at the fringe, but doing it at density levels that will not promote further sprawl. To succeed, this approach needs more effective public policies encouraging such compact growth and removing barriers to it.

However, the other side of certainty for developers requires commitments to conserve ecologically important habitats and other open space. Accelerating state-wide planning efforts such as Natural Communities Conservation Planning (NCCP), which involves voluntary action at the local level and requires consensus among development, environmental, community and local government interests, will enhance our ability to provide greater environmental and economic certainty regarding new development. With its emphasis on biological assessment, ecosystem protection and compatible economic development, NCCP can provide much greater certainty to both those who want to develop their property and those who want to protect the natural environment. Broader use of mitigation banks can facilitate market-based compensation to landowners who choose to help protect ecologically valuable land.

Conservation of other habitat and open space, such as prime agricultural land, will also require us to find creative approaches like the NCCP process. The newly established California Environmental Resources Evaluation System (CERES) will help this process by expanding access to data about important resources in the state.

Regardless of the methods used, much of the leadership for providing greater certainty for conservation and development must come from the state, regional agencies, and local governments working together. But private businesses also have a critical role. Especially in difficult economic times, real estate developers and their lenders know that certainty of approval and availability of infrastructure, rather than speculative leapfrogging, will reduce costs and reduce processing time. Thus, new real estate developments can be

brought to market more quickly and cheaply within areas where effective consensus plans for conservation and development have been created.

Second, we should make more efficient use of land that has already been developed. Older urban and suburban neighbourhoods should be reinforced as good places to live and do business, and the process should take place without displacing low-income residents. Sprawl occurs partly because of the perception that older neighbourhoods are dangerous, expensive, obsolete, unpleasant, or otherwise unacceptable to those who have the option of leaving. The result is a tragic neglect of both people and capital investments.

Older neighbourhoods must be maintained and improved so they are again desirable places to live and work. Old Town Pasadena, the South of Market area in San Francisco, and the train depot reconstruction in Sacramento are all prime examples of successful restoration projects. Better school systems, job training and access to capital for small businesses are prerequisites. These efforts require a combination of government policy initiatives, active business investment, and special efforts by individuals and community groups.

Attracting jobs is absolutely critical. State and local governments should adopt land-use and transportation policies that reinforce investments in older neighbourhoods. Incentives must be developed for job-creating businesses, homebuyers, and others willing to invest in older neighbourhoods. For example, Superfund laws can be made more sensible so existing industrial sites can be recycled into new uses. Investors can make more aggressive use of low-income housing tax credits. Wider use can be made of Enterprise Zones. And tax credits or other incentives can be established for lending and equity investments that support small businesses and job growth. Development on the fringe imposes infrastructure, pollution and social costs well in excess of assessed development fees. If we rationalize development and control the costs of sprawl, it will free up capital that can be reinvested into existing cities and suburbs.

Older communities themselves need to make their neighbourhoods attractive to job-creating and housing investments. Individuals and community groups in those areas should redouble their efforts to improve the quality of urban life in small ways, for example, by forming community-based crime prevention groups and supporting local community development efforts that will enhance their neighbourhoods.

Home ownership at all income levels needs to be encouraged. In general, those who own homes have the greatest interest in maintaining neighbourhood vitality. Public policy should support methods of keeping low-income people from displacement through development of affordable housing (both home ownership and rental) and provision of supportive services. Also if developers are to provide quality housing in existing neighbourhoods, they need protection from frivolous environmental and product liability suits.

The closing of military bases in California offers interesting potential for development. Bases have substantial potential as alternatives to building houses and job centres on the suburban fringe. While there are problems associated with redeveloping many bases, they also have excellent potential for showcasing how to resolve difficult urban rebuilding strategies.

Third, a legal and procedural framework should be established to create the desired certainty and send the right economic signals to investors. Four elements are needed.

(a) Where development is allowed, state and local permitting should be streamlined. This is critical to encouraging development in urban and older suburban areas. It may require changes to legislation that relates to permitting.

(b) Development at the metropolitan fringe should be required to pay the full marginal cost of development. Housing and business space on the metropolitan fringe is often inexpensive because those developments pay for local infrastructure, but do not pay the full cost of constructing roads, developing water supplies, mitigating environmental problems, and creating regional imbalances. Imposing such costs on those developments would discourage sprawl. For example, the city of Lancaster adopted an innovative program that requires new development to pay capital and operating costs of infrastructure. Development further out pays its full cost, while development that is closer to the city's centre pays much less, since it is tied in to existing city services.

Again, this is a task that requires the active participation of both government and business. For example, many government agencies, such as water suppliers, subsidize development on the metropolitan fringe by spreading the cost of their infrastructure across all users, new and old. Changing such policies would discourage sprawl.

Failing to levy the full marginal cost gives leapfrog development an unfair competitive advantage over projects in existing urban areas, where transactions are made more difficult and expensive by toxic waste and other environmental liability issues. Expanding environmental audits to include wetlands, endangered species, and other issues—a practice that is already beginning—would also discourage sprawl by including the full assessment of environmental cost in private real estate transactions.

(c) California's local governments should encourage more efficient and coordinated local land-use policies. Sprawl has been encouraged by tax revenue competition among local governments for some land uses, such as retail centres, and by slow-growth policies that discourage other land uses, such as housing.

Development patterns that are now truly regional are being created almost completely by an accumulation of local decisions. But some local governments are beginning to show that it is possible to work together toward consistent land-use policies when given the incentive to do so. In planning for the reuse of closed military bases, for example, local governments are forming "joint powers authorities" in which many jurisdictions work together toward a common goal.

The vast majority of Californians choose to locate in large metropolitan areas. But most of these people live in small, politically independent suburban jurisdictions. These local governments must work together toward a consistent set of land-use policies—such as discouraging development on the metropolitan fringe and reinforcing investments in transit systems—that will enhance economic opportunity and quality of life across the entire metropolitan area. Joint powers authorities, such as those created for military base reuse, should be viewed as one model for cooperative planning, and others are needed.

(d) Technological change should be used to combat sprawl rather than encourage it. In the past, technological advancements (such as automobiles and government-sponsored freeways) have supported sprawl, requiring expensive after-the-fact government action of questionable value (such as ridesharing requirements). Today we stand at the threshold of a new technological era that offers the opportunity to have more work done at home and in local communities. We must take advantage of the opportunities presented by the information superhighway to improve our land-use patterns rather than further destroy them.

For example, the information superhighway could end up encouraging a further decentralization of jobs to the metropolitan fringe. Freed of a daily commute to a large employment centre, some individuals and small businesses will seek to locate in distant suburbs and travel back to older urban centres to do business as needed. This trend could put more pressure on land at the fringe.

However, the telecommunications revolution can also hold the potential for reviving economically troubled areas. Because of its locational flexibility, telecommunications can provide new job prospects for older urban neighbourhoods and for rural towns. Both government policy and private business practice should encourage the use of telecommunications to reinforce existing communities rather than further dissipate them.

Fourth, we should forge a constituency to build sustainable communities. Past efforts to reduce sprawl have been hampered because little constituency exists beyond groups of government reformers, some local government leaders, community groups, and conservationists. But, as this report suggests, many other players in California's future will also find themselves increasingly stifled by sprawl. Political alliances must be forged between environmentalists, inner-city community advocates, business leaders, government experts, farmers, and suburbanites to improve the quality of life in all our existing communities and protect our resources.

This will not be an easy task. Most of these groups are focused on their specific agendas and often harbour animosity toward each other even though alliances make long-term strategic sense.

But it is possible. For example, environmentalists concerned about development at the suburban fringe have tremendous opportunities to work with governments and community organizations seeking to increase

investment in more central urban areas. Farmers seeking a long-term future in agriculture near an urban area can form very effective alliances with those working to protect resources. Community groups, government agencies, and builders can explore new marketing and funding options that support home-building closer to major transit lines, taking advantage of the huge demand for housing created by the state's dramatically changing demographics. Taxpayers concerned about the inefficiency of governmental expenditures can join with those working to make better use of infrastructure in existing urban areas. There are literally dozens of such alliances waiting to be created.

We must act now. The decisions we make in the next few years will determine California's future course—and its chances for success. To build a strong economy and retain a good quality of life for the 21st Century, we must move beyond sprawl to a new vision of community in the few remaining years of the 20th Century.

Acknowledgments

All of the report's conclusions may not be endorsed in their entirety by each of the four sponsors. At the same time, each of the organizations believes that the time to act is now and that this report can help advance the public dialogue about California's growth and development.

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California 2025: Taking on the Future

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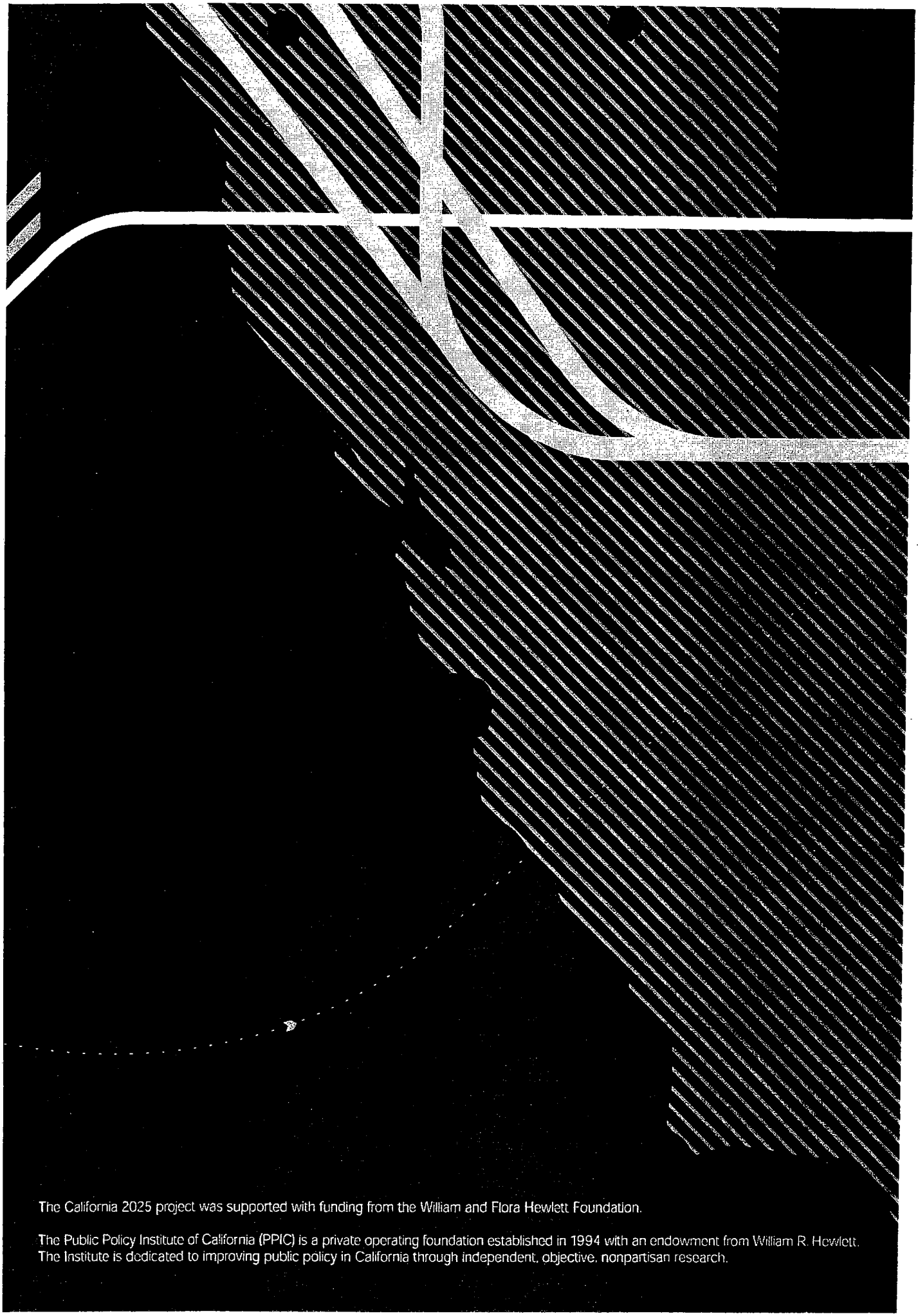
CA2025 It's Your Choice!
Mark Baldassare/Ellen Hanak



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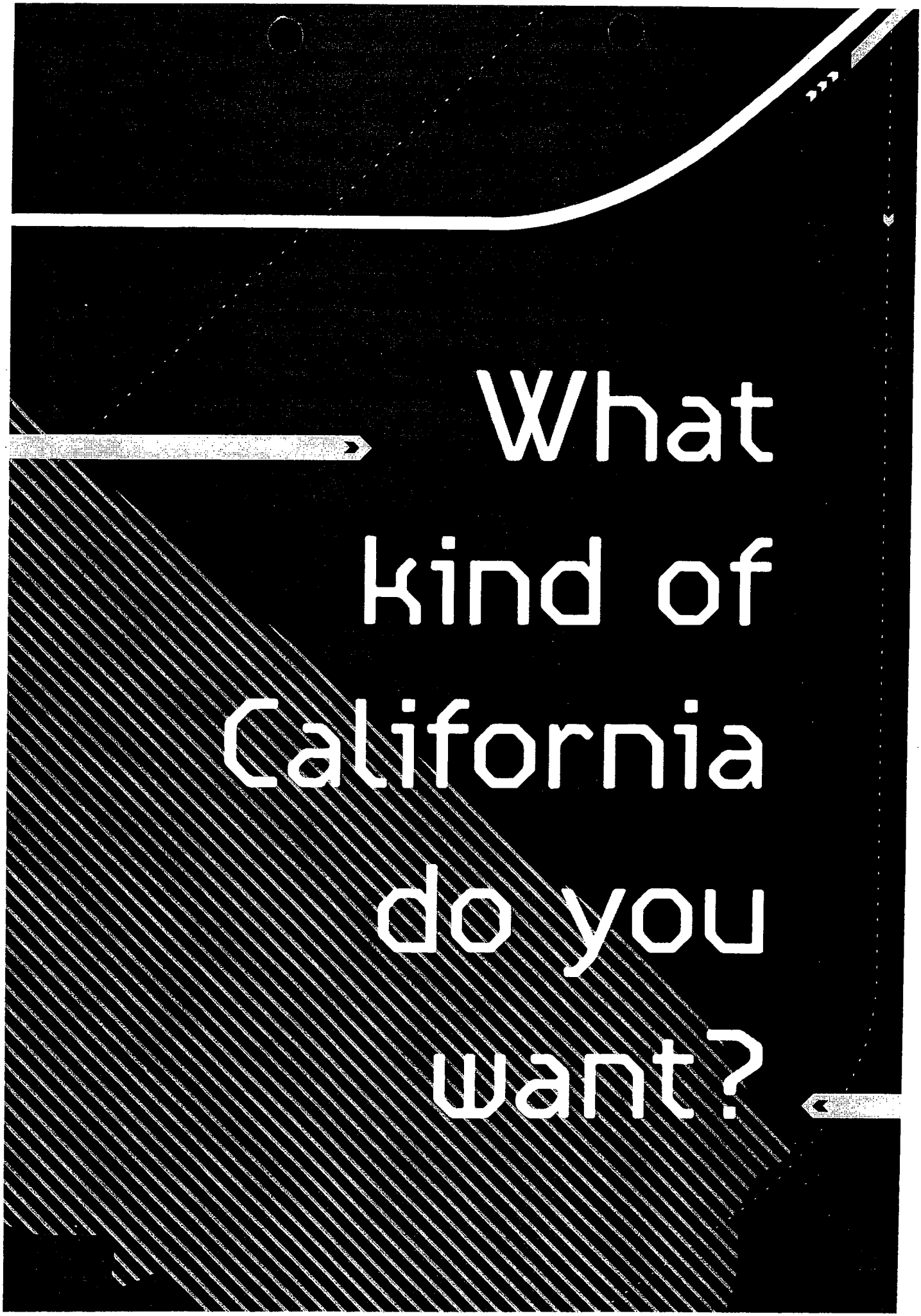

What
kind of
California
do you
want?


The Challenge

California is being reshaped by a changing population, a globalizing economy, and fantastic new technologies that are redefining our relationships and our sense of geography. The grand universities, highways, and water systems that fueled prosperity for recent generations are now stretched beyond their capacities. The reforms most critically needed are threatened by major obstacles in leadership and governance, finance and equity, influence and participation.

We haven't reached a crisis point, but trends and forces are gathering that could seriously erode the quality of life in California in the next two decades. Thoughtful, systematic action is needed. If we don't make careful choices now, the future we get by default may not be our worst nightmare, but it probably won't be the brightest dream for ourselves, our children, and our grandchildren.

We should make no mistake — this isn't someone else's problem or responsibility. All Californians have a stake in this. And all Californians with the ability to influence the policies and programs needed to secure our future must understand the problems and options and make their voices heard.

CA2025: It's Your Choice is a starting point. It describes facts about our population, our economy, and our physical structures so that we can start a discussion about the future from the same page, beginning with this question: What kind of California do you want?

It's a simple question that is extremely hard to answer. To reach a common future that reflects our regional, financial, and ethnic differences will require tough choices about sacrifices to be made and higher prices to pay. Not least important, the long-range view of California's future presented here helps illustrate how short-term gains for one group today can jeopardize long-term opportunities for all groups in the future.

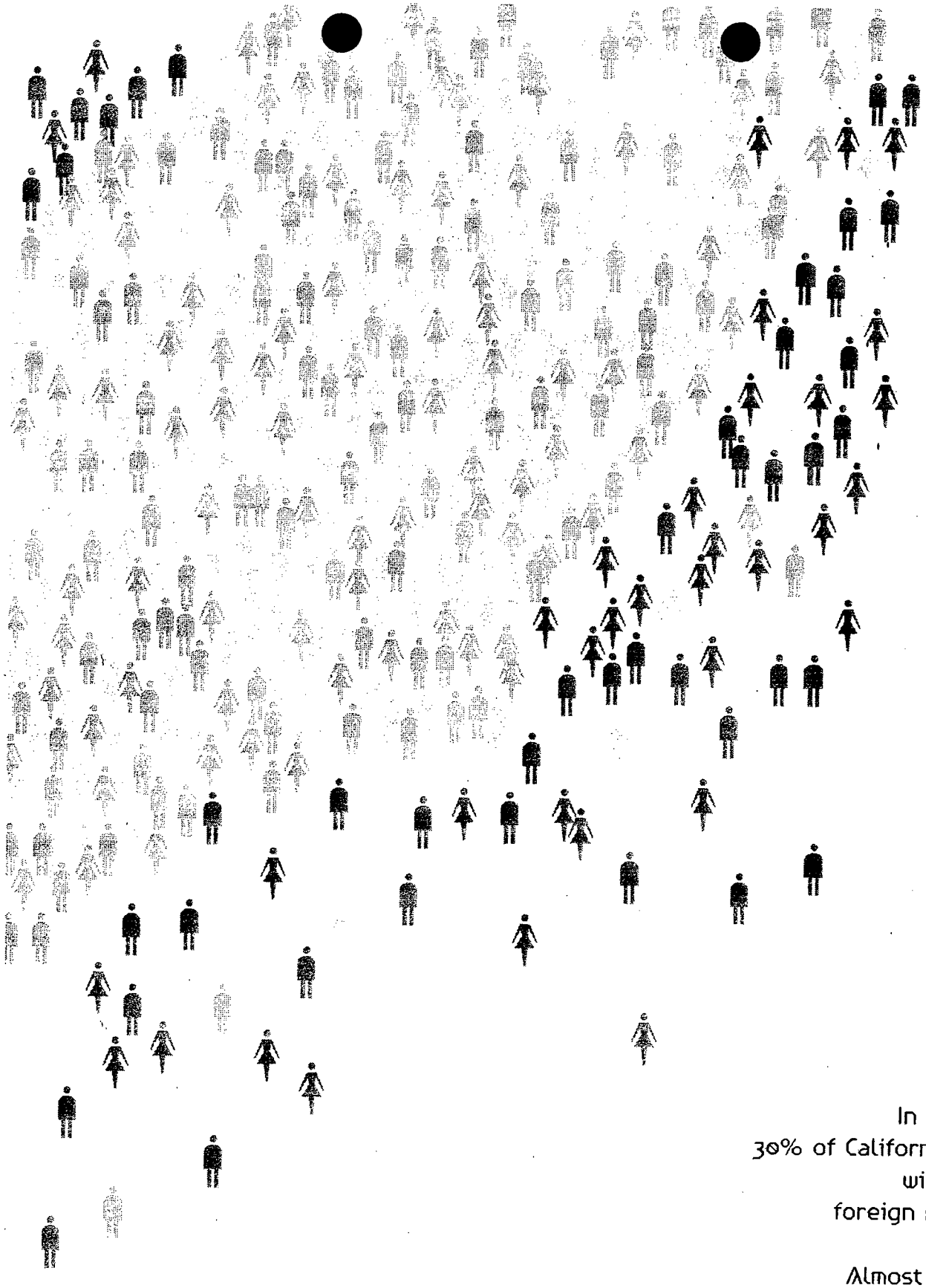
A larger, more diverse population

Looking ahead, the critical issues about California's population will continue to be its size and diversity. In terms of size, the most rapid change has already occurred. But the population continues to change based on trends set in motion in recent years.

Since 1960, the state's population has more than doubled, reaching 36.5 million by mid-2004. During the 20th century, no other developed region of the world experienced population growth rates as great as California's. Indeed, California's growth rates more closely resemble those of a less-developed country. Meeting the first-world demands of a population with such rapid growth rates presents a formidable challenge.

Equally remarkable? The diversity of California's population growth. Today, California is home to sizable immigrant communities from more than 60 different countries, arguably making California's population the most diverse in the world. Whites, who represented 80 percent of the population in 1970, are just under half today and will be about a third by 2025. Latinos, meanwhile, will represent nearly half of the state by 2025. (fig. 1)

Another significant demographic change is the aging of California's population. Demographers project that the number of seniors in California will more than double in a little more than a generation. By 2025, about one in every seven Californians will be over the age of 65. At the other age extreme, and of even greater importance



FACT
01

In 2025,
30% of Californians
will be
foreign born.

Almost half
will be Latino.

One in seven
will be over 65.

because of education expenditures, the child population of California is expected to change very little over the next 10 years.

While the population continues to increase, the days of its exploding growth may be over. Experts have recently scaled back their predictions for California's growth, with important implications for schools, highways, housing, and other infrastructure categories.

All of the state's major university and government researchers made the same recalculations after determining that fertility rates for California women are dropping faster than expected and that immigration has subsided. In hindsight, they find that California's unusually high population growth rate actually peaked in 1989 and is expected to be closer to the national average in the future. Today, most demographers predict California's population will be between 44 million and 48 million in 2025. (fig. 2)

But the growth in the state will not be the same everywhere, meaning that some regions will have much greater infrastructure needs than others. Many inland counties from Riverside to Sacramento are expected to grow by 50 percent between 2005 and 2025. One of the fastest growing metropolitan areas in the United States, the Inland Empire, now has a larger population than metropolitan St. Louis or Denver. In coming years, growth rates in the northern San Joaquin Valley are expected to equal the experience in the Inland Empire.

Meanwhile, more than 60 percent of the state's population will continue to live in coastal areas, as cities like Los Angeles and San Francisco keep growing, although not as fast as the inland counties.

Even though growth will not be as phenomenal as in the past, it is still daunting to consider the planning and construction needed over the next 20 years to add a population about the size of Ohio — the nation's sixth largest state. And the demand for infrastructure is not driven only by future growth. The state's systems are still catching up with the backlog of demands generated by the population explosion of the 1970s and 1980s.

FIGURE 1.
POPULATION PROJECTIONS BY ETHNICITY

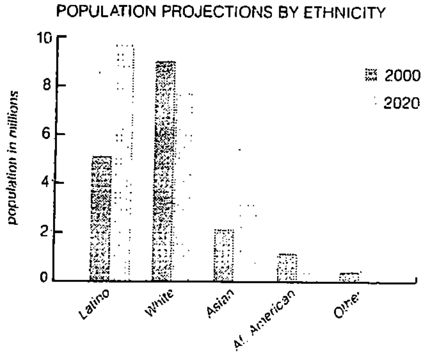


FIGURE 2.
POPULATION PROJECTIONS FOR CALIFORNIA

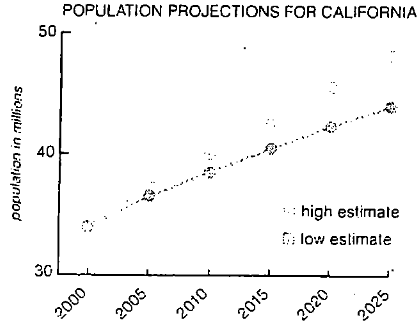
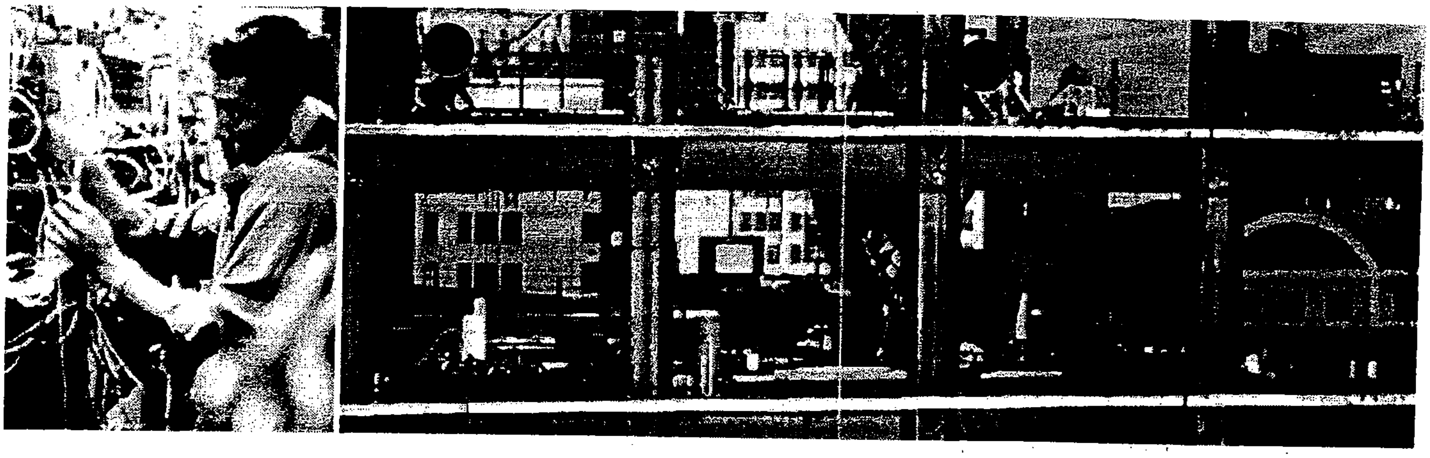


Figure 1
California's population will become increasingly diverse

Figure 2.
By 2025, California will have between 7 million and 11 million more people than today.



Population projections are based on current trends, and experts warn that the state's long-term demographic profile remains volatile. There are questions about the state's demographic future that will be determined by trends in the economy — for example, availability and quality of jobs. During the 1990s, recession slowed foreign immigration and caused so many residents to leave the state that New York City actually grew faster than Los Angeles for the first time in nearly 150 years

Now, the key question for prognosticators is whether California will become the next demographic New York — a place of slow population growth in which thousands of international migrants arrive each year while thousands of domestic migrants leave. Or will California return to the population growth patterns that have characterized so much of its history, attracting migrants both internationally and domestically?

A new economy

The answer to that question is likely to be determined by the shape of the state's future economy. California's economic engine is expected to grow and change remarkably. The state is already ranked by many as the fifth largest economy in the world. Between 2000 and 2020, the workforce is projected to grow by more than 30 percent, to a total of roughly 20 million jobs.

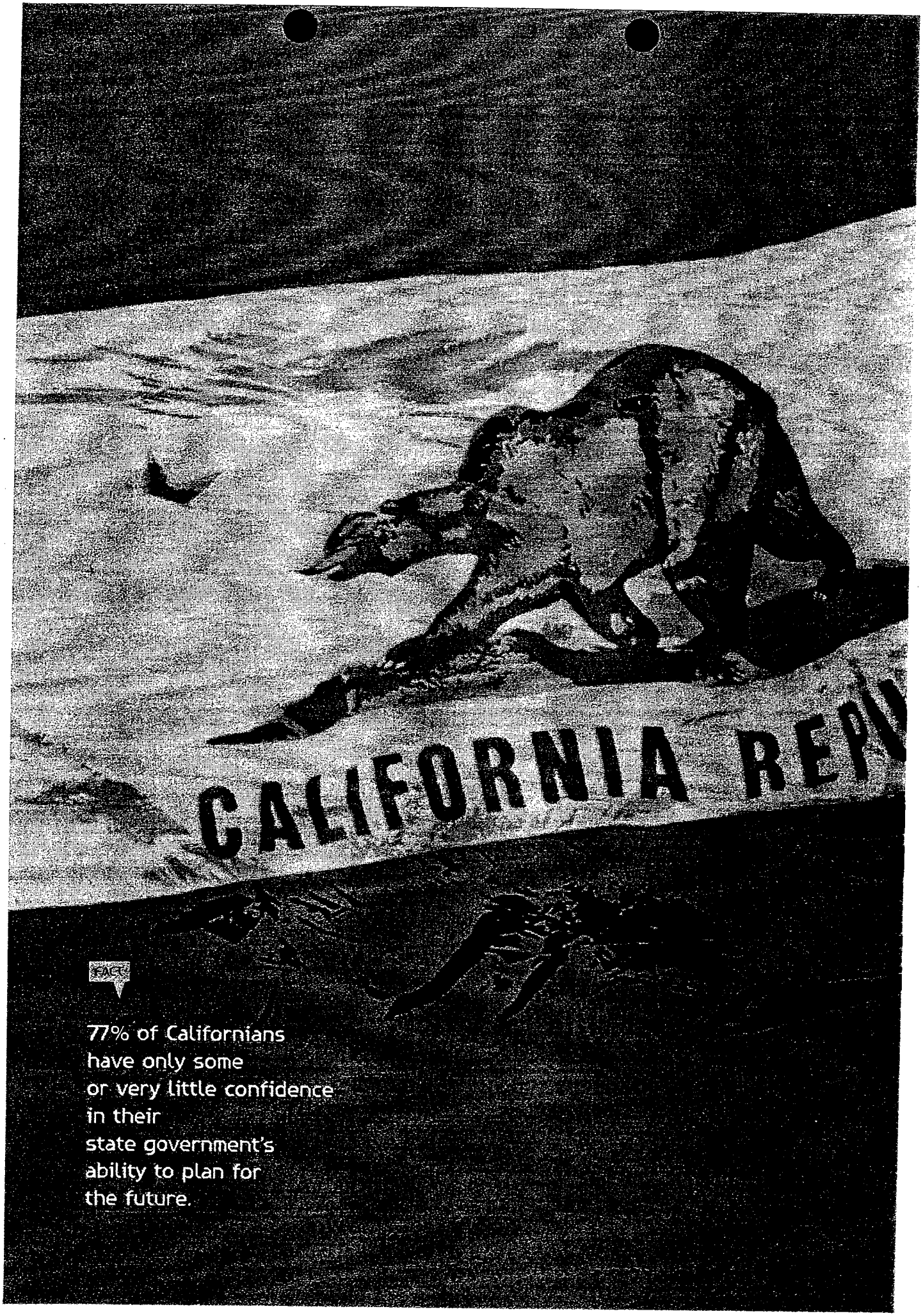
Almost 1 million new workers will be added in the Bay Area and perhaps 2–3 million more around Los Angeles, which will be home to half the state's workforce. In percentage terms, the growth rate could even be higher in San Diego and the Central Valley.

California will also continue its shift from a manufacturing jobs base to one driven by services industries. By 2020, a sizeable majority of workers in California will be employed in service-oriented industries. At the same time, manufacturing jobs, as a share of state employment, will drop by at least 25 percent. (fig. 3)

Although services put less burden than manufacturing on roads, water facilities, and physical structures, this economic shift poses a crucial challenge for the future. Many people, if not most, see service-oriented industries as the domain of less-educated, low-wage workers. But service employment includes business, professional, entertainment, recreation, health, and educational activities. Compared to manufacturing, these require higher levels of education

FACT

02



FACT

77% of Californians have only some or very little confidence in their state government's ability to plan for the future.

FIGURE 3.
INDUSTRY PROJECTIONS FOR CALIFORNIA

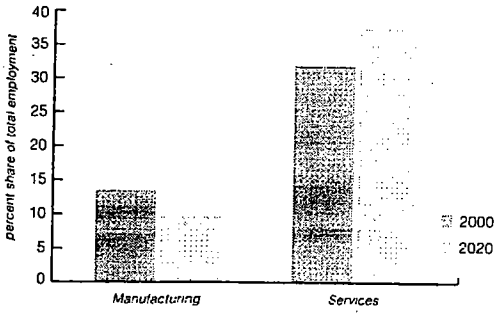


Figure 3. Future job growth will be driven by the services sector as manufacturing declines.

The critical question is whether California can produce or attract the educated workforce this shift requires. The changing demographic mix of the population could work in the other direction because most population growth will be among groups that have historically had less education.

A changing context for planning

Besides the size of the population, another major challenge is its mindset. A very large proportion of Californians deeply distrust government and those who govern. They have little faith in either the good faith or the competence of their elected officials.

That distrust and a growing fiscal conservatism have produced a host of changes: Proposition 13 and its progeny; super-majority requirements for raising revenues; anti-tax sentiment in general; term limits; and a belief in and growing use of the initiative process, which allows a disenchanted public to exercise its preference for making policy at the ballot box.

All these things make consensus building and planning for the future much more difficult than they were during the great building years of the mid-20th century. Those who believe that what California needs to meet future challenges is another great leader, a reincarnation of Governor Pat Brown, if you will, are not realistic about how the context of governance and planning has changed.

If we don't have the educated workforce we need, we're potentially in a double bind: Where will the tax revenues come from to fund the transfer programs or to keep roads repaired, water clean and flowing, and schools running? Is it likely that the growing proportion of older people will be a source of high tax revenues?

It is particularly ironic that as the state seeks to cope with its budget woes, we may be limiting access to our public institutions of higher education, thereby potentially limiting the source of higher tax revenues from the working population in the future.

Besides these concerns, if California cannot provide the educated workforce required, companies might leave the state to meet their requirements or may be forced to hire increasingly from outside the state. Or key industries may falter, leaving business and workers at risk.

Reversing the trend will test the public's commitment to education. And Californians have shown strong support for education. Schools have been at or near the top of the priority list for California voters during the past several years. They've pressured lawmakers to make dramatic reforms and have also lowered the threshold for approval of local school bonds from two-thirds to 55 percent. As a result, since 2000, an unprecedented $42 billion in state and local borrowing has been directed at K-12 schools.

Although these bond funds will go a long way toward meeting the backlog of unmet needs and making room for growth, more funds are likely to be required to provide a decent learning environment for all California's children. Some state bond funds are earmarked to school districts facing hardships. However, more could be done to address their special problems.

In higher education, thanks to state and local bonds and private contributions, the money for buildings and classroom space is adequate for much of the expansion required over the next decade. But because of recent budget cuts, universities are left without enough operating funds to teach all of the eligible students. In 2004, 7,000 youth were initially turned away from the University of California. Had they not been admitted eventually, this would have been the first ever violation of the Master Plan for Education adopted in 1960. Spending cuts and fee hikes have also led to enrollment drops in the California Community Colleges, which serve the most economically vulnerable populations.

A failure of California's education system to deliver the workforce it needs is the most critical threat to the future, but there is also considerable work necessary to expand water and transportation facilities and make more efficient use of the facilities in place. Infrastructure needs are also not spread evenly. Part of the challenge for the future is to balance demographic and social trends against the fair distribution of resources.

Shrinking resources and growing demand

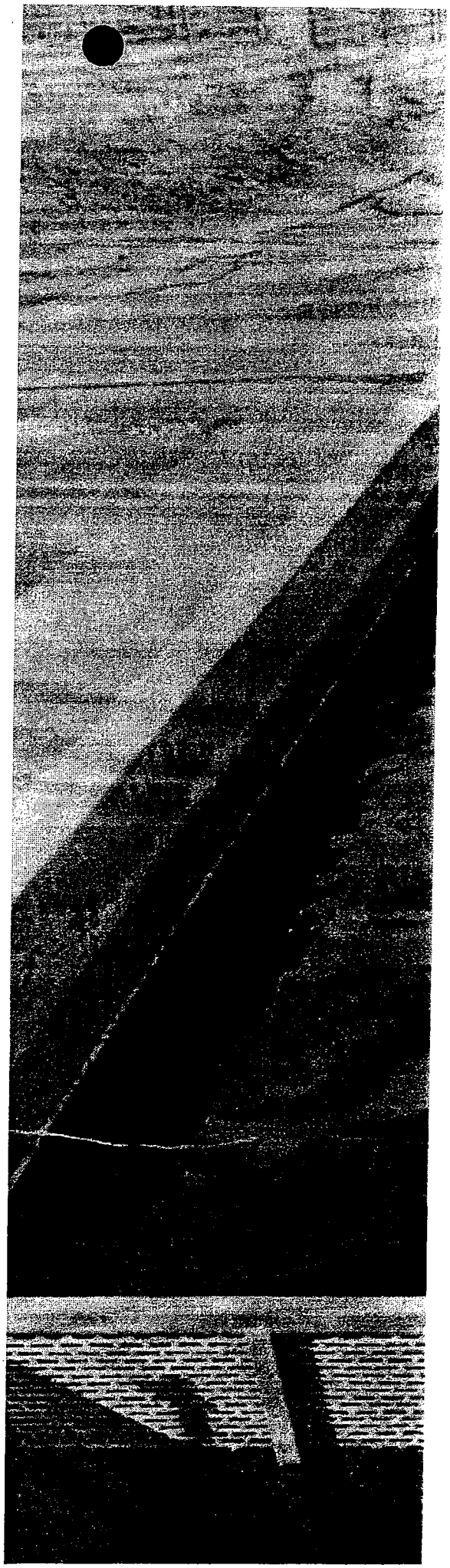
Experts have scaled back their forecasts for the state's water needs because of lower population projections and an expected reduction in agriculture as Central Valley farms give way to new homes.

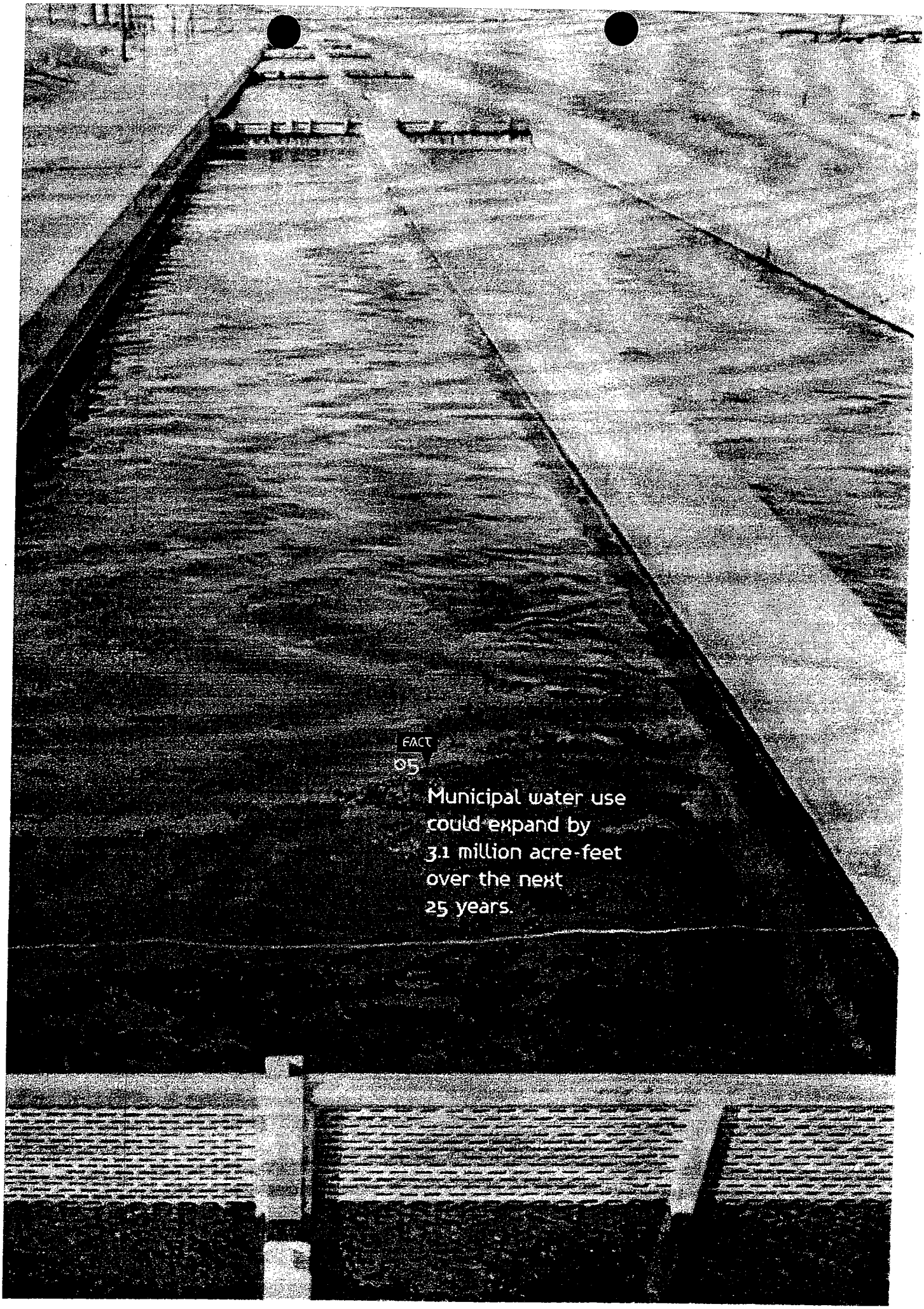
Still, the demand is going up and the supply is actually shrinking. In 2000, roughly one acre-foot of water would supply four Californians for a year. With current trends, experts say the state needs about 3.1 million acre-feet of new water by 2030 to accommodate the expected population growth. Some additional resources are needed to support endangered wildlife and to make up for cutbacks in California's use of the Colorado River, as some neighboring states begin to use their full share.

To reverse the trends, experts say water conservation is essential. Water metering and other policies could actually resolve up to half of the need for new water sources. These and other innovative solutions, including desalination, wastewater recycling, and the sale of some farm water to cities, may offer more promise than building large new water storage facilities — the predominant model of the 20th century.

Fuel efficiency and outdated policies

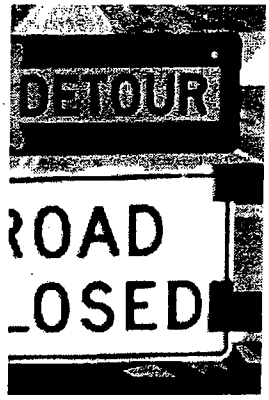
Fuel-efficient cars like hybrids could improve the future in California by cutting air pollution and reducing the economy's dependence on fuel prices. Ironically, however, absent effective policy response, greater fuel economy could have ominous consequences for transportation investments. (Fig. 5)





FACT
05

Municipal water use could expand by 3.1 million acre-feet over the next 25 years.



FACT

Congestion will cause travel time in the state to increase by 48%.

FIGURE 5.
GROWTH IN POPULATION AND VEHICLE MILES TRAVELED ON STATE HIGHWAYS IN CALIFORNIA

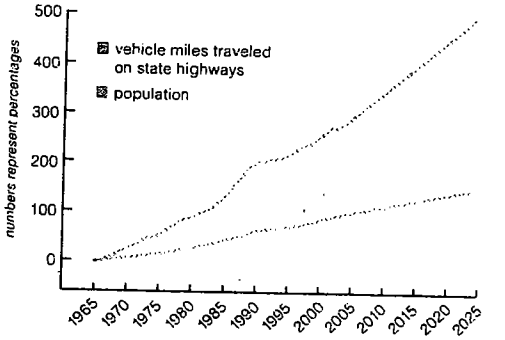


Figure 5. Miles traveled will outstrip population growth putting greater strain on roads and highways.

Historically, California has relied heavily on fuel taxes — in effect, a fee for using roads — as the major source of funding for highway and road construction and maintenance. But inflation and rising fuel efficiency have eroded this revenue source. Today, per vehicle mile, the gas tax produces about one-third of the revenues it produced in 1970.

Partly as a result, California spent about one-third less on capital outlay per person on roads and highways in 2002 than it did 35 years earlier. Moreover, the higher costs for rights-of-way, environmental mitigation, and modern design standards mean that these dollars do not go as far as they once did. Even after adjusting for inflation, it costs over three times more to build a highway lane mile than it did in 1960.

Slow roadway expansion, combined with increasing car use, has earned California's coastal metropolitan areas the dubious distinction of ranking among the most congested places in the nation. The state also ranks second for the roughest roadways.

The low investment in roads is a major concern as the state prepares for its future population growth and increases in economic activity.

Planning for future road and highway work is poor because of multiple sources of funds, layers of authority, and a variety of planning procedures. In addition, the money is harder to come by today. Federal funds are not the dependable source they once were. Unlike local school bonds, local transportation sales taxes still require a two-thirds majority for passage. Attempts to raise the gas tax have proven unpopular. And while voters in 2002 approved a dedicated revenue stream for roads, the change has been all but ignored during the recent budget shortfall.

Uneven jobs and population growth

The concept of "smart growth" is based on the proximity of people to jobs. In other words, if the population of workers in one area exceeds the jobs available, many are forced to make longer commutes, placing greater burden on roads, air quality, and lifestyles.

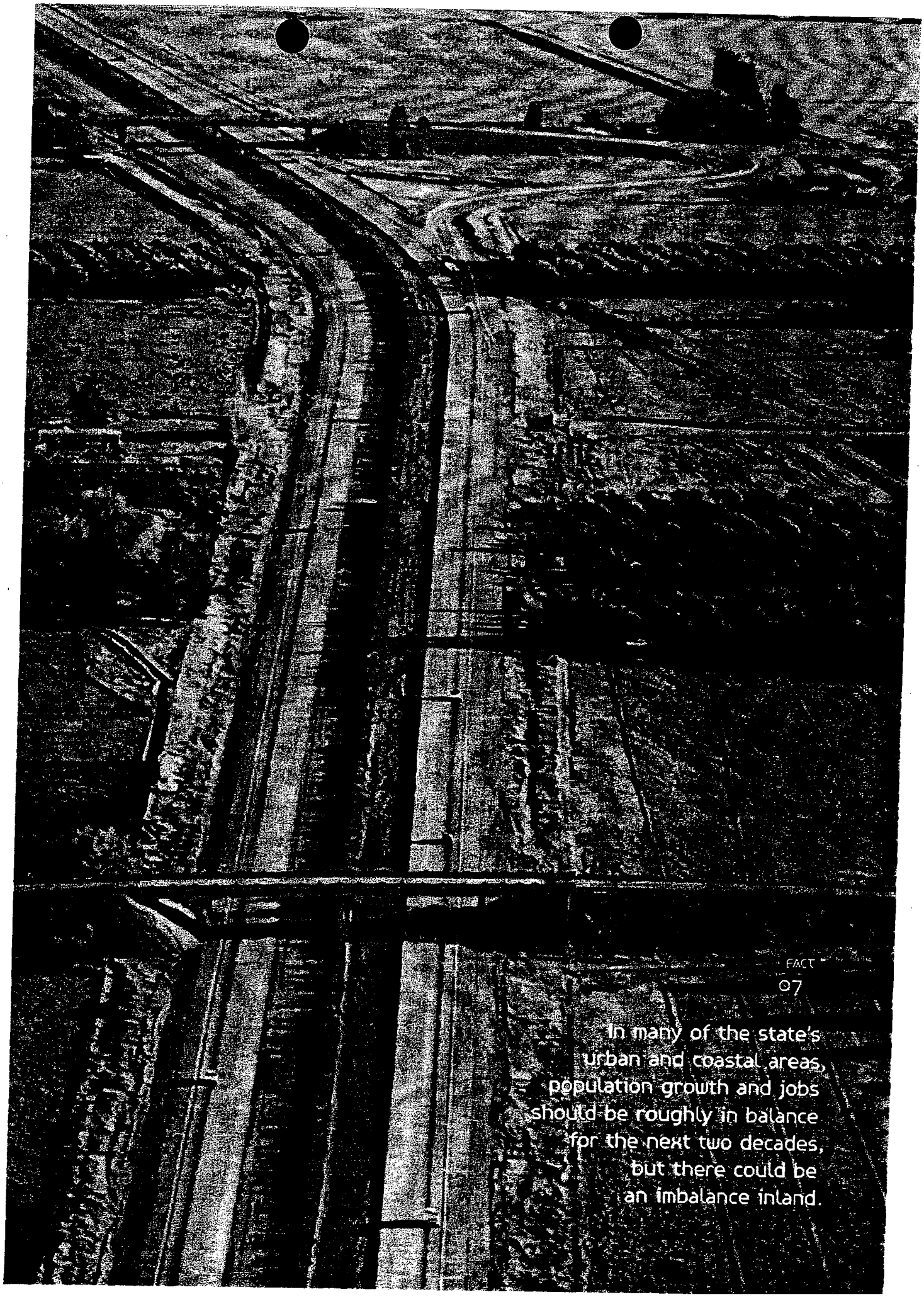
While all of California's major urban areas are working toward "smart growth" plans, it is a difficult challenge. For one thing, it takes an extremely high population density before public transit becomes a popular mode of transportation. That kind of density is highly unlikely outside the state's urban core — particularly with Californians' strong preference for single-family homes.

Affordability presents another challenge. California has nine of the 10 most unaffordable housing markets in the nation. That forces many homebuyers to search farther from job centers. And developers are encouraged to build in outlying areas. The consequences are long commutes for workers and the rise of "bedroom communities" and tenuous local economies.

Competition or consensus

Differences between various constituencies in California are growing, posing the risk of emotional and divisive battles about the state's future course and the use of its limited resources. The imbalance between population and job growth, for example, could create rivalries among regions of the state. Most leadership positions in state government today are held by lawmakers from major population centers. Yet, the fastest growth — and the greatest need for infrastructure spending — will be in the state's interior.

The phenomenal growth of California's senior population will also have economic, social, and political consequences. Between 2000 and 2030, the number of seniors in California is expected to double. In 2025, there will be 65 non-working children and seniors for every 100 working-age adults, an increase of 10 percent.



FACT
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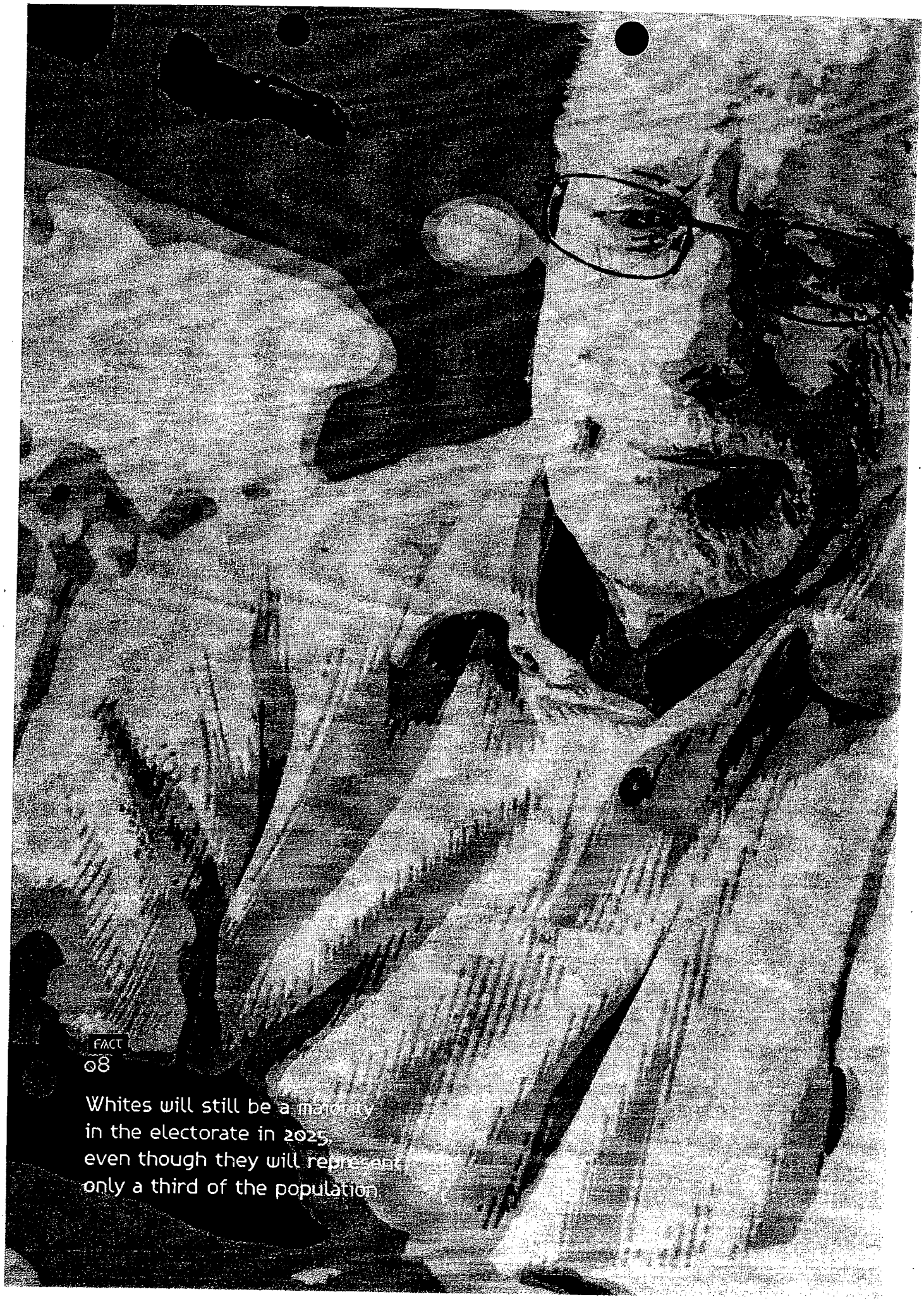
In many of the state's urban and coastal areas, population growth and jobs should be roughly in balance for the next two decades, but there could be an imbalance inland.



FACT
08

Whites will still be a majority
in the electorate in 2025,
even though they will represent
only a third of the population

FIGURE 6.
INEQUITY IN EDUCATION AND ATTITUDES

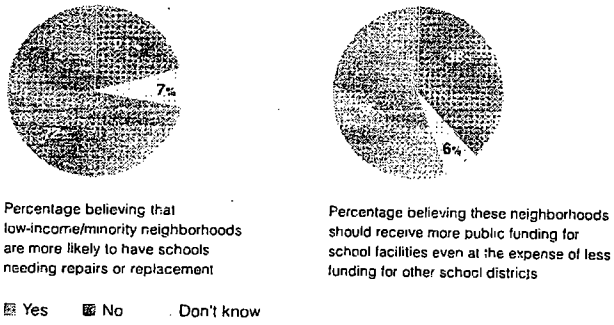


Figure 6. Many Californians believe education resources aren't fairly distributed, but fewer are in favor of adjusting the balance.

That shift will increase the demand for taxpayer-paid services even as the share of taxpayers is shrinking. Besides that, the fair distribution of state resources could be problematical because of the increasing share of seniors. Some commentators have expressed concern that this demographic shift could erode political support for programs targeting younger Californians, such as eduction. Seniors are more likely than younger residents to vote and to participate in socially influential organizations.

The state's electorate is also increasingly out of synch with the population because Latino and Asian American citizens are not as likely as whites to vote. In 2004, for example, whites represented just under half of the state's population but roughly two-thirds of its electorate. Based on current trends, studies suggest whites will still be a majority of the electorate in 2025, even though they will represent about a third of the population.

Finally, as in the United States as a whole, the gap between rich and poor in California has grown significantly. In fact, income inequality here is among the highest in the nation. Some of the trends that have created this gap are likely to continue — the globalization of our economy that has brought worldwide demand for goods and services by skilled workers and the growing international competition less-skilled workers face in manufacturing and production. As they do, it will be even more crucial to consider investments to improve the education of traditionally less-educated groups and to make other infrastructure improvements to create opportunities for those that have been left behind by economic growth. (Fig. 6)


Making Choices

We've seen the trends.

We've considered where they may lead.

Where do we go from here?

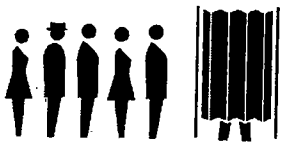
The trends and their potential consequences raise a host of issues, questions, policy options, and strong feelings among various constituencies. Above all, they underscore the urgency of making informed choices — sooner, rather than later — if we don't want to lose control over California's future.

We cannot consider every issue, question, or option here. Nor do we have a list of quick and easy solutions to offer. There are choices to be made by Californians and their elected leaders, and selecting a course of action will involve tradeoffs. But we can prime the pump of policy debate by highlighting selected options — some suggested by the trends and directions we've been discussing, some by other concerned commentators on the state's future. Here are some examples identified by issues we have raised.

Invest in education now, given the potential shortage of college-educated workers in the future economy

Over the last year, as they attempted to cope with California's big budget problems without raising taxes, policymakers have given K–16 education short financial shrift in various ways. The trends indicate that this is short-term temporizing that will shoot California in the foot — economically and socially. This is one area for which the public has said it is willing to accept higher taxes. Does the political will exist in Sacramento to ask the public to ante up?

Greatly increase voter registration efforts to make voters more representative of the state's population



This isn't pious idealism. If California wants to treat all its citizens equitably, level important playing fields, and preserve representative government, we need to get out the vote. The voice of the voter should represent all Californians proportional to their presence in the population. The state has monies for voter registration that aren't being used for that purpose. It's also a cause that foundations could appropriately espouse and support.

Make a priority of investment in low-income areas

Are Californians willing to assure equity for all or will they tolerate poverty-perpetuating conditions for some? Critical overcrowding and low academic performance are more common in schools serving low-income, African American, and Latino children. In their neighborhoods, access to decent jobs, housing, medical facilities, parks and recreation, and stores and shopping is often limited. Surveys show that Californians are aware of the inequities and would support steps to resolve them. For example, 56 percent think the state should give more money to schools in such communities — even at the cost of giving less to more prosperous ones. Is the leadership in Sacramento willing to make investments in lower-income areas their priority?

If federal monies aren't available or dry up, one place to look for infrastructure funding is through public-private partnerships. The University of California provides a compelling example of the effectiveness of such partnerships to find infrastructure funding. In partnership with private companies, UC Irvine, for example has created a 1,100-unit housing development on the campus. Its UC Irvine Research Park is leased to the Irvine Corporation, which leases sites to research-oriented companies that are interested in linking up with university researchers, participating in university research projects, and offering internships to UCI students. The trend to university-private industry partnerships is growing across the state. Then-Governor Davis created an initiative that would establish four new science institutes at four UC campuses by leveraging state funding with private investment. This is a model the state could use in other areas of infrastructure building.

04

Use public-private partnerships for new infrastructure

Californians resist more building to meet the projected demands of a growing population on at least two grounds: They don't want their taxes raised and they don't want facilities built in their backyards. Borrowing is one alternative to raising taxes. But California already has such a high debt load that General Fund revenues devoted to debt service rose from 3 percent in 2002 to 7 percent in 2005 — a percentage considered financially dangerous by some experts.

Under the circumstances, the most feasible alternative is to manage demand and encourage conservation, as well as increasing supply strategically. Examples of demand management would be fostering water conservation in the urban and agricultural sectors; implementing road pricing to mitigate traffic congestion; and encouraging carpooling, off-peak travel, mass transit, and other forms of travel besides driving alone. In the case of higher education, operating year-round could increase the number of students accommodated by as much as one-third, saving billions of dollars. Students might also move more briskly through college if student loans were more costly or fees were higher for those who don't finish in reasonable time.

Rely on demand management and conservation for maintaining infrastructure

06

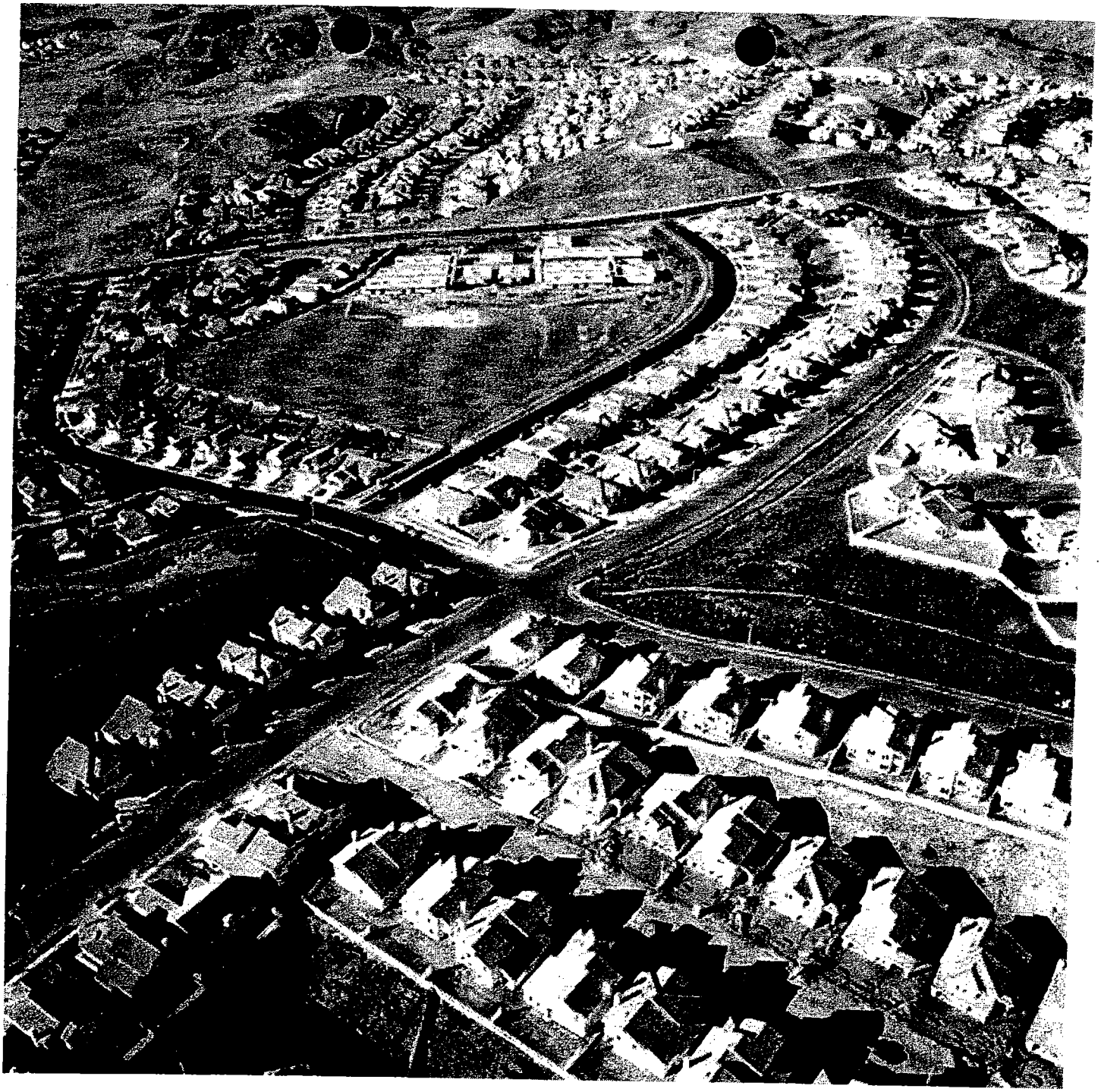
Extend term limits to change the context of long-term planning in the legislature

One thing that makes long-term planning difficult for lawmakers is that it requires spending money or making sacrifices today for benefits that may not be realized until term limits force the lawmaker out of office. The decisions also require leadership that can articulate a vision and inspire support for it. Partisanship and lack of public trust for elected officials make that job exceedingly hard. Under term limits, lawmakers are less experienced and special interests are more powerful than before.

07

Encourage localities to think and act regionally

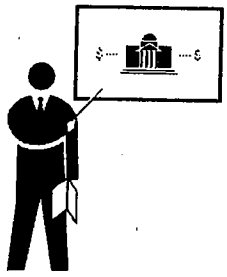
On some dimensions, planning to meet population growth is the prisoner of competing authorities at the state, local, and regional level. Local government determines the best development for its community. Regional organizations coordinate housing, transportation, and jobs. State authorities seek a fair distribution of affordable housing, infrastructure, and costs. But instead of collaborating, state and local governments today are adversarial, and regional groups have little authority. The result is a lack of planning and enforcement of, for example, housing goals. To encourage regional planning and action, the state could help align local and regional objectives, planning mechanisms, and incentives. It could also create incentives by rewarding jurisdictions that promote the objectives. Effective "carrots" could be preferential access to loans, grants, or infrastructure improvements and new revenue-raising authority to fund improvements.



Without the landmark 1978 initiative that capped property tax hikes, many homeowners today might be forced to move as the value of their homes skyrockets. But Proposition 13 had many unintended fiscal consequences. One reason for the skyrocketing home prices is that property tax reduction discourages local government from approving new home development. It costs them more in service provision for households than they can realize in taxes. Some critics also contend that the supporters of Proposition 13 did not intend to put the same constrictions on corporate property tax that they imposed on residential property tax.

Revisit Proposition 13

Increase the transparency and accountability of the state-local fiscal system



The current state-local fiscal system needs overhauling — if for no other reason than making local residents aware of where their property tax dollars go and what their local governments can actually provide in the way of infrastructure and other services. County governments are tasked with providing much of this. Yet, Proposition 13 and its progeny have severely limited their ability to raise revenues to cover the cost. The counties' ability to cope has been further eroded as the federal government devolved more responsibility to the state and the state to the counties. In both cases, funds earmarked to cover mandated responsibilities are often inadequate. Reforming the state-local fiscal system could provide greater certainty about who will pay for what and how it will be delivered to the public most efficiently and effectively. Greater fiscal certainty and transparency might also go far in reducing public distrust.

Reduce the supermajority requirements for local revenue raising

Local governments are responsible for funding many of the investments necessary to support California's growth. Yet the two-thirds supermajority requirement for local taxes and bonds severely limits their authority to raise new revenues. Lowering that requirement could also take off some of the pressure for funding from the state caused by declines in federal funding. When the threshold for passing local school bonds was lowered to 55 percent in 2000, it generated an additional $10 billion for K–12 construction and nearly $7 billion for community colleges.

The options we've laid out here could create a more enabling context for policymaking, save money in some cases, and generate more in others. And more options have been broached or could be developed. Many of them, however, require sacrifices, changes in cultures and lifestyle, and an ability to look beyond immediate needs and comforts for the sake of the state's future. Nobody said it was going to be easy. The crucial question is whether Californians care enough to make the effort.

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PARTICLE CIVICS

How Cleaner Air in California Will Save Lives & Save Money

Renee Sharp
Bill Walker

ENVIRONMENTAL WORKING GROUP™

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Executive Summary

Airborne soot and dust, technically known as particulate air pollution, causes or contributes to the deaths of more Californians than car accidents, murder and AIDS combined. State health officials are proposing new air pollution rules that could save or extend more than 6,500 lives a year, but the proposal faces strong and well-financed opposition from major oil companies and automakers.

Tougher state standards for particulate air pollution could save more than 6,500 lives and half a billion dollars a year.

In California, respiratory illnesses caused or made worse by airborne particulate matter (PM) are responsible for 9,300 deaths, 16,000 hospital visits, 600,000 asthma attacks and five million lost work days each year. By saving lives and preventing illnesses, tougher standards could save more than half a billion dollars a year.

In recent years, hundreds of studies worldwide have shown that PM pollution kills people. Both short- and long-term exposure to particulate pollution at levels lower than the levels currently experienced by millions of California residents can cause death. The proposed new PM standards are the first new regulations developed in response to a landmark 1999 state law requiring that air pollution standards must be adequate to protect children's health.

Statewide, total PM emissions are on the rise, and the great majority of Californians are exposed to potentially harmful levels. The worst particulate pollution in the state is found in Imperial County. But far more Californians are affected by the severe problems in the South Coast Air Basin, covering greater Los Angeles, which has the highest PM levels of any U.S. metro area, and the eight-county San Joaquin Valley, which is among the six worst areas in the nation. EWG estimates that the proposed new standards could save more than 4,200 lives a year in the South Coast Air Basin, and more than 800 lives a year in the San Joaquin Valley.

EWG urges the Air Resources Board to resist pressure from polluters and adopt the PM standards recommended by state scientists. Exemptions for agriculture should be eliminated. To further protect children and other sensitive populations, ARB should also set eight-hour PM standards, as it has for ozone. Finally, the state PM standards must be more rigorously enforced.

A Life and Death Decision

Particulate air pollution causes or contributes to the deaths of more Californians than car accidents, murder and AIDS combined, according to an analysis of state data by Environmental Working Group. EWG's investigation found that state health officials are proposing new air pollution rules that could save or extend more than 6,500 lives a year, but the safer standards face entrenched opposition from a deep-pockets alliance of major oil companies and automakers.

Airborne microscopic particles, much smaller than the width of a human hair, are known as particulate matter, or PM. (The smallest particles are often called "fine" particulates; the larger ones, still very tiny, are called "coarse" particulates.) California Department of Health Services (DHS) data shows that respiratory illnesses caused or made worse by PM pollution are responsible for the deaths of more than 9,300 Californians a year. That is three times more than are killed in car accidents, 4.6 times more than those who are victims of homicide and six times the number who die of AIDS. (Table 1.) What's more, even this number is an underestimate of the total number of PM-related deaths each year since it includes all deaths due to long-term exposure but only includes some of those due to short-term exposure to particulate air pollution[1].

The air polluters' lobby tries to divert attention from the overwhelming evidence that particulate matter is deadly by arguing that compliance with the "impossibly stringent" proposed new standards would be too costly and would not produce

Cause of Death	Number of Deaths in 1999
Particulate air pollution	9,340
Motor vehicle accidents	3,140
Suicide	3,047
Accidental poisonings	2,221
Homicide	2,042
HIV/AIDS	1,558
Accidental falls	1,202
Drownings	397

Source: EWG, from California Department of Health Services 1999.

Table 1. Particulate air pollution in California causes or contributes to more than 9,000 deaths each year.

"any greater protection of public health than the current California standards." (Ford 2002, AAM 2002.) But EWG's five-month review of hundreds of state, national and international studies found just the opposite: By saving lives and preventing illnesses, tougher PM standards could save the state and its citizens more than half a billion dollars a year.

The price tag: $1 billion a year

Each year, PM pollution is responsible for more than 16,000 hospital or emergency room admissions, at an estimated health care cost of $132 million. PM-triggered illnesses also cause Californians to miss almost five million work days a year, a loss to the state's economy of more than $880 million[2]. More difficult to put a price tag on are the thousands of less severe illnesses that result every year from PM pollution, including 600,000 asthma attacks and 13,500 cases of chronic bronchitis in California. (Tables 2, 3.)

Particulates, which are taken deep into the lungs by inhalation, have been linked with a long list of respiratory ailments such as chronic cough, chest pain, breathlessness, wheezing, phlegm, chronic bronchitis, decreased lung growth, decreased lung function, and the exacerbation of asthma symptoms.

Table 2. Proposed new standards would prevent hundreds of thousands of illnesses each year.

	Ages Considered	Cases at Current PM Levels	Cases Under Proposed Standards	Cases Avoided	Cases Reduced by
Long-term Mortality	30+	9390	2865	6525	69%
Short-term Mortality	All	4063	1772	2291	56%
Chronic Bronchitis	27+	13530	5696	7835	58%
Chronic Obstructive Pulmonary Disease Hospital Admissions	65+	2115	923	1192	56%
Pneumonia Hospital Admissions	65+	3061	1340	1721	56%
Cardiovascular Disease Hospital Admissions	65+	5452	2395	3057	56%
Asthma Hospital Admissions	64-	1624	692	933	57%
Asthma Emergency Room Visits	64-	3992	1691	2301	58%
Asthma Attacks	All	592736	254466	338270	57%

Notes: In this table, the long-term mortality values are for PM2.5 and the short-term mortality values are for PM10. Long-term mortality is deaths from long-term exposure to particulates, while short-term is deaths from short-term exposure. Because the estimates of long-term mortality include some but not all short-term deaths, the two cannot be added together to get an estimate of total mortality.

Source: EWG, from ARB/OEHHA 2001, EWG 2002.

PM concentrations have also been shown to be associated with hospital admissions for a wide variety of cardiovascular and pulmonary diseases, including asthma. Groups particularly at risk include children, the elderly, people who already suffer from respiratory illness, and those of low socioeconomic status, who tend to live in areas where particulate pollution is most severe.

In recent years, a major international scientific effort has produced a flood of studies that has clearly established that PM pollution can kill people. Epidemiological studies have been conducted in over 200 cities worldwide, examining the effects of different exposure durations, and accounting for contributing factors including age, smoking habits, weather, and other pollutants. The results have been remarkably consistent: Both short- and long-term exposure to particulate pollution at levels lower than currently experienced by millions of California residents can cause death. Compared to just a few years ago, scientists today are much more likely to say plainly that PM kills, than that it contributes to death.

Hundreds of studies worldwide confirm that exposure to particulate pollution at levels lower than millions of Californians breathe can cause death.

California's current PM standards were set in 1982. New standards proposed by scientists at the state Air Resources Board (ARB) and Office of Environmental Health Hazard Assessment (OEHHA) would reduce the number of PM-triggered deaths and illnesses dramatically. The scientists say cutting allowable levels of PM to recommended levels will reduce deaths by at least 69 percent, asthma attacks by 57 percent, hospital visits by 56 percent and cases of chronic bronchitis by 58 percent. (Table 2.) Statewide, the recommended standards would result in an annual reduction of about 3 percent of all mortality in the population above age 30. (ARB/OEHHA 2001.) EWG estimates that these new PM-standards would also result in savings of state direct and indirect costs of more than $580 million a year. (Table 3.)

The Children's Environmental Health Act

Gov. Gray Davis' appointed ARB directors are scheduled to vote on the proposed new standards in June 2002. Their decision is being watched closely by health and environmental officials and researchers across the country. In 1999, California enacted the landmark Children's Environmental Health Act (SB 25), the first law anywhere in the U.S. to require that air pollution standards must be stringent enough to protect children – as opposed to almost all other environmental regulations designed to protect the average adult male. SB 25 required the ARB to review all of the state's air pollution standards to determine whether they adequately protect children. A preliminary review determined that the current PM standards were inadequate and that revising them should be ARB's highest priority. Other standards determined to be inadequate must be revised at a rate of one a year[3]. The proposed PM standards could again make California the national leader in air quality standards to protect public health – but not if the air polluters' lobby gets its way.

The Western States Petroleum Association, the Alliance of Auto Manufacturers, the Engine Manufacturers Association and other industry groups and individual companies have mounted a well-financed major campaign against the proposed

Table 3. Costs Associated With PM10-related Illness in California.

	Ages Considered	Number at Current PM10 Level	Cost at Current PM10 Level (1999 $)	Number Avoided Under Proposed New Standards	Savings Under Proposed New Standards
Chronic Obstructive Pulmonary Disease Hospital Admissions [1]	65+	2,115	$24,792,990	1,192	$13,972,624
Pneumonia Hospital Admissions [2]	65+	3,061	$42,639,263	1,721	$23,971,809
Cardiovascular Disease Hospital Admissions [3]	65+	5,452	$34,362,621	3,057	$19,268,271
Asthma Hospital Admissions [4]	64-	1,624	$28,904,937	933	$16,601,802
Asthma Emergency Room Visits [5]	64-	3,992	$1,193,527	2,301	$687,999
Work Loss Days [6]	64-	4,910,652	$883,917,360	2,814,815	$506,666,700
Total		4,926,896	$1,015,810,698	2,824,019	$581,169,205

Notes:
1) Hospital charge cost only. Mean hospital stay is 6.02 days with a mean charge of $11,722 (1999 dollars). (Abt 2000)
2) Hospital charge cost only. Mean hospital stay is 7.01 days with a mean charge of $13,929 (1999 dollars). (Abt 2000)
3) Hospital charge cost only. Mean hospital stay is 5.44 days with a mean charge of $17,794 (1999 dollars). (Abt 2000)
4) Hospital charge cost only. Mean hospital stay is 3.03 days with a mean charge of $6,303 (1999 dollars). (Abt 2000)
5) The average asthma ER visit cost is $299 (1999 dollars). (Abt 2000)
6) The median per-day income of California residents in the year 2000 was $180. (US Census 2002)

Source: ARB/OEHHA 2001, EWG 2002, Abt 2000, U.S. Census 2000.

standards. Their tactics are familiar: carping on minor inconsistencies between scientific studies, exaggerating uncertainties although PM is perhaps the most-studied type of air pollutant, and drawing on industry-funded studies to dispute the overwhelming consensus of peer-reviewed academic and government research. If their campaign, for which a small army of lobbyists in Sacramento has millions of dollars to spend, is only partly successful in watering down the proposed standards, thousands more Californians will die from dirty air each year.

Unlike most other air pollutants, particulates are regulated by size. Particles with diameters less than or equal to 10 microns are called PM10 and are often referred to as "coarse particles." Particulates with diameters less than or equal

to 2.5 microns are called PM2.5 and are often referred to as "fine particles." (A single human hair has a diameter of 50 to 100 microns.) California's current standards regulate only PM10, but the proposed new standards would also cover PM2.5.

PM contains heavy metals, nitrates, sulfates, aerosols and other toxic chemicals, as well as ordinary soot, soil, dust and smoke from both man-made and natural sources, including cars, industrial pollution and unpaved roads. Recent research suggests that PM from industrial and other man-made sources is more harmful to human health than dust from natural sources. (See Chapter 3.) The makeup of PM pollution varies considerably among different locations and at different times of the year (or even day) in the same location. As a result, two areas in California with the same level of particulates in the air may have distinctly different PM problems, and within counties where overall PM levels are relatively low, individual cities or neighborhoods may be exposed to high levels. Although annual average PM levels have declined in recent years, only small, mostly rural Lake County is in full compliance with current state standards. Statewide, total PM emissions are on the rise, and the great majority of Californians are exposed to potentially harmful levels:

The Los Angeles–Riverside metro area has the worst particulate air pollution in the U.S., and the San Joaquin Valley's problem is also among the worst.

- Over 99 percent of Californians breathe air that violates the current PM10 standards during at least part of the year. (ARB/ OEHHA 2000.)

- Fifty-five of fifty-eight counties have average annual PM10 concentrations that exceed the proposed standards and fourteen counties (or portions of counties) have average annual concentrations that are at least twice as high, based on the last three years of ARB monitoring data[4]. (Table 4.)

- Forty-three counties (or portions of counties) have average annual PM2.5 concentrations that exceed the proposed standards, based on the last two years of ARB monitoring data[5]. (Table 4.)

Preventing deaths and asthma

The worst particulate pollution in the state is found in Imperial County (and an adjoining part of Riverside County). But far more Californians are affected by the severe problems in the South Coast Air Basin (Los Angeles, Orange, Riverside and San Bernardino counties) which consistently records the highest PM levels of any U.S. metro area, and the eight-county San Joaquin Valley, which ranks among the six worst air basins in the country for particulate pollution. (Grossi 2002, Table 4.) Considering the same factors state scientists used in calculating statewide PM-related deaths and illnesses, EWG estimates that the proposed new standards could prevent or delay more than 4,200 deaths a year in the South Coast Air Basin, and more than 800 deaths a year in

Table 4.
55 of California's 58 counties are not in full compliance with existing PM standards.

Source: EWG, from ARB/ OEHHA 2001.

County	Portion of County*	PM10 Annual Average (ug/m3)**	PM2.5 Annual Average (ug/m3)***
Alameda		21.7	15.8
Alpine		16.7	8.5
Amador		23.0	16.6
Butte		24.5	12.3
Calveras		23.0	16.6
Colusa		24.5	12.3
Contra Costa		21.7	15.8
Del Norte		17.5	7.5
El Dorado	Lake Tahoe Basin	20.8	7.5
El Dorado	Mountain Counties Basin	23.0	16.6
Fresno		39.5	22.3
Glenn		24.5	12.3
Humbolt		17.5	7.5
Imperial		70.2	13.1
Inyo		16.7	8.5
Kern	Mojave Basin	21.6	10
Kern	San Joaquin Basin	39.5	22.3
Kings		39.5	22.3
Lake		10.8	≤ 5
Lassen		13.0	≤ 5
Los Angeles	Mojave Basin	21.6	10
Los Angeles	South Coast Basin	40.7	22.2
Madera		39.5	22.3
Marin		21.7	15.8
Mariposa		23.0	16.6
Mendocino		17.5	7.5
Merced		39.5	22.3
Modoc		13.0	≤ 5
Mono		16.7	8.5
Monterey		24.2	7.5
Napa		21.7	15.8
Nevada		23.0	16.6
Orange		40.7	22.2
Placer	Lake Tahoe Basin	20.8	7.5
Placer	Sac Valley Basin	24.5	12.3
Plumas		23.0	16.6
Riverside	Mojave Basin	21.6	10
Riverside	Salton Sea Basin	70.2	13.1
Riverside	South Coast Basin	40.7	22.2
Sacramento		24.5	12.3
San Benito		24.2	7.5
San Bernardino	Mojave Basin	21.6	10
San Bernardino	South Coast Basin	40.7	22.2
San Diego		28.8	15.6
San Francisco		21.7	15.8
San Joaquin		39.5	22.3
San Luis Obispo		23.0	11.8
San Mateo		21.7	15.8
Santa Barbara		23.0	11.8
Santa Clara		21.7	15.8
Santa Cruz		24.2	7.5
Shasta		24.5	12.3
Sierra		23.0	16.6
Siskiyou		13.0	≤ 5
Solano	Sac Valley Basin	24.5	12.3
Solano	San Francisco Basin	21.7	15.8
Sonoma	North Coast Basin	17.5	7.5
Sonoma	San Francisco Basin	21.7	15.8
Stanislaus		39.5	22.3
Sutter		24.5	12.3
Tehama		24.5	12.3
Trinity		17.5	7.5
Tulare		39.5	22.3
Tuolumne		23.0	16.6
Ventura		23.0	11.8
Yolo		24.5	12.3
Yuba		24.5	12.3

the San Joaquin Valley. Each year, more than 76,000 asthma attacks could be averted in Riverside and San Bernardino counties alone. (Table 5.)

In December 2001, ARB and OEHHA staff scientists proposed that California's annual PM10 standard be lowered by one-third, from 30 micrograms per cubic meter of air ($\mu g/m^3$) to 20 micrograms, and that an annual state PM2.5 standard be set at 12 $\mu g/m^3$. But the agencies also had to decide about standards for short-term (24-hour) exposures to PM. They proposed to leave the short-term standard for PM10 unchanged at 50 $\mu g/m^3$. They at first opted not to propose a state short-term standard for PM2.5, continuing to rely on the federal level of 65 $\mu g/m^3$. After criticism from an external scientific review panel and pressure from state environmental advocates, however, ARB and OEHHA decided a state short-term PM2.5 standard was necessary, and in March 2002 proposed a level of 25 $\mu g/m^3$. (Figures 1 and 2.)

When the ARB directors meet to set the final standards, the stakes are high. If the annual PM10 standard is strengthened only slightly to 28 $\mu g/m^3$, and the PM2.5 standard is set at the federal level of 15 $\mu g/m^3$, as the oil companies and automakers advocate, the result would be 3,000 more premature deaths, 3,000 more hospital admissions, 1,000 more emergency room visits for asthma, 3,500 more cases of chronic bronchitis, and 150,000 more asthma attacks each year than if the standards were set at the proposed levels. For thousands of Californians, it will be literally a life-and-death decision.

Gov. Davis' air quality board should adopt the tougher regulations recommended by state scientists, and enforce them rigorously.

Recommendations

- Directors of the Air Resources Board should resist pressure from polluters and adopt both the annual and short-term PM10 and PM2.5 standards recommended by state scientists.
- The *de facto* state exemption from PM regulations for most agricultural activities – a major source of particulate pollution in California – should be eliminated.
- To further protect children and other sensitive populations from acute levels of particulates, ARB should also set shorter-term standards for PM10 and PM2.5, on the model of the state's eight-hour standard for ozone air pollution.
- The PM standards adopted by the state should be rigorously enforced. Currently the standards are non-binding, making enforcement inconsistent and ineffective.

Footnotes

[1] This figure is for estimated mortality due to long-term exposures to PM2.5 air pollution. It is difficult to arrive at an absolute number of PM-related deaths because of overlap in various estimates. For instance, the figures for long-term mortality are believed to encompass some but not all short-term deaths, and therefore estimates of short and long-term mortality can not be simply added together to get an estimate of total mortality.

[2] The median per-day income of California residents in the year 2000 was $180 (=46,802 dollars per year / 260 work days per year). (U.S. Census Bureau 2000.) The actual number of work days lost to PM10-related illness is 4,910,652. (OEHHA/ARB 2001.) The estimated cost to the state's economy is the product of these two numbers.

[3] OEHHA categorized the air pollutants under review into two tiers based on the agency's assessments of potential risks to public health. The first tier includes PM, ozone and nitrogen dioxide. The second tier includes lead, carbon monoxide, and hydrogen sulfide.' (OEHHA/ARB 2001.)

[4] Average PM10 levels were calculated by ARB using the last three years of data available (1998-2000). (OEHHA/ARB 2001.)

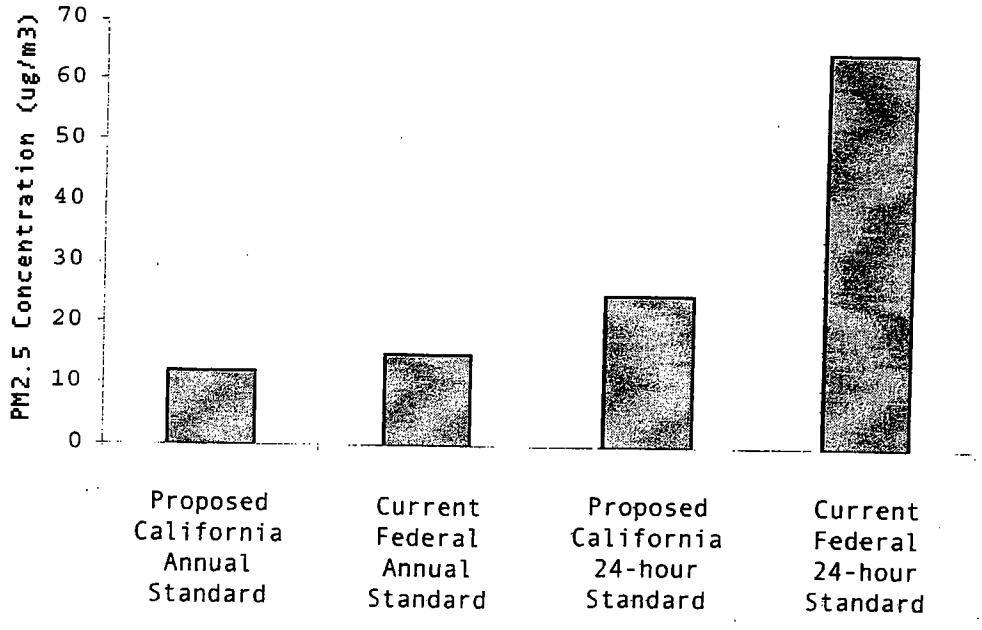
[5] Average PM2.5 levels were calculated by ARB using the last two years of data (1999-2000), which is all the monitoring data available. (OEHHA/ARB 2001.)

California's Particulate Problem

Emissions of particulates have been increasing in California for decades, from 2,017 tons of PM10 per day in 1980, to 2,240 tons per day in 1990, to 2,312 tons per day in 2000. (ARB 2001.) However, the increase has been far from uniform across the state. During this period, PM10 emissions in some counties have remained relatively steady or declined, while other counties have seen a marked increase. For instance, between 1975 and 2000, emissions in San Bernardino County increased by 93 percent and in San Diego County by 70 percent. (ARB 2001.) The increase in emissions comes from many sources, but one clear cause is the ever-growing dependence on automobiles: From 1975 to 2000 the number of vehicle miles traveled in California more than doubled, from 351 million miles per day to 800 million. (ARB 2001.)

While the total *amount* of emissions continues to rise, concentrations of PM10 *measured* by air quality monitors have actually declined. Statewide, annual mean concentrations measured by the state's 250 air monitors dropped 20

Figure 1. Proposed and Existing PM2.5 Standards



percent between 1988 and 1999, from about 80 μg/m³ to 60. A big reason for this apparent discrepancy is that most of the monitors are in the South Coast Air Basin, where in recent years progress has been made in reducing PM emissions. Since the current PM standards were adopted in 1982, improvements in air quality have been achieved statewide, but today all counties except Lake County still fail to meet the state's short-term PM10 standard. (Lassen, Modoc and Siskyou counties lack enough data to measure compliance.) Twenty counties fail to meet even the considerably weaker federal short-term PM10 standard.' (Table 4.)

Problem areas

In most areas of the state with elevated PM levels, the problem is not limited to short-term spikes in concentration but is a year-round concern. By far the highest levels are found in Imperial County and an adjacent portion of Riverside County, with an annual average of 70 μg/m³ of PM10 – almost 3.5 times the proposed state standard. But annual levels of 40 μg/m³ or more of PM10 – twice the proposed standard-- are recorded in twelve other counties or portions of counties: Fresno, Kern, Kings, Los Angeles, Madera, Merced, Orange, Riverside, San Bernardino, Stanislaus, San Joaquin and Tulare. (Table 4.)

PM differs from many other types of air pollution in that it is not a single compound, but rather a highly complex mixture of small solid particles and

Figure 2. Proposed and Existing PM10 Standards.

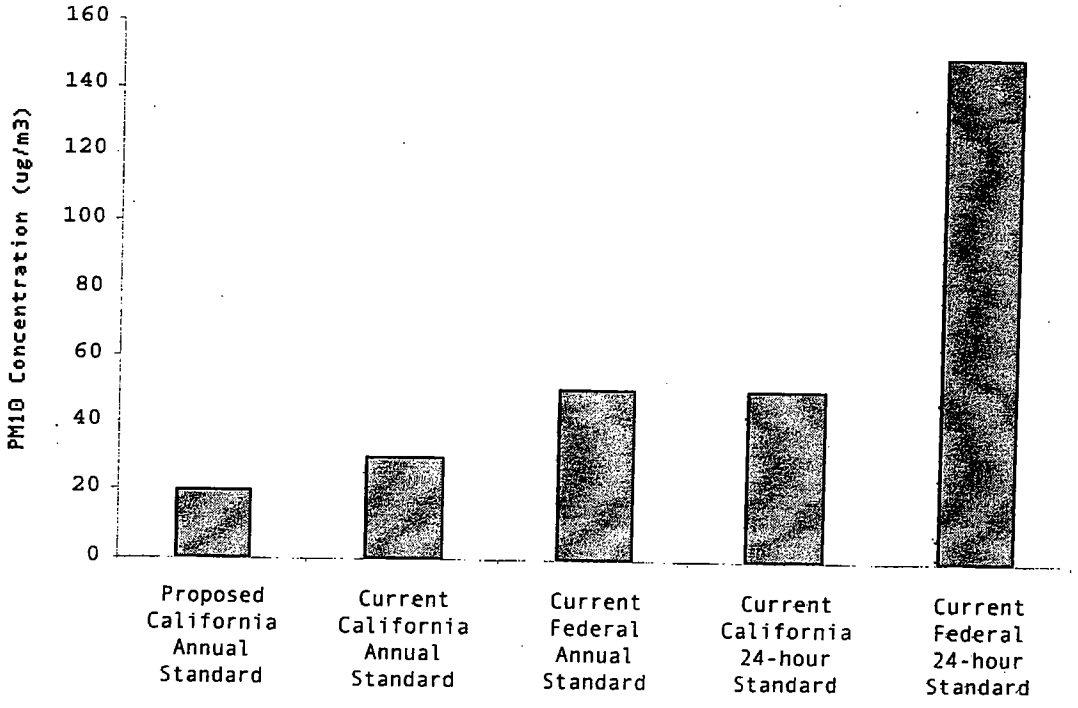


Table 5. Consequences of PM exposure, by county.

	Long-term mortality		Short-term mortality		Asthma Hospital Admissions		Asthma Emergency Room Visits		Asthma Attacks		Work Loss Days	
County	Deaths Due to PM2.5 at Current Levels	Fewer Deaths if Proposed Standards Achieved	Deaths Due to PM10 at Current Levels	Fewer Deaths if Proposed Standards Achieved	Admissions due to PM10 at Current Levels	Fewer Admissions if Proposed Standards Achieved	Visits Due to PM10 at Current Levels	Fewer Visits if Proposed Standards Achieved	Attacks Due to PM10 at Current Levels	Fewer Attacks if Proposed Standards Achieved	Days lost due to PM10 at current levels	Fewer Days Lost if Proposed Standards Achieved
Alameda	317	178	92	13	36	5	89	13	12,944	1,861	142,140	15,940
Alpine	0	0	0	0	0	0	0	0	6	0	93	0
Amador	12	7	4	1	1	0	2	1	349	80	3,334	626
Butte	32	3	24	8	6	2	14	5	2,257	704	21,072	5,629
Calveras	14	9	5	1	1	0	3	1	404	93	3,845	723
Colusa	2	0	1	0	1	0	1	0	209	65	2,053	548
Contra Costa	197	111	63	9	23	3	58	8	8,507	1,223	92,286	10,349
Del Norte	0	0	2	0	0	0	1	0	160	0	2,156	0
El Dorado	85	52	13	2	4	1	10	2	1,503	304	15,576	2,534
Fresno	311	243	126	83	49	33	121	81	17,894	11,905	138,277	99,442
Glenn	4	0	2	1	1	0	2	1	294	92	2,835	757
Humbolt	0	0	7	0	2	0	5	0	735	0	9,922	0
Imperial	15	4	38	32	17	15	41	35	6,370	5,348	40,840	42,511
Inyo	0	0	1	0	0	0	1	0	93	0	1,242	0
Kern	223	172	98	61	37	23	90	57	13,296	8,317	106,695	69,919
Kings	40	31	16	11	8	5	20	14	2,898	1,928	23,021	16,556
Lake	0	0	0	0	0	0	0	0	38	0	2,639	0
Lassen	0	0	0	0	0	0	1	0	78	0	2,061	0
Los Angeles	3555	2,759	1,387	930	599	405	1,469	997	217,366	146,105	1,672,103	1,220,537
Madera	50	39	21	14	7	5	18	12	2,756	1,833	21,026	15,121
Marin	55	31	16	2	6	1	15	2	2,217	319	23,452	2,630
Mariposa	6	4	2	0	0	0	1	0	170	39	1,644	309
Mendocino	0	0	5	0	1	0	3	0	501	0	6,680	0
Merced	79	62	32	21	13	9	32	22	4,713	3,136	36,585	26,310
Modoc		0	0	0	0	0	0	0	22	0	521	0
Mono	0	0	0	0	0	0	0	0	67	0	1,016	0
Monterey	0	0	27	8	12	4	30	9	4,391	1,318	44,102	11,262
Napa	37	21	11	2	3	0	7	1	1,114	160	11,536	1,294
Nevada	30	18	9	2	2	1	6	1	916	211	8,804	1,655
Orange	956	744	410	277	182	124	447	306	66,218	44,928	506,007	374,751
Placer	25	2	21	6	7	2	19	6	2,733	832	26,429	6,869
Plumas	7	4	2	0	1	0	1	0	207	48	1,981	372
Riverside	583	431	353	256	112	82	272	200	42,149	30,675	296,622	243,660
Sacramento	132	12	106	33	37	12	92	29	13,594	4,238	133,938	35,779
San Benito	0	0	3	1	2	0	4	1	582	175	5,969	1,524
San Bernardino	486	370	231	144	95	60	234	147	34,127	21,263	276,676	180,041
San Diego	560	308	279	131	110	52	273	130	40,465	19,074	358,663	159,824
San Francisco	203	114	60	9	19	3	46	7	6,964	1,001	73,543	8,247
San Joaquin	251	196	101	67	34	23	84	57	12,616	8,393	96,729	69,562
San Luis Obispo	26	0	21	5	7	2	16	4	2,471	581	24,534	4,727
San Mateo	150	84	45	6	17	2	42	6	6,340	912	67,890	7,613
Santa Barbara	37	0	29	7	11	3	27	6	4,000	940	40,532	7,809
Santa Clara	271	152	82	12	42	6	104	15	15,085	2,169	166,914	18,718
Santa Cruz	0	0	20	6	8	2	19	6	2,793	838	28,076	7,170
Shasta	25	2	19	6	5	1	12	4	1,814	566	17,043	4,553
Sierra	1	1	1	0	0	0	0	0	35	8	339	64
Siskiyou		0	0	0	0	0	1	0	102	0	2,428	0
Solano	60	29	23	5	11	2	26	5	3,790	773	40,655	6,672
Sonoma	99	56	35	4	11	1	26	4	3,938	520	42,970	4,336
Stanislaus	193	150	79	52	27	18	67	45	10,006	6,657	76,857	55,272
Sutter	9	1	7	2	2	1	6	2	877	273	8,519	2,276
Tehama	9	1	7	2	2	1	4	1	623	194	5,802	1,550
Trinity	0	0	0	0	0	0	0	0	76	0	966	0
Tulare	145	113	58	38	23	15	56	37	8,238	5,481	63,764	45,855
Tuolumne	18	11	5	1	1	0	3	1	542	125	5,148	968
Ventura	57	0	47	11	21	5	52	12	7,544	1,773	78,649	15,153
Yolo	15	1	13	4	5	2	13	4	1,874	584	18,826	5,029
Yuba	8	1	6	2	2	1	5	1	669	209	6626	1,770
Total	9,390	6,525	4,063	2,791	1,624	934	3,992	2,801	592,736	438,270	4,910,662	2,814,815

Source: EWG, from ARB/OEHHA 2001.

liquid droplets suspended in air. These particles may be emitted directly into the air or they may form in the atmosphere from "precursor" chemicals such as sulfur and nitrogen compounds. Substances that comprise PM range from soot, soil, organics, dust, and smoke to heavy metals, aerosols, nitrates, and sulfates. The makeup of PM pollution varies considerably among different locations and at different times of the year (or even day) in the same location. The diverse composition and distribution of particulate pollution makes it especially difficult to assess and control.

Particulate pollution comes from both natural and human sources. The five leading sources of PM10 emissions in California are in the catchall category of "dust" – unpaved road dust, paved road dust, and windblown dust together comprise about 55 percent of the total, with construction and agriculture each contributing another 9 percent. (Table 6.) Other significant human sources of PM10 emissions are industrial pollution and fuel combustion (6 percent combined), fireplaces and wood stoves (6 percent), burning waste (6 percent) and vehicle exhaust (5 percent). (ARB 2000a.)

Unlike most air pollutants, which are regulated based on their chemical composition, particles are regulated based on their size: those with diameters greater than 10 microns, those with diameters less than or equal to 10 microns (PM10), and those with diameters equal to or less than 2.5 microns (PM2.5). (One micron is one millionth of a meter, and a single human hair has a diameter of 50 to 100 microns.) The human respiratory system can filter out most particles larger than 10 microns. But as the particles get smaller they are

Table 6.
Sources of PM10 pollution in California.

PM10 Source	Tons of PM10 Emitted per Year	Percent of Total
Unpaved road dust	235,060	27%
Paved road dust	140,890	16%
Windblown dust	106,945	12%
Construction	74,825	9%
Farming	79,935	9%
Woodstoves & fireplaces	51,465	6%
Waste burning	50,735	6%
Mobile vehicles*	45,625	5%
Wildfires	31,755	4%
Industrial	32,485	4%
Fuel combustion	15,695	2%
Other	11,315	1%
Total	876,730	100%

* includes cars, trucks, airplanes, trains, and boats

Source: EWG, from ARB 2000.

Table 7. Comparison of PM2.5 (Fine Particles) and PM10 (Coarse Particles).

	FINE	COARSE
Formed from	Gases	Large solids/droplets
Formed by	Chemical reaction Nucleation Condensation Coagulation Evaporation	Mechanical disruption (crushing, grinding, etc.) Evaporation of sprays Suspension of dusts
Composed of	Sulfate Nitrate Ammonium Hydrogen ion Elemental carbon Organic compounds Metals Particle-bound water	Resuspended dusts Soil, dust, street dust Oxides of crustal elements Sea salt, calcium carbonate Pollen, mold, fungal spores Plant/animal fragments Tire wear debris
Solubility	Largely soluble	Largely insoluble
Sources	Combusiton of coal, oil, gasoline, diesel, wood Atmospheric transformation products of nitrogen oxides, sulfur dioxide, and organics High temperature processes, smelters, steel mills, etc.	Resuspension of industrial dust and soil tracked onto roads and streets Suspension from disturbed soil, e.g. farming, mining Biological sources Construction Coal and oil combustion Ocean spray
Lifetime	Days to weeks	Minutes to hours
Travel distance	100s to 1000s of kilometers	<1 to 10s of kilometers

Source: EWG, from US EPA 1996.

able to penetrate deeper into the lungs, and are harder for the body to remove. Therefore, over the past two decades, researchers and regulators have focused on ever-smaller inhalable particles. The U.S. Environmental Protection Agency first set standards for PM10 in 1987 and set standards for PM2.5 in 1997.

PM10 and PM2.5 also differ in their sources, how they are formed, composition, and lifetime in the atmosphere. Fine particulates are generated from fossil fuel combustion and other high-temperature processes, are formed from gases which then react and coagulate in the atmosphere and persist in the air for days or weeks. Coarse particulates are usually generated from the suspension of dust from natural or man-made sources, are composed of very small particles or droplets rather than gases, and remain in the air for minutes to hours. (Table 7.) (U.S. EPA 1996.)

Dust in the wind

More than 70 percent of PM10 emissions in the state are from "dust," which includes wind-blown dust from paved and unpaved roads, farming and ranching, and construction sites. Agriculture is a major source of PM10, but its impact is somewhat hidden because ag-related emissions fall into a number of different categories: farming operations, windblown dust, waste burning, industrial processes and farm vehicles. All told, California agriculture produces 459 tons of PM10 a day, or more than 167,500 tons a year. The farm-related particulates problem is so severe in the San Joaquin Valley that the region has repeatedly been unable to meet federal PM standards, and stands to lose more than $2 billion in federal highway funds if the eight counties can't achieve a five percent annual reduction in particulate levels – the only air basin in the country to be hit with such sanctions.

Yet the agricultural industry is exempt from most air pollution laws. The federal Clean Air Act exempts emissions from farm equipment of less than 175

Table 8. Leading Industrial Sources of PM10 Pollution in California.

Facility Name	City	Tons of PM10 Emitted per Year
ADM Inc (Wood Products)	Benicia	1,376
US Borax	Boron	614
Kern Oil & Refining	Bakersfield	544
IMC Chemicals	Trona	526
Mitsubishi Cement	Lucerne Valley	472
Chevron	El Segundo	472
Arco	Carson	452
Ampine (Wood Products)	Martell	447
Port of Stockton	Stockton	436
Martinez Refining Company	Martinez	433

Source: EWG, from ARB 2001.

horsepower. Strictly speaking, California doesn't exempt farm sources from air pollution *regulations*, but does exempt farm operations from having to obtain an air pollution *permit* – and without the conditions attached to a permit, there is no effective control on emissions. The EPA has announced that it will commission the National Academy of Sciences to study agricultural sources of air pollution, which could lead to full-scale regulation of air pollution from farming operations.

Dirty diesels

"Mobile" sources (vehicles) contribute about 5 percent of California's annual PM10 emissions. Passenger cars and light trucks are responsible for about a quarter of this pollution, with most of the rest coming from heavy duty trucks, farm and construction and both commercial and recreational boats. But the bad actor of the category is diesel fuel. Even though diesel-fueled vehicles make up only 4 percent of the 31 million vehicles on the road in California, diesels are responsible for 53 percent of all auto-related PM emissions in California. (ARB 2000b.) And in addition to the adverse health effects associated with all other sources of particulate matter, diesel PM contains many known carcinogens. ARB estimates that diesel-derived PM is responsible for 900 excess cases of cancer per 1 million people exposed over a 70-year lifetime, accounting for 70 percent of the known statewide cancer risk from outdoor air toxics. (ARB 2000b.)

Agriculture is the largest industry in California and a major source of particulates, but is exempt from most air pollution rules.

Industrial emissions account for about 4 percent of California's PM10 pollution. The list of the leading industrial polluters includes petrochemical companies like Chevron, Arco and other refiners, but by far the worst offender is ADM Inc., a manufacturer of wood products in Benicia, Solano County, with more than 1,300 tons emitted in 2000. (Table 8.) Collectively, the ten worst industrial PM polluters in the state emitted 5,300 tons of PM10 in 2000.

Air Pollution, Illness, and Death

Scientists began investigating the link between air pollution, illness and death in response to a number of severe air pollution episodes that sickened and killed thousands of residents in the United States, England and Belgium between 1930 and 1952. Most of the early research looked the effects of very high pollution levels, but more recent inquiry has focused on how low-to-moderate levels of particulates and other air pollutants affect human health. In the past decade the amount of research in this area has exploded, as literally hundreds of studies have been conducted just on the relationship between particulates and death. The scientific consensus is undebatable: Particulates are significantly more harmful than previously realized, and levels well below current state and federal air quality standards can cause or contribute to death.

Relatively small increases in airbone particulates can significantly increase the incidence of respiratory disease and death.

PM pollution has been linked to an array of respiratory ailments in children and adults, including chronic cough, chest pain, breathlessness, wheezing, phlegm, and chronic bronchitis. (Abbey et al. 1995a,b, Pope and Dockery 1991, Braun-Fahulander et al. 1992, Hruba et al. 2001, Zemp et al. 1999.) PM also affects overall lung functioning. Researchers have found that levels of PM commonly experienced by Californians are associated with small but significant decreases in the ability of both children and adults to take and hold deep breaths. (Hoek et al., 1998, Raizenne et al. 1996, Ackerman-Liebrich et al. 1997.)

Kids + PM = Damaged lungs

More troubling, PM can also retard the growth of children's lungs. The Children's Health Study, a long-term investigation of the health effects of air pollution conducted on more than 3,500 children from 12 communities in Southern California, found that PM10 and PM2.5 exposure was associated with decreases in both lung function and lung growth. (Peters et al. 1999, Gauderman et al. 2000.) A follow-up study found that children who moved to areas with lower PM levels showed increased lung growth and functioning, while lung growth and function continued to decline in those who moved to areas with even higher PM levels. (Avol et al. 2001.)

Wherever the link has been investigated, including many studies conducted in California, the results have been consistent: For every 10 micrograms of PM10 added to every cubic meter of air, symptoms of respiratory illness increase, with some studies showing increases of up to 40 percent. State scientists estimate that more than 13,500 current cases of chronic bronchitis in Californians

over the age of 27 are due to particulate air pollution. PM is also responsible for upper respiratory symptoms in an estimated 418,000 California children between the ages of 9 and 11, for lower respiratory symptoms in almost 400,000 children between the ages of 7 and 14, and almost five million lost days of work each year for PM-related illnesses[1]. (ARB/OEHHA 2001.)

Between 1980 and 1994 the prevalence of asthma in the United States increased by more than 75 percent. (Mannino et al., 1998.) Asthma now affects more than 10 million adults and almost five million children. While the current scientific consensus holds that PM pollution does not cause asthma, studies in California and elsewhere have repeatedly found that PM can significantly exacerbate the disease.

The state's proposed 24-hour particulate standards may not cover a short enough exposure period to fully protect public health.

Both PM2.5 and PM10 are associated with many different measures of the severity of asthma, including frequency of attacks, increased use of medication, emergency room visits and hospitalization. (Ostro 2001, Delfino 1998, Pope and Dockery 1992, Yu et al. 2000, Gielen et al. 1997.) A study of asthmatic African-American children in Los Angeles found that one-hour maximum levels, 24-hour averages, and multi-day averages of PM10 were all associated with increases in asthmatic symptoms. (Ostro et al 2001.) State scientists estimate that almost 600,000 asthma attacks, almost 4,000 emergency room visits and more than 1,600 hospital admissions each year are linked to PM-induced asthma.

PM is also associated with increased hospital visits for illnesses other than asthma. Research in dozens of cities in California and other states has consistently found that short-term PM10 and PM2.5 exposures are associated with hospital admissions for cardiovascular and pulmonary diseases such as heart attack, congestive heart failure, cardiac arrhythmia and chronic obstructive pulmonary disease. (Linn et al 2000, Moolgavkar 2000 a,b, Samet et al 2000a, Sheppard et al 1999, among others). Overall, these studies have found that for each 10-microgram increase in PM10 levels in a cubic meter of air, hospital admissions for cardiovascular and respiratory diseases rose by 1.25 to 5 percent. (ARB/OEHHA 2001.) This holds true in locations where PM10 pollution was at low to moderate levels, as well as where levels were high. Data for PM2.5 is more sparse, but suggests that incremental increases in fine particulates may be associated with even greater increases in hospital admissions.

State scientists estimate each year PM10 pollution is responsible for 2,100 hospital admissions for chronic obstructive pulmonary disease, 3,000 admissions for pneumonia and 5,500 admissions for cardiovascular diseases. These estimates account *only* for people age 65 and older, but research has found increases in hospital admissions for these illnesses among younger people as well. (Table 9.)

Common sense says that breathing polluted air daily over an extended period of time is more dangerous than exposure for a few hours or days. Observed increases in mortality from short-term PM exposures are three to four times lower than those from long-term exposures. (ARB/OEHHA 2001.) Yet the impact of short-term PM exposures on public health cannot be ignored. ARB cautions that annual PM averages "do not give an accurate indication of the

seasonal nature of emissions." (ARB 2001.) Averaging means that an area could meet annual standards but have significantly higher PM levels for part of the year, and acutely high levels for a few days of the year.

Shorter-term standard may be needed

A 24-hour standard may actually not be short *enough* to protect public health, as there is evidence that exposure to high levels of particulates over shorter time periods can have significant health effects. One study found that exposure for only two hours was associated with the onset of heart attack symptoms. (Peters et al. 2001.) ARB says it may consider shorter-term standards in the future.

In 1993, Harvard researchers published the results of a 16-year study of 8,000 people in six cities, which found that residents of the city with the highest levels of particulates had a 26 percent higher death rate than the people living in the least polluted city. (Dockery et al. 1993.) An even more extensive seven-year study conducted of more than 550,000 people in 151 metropolitan areas found that residents of cities with the highest PM10 had a 17 percent higher mortality rate than those residing in cities with the lowest levels. (Pope et al. 1995.) These long-term studies have convincingly shown that chronic exposure to particulate matter increases death rates, but recent research shows that short-term PM exposure also is associated with increased mortality.

"The evidence in support of an association between the concentration of particulate air pollution and the mortality rate is consistent."

– Dr. James Ware, Harvard School of Public Health.

Studies in over 200 cities worldwide – cities with significantly different climates, racial profiles, weather patterns, pollution sources and pollution severity – have found a consistent connection between *daily* PM levels and *daily* mortality rates. These studies accounted for numerous other factors such as smoking, age, poverty, weather and other pollutants. Dr. James Ware of the Harvard School of Public Health summarized the findings: "The evidence in support of an association between the concentration of particulate air pollution and the mortality rate is consistent, is not affected by differences in statistical methods, and can be generalized." (Ware 2000.)

In assessing the health risks of a given pollutant, the standard scientific assumption is that risks decrease as exposure rates decrease, and that no harmful effects occur below a certain threshold. But PM does not fit this model. Studies show that the relationship between PM concentration and death is not a tapering curve but a straight line – that is, the health effects of particulates are directly proportional to the level of exposure. No exposure level, including levels below current state and federal standards, has been found at which PM does not have a measurable effect on mortality. (Pope 2000, Daniels et al. 2000.) This has important implications for the development of state air quality standards, which are required to determine the level above which a pollutant is known to harm sensitive populations and incorporate a margin of safety to protect them. (ARB/OEHHA 2001.)

Environmental pollutants do not affect everyone equally, but have greater impact on the very young, the very old, the poor, and those with pre-existing illnesses. The highest rates of PM-related death are among the elderly, especially those with heart or lung diseases.

PM and SIDS

But research into PM's effects on infants and children has found links to pre-term birth or Sudden Infant Death Syndrome (crib death). Most of these studies have been conducted outside the U.S., but indicate a 2 to 4 percent increase in mortality for each 10 micrograms of PM10 in a cubic meter of air. (Loomis et al. 1999, Ostro et al. 1999a.) A study of 98,000 newborns in Southern California born between 1989 and 1993 concluded that the likelihood of pre-term birth was significantly associated with elevated PM levels during the six weeks before birth. (Ritz 2000.)

Some critics argue that PM-related mortality is not a major public health concern, because most deaths are of people who are already ill and only shorten life by days or weeks. Yet in recent years scientists who have thoroughly investigated this notion found it wasn't true. For instance, studies have found that out-of-hospital deaths are between two and four times more strongly related to PM pollution than in-hospital deaths. This indicates that it is not just the critically ill who are more likely to die on days of high PM exposure. (Schwartz 2000, 2001b.) Addressing this issue, the ARB and OEHHA say PM-related mortality is "not the result of just a few days of life shortening . . . it appears that significant reductions in life expectancy may be involved." (ARB/OEHHA 2001.)

Not all particles are created equal. Research indicates that people are much less sensitive to dust and particulates from other natural sources than industrial emissions and auto exhaust. Two studies have found that exposure to particles derived from motor vehicles, coal combustion, and iron and steel manufacturing was significantly associated with daily mortality, while exposure to particles from soil was either not associated or less significantly associated with increased mortality. (Laden et al. 2000, Ozkaynak and Thurston 1987.) Another study was conducted after researchers in Utah noted that hospital admissions and deaths declined following the temporary shutdown of a local steel mill. (Pope 1989.) Scientists then exposed rats to a constant amount of particulates collected before, during and after the mill's closure and found that animals exposed to particulates collected while the mill was closed showed much lower rates of lung damage and related symptoms. (Dye et al. 2001.) The policy implications are clear: The largest sources of particulates, such as road dust, may not be as harmful as particulates from smaller sources such industrial emissions or auto exhaust.

PM-related illnesses carry significant economic impacts. For example, hospital visits for PM-induced COPD, pneumonia and cardiovascular diseases in the population aged 65 and over and visits for pollution-induced asthma in the population under 65 total $132 million a year (Table 3). PM-related illnesses cause Californians to miss almost 5 million work days a year, costing the state's economy more than $880 million[2]. Considering just these costs, the

price of PM air pollution in California exceeds $1 billion a year. (Table 3.) This does not take into consideration many hospital and non-hospital costs of other minor and serious PM-related illnesses.

If California's air quality met the proposed PM standards, an estimated $584 million could be saved each year, cutting the costs of particulate air pollution by more than half. (Table 3.) And if lower standards were reached, these costs would be reduced even further. By achieving a mean ambient PM10 level of 15 micrograms per cubic meter – just 5 micrograms less than the proposed standards – an additional $200 million would be saved each year.

Proposed state standards would prevent hundreds of thousands of asthma attacks each year.

Footnotes

[1] The studies on which OEHHA based their estimates of PM-related illnesses only looked at certain age groups. OEHHA/ARB decided not to extrapolate the results to other age groups and, instead, estimated the illness figures for only these same age groups.

[2] The median per-day income of California residents in the year 2000 was $180 (=46,802 / 260). (US Census Bureau 2000) The actual number of work days lost to PM10-related illness is 4,910,652. (OEHHA/ARB 2001) The estimated cost to the state's economy is the product of these two numbers.

Particle Civics

California has long been a national and global leader in pioneering efforts to improve air quality to protect public health. California developed the nation's first vehicle emission control program in 1963, instituted the nation's first heavy-duty diesel truck standards in 1973, and was the first state to sell unleaded gasoline in 1976. California has also been a trendsetter in developing health-based ambient air quality standards that reflect the most current science available. The existing PM10 standards are a perfect example.

California is the first state to require that air pollution standards be tough enough to protect children, rather than adult males.

In the late 1970s, ARB scientists were among the first to recognize that particulates with diameters of 10 microns or less (PM10) posed more of a human health risk than those with larger diameters. At that time, state and federal air quality standards treated this highly diverse group of compounds as one category called total solid particulates (TSP). But the ARB determined that separate standards were needed for PM10, which took effect in 1982. It took five more years for the U.S. EPA to follow suit, but the federal standards were set 1.5 to three times weaker than the state standards.

Since then, entire libraries of research on particulates and health have been published. There is no disagreement in the scientific and regulatory committees: PM has more profound negative effects on human health than ever before realized, and these effects are measurable at concentrations at or below current air quality standards. This research has established that particles with diameters less than 2.5 microns, or PM2.5, may be particularly hazardous to human health, making the need for tougher and more comprehensive standards more urgent.

Priority: Protecting kids

The need for a revision of California's particulate standards was highlighted with the passage of the Children's Environmental Health Protection Act of 1999 (SB 25 by State Sen. Martha Escutia.) As part of the Act, the ARB and OEHHA were required to review all existing health-based ambient air quality standards in California to determine whether they protected infants and children, as well as other sensitive populations, with a sufficient margin of safety. During this review, it became clear that the current levels of particulate matter in California were responsible for significant and measurable health effects, not

only on children but the public as a whole. As result, the agencies made PM standards the top priority for revision.

In December of 2001 the agencies proposed that California's annual mean PM10 standard be lowered by a third, and added a new standard for PM2.5 that is slightly more stringent than the corresponding federal standard. They recommended leaving the short-term standard for PM10 at current levels, and opted not to recommend establishment of a short-term standard for PM2.5. However, after criticism from an independent scientific review panel and pressure from the environmental community, ARB and OEHHA proposed a short-term standard for PM2.5 that is more than twice as stringent as the existing federal standard. (Figures 1 and 2.)

How many people will California allow to die or become ill each year from the very air they breathe?

The proposed annual standards would dramatically reduce the number of air pollution-related health problems in California. If these standards were attained, thousands of deaths and injuries would be prevented each year: 6,525 premature deaths, 6,903 hospital admissions for respiratory illness, 2,301 emergency room visits for asthma, 7,835 cases of chronic bronchitis, and 338,270 asthma attacks. **(Table 9.)** Overall, the number of PM10-induced illnesses and deaths would decrease by an average of 60 percent, and PM2.5 illnesses and deaths would be cut in half. Because these figures account only for certain illnesses and age groups, the actual health benefits of reducing PM levels would be even greater.

How many will die?

If the standards were set at levels slightly more stringent than those being proposed by the ARB, even more lives would be saved and illnesses avoided. For example, if California met an annual mean PM10 standard of 15 $\mu g/m^3$ and an annual mean PM2.5 standard of 10 $\mu g/m^3$ an additional 1,900 premature deaths, 2,700 respiratory hospital admissions, 850 emergency room visits for asthma, 3,000 cases of chronic bronchitis, and 127,000 asthma attacks could be avoided each year. Overall, PM-induced deaths and illnesses would drop by almost 80 percent.

The consequences of moving in the other direction, toward less stringent standards advocated by the oil and auto industries, would be deadly. EWG analysis shows that if the annual PM10 standard was weakened only slightly from proposed levels, to 28 $\mu g/m^3$, and the annual PM2.5 standard was set to correspond with the federal standard of 15 $\mu g/m^3$, there would be 4,000 more premature deaths, 3,000 more hospital admissions, 1,000 more emergency room visits for asthma, 3,500 more cases of chronic bronchitis, and 150,000 more asthma attacks each year. The question facing the ARB board next month is grim: How many people will California allow to die or become ill each year from the very air they breathe?

Table 9. Savings from Reducing PM-related Illnesses.

PM2.5

	Ages Considered	Number at current annual average PM2.5 level	Cost at current level (1999 $)	Number if proposed standard achieved	Number fewer if proposed standard was achieved	Percent fewer	Dollars saved if proposed standard was achieved	Additional number saved if proposed standard was tightened to 10 ug/m3	Additional dollars saved if standard was tightened to 10 ug/m3
Long-term Mortality [1]	30+	9,390	-	2,865	6,525	69%	-	1,895	-
Short-term Mortality	All	4,011	-	2,066	1,945	48%	-	573	-
Chronic Bronchitis [2]	27+	11,409	N/A	5,660	5,749	50%	N/A	1,612	N/A
Chronic Obstructive Pulmonary Disease Hospital Admissions [3]	65+	1,243	$14,575,966	642	601	48%	$7,529,519	179	$2,098,238
Pneumonia Hospital Admissions [4]	65+	1,791	$24,947,738	927	864	48%	$12,914,520	258	$3,593,682
Cardiovascular Disease Hospital Admissions [5]	65+	3,173	$19,999,436	1,646	1,527	48%	$10,376,736	456	$2,874,168
Asthma Hospital Admissions [6]	64-	950	$16,912,004	481	470	49%	$8,550,392	133	$2,366,602
Asthma Emergency Room Visits [7]	64-	2,352	$703,156	1,185	1,167	50%	$348,933	330	$98,670
Work Loss Days [8]	64-	2,923,535	$526,236,300	175,151	1,445,535	49%	$260,196,300	354,479	$63,806,290
Total			$603,374,599				$299,916,400		$74,837,650

PM10

	Ages Considered	Number at current annual average PM10 level	Cost at current level (1999 $)	Number if proposed standard achieved	Number fewer if proposed standard was achieved	Percent fewer	Dollars saved if proposed standard was achieved	Additional number saved if proposed standard was tightened to 15 ug/m3	Additional dollars saved if standard was tightened to 15 ug/m3
Long-term Mortality [9]	30+	7,470	-	978	6,492	87%	-	N/A	-
Short-term Mortality	All	4,063	-	1,772	2,291	56%	-	N/A	-
Chronic Bronchitis [10]	27+	13,530	N/A	5,696	7,835	58%	N/A	2,902	N/A
Chronic Obstructive Pulmonary Disease Hospital Admissions [11]	65+	2,115	$24,792,990	923	1,192	56%	$10,815,492	463	$5,427,286
Pneumonia Hospital Admissions [12]	65+	3,061	$42,639,263	1,340	1,721	56%	$18,664,007	671	$9,346,359
Cardiovascular Disease Hospital Admissions [13]	65+	5,452	$34,362,621	2,395	3,057	56%	$15,096,981	1,195	$7,532,085
Asthma Hospital Admissions [15]	64-	1,624	$28,904,937	692	933	57%	$12,311,563	346	$6,156,724
Asthma Emergency Room Visits [15]	64-	3,992	$1,193,527	1,691	2,301	58%	$687,999	850	$254,150
Work Loss Days [16]	64-	4,910,652	$883,917,360	254,466	2,814,815	57%	$506,666,700	953,659	$171,658,534
Total			$1,015,810,698				$564,242,742		$200,375,138

Source: ARB/OEHHA 2001, EWG 2002, Abt 2000, US Census 2000.

Notes - Table 9

1) The reason why the number of PM2.5-related deaths is higher than the number of PM10-related deaths even though PM2.5 particles are a subset of PM10 particles is related to the study which ARB/OEHHA based their calculations of long-term mortality. This study (Krewski et al. 2000) found long-term mortality to be assocaited only with the fine (PM2.5) fraction of PM10. Although the other major long-term mortality study (Dockery et al. 1993) did find an association between chronic exposure and mortality, ARB/OEHHA decided to based their calculations on the Krewski et al. (2000) study. See ARB/OEHHA 2001 for futher details.

2) The costs related to chronic bronchitis could not be calculated.

3) Hospital charge cost only. Mean hospital stay is 6.02 days with a mean charge of $11,722 (1999 dollars). (Abt 2000)

4) Hospital charge cost only. Mean hospital stay is 7.01 days with a mean charge of $13,929 (1999 dollars). (Abt 2000)

5) Hospital charge cost only. Mean hospital stay is 5.44 days with a mean charge of $17,794 (1999 dollars). (Abt 2000)

6) Hospital charge cost only. Mean hospital stay is 3.03 days with a mean charge of $6,303 (1999 dollars). (Abt 2000)

7) The average asthma ER visit cost is $299 (1999 dollars). (Abt 2000)

8) The median per-day income of California residents in the year 2000 was $180. (US Census 2002)

9) The number of PM10 related deaths at an annual average of 15 ug/m3 was not calculated because no studies have been done on mortality where PM10 is less than 18; as a result OEHHA/ARB uses 18 ug/m3 as background level.

10) The costs related to chronic bronchitis could not be calculated.

11) Hospital charge cost only. Mean hospital stay is 6.02 days with a mean charge of $11,722 (1999 dollars). (Abt 2000)

12) Hospital charge cost only. Mean hospital stay is 7.01 days with a mean charge of $13,929 (1999 dollars). (Abt 2000)

13) Hospital charge cost only. Mean hospital stay is 5.44 days with a mean charge of $17,794 (1999 dollars). (Abt 2000)

14) Hospital charge cost only. Mean hospital stay is 3.03 days with a mean charge of $6,303 (1999 dollars). (Abt 2000)

15) The average asthma ER visit cost is $299 (1999 dollars). (Abt 2000)

16) The median per-day income of California residents in the year 2000 was $180. (US Census 2002)

Who's Against Clean Air?

Lobbyists for the petrochemical industry, automakers and engine manufacturers have mounted a major campaign against the PM standards proposed by the Air Resources Board and Office of Environmental Health Hazard Assessment. The dirty-air lobby includes the Alliance of Auto Manufacturers, representing 13 U.S. and international automakers; Western States Petroleum Association, representing 36 oil companies; and the Engine Manufacturers Association, representing 27 companies. Individual corporations include ExxonMobil, General Electric and BP (formerly British Petroleum) ranked by *Forbes* as the second, third and fourth most powerful corporations in the world.

Oil companies and automakers opposed to cleaner air gave Gov. Davis $175,000 in the current election cycle.

According to records filed with the California Secretary of State, 22 industry associations and individual companies opposed to tougher particulate standards spent more than $7.5 million in 2001 on lobbying at the State Capitol. (Table 10.) Most of these associations and companies have full-time lobbyists in Sacramento or are represented by one or more lobbying firms, some of whom employ whole teams of lobbyists. Their lobbying activity is in addition to hundreds of thousands of dollars in campaign contributions to state politicians made by the associations and companies each year. Just three members of the Western States Petroleum Association – BP, Occidental Petroleum and Chevron Texaco-- collectively gave $175,000 to Gov. Gray Davis in 2000-2001. (Cal-Access 2002.)

The truth behind the smokescreen

Here's a sampling of their arguments against cleaner air, and the truth behind the smokescreen:

- The Alliance of Auto Manufacturers and Engine Manufacturers Association claim the proposed tougher standards will not "result in any greater protection of public health than the current California standards." (AAM 2002.) But the peer-reviewed risk assessment by state scientists found that attaining the "recommended standards would result in a reduction of . . . about 3 percent of all mortality in the population above age 30." (ARB/OEHHA 2001.)

- According to the Western States Petroleum Association, "as much or more public health benefit would be gained from uniform reduction targets than from a single statewide standard." (WSPA

2002.) But because the heaviest particulate pollution is found in lower-income communities of color, such a policy would perpetuate existing environmental inequities"– as if people who live in highly polluted areas have less right to clean air.

- Ford Motor Co. says the proposed standards are "impossibly stringent . . . with practically no hope of attainment." (Ford 2002.) It is hard to take this claim seriously when the auto industry's estimates of the cost of complying with other recent air quality regulations have been inflated by a factor of 14. (Browner 1997.)

Residents of communities of color, who are more likely to breathe dangerous levels of particulate pollution, would benefit most from cleaner air.

The attack on California's proposed particulate standards is a rerun of the same special interests' efforts to derail tough standards at the federal level.

In 1996, the U.S. EPA proposed for the first time to regulate PM2.5, after research had shown strong links between fine particles and death. The EPA proposed to cut allowable levels of PM2.5 in half, saving an estimated 35,000 lives a year nationwide. In California those standards would have saved an estimated 2,500 lives. In reviewing the EPA's 1997 proposal, the Air Resources Board went further, recommending an even tougher PM2.5 standard that would have saved an estimated 3,000 to 4,000 additional lives in the state.

Even before the EPA and ARB announced their proposals, more than 650 industry associations and companies banded together as the Air Quality Standards Coalition. The coalition included the National Association of Manufacturers, American Petroleum Institute, American Automobile Manufacturers Association, Chemical Manufacturers Association, Edison Electric Institute, National Mining Association, American Forest and Paper Association, and American Trucking Association.

Goodbye to barbecues?

The coalition spent $1.5 million on a nationwide lobbying and misinformation campaign, and millions more on industry-funded "sound science" to undermine the peer-reviewed science relied on by the EPA. They spread exaggerated claims about how the proposed standards would impact the American way of life –for example, forcing an end to backyard barbecues. (Skrzycki 1996) A fake "grassroots" group called Citizens for a Sound Democracy targeted African-Americans and Latinos, warning that the cost of new standards was too high for small minority-owned businesses. (Washington Post 1996.)

To the contrary, in 1997 EWG found that residents of communities of color in California would benefit the most from tougher PM standards, because people in communities of color were nearly three times more likely to breathe dangerous levels of PM pollution than Californians living in predominantly white communities. Based on then-current population and pollution data, residents of communities of color had a 54 percent chance of breathing unsafe levels of particulates, compared to a 19 percent chance for predominantly white communities. (EWG 1997a.)

After the standards were adopted by the Clinton Administration, the American Trucking Association challenged them in court, claiming that EPA had overstepped its authority in setting the regulations and that the agency should consider the cost of compliance as well as the benefits to public health. ATA's arguments were dismissed by the U.S. Supreme Court in 2001. The ruling stated that the law clearly established the agency's right to set standards and that the Act "unambiguously bars cost considerations." But the Supreme Court also sent parts of the case back to the U.S. Court of Appeals for clarification. In March 2002 the appeals court affirmed its ruling that "EPA must err on the side of caution – setting the [standards] at whatever level it deems necessary and sufficient to protect the public health with an adequate margin of safety, taking into account both the available evidence and the inevitable scientific uncertainties."

The unanimous appeals court ruling ended five years of counterattack by the opponents of cleaner air. In that period, according to EPA's estimates, 175,000 Americans died from PM pollution whose lives would have been saved or extended if air quality goals represented by the proposed standards had been achieved.

Table 10. Opponents of new PM standards spent almost $7.5 million to lobby against cleaner air in 2001.

	Lobbying Expenditures 2001	Contributions to Gov. Davis, current election cycle
Western States Petroleum Association	$2,137,100	
BP America	$1,253,634	$80,000
Chevron Texaco	$760,456	$35,000
General Motors Corporation	$549,434	
Equilon Enterprises	$521,600	
Ford Motor Company	$418,742	
Phillips Petroleum	$396,143	
General Electric	$255,774	
Nuevo Energy Company	$174,207	
Alliance of Automobile Manufacturers, Inc.	$161,790	
Aera Energy LLC	$151,466	
Occidental Petroleum	$135,225	$60,000
Ultramar Diamond Shamrock Corp.	$120,983	
Exxon Mobil	$112,937	
Toyota Motor Sales, U.S.A., Inc.	$85,673	
DaimlerChrysler Corporation	$51,213	
Kinder Morgan Energy Enterprises	$44,921	
Caterpillar Inc.	$41,735	
Deere and Company	$36,348	
Nissan North America	$25,156	
Venoco Inc.	$3,000	
TOTAL	$7,437,537	$175,000

Source: Compiled from lobbying and campaign finance reports as filed with the California Secretary of State. Available at http://CAL-ACCESS.ss.ca.gov

References

Ackermann-Liebrich U, L Philippe, J Schwartz, C Schindler, C Monn, G Bolognini, JP Bongard, O Brandli, G Domenighetti, S Elsasser, L Grize, W Karrer, R Keller, H Keller-Wossidlo, N Kunzli, BW Martin, TC Medici, AP Perruchoud, MH Schoni, JM Tschopp, B Villiger, B Wuthrich, JP Zellweger, and E Zemp. 1997. Lung function and long term exposure to air pollutants in Switzerland. Study on Air Pollution and Lung Diseases in Adults (SAPALDIA) Team. Am J Respir Crit Care Med. 155(1):122-9.

Abbey DE, BE Ostro, F Petersen, and RJ Burchette. 1995a. Chronic respiratory symptoms associated with estimated long-term ambient concentrations of fine particulates less than 2.5 microns in aerodynamic diameter (PM2.5) and other air pollutants. J Expo Anal Environ Epidemiol 5(2):137-59.

Abbey DE, BE Ostro, G Fraser, T Vancuren, and RJ Burchette. 1995b. Estimating fine particulates less than 2.5 microns in aerodynamic diameter (PM 2.5) from airport visibility data in California. J Expo Anal Environ Epidemiol 5:161-80.

Abt. Associates, Inc. 2000. The Particulate-Related Health Benefits of Reducing Power Plant Emissions. Prepared for Clean Air Task Force. Bethesda, MD.

Air Resources Board. 2001. The 2001 California almanac of emissions and air quality. ARB Planning and Technical Support Division. Draft. November 30, 2001. California Environmental Protection Agency.

Air Resources Board. 2000. 2000 Emission Inventory. http://www.arb.ca.gov/emisinv/emsmain/ emsmain.htm.

Air Resources Board. 2000. Risk Reduction Plan for Diesel PM Emissions. Draft. July 13 2000.

Air Resources Board and Office of Environmental Health Hazard Assessment. 2000. Adequacy of California's Ambient Air Quality Standards: Senate Bill 25 – Children's Environmental Health Protection. Draft. Sept. 12, 2000

Air Resources Board and Office of Environmental Health Hazard Assessment. 2001. Review of the California Ambient Air Quality Standards for Particulate Matter and Sulfates. Report to the Air Quality Advisory Committee.

Alliance of Auto Manufacturers. 2002. Review and critique of CalEPA November 30, 2001 Public Review Draft. Jan. 10, 2002.

Avol EL, WJ Gauderman, SM Tan, SJ London, JM Peters. 2001. Respiratory effects of relocating to areas of differing air pollution levels. Am J Respir Crit Care Med. 164 (11):2067-72.

Braun-Fahrlander C, U Ackermann-Liebrich, J Schwartz, HP Gnehm, M Rutishauser, HU Wanner. 1992. Air pollution and respiratory symptoms in preschool children. Am Rev Respir Dis. 145(1):42-7

Browner, C. M. 1997. Oral Testimony of Carol M. Browner, 'Administrator, US Environmental Protection Agency, before the Senate Committee on Environment and Public Works. February 12, 1997.

California Department of Health Services. 1999. Major causes of death and death rates by race/ethnicity. Table 5-11. Center for Health Statistics. http://www.dhs. cahwnet.gov/hisp/chs/OHIR/vssdata/1999 Data/ 99Ch5Excel/ 5-11-1999Pre.xls

Daniels MJ, F Dominici, JM Samet, SL Zeger. 2000. Estimating particulate matter-mortality dose-response curves and threshold levels: an analysis of daily time-series for the 20 largest US cities. Am J Epidemiol. 152(5): 397-406.

Delfino, RJ, RS Zeiger, JM Seltzer, and DH Street. 1998. Symptoms in pediatric asthmatics and air pollution: differences in effects by symptom severity, anti-inflammatory medication use and particulate averaging time. Environmental Health Perspectives. 106: 751-761.

Dockery DW, CA Pope III, X Xu, JD Spengler, JH Ware, ME Fay, et al. 1993. An association between air pollution and mortality in six US cities. New England Journal of Medicine. 329:1753-9.

Dye JA, JR Lehman, JK McGee, DR Winsettm, AD Ledbetter, JI Everitt, AJ Ghio, and DL Costa. 2001. Acute pulmonary toxicity of particulate matter filter extracts in rats: coherence with epidemiologic studies in Utah valley residents. Environmental Health Perspectives. 109 (Suppl 3): 395-403.

Environmental Working Group. 1997. Smokestacks and smokescreens. Big polluters, big profits and the fight for cleaner air. Washington, DC. www.ewg.org/reports/smoke

Environmental Working Group. 1997a. People of Color in California Breathe the Most Heavily Polluted Air. Washington, DC. www.ewg.org/reports/caminority/caminority.html

Ford Motor Company. 2002. Untitled comments on ARB/OEHHA Public Review Draft of Nov. 30, 2001. January 9, 2002.

Gauderman WJ, R McConnell, F Gilland, S London, D Thomas, E Avol, H Vora, K Berhane, EB Rappaport, F Lurmann, HG Margolis, and J Peters. 2000. Association between air pollution and lung function growth in southern California children. Am J Respir Crit Care Med. 162 (4 Pt 1):1383-90.

Gielen MH, SC van der Zee, JH van Wijnen, CJ van Steen, and B Brunekeef. 1997. Acute effects of summer air pollution on respiratory health of asthmatic children. Am J Respir Crit Care Med. 155:2105-8.

Grossi M. 2002. Officials pull Valley air plan Move is intended to avoid delay of road-project funds. The Fresno Bee. February 22, 2002.

Hoek G, DW Dockery, CA Pope III, LM Neas, W Roemer, and B Brunekreef. 1998. Association between PM10 and decrements in peak expiratory flow rates in children: reanalysis of data from five panel studies. Eur Respir J. 11:1307-11.

Hruba F, E Fabianova, K Koppova, JJ Vandenberg. 2001. Childhood respiratory symptoms, hospital admissions, and long-term exposure to airborne particulate matter. J Expo Anal Environ Epidemiol. 11(1):33-40.

Krewski D, R Burnett, MS Goldberg, K Koover, J Siemiatycki, M Jerrett et al. 2000. Reanalysis of the Harvard Six Cities Study and the American Cancer Society Study of Particulate Air Pollution and Mortality. Res Rep Health Eff Inst (A special report of the Institute's Particle Epidemiology Reanalysis Project).

Laden F, LM Neas, DE Dockery, and J. Schwartz. 2000. Association of fine particulate matter from different sources with daily mortality in six US cities. Environmental Health Perspectives. 108 (10): 941-947.

Loomis D, M Castillejos, DR Gold, W McDonnell, and VH Borja-Aburto. 1999. Air pollution and infant mortality in Mexico City. Epidemiology. 10(2):118-23.

Linn WS, Y Szlachcic, H Gong Jr., PL Kinney, and R Zweidinger. 2000. Air pollution and daily hospital admissions in metropolitan Los Angeles. Environmental Health Perspectives. 108:427-34.

Mannino DM, DM Homa, CA Pertowski, A Ashizawa, LL Nixon, CA Johnson, LB Ball, E Jack, and DS Kang. 1998. Surveillance for asthma—United States, 1960-1995. Mor Mortal Wkly Rep CDC Surveill Summ. 47(1):1-27.

Moolgavkar, S.H. 2000a. Air pollution and daily mortality in three US counties. Environmental Health Perspectives. 108(8): 777-84.

Moolgavkar, S.H. 2000b. Air pollution and hospital admissions for diseases of the circulatory system in three US metropolitan areas. Journal of the Air & Waste Management Association 50: 1199-1206.

Ostro, B, M Lipsett, J Mann, H Braxton-Owens and M White. 2001. Air pollution and exacerbation of asthma in African-American children in Los Angeles. Epidemiology 12(2): 200-208.

Ostro BD, L Chestnut, V Nuntavarn, and L Adit. 1999. The impact of particulate matter on daily mortality in Bangkok, Thailand. Journal of the Air & Waste Management Association 49:100-7.

Ozkaynak H and GD Thurston. 1987. Associations between 1980 U.S. mortality rates and alternative measures of airborne particle concentration. Risk Anal. 7:449-461.

Pope CA III. 2000. Epidemiology of fine particulate air pollution and human health: biologic mechanisms and who's at risk? Environmental Health Perspectives. 108(Supp 4): 713-23.

Pope CA. 1989. Respiratory disease associated with community air pollution and a steel mill, Utah Valley. Am J Public Health. 79: 623-628.

Pope CA III, MJ Thun, MM Namboodiri, DW Dockery, JS Evans, Fe Speizer et al. 1995. Particulate air pollution as a predictor of mortality in a prospective study of US adults. Am J Respir Crit Care Med. 151:669-74.

Pope CA III and DW Dockery. 1992. Acute health effects of PM10 on symptomatic and asymptomatic children. Am Rev Respir Dis. 145: 1123-8.

Pope CA III, DW Dockery, J Spenglerf, ME Raizenne. 1991. Respiratory health and PM10 pollution- a daily time series analysis. American Review of Respiratory Diseases. 144:668-74.

Peters A, DW Dockery, JE Muller, and MA Mittleman. 2001. Increased particulate air pollution and the triggering of myocardial infaction. Circulation 103: 2810-5.

Peters JM, E Avol, WJ Gauderman, WS Linn, W Navidi, SJ London, H Margolis, E Rappaport, H Vora, H Gong, Jr, and DC Thomas. 1999. A study of twelve Southern California communities with differing levels and types of air pollution. II. Effects on pulmonary function. Am J Respir Crit Care Med. 159(3):768-75.

Raizenne, M., L.M. Neas, A.I. Damokosh, D.W. Dockery, J.D. Spengler, P. Koutrakis, J.H. Ware, and F.E. Speizer. 1996. Health symptoms of acid aerosols on North American children: Pulmonary function. Environmental Health Perspectives 104(5): 506-514.

Ritz, B, F Yu, G Chapa, and S Fruin. 2000. Effect of air pollution on preterm birth among children born in Southern California between 1989 and 1993. Epidemiology 11(5): 502-511.

Samet JM, SL Zeger, F Dominici, F Curriero, I Coursac, DW Dockery et al. 2000. The national morbidity, mortality, and air pollution study. Part II: Morbidity

and mortality from air pollution in the United States. Res Rep Health Eff Inst (94 Pt 2):5-79.

Schwartz J. 2001a. Air pollution and blood markers of cardiovascular risk. Environmental Health Perspectives. 109(Suppl 3): 405-9.

Schwartz J. 2001b. Is there harvesting in the association of airborne particles with daily deaths and hospital admissions? Epidemiology. 12(1):55-61.

Schwartz J. 2000. Harvesting and long term exposure effects in the relationship between air pollution and mortality. Am J Epidemiology. 151:440-8.

Sheppard, L., D. Levy, G. Norris, T. Larson, and J. Koenig. 1999. Effects of ambient air pollution on nonelderly asthma hospital admissions in Seattle, WA, 1987-1994. Epidemiology 10(1): 23-30.

U.S. Census Bureau. 2000. Income 2000. Median Household Income by State. http://www.census.gov/hhes/income/income00/statemhi.html

U.S. Environmental Protection Agency. 1996. Review of the National Ambient Air Quality Standards for Particulate Matter: Policy Assessment of Scientific and Technical Information: OAQPS staff paper. Office of Air Quality Planning and Standards, Research Triangle Park, NC, EPA-452\R-96-013.

Ware, JA. 2000. Particulate air pollution and mortality- Clearing the air. The New England Journal of Medicine. 343(24): 1798-1799.

Western States Petroleum Association. 2002. Comments on the California Environmental Protection Agency November 30, 2001 draft report. A report to the Western States Petroleum Association [from] Exxon Mobil Biomedical Sciences, Inc. Jan. 11, 2002.

Whitman, David. 2001. Fields of Fire. U.S. News & World Report, September 3, 2001.

Yu O, L Sheppard, T Lumley, JQ Koenig, and GG Shapiro. 2000. Effects of ambient air pollution on symptoms of asthma in Seattle-area children enrolled in the CAMP study. Environmental Health Perspectives. 108(12): 1209-14.

Zemp, E, S Elsasser, C Schindler, N Kunzli, AP Perruchoud, et al. 1999. Long-term ambient air pollution and respiratory symptoms in adults (SAPALDIA Study). Am J. Respir. Crit. Care Med. 159: 1257-1266.

Nitrogen Deposition Effects on Coastal Sage Vegetation of Southern California[1]

Edith B. Allen,[2] Pamela E. Padgett,[2] Andrzej Bytnerowicz,[3] Richard Minnich[4]

Abstract

*The coastal sage scrub (CSS) vegetation of southern California has been declining in land area and in shrub density over the past 60 years or more, and is being replaced by Mediterranean annual grasses in many areas. Although much of this loss is attributable to agriculture, grazing, urbanization and frequent fire, even protected areas have experienced a loss in native shrub cover. Nitrogen (N) deposition has not previously been examined as a contributor to CSS decline, but up to 45 kg/ha/yr are deposited in the Los Angeles Air Basin. Several mechanisms were examined by which atmospheric N deposition might affect the shrubs and promote growth of weeds. Field nitrogen fertilization studies at sites of high and low deposition showed that most of the abundant native and introduced species had increased growth after fertilization in the low deposition site, but in a high deposition site only one weedy species, small-podded mustard (*Brassica geniculata *(Desf.) J. Ball), responded to N fertilization. Greenhouse studies showed that both shrubs and weeds had high plasticity in their growth response to N fertilizer, an unexpected result for the shrubs. Preliminary competition studies indicated there was no change in the relative competitive ability of the shrubs or grasses after fertilization. However, negative effects of high N have been detected on the growth and survival of the shrubs. Greenhouse grown California sagebrush (*Artemisia californica *Less.) began to senesce at 6 to 9 months when fertilized with 50 µg N/g soil. This soil N concentration corresponds to extractable N levels in polluted sites, while levels are typically less than 10 µg/g in unpolluted sites. Another source of damage to plants can be cuticular lesions caused by nitric acid, but how nitric acid affects CSS leaves is unknown. Fumigation of pine needles with high ambient levels of nitric acid caused cuticular lesions and stomatal collapse, as well as modifications to nitrogen assimilation pathways. The preliminary evidence suggests that CSS vegetation may decline due to elevated nitrate levels in the soil, and additional studies are need to test effects of ambient nitric acid on CSS leaves.*

Introduction

The coastal sage scrub (CSS) vegetation of southern California has been declining in land area and in shrub density over the past 60 years or more, and is being replaced by Mediterranean annual grasses (Davis 1994, Freudenberger and others 1987, Minnich and Dezzani [In press], O'Leary and others 1992, Zink and others 1995). Although much of this loss is attributable to agriculture, grazing, urbanization and frequent fire, even protected areas have experienced a substantial loss in native shrub cover (Minnich and Dezzani [In press]). Nitrogen (N) deposition has not previously been examined as a contributor to CSS decline, but up to 45 kg/ha/yr are deposited in the Los Angeles Air Basin (Bytnerowicz and Fenn 1996). Nitrogenous compounds in polluted air affect even those tracts of land that have been set aside as reserves, which are in many cases surrounded by urbanization in southern California (O'Leary and others 1992). The coastal sage scrub is of particular interest to conservationists because it supports some 200 sensitive plant species and several federally listed animal species (DiSimone 1995, O'Leary 1989). We need to understand how to manage lands that are influenced by urban air pollution, and whether the biotic communities of these lands can be preserved.

Nitrogen deposition is known to cause vegetation type conversions in other countries, notably the Netherlands (Bobbink and Willems 1987), which have up to 85 kg/ha/yr of N deposited, the highest measured in the world. Nitrogen deposition to reserves is a conservation problem in the Netherlands, where heathlands and species-rich pastures are turning into species-poor grasslands (Asman and others 1989, Bobbink and Willems 1987). The high rates of N deposition in southern California have caused increased soil fertility and surface litter decomposition rates in mixed conifer forests (Fenn 1991), but less is known about

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vegetation change with elevated N deposition in this region. The coniferous forests of the San Bernardino Mountains exhibit symptoms of N saturation, such as high N:P ratios in leaf tissue, high soil N, high rates of N loss from the ecosystem, and others (Fenn and others [In press]). If the relatively productive forests of the Los Angeles Air Basin are N-saturated, then less productive vegetation such as CSS that is receiving similar levels of deposition would also surely be saturated. Less productive vegetation may become N saturated more rapidly than highly productive vegetation because the ratio of deposited N to plant biomass is greater, as suggested by Aber and others (1989, 1992) concept of anthropogenic nitrogen saturation. In addition, long-lived trees may respond less rapidly than shorter-lived shrubs, so we may expect to see a more rapid response in vegetation change in CSS than in nearby forests.

Here we examine the mechanisms by which deposited nitrogen might cause CSS shrubs to be replaced by Mediterranean annual grasses. We present three hypotheses with preliminary data to explain how nitrogen deposition may affect CSS species. Stated in the null form they are 1) CSS shrubs are equally plastic in their growth response to N as are introduced grasses, 2) CSS shrubs are equally competitive as the grasses after N fertilization, and 3) CSS shrub growth and mortality are not affected by high N levels.

Effects of N Deposition on Coastal Sage Scrub Vegetation

We have done series of field and greenhouse experiments on the effects of N deposition on CSS species. The field experiments were done along a gradient of atmospheric N concentrations, using one site with relatively high and another with relatively low N air concentrations for intensive measurements (*fig. 1*). The high deposition site is at Box Springs Mountain near the University of California, Riverside at an elevation of 670 m, and the low deposition site is some 60 km to the south at the Lake Skinner Reserve, elevation 540 m. Longterm climate data are not available at either site, but the city of Riverside, adjacent to Box Springs Mountain, receives 280 mm precipitation annually. We are still working out the actual deposition rates, which are likely lower than the estimated high values of 30 kg N/ha and more recently 45 kg N/ha at Camp Paivika on the western end of the

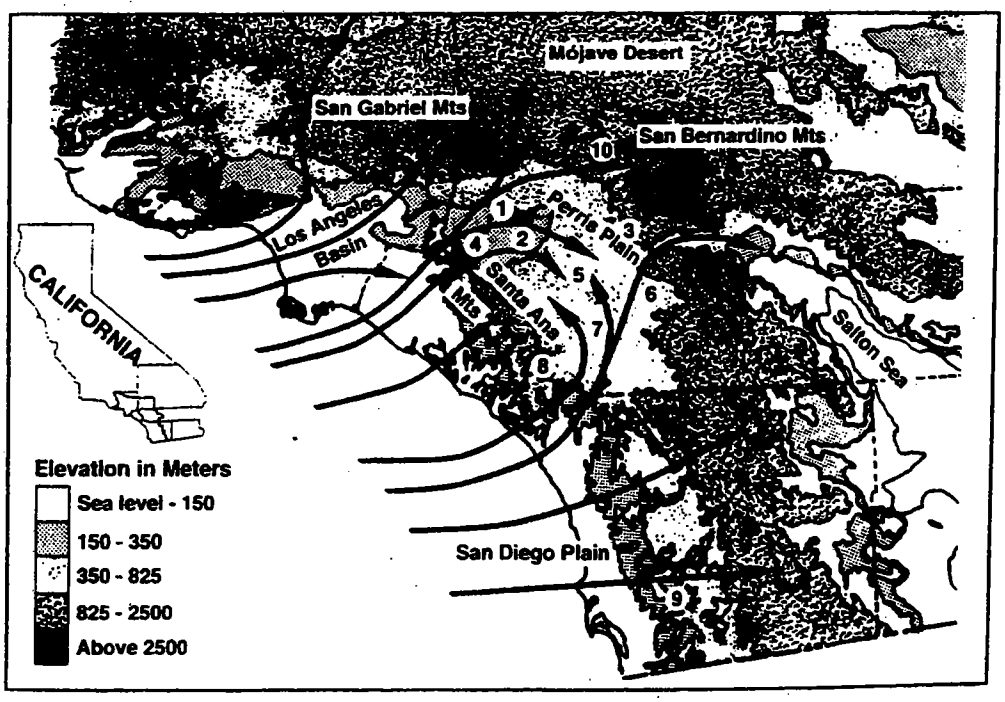

Figure 1 — Sample sites on the Perris Plain referenced in the text. The site of highest measured N deposition is Camp Paivika (10) and the site with lowest air concentrations is (9) at Mission Trails Park in San Diego. Arrows show air flow patterns, with polluted air flowing inland from Los Angeles and cleaner air flowing inland from other coastal sites. A convergence zone of polluted and clean air occurs in the middle of the Perris Plain.
1 = Jurupa Hills,
2 = Mockingbird Reservoir,
3 = Box Springs Mountain,
4 = Lake Matthews,
5 = Motte Rimrock Reserve,
6 = Simpson Park in Hemet,
7 = Lake Skinner,
8 = Santa Margarita Ecological Reserve,
9 = Mission Trails Park in San Diego,
10 = Camp Paivika, San Bernardino Mountains.

San Bernardino Mountains (Bytnerowicz and Fenn 1996, Fenn and Bytnerowicz 1993). Peak air concentrations were measured with an annular denuder system in August, 1994 as 31.0 μg/m³ NO_3^- plus 8.6 μg/m³ NH_4^+ at Box Springs Mt., and 13.9 μg/m³ NO_3^- and 3.9 μg/m³ NH_4^+ at the Lake Skinner Reserve (*fig. 2*). Sulfur was relatively low across the gradient, as is the case in other western air pollution measurements (Bytnerowicz and others 1987). The vegetation at both sites is CSS, with a higher proportion of introduced grasses on Box Springs Mountain than at Lake Skinner (Minnich and Dezzani [In press]). Both sites are on granitic soils. Additional sites were used for less intensive measurements.

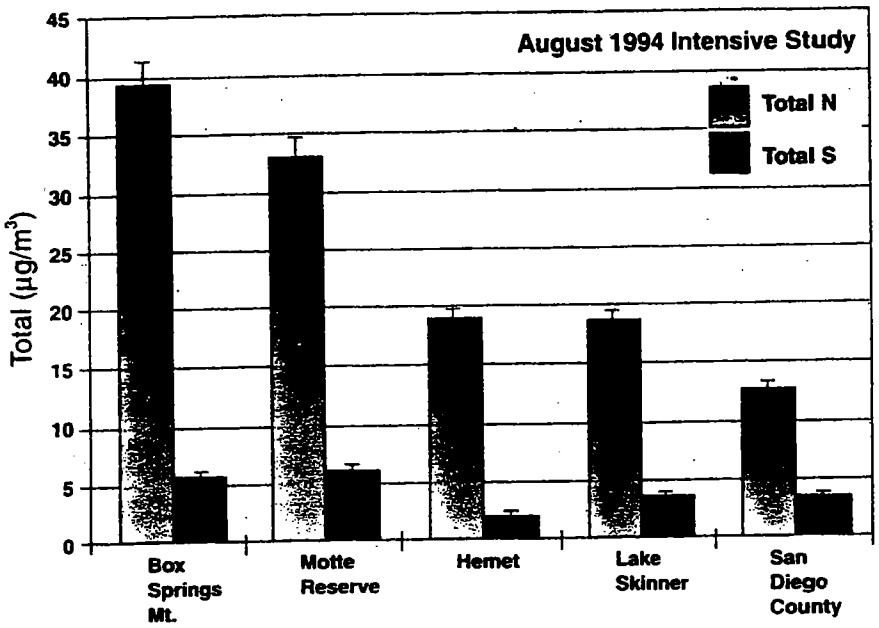

Figure 2 — Nitrogen (NO_3^--N and NH_4^+-N) and total S (SO_4^{2-}-S) concentrations in the atmosphere at five sites representing a gradient of air pollution from Box Springs Mountain in Riverside and southward to San Diego during August 1994. Location of sites is shown in *figure 1*.

In addition to air measurements, soil samples were taken along the gradient of pollution that also included sites to the northwest of Box Springs Mountain (*fig. 3*). The top 2 cm of soils of the Jurupa Hills had as much as 86 μg/g of extractable N in the form of nitrate plus ammonium (*fig. 3*), with nitrate predominating at the more polluted sites. Box Springs Mountain had 44 μg/g, and Lake Skinner had 8 μg/g of extractable N. These soils were collected in September during the dry season, when soil N accumulates because plants have senesced and are no longer taking up N. The soil N measurements confirm the gradient of N pollution by showing that the soils also accumulate N. We do not yet know if the soil N is higher because of accumulated N deposition, or because of increased mineralization that is induced by N deposition (Fenn and Dunn 1989). However, such high concentrations of N in the soil are likely to affect the plant community, which at each of these sites is CSS with an understory of annual grasses. At some sites, such as Box Springs Mountain and the Jurupa Hills, the annual grasses have become dominant with interspersed patches of shrubs. We explore the mechanisms to explain how the vegetation may change from shrubland to grassland after N deposition.

Plasticity Hypothesis

For one species to replace another in a high N soil, it must have a greater response to N, or in other words be more plastic in response to changes in resources (Jennings and Trewavas 1986). To test this hypothesis, we did N fertilization experiments in the field and the greenhouse. In the field, we fertilized plots at the Box Springs Mountain and the Lake Skinner sites. Both sites had burned in November 1993, and the fertilizer treatments included both burned and unburned vegetation. Each site had ten 5 by 5 m² plots and N was applied at a rate of 60 kg N/ha as NH_4NO_3 in two doses of 30 kg/ha each in February and March, 1994. Plant response was

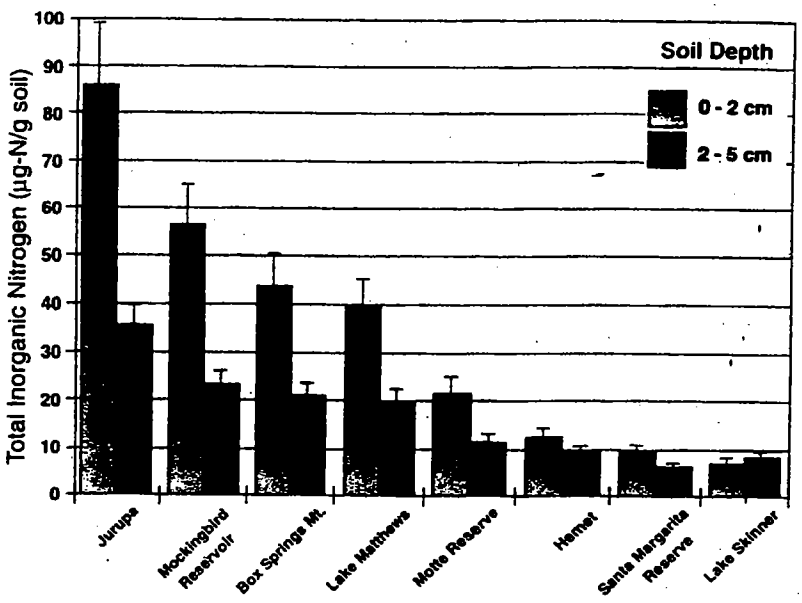

Figure 3 — Extractable soil nitrogen (NO_3^--N and NH_4^+-N) from sites on a nitrogen gradient in September 1995. Soil cores were divided into the upper 2 cm and lower 2 to 5 cm. Location of sites is shown in *figure 1*.

evaluated in May using non-destructive percent cover data. The unburned plots did not respond to fertilizer at either site with one exception described below, so results of fertilization trials are shown only from the burned plots (*table 1*).

At Box Springs Mountain only one introduced forb, small-podded mustard (*Brassica geniculata* [Desf.] J. Ball), responded significantly to N fertilizer on the burned plots, and this was also the only species that responded on the unburned plots (data not shown, but small-podded mustard increased from 17 to 29 percent after N fertilization on unburned plots). None of the other introduced grasses and none of the native species responded significantly at Box Springs Mountain in the burned plots (*table 1*). The introduced grasses included species in the genera wild oats (*Avena*), brome (*Bromus*), fescue (*Vulpia*) and split grass (*Schismus*), while the native species included a diverse mixture of some 70 species.[5] By contrast, at Lake Skinner almost all of the categories of species, both native and introduced, responded to fertilizer, with the exception of the introduced forbs (*table 1*). Small-podded mustard occurred infrequently at Lake Skinner, with < 5 percent cover. The total percent vegetative cover was greater in fertilized plots at both sites, but was higher overall at Box Springs Mountain. These results suggest that the plants are N deficient at Lake Skinner, and N saturated at Box Springs Mountain, with the exception of small-podded mustard, which continued to grow and take up N after fertilization. Leaf tissue N of small-podded mustard increased from 3.2 percent to 4.2 percent after fertilization. This suggests that small-podded mustard may be one of the "winners" in the high N deposition zones, as it can take advantage of additional N, even when soil N is already high. The results from the Lake Skinner site suggest that both native and introduced species are plastic in their responses to N, whereas our original hypothesis was that only the introduced species would be highly responsive to N, or "nitrophilous."

The responses in the field may have been influenced by a number of factors, especially competition in a complex community. To understand the responses of native and weedy plants under more controlled conditions, we performed greenhouse N fertilizer trials of monocultures of three introduced annuals (wild oats [*Avena fatua* L.], red brome [*Bromus rubens* L.], and small-podded mustard), and three native shrubs (California sagebrush (*Artemisia californica* Less.), brittle-bush (*Encelia farinosa* Gray.) and California buckwheat (*Eriogonum fasciculatum* Benth.). The plants were grown in 3.5l pots in native soil amended with 0, 10, 50 and 100 µg/g of N as NH_4NO_3. The soil was collected from the Motte Reserve after scraping off the top 5 cm of soil. After 4 month's growth in the greenhouse, the native shrubs were just as plastic in their responses to N as were the introduced

[5] Unpublished data on file. Department of Botany and Plant Sciences. University of California. Riverside.

annuals (*figs. 4 and 5*). In fact, the annuals tended to saturate at 50 µg/g, while the shrubs had continued increased growth to 100 µg/g. This was an unexpected result, as native wildland species are typically thought to have low responses to nutrient additions compared to weeds and crop plants (Chapin 1980). Clearly the native shrubs are adapted to rapid growth during the brief 4 to 6 month rainy period, at which time they likely take up nutrients as rapidly as possible. The growth period is brief in Mediterranean climates, which have a moist winter and spring but the other seasons are dry. However, in an unpolluted situation, the loading of available N in the soil would not be as great as after N deposition. Our field observations showed that available N built up as high as 86 µg/g in the upper 2 cm of soil (*fig.* 3) during the dry season, an amount that would be available to newly growing seedlings at the beginning of the next rainy season. Both the native shrubs and the introduced grasses are apparently able to take advantage of this high soil N.

These results were unexpected and not only confound our notions of how plants behave in the wild (the paradigm states they should have slow rates of nutrient uptake and growth), the results also do not explain why N deposition would shift the vegetation from a shrub-dominated to a grass-dominated type. An alternative hypothesis is that competition for N occurs between the grasses and shrubs that is skewed in favor of the grasses.

Table 1 — Percent cover of vegetation in nitrogen fertilized and unfertilized treatments in burned plots at the high N (Box Springs) and low N (Lake Skinner) deposition sites.

Species	BOX SPRINGS N Fert.	BOX SPRINGS No N		LAKE SKINNER N Fert.	LAKE SKINNER No N	
Brassica geniculata	17.1	9.0	(1)	0.0	0.0	n.s.
Bromus rubens	15.6	13.5	n.s.[2]	4.5	2.0	P = 0.07
Other exotic grasses	20.1	14.7	n.s.	10.5	4.2	(1)
Other exotic forbs	27.5	26.3	n.s.	19.8	18.9	n.s.
Native forbs	20.7	19.2	n.s.	37.5	22.7	(1)
Native shrubs	0.0	0.1	n.s.	11.1	4.9	(1)

1 Significantly different using a t-test at $P < 0.05$.

2 n.s.=not significantly different.

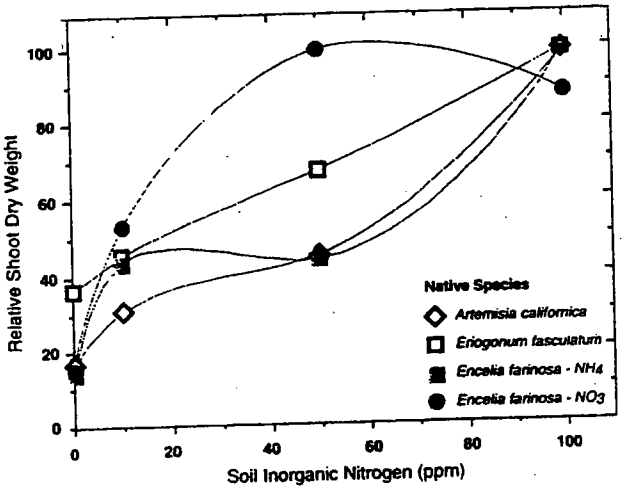

Figure 4 — Relative shoot dry weight of three native shrub species subjected to levels of 0, 10, 50, and 100 µg/g N as NH_4NO_3 in the soil after 4 months of growth. In the case of brittle- bush (*Encelia farinosa*), N was added either as NH_4Cl or as $Ca(NO_3)_2$.

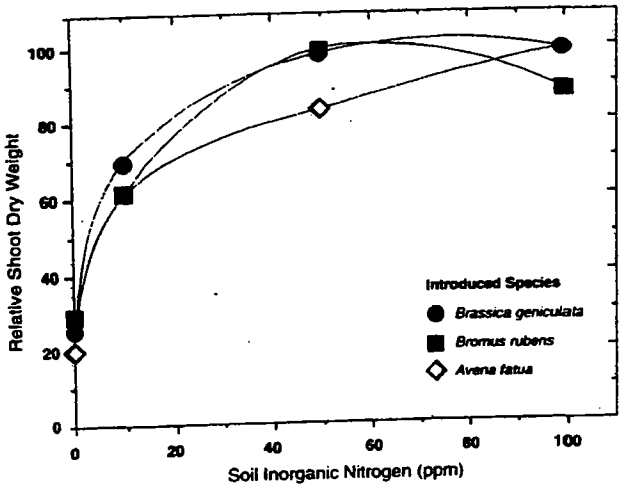

Figure 5 — Relative shoot dry weight of three introduced weed species subjected to levels of 0, 10, 50, and 100 µg/g N as NH_4NO_3 in the soil after 4 months of growth.

Competition Hypothesis

To determine whether N shifts the competitive balance between the grasses and shrubs, we initiated a competition experiment in a patch of introduced grassland that was once dominated by CSS species. This research was done at the Motte Rimrock Reserve about 24 km south of Riverside and intermediate in nitrogen deposition to the Box Springs and Lake Skinner sites. In a blocked experimental design we weeded grasses from ten, 1.2 m^2 plots and left an additional ten plots as controls dominated by the introduced grasses red brome and foxtail fescue (*Vulpia megalura* Rydb.) A few introduced forbs were also present, mainly species of storksbill (*Erodium*), but few native species. One-half of the cleared plots and one-half of the grassy plots were fertilized with two doses of NH_4NO_3 at the rate of 30 kg N/ha each time in spring 1995. Nine seedlings of California sagebrush were planted in each of the plots in a 2 by 2 factorial design to test two levels of N (0 and 60 kg/ha) and two levels of competition (with and without grasses) on the growth of California sagebrush. The seedlings were spaced 30 cm apart, so they did not interfere in aboveground growth during the first growing season. Because we did not wish to harvest seedlings during the first year, we did non-destructive measurements of height and width to calculate shrub volume. Volume was calculated by assuming that the shape of California sagebrush is spheroid.

The grass competition proved overwhelming for California sagebrush, which had only about one-ninth the volume in the grass plots compared to the cleared plots, with or without N fertilizer (*fig. 6*). Nitrogen did not shift the balance of competition in favor or against California sagebrush, it only increased the growth of California sagebrush with and without grass competition. Increased growth of California sagebrush after fertilization should be a benefit, if this means that it can survive competition from the grasses. But in fact most of the California sagebrush seedlings in grass plots died during the normal summer drought that followed these measurements, while many survived in the cleared plots. With or without N the seedlings that experienced grass competition were still tiny, and apparently not large enough, or with roots too shallow, to survive the summer drought. On the basis of this experiment, we cannot expect that areas with N deposition will have greater shrub seedling survival. In fact, we noted mortality of mature shrubs in areas of high N deposition, and proceeded to examine potential negative effects of N on shrub growth.

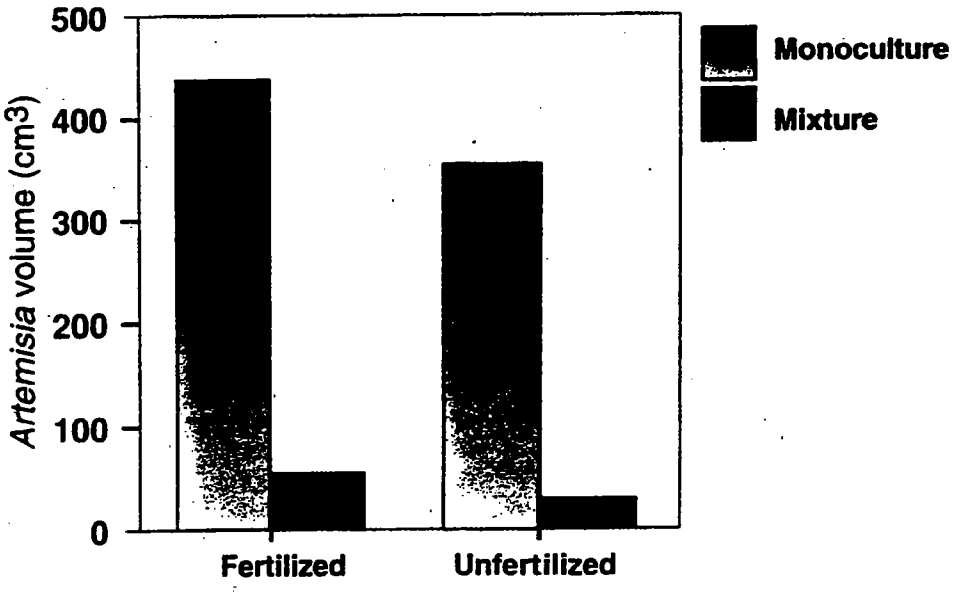

Figure 6 — Volume measurements of California sagebrush (*Artemisia californica*) in weeded (monoculture) and grassy (mixture) plots in the field after 3 months of growth, fertilized with 60 kg/ha N as NH_4NO_3 or unfertilized.

Negative Plant Response to Nitrogen Hypothesis

Because the plasticity and competition hypotheses did not explain why N might cause CSS decline, we continued to test alternative hypotheses. Shrubs in pollution-impacted urban areas have been dying, as can be seen by a walk through Box Springs Mountain County Park and other local reserves. Some 10 percent of the shrubs in the polluted areas that we marked for experimental purposes died during two growing seasons, but we did not experience shrub loss at the Lake Skinner site. We do not yet have an estimate of the rate of mortality on a larger scale, but Minnich and Dezzani [In press] have shown up to a 90 percent loss in shrub cover since the 1930's in urban areas of the Perris Plain (Riverside, California and southward). Shrub loss is lower in the more rural southern Perris Plain. They did their analyses from historic plots in CSS collected by the USDA Forest Service in the 1930's, which they resampled in 1993. Although they showed an increasing pattern of shrub loss toward the urban areas, some factors confounded the results, such as changes in soil type and CSS stand age since the most recent fire at the time of sampling.

Wellburn (1990) explained that N deposition may more frequently harm than fertilize plants, especially in the form of N oxides. We did a series of experiments to determine if elevated N levels might have negative effects on the shrubs. One was a greenhouse fertilization experiment with California sagebrush, where the seedlings were fertilized with 50 µg N/g as NH_4NO_3. Seeds were planted in a soil of low N, and after they were 3 to 4 months old they were fertilized with the 50 µg N/g soil. They were then fertilized every 2 months to maintain high soil N. During the first 6 months the seedlings grew rapidly, as was noted above. Senescence of individual branches at 6 months, and then complete mortality of all seven replicate plants between 6 and 9 months occurred. At 9 months, and even at 1 year, all of the plants that received low N fertilizer levels were still healthy. These negative effects are difficult to explain, as they appear to be a toxic effect. The soil N we maintained in the greenhouse was not as high as the highest levels we measured in the field, up to 86 µg/g in soils of polluted sites during the dry season. The greenhouse experiment was designed to maintain a concentration of 50 µg/g in the soil during the experiment, with two to three fertilizer additions during the 6 to 9 months. In the field, such a high level would build during the dry season and be maintained only until the beginning of the next rainy season. When vegetation begins to grow again in response to rain, the plants take up the available soil N, and our measurements showed that extractable soil N dropped to 10 µg/g even in the most polluted sites.[6] Leaching and denitrification might also remove some of the deposited N from the soil, although both of these are probably minor components of the N cycle in this semiarid shrubland. Such high levels of soil N were not maintained throughout the year, so high soil N would not cause as high a rate of shrub mortality in the field as in the greenhouse. But these results do suggest that, over time, high soil N may be a cause of shrub mortality.

The mechanisms by which shrub mortality occurred under high soil N is not known. Horticulturists have long known that native species from soils of low fertility will have short lifespans in a fertile garden, and advise that low fertilizer levels be used for native California shrubs (Keator 1994). We can discuss a number of alternative explanations for the adverse response of native shrubs to high N. It is likely that California sagebrush was taking up large quantities of N, because it has evolved only to take up this limiting nutrient in the soils, not to exclude it. The metabolic requirements for maintaining and detoxifying N in the tissues (NH_4^+ is toxic in high concentrations) may be expensive, and may lead to a shortened lifespan. Assimilation of NH_4^+ requires that carbon be shunted away from sugar synthesis into amino acid synthesis. This would leave a plant deficient in carbohydrates and consequently energy

[6] Unpublished data on file. Department of Botany and Plant Sciences, University of California, Riverside.

to carry out other biochemical functions. We plan to pursue research on this question, and currently are testing other species of CSS shrubs to determine if this direct effect is generalizable.

Atmospheric N not only causes increased soil N, it results in exposure of vegetation to elevated levels of gaseous and particulate forms of N that may be deposited on leaf surfaces and interact directly with them (Krywult and others 1996). Fumigation experiments have not yet been carried out on CSS species, but they have been done on ponderosa pine (*Pinus ponderosa* Dougl. ex Laws.) and black oak (*Quercus kelloggii* Newb.). Fumigation with ambient peak summer levels of nitric acid (50 $\mu g/m^3$) caused cuticular lesions and stomatal collapse. These adverse responses by leaf surfaces could result in reduced stomatal control and increased exposure of the leaf to other stresses. In addition, nitric acid fumigation caused induction of nitrate reductase and increases in amino acid levels in leaf tissue (Padgett and others 1995). These negative effects can only be postulated for CSS species until similar research is done. Because up to 90 percent of the leaves of CSS shrubs senesce in the summer, there are fewer opportunities for foliar interaction with airborne N at peak summer pollution levels. The CSS plants would be subject to lower spring airborne nitric acid levels.

Conclusions

The decline of CSS vegetation is caused by a combination of complex factors, beginning with direct destruction of CSS for agriculture and urban construction, possibly including past grazing, and also including increased fire frequency in lands that are adjacent to urban areas. But even when these effects are held constant by examining CSS natural reserves that have not been impacted, these shrublands are still declining. The lack of response of the vegetation at Box Springs Mountain to additional N fertilization suggests that it is already N saturated, one response that is cited by Aber and others (1989) as being an indicator of N saturation. However, two forms of air pollution, ozone and N compounds, are likely both central players in the Los Angeles Air Basin and the Perris Plain. We have not discussed ozone in this paper, although it may also play a role in CSS decline. Ozone is known to increase the mortality of conifers in the local mountain ranges (Bytnerowicz and Grulke 1992, Miller and others 1963). Westman (1990) hypothesized that ozone may also be a cause of CSS decline because it reduced the growth of well-watered seedlings in greenhouse experiments at simulated ambient summer concentrations (Stolte 1982). However, during peak summer air pollution conditions stomates of CSS shrubs are closed and many leaves have senesced. Spring ozone concentrations are relatively low, so ozone effects in the field are likely smaller than greenhouse experiments would suggest. The effects of ozone may not be as serious as previously thought in CSS vegetation. However, until our work began, all of the air pollution effects were attributed to ozone and none to N deposition on this vegetation type.

Our studies showed that the annual grasses that replace CSS vegetation are not more nitrophilous than the shrubs, as they have equal plasticity in response to N. However, one species we have tested to date, California sagebrush, suffers a 100 percent mortality rate in the greenhouse in fertilized soils with available N at levels that are no higher than field soils in polluted sites. We are currently conducting experiments with two additional shrub species, brittle-bush and California buckwheat. We have not seen similar results from studies on ozone that would show such a rapid mortality rate. Most studies on ozone report only decreased growth rates at ambient concentrations, not mortality. In addition, the study on toxic effects of nitric acid vapor on pine and oak leaves suggests that more studies of deposited N on CSS shrubs are

needed. Increased mortality of CSS shrubs in N-polluted areas may be a cause of CSS decline in the Los Angeles Air Basin. CSS may be the first vegetation type in the western United States that exhibits stage 3 symptoms of N saturation, which is defined as toxic effects on the vegetation (Aber and others 1989).

Acknowledgments

We thank Shiela Kee, Lucia Vasquez, and Lidia Yoshida for field assistance. This research was funded by National Science Foundation grant no. DEB-9408079 and USDA-National Research Initiative grant no. 9503036. We also thank Laurie Dunn for technical editing of this manuscript.

References

Aber, J. D. 1992. **Nitrogen cycling and nitrogen saturation in temperate forest ecosystems.** Trends in Ecology and Evolution 7: 220-223.

Aber, J. D.; Nadelhoffer, K. J.; Steudler, P.; J. M. Mellilo. 1989. **Nitrogen saturation in northern forest ecosystems: excess nitrogen from fossil fuel combustion may stress the biosphere.** BioScience 39: 378-386.

Asman, W. A. H.; Pinksterboer, E. F.; Maas, H. F. N.; Erisman, J. -W. 1989. **Gradients of the ammonia concentration in a natural reserve: model results and measurements.** Atmospheric Environment 23: 2259-2265.

Bobbink, R.; Willems, J. H. 1987. **Increasing dominance of *Brachypodium pinnatum* (L.) Beauv. in chalk grasslands: a threat to a species-rich ecosystem.** Biological Conservation 40: 301-314.

Bytnerowicz, A.; Fenn, M. E. 1996. **Nitrogen deposition in California forests: a review.** Environmental Pollution 92: 127-146.

Bytnerowicz, A.; Grulke, N. E. 1992. **Physiological effects of air pollutants on western trees.** In: Olson, R. K.; Binkley, D.; Böhm, M., eds. The response of western forests to air pollution. New York: Springer-Verlag; 183-233.

Bytnerowicz, A.; Miller, P. R.; Olszyk, D. M. 1987. **Dry deposition of nitrate, ammonium and sulfate to a *Ceanothus crassifolius* canopy and surrogate surfaces.** Atmospheric Environment 21: 1749-1757.

Chapin, F. S. III 1980. **The mineral nutrition of wild plants.** Annual Review of Ecology and Systematics 11: 233-260.

Davis, C. M. 1994. **Changes in succession after anthropogenic mechanical disturbance in coastal sage scrub.** San Diego, California. San Diego State University; 65 p. M.S. thesis.

DiSimone, S. 1995. **California's coastal sage scrub.** Fremontia 23: 3-8.

Fenn, M.E. 1991. **Increased site fertility and litter decomposition rate in high- pollution sites in the San Bernardino Mountains.** Forest Science 37: 1163-1181.

Fenn, M. E.; Bytnerowicz, A. 1993. **Dry deposition of nitrogen and sulfur to ponderosa and Jeffrey pine in the San Bernardino National Forest in southern California.** Environmental Pollution 81: 277-285.

Fenn, M. E.; Dunn, P. H. 1989. **Litter decomposition across an air-pollution gradient in the San Bernardino mountains.** Soil Science Society of America Journal 53: 1560-1567.

Fenn, M. E.; Poth, M. A.; Johnson, D.W. [In press]. **Evidence for nitrogen saturation in the San Bernardino Mountains in southern California.** Forest Ecology and Management.

Freudenberger, D. O.; Fish, B. E.; Keeley J. E. 1987. **Distribution and stability of grasslands in the Los Angeles basin.** Bulletin of Southern California Academic Sciences 86: 13-26.

Jennings, D. H.; Trewavas, A. J. 1986. **Plasticity in plants.** Cambridge: Symposia of the Society for Experimental Biology 40; 372 p.

Keator, G. 1994. **Complete garden guide to the native shrubs of California.** San Francisco, CA: Chronicle Books; 303 p.

Krywult, M.; Hom, J.; Bytnerowicz, A.; Percy, K. E. 1996. **Deposition of gaseous nitric acid and its effects on foliage of ponderosa pine (*Pinus ponderosa* Dougl ex Laws.).** In: Proceedings of the 16th international meeting for specialists in air pollution on forest ecosystems. 1994 September 7-9: Fredericton, Canada: Air Pollution and Multiple Stresses; 45-51.

Miller, P. R.; Parmeter, J. R. Jr.; Taylor, O. C.; Cardif, E. A. 1963. **Ozone injury to the foliage of *Pinus ponderosa*.** Phytopathology 53: 1072-1076.

Minnich, R. A.; Dezzani, R. J. [In press]. **Historical decline of coastal sage scrub in the Riverside-Perris Plain, California.** In: Scott, T. A.; Rotenberry, J. T., eds. Proceedings of the symposium on the California gnatcatcher. Studies in Avian Biology. Monograph Series. 1995 October 5-6; Cooper Ornithology Society.

O'Leary, J. F. 1989. **California coastal sage scrub: General characteristics and future prospects.** Crossosoma 15: 4-5.

O'Leary, J.; Murphy, D.; Brussard, P. 1992. **The coastal sage scrub community conservation planning region. Natural community conservation planning/coastal sage scrub.** Special Report No. 2. San Francisco: California Environmental Trust; 4 p.

Padgett, P. E.; Bytnerowicz, A.; Krywult, M. 1995. **Uptake and assimilation of atmospheric nitric acid gas.** Plant Physiology Supplement 108: [Abstract].

Stolte, K.W. 1982. **The effects of ozone on chaparral plants in the California South Coast Air Basin.** Riverside: University of California Riverside. 108 p. M.S. thesis.

Wellburn, A. R. 1990. **Why are atmospheric oxides of nitrogen usually phytotoxic and not alternative fertilizers?** New Phytologist 115: 395-429.

Westman, W. E. 1990. **Detecting early signs of regional air pollution injury to coastal sage scrub.** In: Woodwell, G. M., ed. The earth in transition: patterns and processes of biotic impoverishment. New York: Press Syndicate of the University of Cambridge; 323-345.

Zink, T. A.; Allen, M. F.; Heindl-Tenhunen, B. I.; Allen, E. B. 1995. **The effect of a disturbance corridor on an ecological reserve.** Restoration Ecology 3: 304-311.

FRIENDS OF THE NORTHERN SAN JACINTO VALLEY
P.O. Box 9097
Moreno Valley, CA 92552-9097

Letter J

RECEIVED
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August 1, 2005

Cynthia Kinser, Principal Planner
Planning Division
City of Moreno Valley
P.O. Box 88005
Moreno Valley, CA 92552-0805

State Clearinghouse
P.O. Box 3044
Sacramento, CA 95812-3044

Re: Draft Environmental Impact Report for the proposed Moreno Valley General Plan Update, SCH Number 2000091075

Dear Ms. Kinser:

Since its formation in 1991, the Friends of the Northern San Jacinto Valley have worked to protect the San Jacinto Wildlife Area. In addition to our earlier comments, we wish to make these further comments regarding the General Plan DEIR:

J-1 1) It is not clear which lands in the general plan are designated and fall under the Williamson Act contracts and what is the status of those contracts.

J-2 2) The Quail Valley Golf course has been designated as residential large lot by the County. The general plan must show the County's designation, not the city's preferred designation, in the maps and text.

J-3 3) The north-south connectors for the San Bernardino-Moreno Valley Corridor use Pigeon Pass Road which has three schools using Pigeon Pass Road as access. This is an unacceptable public safety hazard. The other proposed connectors will also significantly disrupt established neighborhoods.

J-4 4) Where is the 40 acre park dedicated to non-sporting uses located? How will the city use the Quimby Act to fund parklands?

J-5 5) Tables in traffic studies were done in 2000. This information is not longer accurate and must be updated to make it accurate.

J-6 6) As recommended by the state water plan, the city general plan should have a separate water section. (see public review draft State Water Plan, volume 2, chapter 20) This plan suggests some of the following:

a) Provide incentives to developers to plan and build using more resource efficient development patterns.

J-6 (cont.)

b) Review the Urban water management plans adopted by water agencies within the city. Work with water agencies to show compliance with water code section that require local governments to consider water supply availability when making land use decisions.
c) Prohibit approval of any development which fails to comply with SB 221 & 610 and AB 857 & 901.

AB 857 provides that the city general plan should

- Promote infill development and equity
- Protect environmental and agricultural resources
- Encourage efficient development patterns

SB 221, SB 610 and AB 901 are intended to improve the assessment of water supplies during the local planning process before approval of land use projects that depend on water by

- requiring verification of sufficient water supplies as a condition for approving developments
- compelling urban water suppliers to provide more information on groundwater reliability if used as a supply
- requiring that average and drought year conditions to be addressed.

J-7 Unless these vital changes are made to the draft document, the final environmental impact report will be inaccurate and invalid.

Sincerely,

Susan L. Nash

Susan L. Nash
Board Member
Tel: 951-928-3698
E-mail: snash22@earthlink.net

Copies to:

Mayor Richard Stewart
Councilmember William H. Batey, II
Councilmember Bonnie Flickinger
Councilmember Frank West
Councilmember Charles R. White
Linda Guillis, Director, Community & Economic Development
Gene Rogers, City Manager

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San Bernardino County: Gary Ovitt, San Bernardino County • Lawrence Dale, Barstow • Paul Eaton, Montclair • Lee Ann Garcia, Grand Terrace • Tim Jasper, Town of Apple Valley • Larry McCallon, Highland • Deborah Robertson, Rialto • Alan Wapner, Ontario

Ventura County: Judy Mikels, Ventura County • Glen Becerra, Simi Valley • Carl Morehouse, San Buenaventura • Toni Young, Port Hueneme

Orange County Transportation Authority: Lou Correa, County of Orange

Riverside County Transportation Commission: Robin Lowe, Hemet

Ventura County Transportation Commission: Keith Millhouse, Moorpark

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Letter K

27 July 2005

Ms. Cynthia Kinser
City of Moreno Valley
Community Development Department
14177 Frederick Street
Moreno Valley, CA 92553

RE: SCAG Comments on the Draft Environmental Impact Report (DEIR) for Moreno Valley General Plan Update
SCAG No. I 20050414

Dear Ms. Kinser:

Thank you for submitting the Draft Environmental Impact Report for the Moreno Valley General Plan Update to the Southern California Association of Governments (SCAG) for review and comment. SCAG's responsibility as the region's clearinghouse per Executive Order 12372 includes the implementation of California Environmental Quality Act (CEQA) §15125 [d]. This legislation requires the review of local plans, projects and programs for consistency with regional plans.

K-1 SCAG staff has evaluated your submission for consistency with the Regional Comprehensive Plan and Guide (RCPG), Regional Transportation Plan (RTP), and the Compass Growth Vision. SCAG appreciates the City of Moreno Valley's efforts to promote and plan for a local jobs-housing balance, a mixture of housing types and densities, and for its support of intensity along transit lines. Based on the information provided in the DEIR, we have no further comments. We would appreciate notification of the Final EIR, especially should a change in project scope occur.

A description of the proposed Project was published in the June 15-30, 2005 Intergovernmental Review Clearinghouse Report for public review and comment.

If you have any questions, please contact me at (213) 236-1851. Thank you.

Sincerely,

Brian Wallace
Associate Regional Planner
Intergovernmental Review

DOCS # 112614v1

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Letter L

August 1, 2005

Cynthia S. Kinser, Principal Planner
City of Moreno Valley
Community Development Department
14177 Frederick Street
P.O. Box 88005
Moreno Valley, CA 92552-0805

Re: Draft Environmental Impact Report, City of Moreno Valley General Plan SCH# 2000091075

Dear Ms. Kinser:

The California Department of Fish and Game (Department) thanks you for the opportunity to comment on the Draft Environmental Impact Report (DEIR) for the City of Moreno Valley General Plan.

L-1 The Department is responding as a Trustee Agency for fish and wildlife resources and as a Responsible Agency for impacts to jurisdictional waters. The Department has reviewed the DEIR, focusing on two areas of interest: 1) biological resources and the Multiple Species Habitat Conservation Plan (MSHCP) and, 2) jurisdictional waters under the Lake and Streambed Alteration Agreement program.

MSHCP Comments

L-2 The MSHCP provides conservation for Covered Species and habitats. The MSHCP Area Plans provide guidelines for the conservation of quantities of habitat and conservation goals within a particular Area Plan. The Criteria Cells pinpoint the more specific geographic location of conservation lands and include criteria for the amount of land to be conserved within a particular cell or group of cells and the biological reasoning behind the criteria. The species objectives provide guidelines and goals for the conservation of individual plants and animals. The MSHCP also provides policies, such as the "Narrow Endemic Plant Species" (Section 6.1.3), "Database Updates/Additional Surveys" (Section 6.3), "Riparian/Riverine Areas/Vernal Pools" (Section 6.1.2), and "Urban/Wildlands Interface" (Section 6.1.4). These policies provide additional layers of protection to certain habitats and particular species.

The plan area includes many biologically significant areas. The MSHCP Area Plan is divided into Area Plans and Subunits. The Area Plan for the City of Moreno Valley is the "Reche Canyon/Badlands Area Plan." The City of Moreno Valley includes the following Subunits: Subunit 1, Box Springs – East; Subunit 2, Reche Canyon;

L-2 (cont.) Subunit 3, Badlands – North; and, Subunit 4, San Jacinto Wildlife Area/Mystic Lake. The DEIR includes a description of the MSHCP Subunit conservation areas. The MSHCP structure, in general, consists of an interlocking system of Core areas and linkages. In the City of Moreno Valley, these areas include: Constrained Linkage 8, Proposed Linkage 4, Proposed Core 3, and Existing Core H. The DEIR includes a description of the cores and linkages found in the City of Moreno Valley, as well as a listing of plant and animal species found in the area and discussions of sensitive biological resources.

L-3 The DEIR mentions the MSHCP implementation policies listed above on page 5.9-5 but does not give a detailed explanation of these policies and how they will be implemented by the City. The Final EIR (FEIR) should include a more detailed explanation of these policies and how the City will implement them.

L-4 On page 5.9-30 of the DEIR states that although the target acreage for conservation in the Reche Canyon/Badlands Area is 10,520 to 15,610 acres, only 80-130 acres is found within the existing boundary of the City of Moreno Valley. Figure 3-1 of the DEIR shows the existing City Boundary and the Sphere of Influence boundary. The Sphere of Influence includes large blocks of Criteria Cells. The Land Use Maps show land use designations in these areas, however, the DEIR does not indicate whether the City of Moreno Valley includes the entirety of the Reche Canyon/Badlands Area Plan, how many acres of conservation land are in the Sphere of Influence, or how many acres in the City of Moreno Valley are already in conservation. The FEIR should include a table showing these figures. Page 5.1-6 of the DEIR discusses the process of coordination between the County of Riverside and the City of Moreno Valley for lands within the Sphere of Influence. A description of this process and how it relates to the MSHCP should also be included in the FEIR.

L-5 The City of Moreno Valley is a signatory to the Implementing Agreement of the MSHCP. As such, the City has specific responsibilities in the section of the Implementing Agreement entitled "Permittees' Take Authorization and Obligations". The FEIR should include a more detailed description of its responsibilities under the Implementing Agreement, the administrative structure of the MSHCP, and measures it will take to implement the MSHCP.

L-6 The Department is a major landowner in the City through ownership of the San Jacinto Wildlife Area. Therefore, the Department is particularly interested in how the City will address compliance with the MSHCP policies regarding adjacency to conservation areas.

There is a potential discrepancy on maps showing the land use designation of the 1,000 acre expansion of the San Jacinto Wildlife Area. Figure 5.9-4 "Reche Canyon/Badlands Area Plan" shows the Criteria Cell with the correct designation of the 1,000 acre expansion. Other exhibits in the text show a land use not consistent with land purchased by the State for conservation. However, the DEIR states on page 5.9-88 that the area including the 1,000 acres is subject to a development agreement that

L-6 (cont.) precludes the City from unilaterally changing the land use plan. The document further states that the 1,000 acres would not be subject to development because it is owned and operated by the Department for wildlife conservation. The FEIR should clarify, either through a change in land use designation or by clearly showing in all exhibits, that the Department lands do not have the ability to be developed by private interests.

Lake and Streambed Alteration Agreement

L-7 Through Section 1600 of the Fish and Game Code, the Department has jurisdiction over lakes and streams. Measure B4 on page 5.9-90 of the DEIR states that prior to physical disturbance of any natural drainage course or wetland that qualifies as jurisdictional, the applicant shall obtain a Streambed Alteration Agreement and/r permit or written waiver of the requirement for such an agreement or permit. The Department requests that this mitigation measure also be included in the "Hydrology" section of the FEIR. In addition, the FEIR should also include a discussion of the "Protection of Species Associated with Riparian/Riverine Areas and Vernal Pools" policy of the MSHCP.

The Department thanks you for your cooperation and looks forward to working with the City on the implementation of the MSHCP. If you have any questions, please call Robin Maloney-Rames, Environmental Scientist, at (909) 980-3818.

Sincerely,

Scott Dawson
Senior Environmental Scientist
Habitat Conservation Planning

cc: State Clearinghouse
Doreen Stadtlander, USFWS, Carlsbad

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Letter M

Gerald M. Budlong
24821 Metric Drive
Moreno Valley, CA 92557
July 27, 2005

City of Moreno Valley City Hall
Community Development Department
14177 Frederick Street
Moreno Valley, CA 92553

ATTN: Cynthia Kinser, Principal Planner

Re: Comments on the DEIR for the Moreno Valley General Plan Update

M-1 Dear Ms. Kinser: The following are my personal comments and are not repeated in the comments, which were included in the comments of the Moreno Valley Ecological Protection Advisory Board.

M-2 COMMENT 1. With the exception of the area located within the Gilman Springs Biological Geographic Section, I support Figure 3.3 Land Use Alternative 2. This alternative best reflects my views I had expressed at Planning Commission workshops held during my past term as a Planning Commissioner.

M-3 COMMENT 2. Figure 5.9-1 Planning Area Biological Geographic Sections (BGS) delineates the Gilman Springs BGS and San Jacinto WP-M BGS. During the preparation of the County General Plan, County representatives made several presentations before the Moreno Valley Planning Commission. As a Planning Commissioner at the time, my comments focused on the protection of an existing wildlife corridor, which serves Lake Perris State Park and San Jacinto Wildlife Preserve. The subject wildlife corridor is located in portions of Lake Perris State Park, San Jacinto Wildlife Preserve, San Jacinto WP-M BGS and Gilman Springs BGS. With the exception of Gilman Springs BGS, the remaining land within this wildlife corridor is state owned with land use administered by agencies mandated by the legislature to protect and manage the environmental resources.

M-4 COMMENT 3. The subject wildlife corridor within the Gilman Springs BGS is delineated in the County of Riverside Figure 3-22 entitled Reche Canyon/Badlands Area Plan with Cells, Cell Groups & Subunits keyed to MSHCP Criteria. This figure delineates Public/Quasi-Public Conserved Lands. These lands protect the wildlife corridor.

M-5 COMMENT 4. Land Use Alternatives 1, 2 and 3 within Gilman Springs BGS are all the same with Residential (color code for R2, RR and R3 are too similar to define correct classification; what is the correct Residential classification?) and Commercial classifications.

M-6

The development of land currently vacant into residential and commercial land uses would potentially eliminate portions of the wildlife corridor. The elimination of the wildlife corridor would result in making Lake Perris State Park, San Jacinto Wildlife Preserve and San Jacinto WP-M into a biological island with all the adverse significant impacts associated with biological islands.

How will the significant impacts associated with a creation of a biological island be mitigated to a level on non-significance?

Thank you for the opportunity to comment on the DEIR.

Sincerely,

Gerald M. Budlong

Letter N

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Gerald M Budlong
24821 Metric Drive
Moreno Valley, CA 92557
July 31, 2005

City of Moreno Valley City Hall
Community Development Department
14177 Frederick Street
Moreno Valley, CA 92553

ATTN: Cynthia Kinser, Principal Planner

RE: Board Member comments DEIR for the Moreno Valley General Plan Update

N-1 Dear Ms Kinser: The following are my member comments made at the Regular May 9, 2005 Meeting of the City of Moreno Valley Ecological Protection Board, Agenda Item 6.2 DEIR for Comprehensive General Plan Update. Micro seismic events occurring since the May 9, meeting are also included to present a more recent sample of seismic events I have attributed to the Casa Loma fault.

Sincerely, Gerald M. Budlong
Board Member, City of Moreno Valley Ecological Protection Board

Attachment: Board Member comments

Letter N

CITY OF MORENO VALLEY ECOLOGICAL PROTECTION BOARD COMMENTS OF MORENO VALLEY GENERAL PLAN PROGRAM EIR FROM GERALD BUDLONG

Chapter 5.5 Hazards

Figure 5.5-1 Hazardous Materials Sites:

N-2

1. The former Lockheed test site located in Laborde Canyon is located approximately one mile east of the eastern-most boundary of the Sphere-of-Influence of Moreno Valley. A former Lockheed test site occupies the environs of Laborde Canyon. This site apparently contains hazardous and toxic wastes generated in the past. It recommend the City of Moreno Valley freeze the eastern boundary at its present sphere of influence eastern boundary so as to avoid this hazardous and toxic waste area.

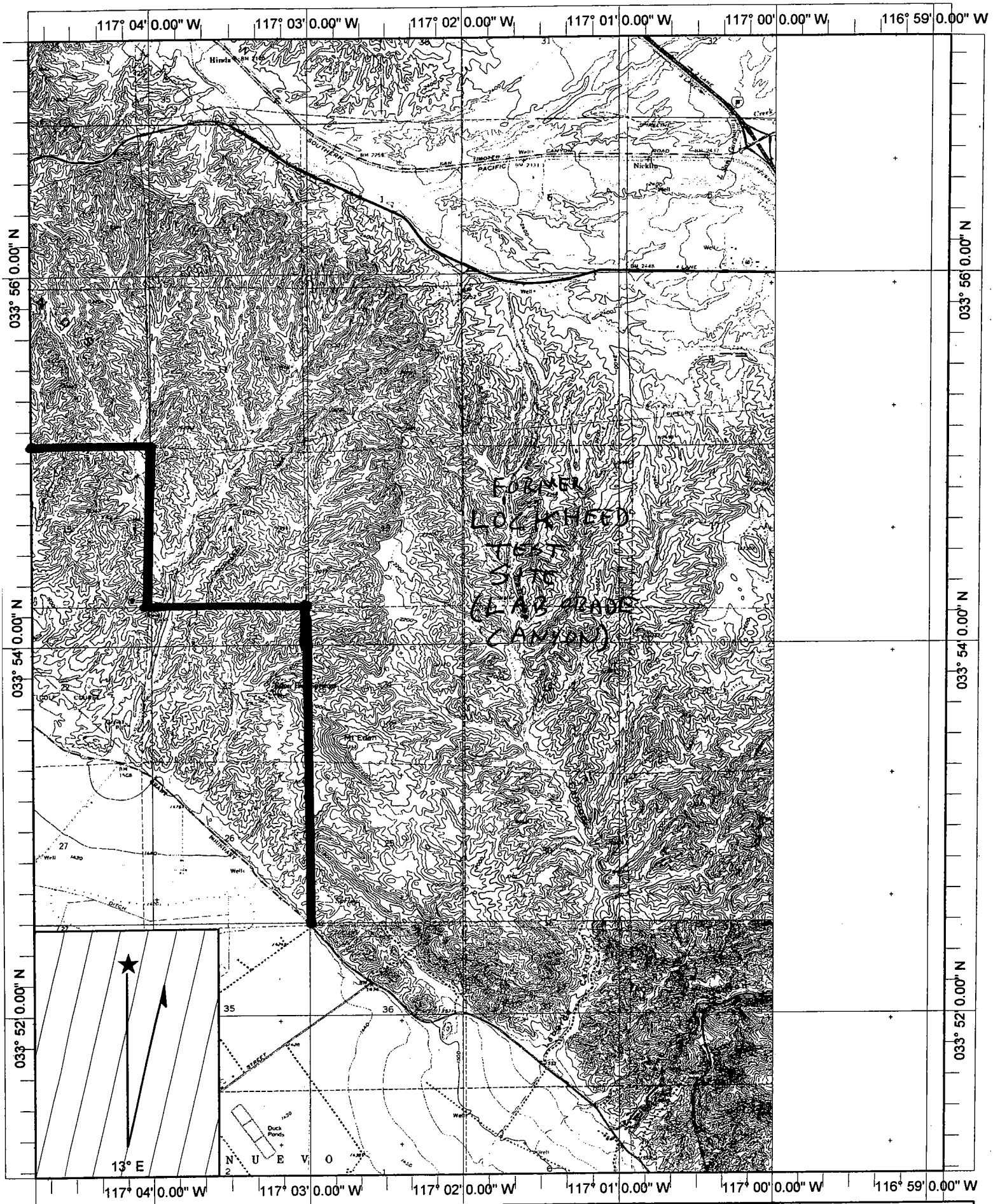
N-3

2. Appendix F: Cultural Resources Analysis on page 18, G. Other Sites, RIV-3272H military target range, describes a site formerly consisting of two target bunkers 320 and 465 feet long and a series of earthen mounds formed rows south of the bunkers, locates north of the intersection of Box Spring Road and Clark Street, now developed. The locality has been developed since the site was recorded in 1983. Prior to development, was this site free of toxic and hazardous wastes normally associated with military target ranges? The U.S. Soil Conservation Publication concerning the soils of Western Riverside County in sheet number 27 has an aerial photograph background, which portrays the subject military target range. The aerial photograph shows evidence of a former military road (future Clark Street) bisects four target berms.

Flooding

N-4

1. Page 5.5-4, Paragraph 2 "The potential for significant damage to occur within the planning area as a result of failure of Lake Perris Dam is considered remote". Also page 5.5-6 " Dam inundation is a potential, albeit remote, flood hazard through several portions of the planning area. This condition is based on the assumption of instantaneous failure of a dam with the reservoir at or near its full capacity. Two locations of concern exist within the planning area. ... and Lake Perris." What is the source of these conclusions and are they technically correct? To document a different conclusion, Metropolitan Water District's Eastside Reservoir Project DEIR, Chapter 2, Page 2-18, 2.2.4.3 Lake Perris, states "Foundation conditions (seepage) at Lake Perris were a special concern identified in the reconnaissance study, and were addressed in the Phase I study"..."were identified as important issues at Lake Perris". Also 2.2.6.1 Summary of Findings, page 2-42, Lake Perris. "At both capacities, Lake Perris ranked below Domenigoni Valley, Potrero Creek, and Vail Lake on engineering



Name: EL CASCO
Date: 6/28/2005
Scale: 1 inch equals 4000 feet

Location: 033° 54' 12.3" N 117° 01' 49.6" W
Caption: VICINITY OF FORMER LOCKHEED LABORADE TEST AREA TO SPHERE OF INFLUENCE AREA.

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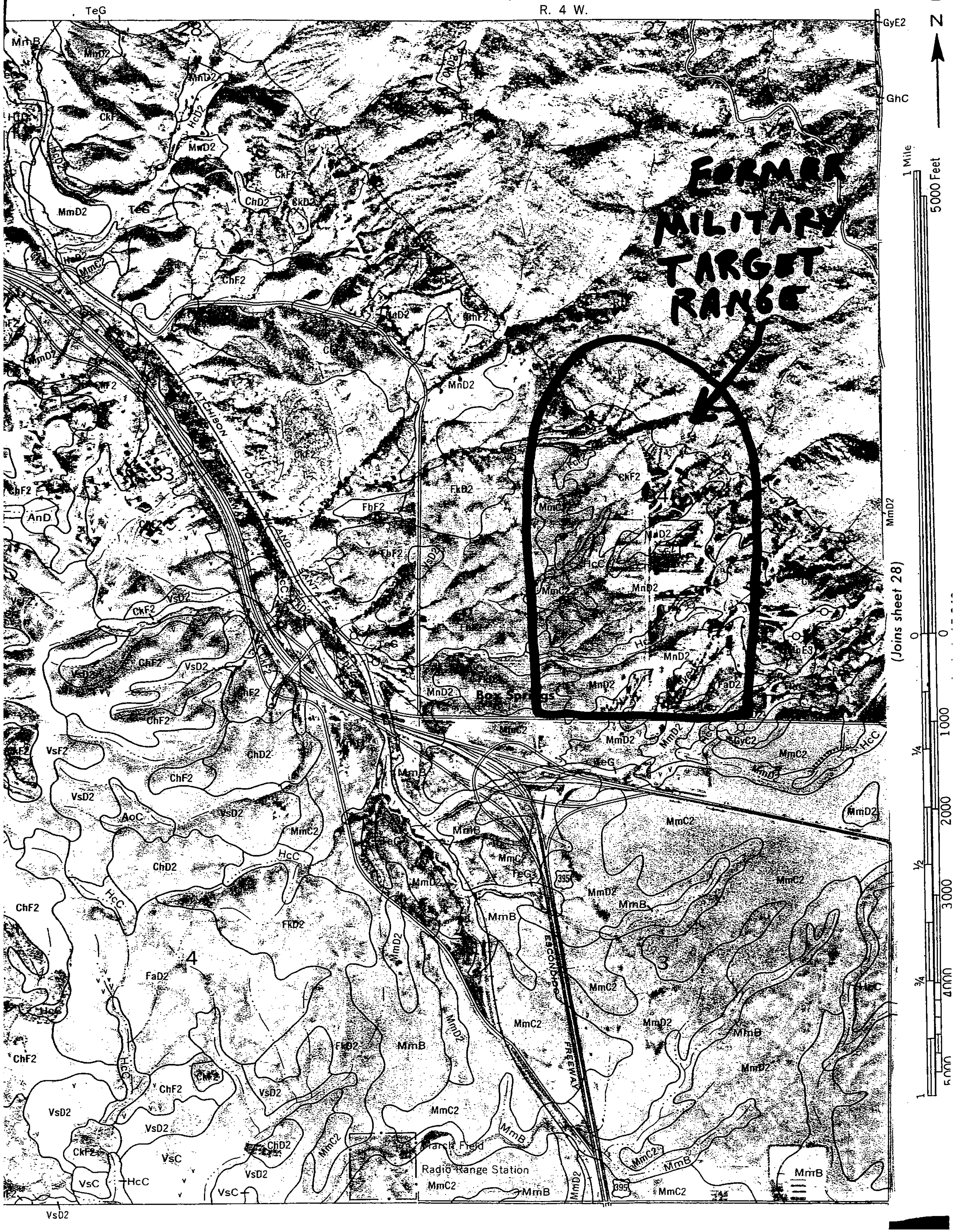
R. 4 W.
FORMER MILITARY TARGET RANGE
N
1 Mile
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(Joins sheet 28)
ATCHISON TOPEKA AND SANTA FE
Box Springs
FREEWAY
March Field
Radio Range Station
395

N-4 (cont.) feasibility measures, primarily because of a saturated alluvial foundation with greater potential for liquefaction from ground shaking in the vicinity of the embankment".

N-5 2. Figure 5.5-2 Floodplains and High Fire Hazard Areas, Potential Inundation Area. Are the boundaries of the potential inundation area (Lake Perris) consistent with the official delineated mapped boundaries of the California State Division of Safety of Dams?

Wildland and Urban Fires

N-6 1. Figure 5.5-2 Floodplains and High Fire Hazard Areas. Is the delineation of the High Fire Hazard boundaries north of Manzanita Ave in the Sunnymead Ranch and Hidden Springs technically correct? The development of these projects with the common open space areas are managed professionally, the presence of a manned fire station, a large lake available emergency source of water for water dropping helicopters, and housing stock with fire resistant roofs would seem to preclude much of its classification as a "high fire hazard area". Would the proposed delineation of the High Fire Hazard Areas impose excessively high fire insurance rates unfairly to residents of Sunnymead Ranch and Hidden Springs?

Aircraft Hazards

N-7 1. The draft 2005 AICUZ Report of March ARB and March Inland Port Air port Authority may be available for public review in September 2005. This new draft will in the future replace the present 1998 AICUZ Report. Will the City consider the 2005 AICUZ after its adoption by the Air Force?

N-8 2. Figure 5.5-3 City Areas Affected by Air Craft Hazard Zones and page 5.5-10, paragraph 3 is not drawn precisely. The map delineates the clear zones and accident potential zones (APZs) incorrectly and out of scale. The United States Department of Defense (DOD) regulates the dimensions of a clear zone as a square 3,000 feet by 3,000 feet. The DOD regulations, permits the curving of APZs to be consistent with the average flight patterns. The portrayal of curved APZs is commendable, because it is an important tool in planning land uses compatible with the March ARB flying mission. However the APZs, as with the clear zones are not drawn to scale. DOD regulates the dimensions of an APZ I as 3,000 feet wide and 5,000 feet long and APZ II 3,000 feet wide and 7,000 feet long. Will this figure be revised to accurately delineate the boundaries of the two clear zones and the APZs?

N-9 3. Historically DOD aircraft accidents DOD airfields worldwide cumulatively have experienced approximately 28.8 % of the aircraft accidents occurring with the clear zones; APZ s 7.8 %, and APZ II s 5.8 %.

N-9 (cont.)

Magnitude 2.3, July 6, 2005 near intersection of Cottonwood and Moreno Beach Road; Event ID# ci14160744 Magnitude 1.9, July 6, 2005 on Perris Blvd., between Ironwood and State Route 60; Event ID# ci14163564 Magnitude 1.6, July 18, 2005 near intersection of Perris Blvd and Manzanita in the Sunnymead Ranch; Event ID#ci14166136 Magnitude 1.6, July 26, 2005 near intersection of Perris Blvd and Ironwood; Event ID# ci14166408 Magnitude 1.5, July 27, 2005 at intersection of SR-60/Sunnymead Blvd and Perris Blvd.; Event ID# 14166608 Magnitude 1.5, July 27, near intersection of Dracaea and Perris Blvd.; Event ID# ci10121429 Magnitude 1.6, July 28, 2005 near intersection of SR-60/Elder and Perris Blvd. It would appear that the subject faults rather than being considered "dead" are really "sleeping". What are the geologic studies to date that have been unable to show that the fault extends beyond the Special Studies Zones and is the evidence for the City to eliminate this subject fault hazard zone and policies from the general plan? Are any of these authorities or sources published after 2000? Is it possible for the city to contract a qualified seismologist to fly low level over the assumed trace of the Casa Loma fault at dusk and photograph the land surface for evidence of lineaments, which may present physical evidence of the fault?

6. It seems strange that south and north of Moreno Valley, the Casa Loma and Reche Canyon faults are considered active. Evidence of geologic faulting to the south includes fault creep occurring under the surface of Romona Expressway with associated cracking of the pavement. North of the city, the State Architects Office denied the construction of a new high school in Colton, due to evidence of active faulting. However, in-between these areas, the fault alignment in Moreno Valley is masked by alluvium and the City now considered the fault is "dead". Is the City really going to turn its back to this potential hazard through the removal of the County Fault Hazard Zones classification from the Casa Loma and Reche Canyon faults with the construction of buildings of human occupancy allowed to be built upon land potentially subject to surface rupture?

N-10

Liquefaction

1. Comments and questions are the same as under Flooding above.

N-11

5.7 HYDROLOGY/WATER QUALITY

ENVIRONMENTAL SETTING

N-12

SAN JACINTO RIVER

1. Page 5.7-1, first sentence; Santa River should read Santa Ana River.

GROUNDWATER

1. Figure 5.7-2 Groundwater Basins. The western boundary of the sub area boundary of the Perris Basin is out of date and thus incorrect. The U.S. Air Force March AFB Installation Restoration Program process required the mapping of the underground bedrock to delineate the groundwater resources

N-13

N-13 (cont.)

at March AFB and environs. A deep layer of alluvial deposits buries the bedrock. The bedrock itself crossed by several underground rivers, whose channels are deeply etched into the bedrock. One of these underground river channels is aligned approximately under the surface alignment of the existing runway. The channel extends northward parallel to I-215 north to the top of the Box Springs summit. A surface map and three-dimensional map prepared by Tetra Tech was presented to the City of Moreno Valley Ecological Protection Advisory Committee (now Board), with permission of the Air Force. The Air Force data should be used to revise Figure 5.7-2.

N-14

2. Have copies of Chapter 5.7 Hydrology/Water Quality been given to the Eastern Municipal Water District and Department of the Air Force, 452nd Civil Engineers/CEV, March ARB to conduct technical review of this chapter? If not, it is strongly recommended it be done.

Figure 5.11-1 Major Scenic Resources

N-15

1. This figure identifies the northern area of Moreno Valley "The Foothills". These "foothills" have peaks, which are higher than the Badlands and rival the Box Springs Mountains. Reche Peak is in fact higher than Box Springs Mountain and Olive Hill only slightly less in altitude. The northern end of Moreno Valley is composed of three mountain masses, which dominate the scenic resources of the City. Why does the figure only recognize Box Springs Mountain and doesn't recognize Reche Peak and Olive Hill?

N-16

2. The outstanding scenic resource of Moreno Valley is not addressed at all on this Figure. The snow clad peaks of the San Gabriel Range and the San Bernardino Range to the north and the San Jacinto Range to the east dominate the Moreno Valley sky line and rival the mountain fronts of the Rocky Mountains. Why aren't these scenic resources mentioned in this figure?

Letter O

San Bernardino Valley Audubon Society
P.O. Box 10973
San Bernardino, CA 92423

July 27, 2005

Ms. Cynthia Kinser
Principal Planner
Community Development Department
14177 Frederick Street
Moreno Valley, California 92553

Dear Ms. Kinser,

O-1

The San Bernardino Valley Audubon Society has been closely involved with the formation and expansion of the San Jacinto Wildlife area, including legal action against the proposed Moreno Highland subdivision. Because of this involvement, we are studying the Moreno Valley General Plan Update to ensure that the associated actions do not put the SJWA in jeopardy.

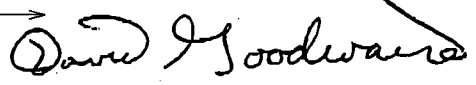
The July article in the Press Enterprise discusses reasons for and against redesignation of the 1,000 acres of the original 3,000 acre Moreno Highlands. We believe redesignation is the logical thing to do, but even if it does not take place, much of the environmental data in the EIR must be adjusted to reflect the fact that those 1,000 acres will not be developed. Traffic, air and water quality, cumulative and growth-inducing impacts, biological resources and virtually all other areas of potential impact will be altered significantly by the acknowledgement that 1,000 acres of Moreno Highlands is off the table for development. Transportation is a major concern, with so many plans to upgrade existing roadways and create new ones. We are concerned that the SJWA will be compromised by transportation changes, and will lose significant buffering from development and transportation projects.

O-2

Geological issues have surfaced again, with disagreement over the extent of the various faults in the area. This is something of great importance that must be resolved with good science and thorough research. If area faults are not completely mapped out, every effort must be made to do so and to include those associated risks in the EIR. Putting homes and public works projects in harms way because of incomplete geological data is simply unacceptable.

O-3 The special value of the SJWA and the surrounding agricultural land is something that Moreno Valley should do everything in its power to protect for the enjoyment of all it's citizens in perpetuity. Few Inland Empire communities can boast of the near proximity of such valuable open space resources as Lake Perris, the SJWA and the new San Timoteo State Park. Areas of high-density housing and transportation corridors should be shifted away from these areas or eliminated from planning consideration.

O-4 The only way the General Plan Update can truly express the future options for this region and allow the public and city officials to make intelligent informed decisions is to produce a supplementary EIR or rewrite the Draft EIR. Too much of the data is outdated or incomplete. It is the function of an EIR to inform the public as accurately as possible as to the environmental impacts of a particular action. In this case, the public is not getting an accurate assessment.



David Goodward
San Bernardino Valley Audubon Society
(909) 783-2417
davegoodward@earthlink.net

State of California • The Resources Agency
Arnold Schwarzenegger, *Governor*

DEPARTMENT OF PARKS AND RECREATION
Ruth Coleman, *Director*
Inland Empire District
17801 Lake Perris Drive
Perris, CA 92571
(951) 657-0676
http://www.parks.ca.gov

Letter P

August 1, 2005

Cynthia S. Kinser
City of Moreno Valley
Community Development Department
14177 Frederick Street
Moreno Valley, CA 92552

Re: Draft Environmental Impact Report for the City of Moreno Valley General Plan Update, SCH# 2000091075

Dear Ms. Kinser:

P-1 The Inland Empire District of the Department of Parks and Recreation (State Parks) appreciates the opportunity to comment on the aforementioned project. State Parks is a trustee agency as defined by the California Environmental Quality Act (CEQA). State Parks' mission in part is to provide for the health, inspiration, and education of the people of California by preserving the state's extraordinary biodiversity and creating opportunities for high quality outdoor recreation. As the office responsible for the stewardship of Lake Perris State Recreation Area, we have an interest and concern about contemplated alterations of land use adjacent to the park.

We identified two topics of interest. First, we suggest identifying the Lake Perris area adjacent to residential development as an area of High Fire Hazard in the text and in Figure 5.5-2. As you may know, this area recently experienced a fire that prompted a significant effort from various fire agencies. Second, we suggest amending Figure 5.7-1 and the related text to reflect the Lake Perris area as a potential source of drainage waters flowing to developed areas.

Again, thank you for the opportunity to review this project. If you have any questions, please feel free to call Enrique Arroyo, District Planner at (951) 940-5664.

Sincerely,

Gary Watts
District Superintendent

cc: Rick Rayburn, DPR
Scott Morgan, SCH
DPLA Environmental Review Unit

Post-it™ Fax Note 7671	Date	# of pages ▶ 1
To Cynthia Kinser	From Enrique Arroyo	
Co./Dept.	Co.	
Phone #	Phone # 951 940-5664	
Fax # 951 413-3210	Fax #	

California Regional Water Quality Control Board
Santa Ana Region

Terry Tamminen
Secretary for Environmental Protection

3737 Main Street, Suite 500, Riverside, California 92501-3348
(951) 782-4130 • Fax (951) 781-6288
http://www.waterboards.ca.gov/santaana

Arnold Schwarzenegger
Governor

Letter Q

July 29, 2005

Cynthia S. Kinser, Principal Planner
City of Moreno Valley Community Development Dept.
P.O. Box 88005
Moreno Valley, CA 92552-0805

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CITY OF MORENO VALLEY

DRAFT ENVIRONMENTAL IMPACT REPORT, CITY OF MORENO VALLEY GENERAL PLAN UPDATE, RIVERSIDE COUNTY, STATE CLEARINGHOUSE NUMBER #2000091075

Dear Ms. Kinser:

Staff of the Regional Water Quality Control Board, Santa Ana Region (RWQCB), has reviewed the City's Draft Environmental Impact Report (DEIR) for its General Plan update (project). The City of Moreno Valley (City) is in the process of updating its General Plan for the implementation of development and use of open space within its corporate area and Sphere of Influence (SOI), including probable near-term boundaries. The following comments should be considered for incorporation into the final EIR:

1. The expansion of a city carries incremental effects that are "cumulatively considerable" and pose a "potentially significant impact" on the environment. There is widespread experience that an increase of disturbed, developed, and paved areas has the tendency to substantially impact and impair the beneficial uses of waters of the United States and the state. Aside from the legally required "no project alternative" (Alternative 1, existing General Plan), two land use alternatives (p. 3.3 through 3.14) propose varying levels of City construction throughout its boundaries and SOI: Alternative 2 proposes a higher density of multi-family residential units, offices, and industrial parks than Alternative 3, particularly with regard to expansion in the northeastern portion of the city. The DEIR states that Alternative 3 "is the environmentally superior alternative," and we would concur if lower density construction would also provide more unpaved areas, grassed swales, pervious materials, and natural soft-bottomed channels, thereby facilitating groundwater recharge and riparian habitat among other water quality beneficial uses (p. 5.7-12). The three alternatives should be discussed in the EIR in terms of how they would impact water quality standards, i.e., water quality objectives and beneficial uses, as defined in the RWQCB's Water Quality Control Plan (Basin Plan). Large-scale maps of the areas to be built upon should be included in the final EIR. Antidegradation policies such as the State Water Resources Control Board's (SWRCB) Resolution No. 68-16) and the federal antidegradation policy (40 CFR 131.12) should also be discussed in the EIR.

Q-1

2. Designated San Jacinto River floodplain areas, including Mystic Lake, appear to be avoided by construction. However, water quality standards would be adversely impacted by the flooding of developed areas adjacent to, or in, the zones of potential flooding indicated on Figure 5.5-2 and on Figures 3-2 through 3-4. Although all drainage plans have not been completed according to the DEIR (p. 5.5-6), the DEIR should include some finalized master drainage map demonstrating how runoff will be transmitted.

Q-2

3. The EIR must reflect the City's incorporation into the General Plan the requirements of the Regional Water Quality Control Board's Waste Discharge Requirements for Riverside County (NPDES Permit No. CAS618033, Order No. R8-2002-0011, "Riverside County Flood Control and Water Conservation District, the County of Riverside, and the Incorporated Cities of Riverside County within the Santa Ana Region Areawide Urban Runoff"), also known as the Riverside County municipal separate storm sewer system, or "Riverside County MS4" permit, to the extent necessary to ensure consistent implementation of the MS4 permit within the City and its SOI. The City is a co-permittee in this permit, as generally discussed on p. 5.7-9 of the DEIR. The final EIR should fully reflect that implementation of the MS4 controls on urban runoff will be a crucial part of the City's participation in local municipal compliance with the Regional Board's pending Total Maximum Daily Loads (TMDL) for nutrients (phosphorus and nitrogen) and pathogens (bacteria) entering Canyon Lake. In accordance with Clean Water Act (CWA) Section 303(d), Canyon Lake is listed as impaired by these pollutants, and TMDLs must be established. The nutrient TMDL for Canyon Lake is currently under review by the Regional Board, and Regional Board action on a pathogen TMDL is projected for 2006. Lake Elsinore, to which Canyon Lake is tributary, is 303(d) listed for nutrients, sediment, and unknown toxicity.

Q-3

4. Appropriate Best Management Practices (BMPs) must be developed and implemented to control the discharge of pollutants both during construction and for the life of a project. Post-construction BMPs must address all pollutant loads carried by dry weather runoff and first-flush storm water runoff from an entire project. Measures of this type are, or soon will be, required of new development and redevelopment by the water quality management plan (WQMP) prepared in compliance with the Riverside County MS4 permit. BMPs that utilize the principles of low impact development (LID) should be encouraged by the EIR. No waste material may be discharged to any drainage areas, channels, streambeds, or streams. Spoil sites must not be located within any streams or where spoil material could be washed into a waterbody. BMPs must be deployed around spoils at all times.

Q-4

5. The Plan must include provisions to advise the City's development, construction and business communities of the need to comply with several permit programs, including:

Q-5

a. <u>The General Construction Activity Storm Water Runoff Permit for individual projects occurring on an area of one or more acres.</u> A Notice of Intent (NOI) with the appropriate fees for coverage of the project under this Permit must be submitted to the SWRCB at least 30 days prior to the initiation of construction activity at the site. Information about this permit program can be found at http://www.swrcb.ca.gov/stormwtr/construction.html.

b. <u>A National Pollutant Discharge Elimination System (NPDES) permit</u> (waste discharge requirements) for projects that will have dewatering or other wastewater discharges to surface waters of the state. RWQCB Order No. R8-2003-0061, NPDES No. CAG998001, a regional general *de minimus* permit, is available for most such discharges. Order No. R8-2003-0061 may be reviewed under the Adopted Orders link for 2003 permits at the Region 8 website. Waste discharge requirements may also be required for discharge of wastes to land. Further

information can be obtained by contacting the RWQCB Regulations Section staff at (951) 782-4130.

Q-5 (cont.)

c. A Clean Water Act Section 401 Water Quality Standards Certification from the Regional Board for any project that causes material to be dredged from or filled into waters of the United States, i.e., surface waters or tributaries thereto, where these waters fall under the jurisdiction of the United States Army Corps of Engineers (ACOE) and a a CWA Section 404 permit is be required. **Early consultation with Regional Board staff concerning potential Section 401 certification issues is strongly suggested.** Information concerning Section 401 certification can be found at the Regional Board's website, www.swrcb.ca.gov/rwqcb8/html/401.html. Impacts to water quality standards of channels and other drainages should first and foremost be avoided by development where possible. Where that is not practicable, impacts to these waters should be minimized. Such disturbance requires mitigation (beyond simply the acquisition of permits) that, at a minimum, replaces the full function and value of water quality standards, i.e., beneficial uses and water quality objectives, of the impacted water body through the Section 401 Certification process. Where the ACOE rules that a water body does not fall under their jurisdiction, as with potential cases of vernal pools or other isolated wetlands in the Moreno Valley area, the Regional Board may still determine that waste discharge requirements are necessary for protection of waters of the State. A Streambed Alteration Agreement from the California Department of Fish and Game may be necessary as well.

6. Consider including in the DEIR guidelines or requirements for holding ponds and/or constructed wetlands to capture and naturally treat dry weather urban runoff and the first flush of rainfall runoff, either on a regional scale (preferred) or during project-by-project development. This type of facility is, or soon will be, required of new development and redevelopment by the water quality management plan prepared in compliance with the Riverside County MS4 permit. To provide maximum water quality benefits, these basins should be designed to detain runoff for a minimum time (e.g., 24 hours) in order to settle suspended solids and associated pollutants.

Q-6

7. The WILD and WARM, and possibly RARE, water quality beneficial uses of the Basin Plan are known to be supported by the network of arroyos within the City and SOI, particularly the Big Springs Arroyo and the Box Springs Arroyo. This arroyo network constitutes critical riparian habitat and wildlife corridors to Sycamore Canyon and the Box Springs Mountains on the Riverside border, and it should be avoided by development (see 5.c. above) if not designated for outright protection. To avoid impeding wildlife movement, roadways or pipelines should be carried over ravines, arroyos, and slope drainages by bridges or wide, arched culverts.

Q-7

8. Among other water quality and environmental benefits, native vegetation in riparian areas is effective at reducing slope erosion, filtering runoff, and providing habitat for native animal species. Therefore, native vegetation should be preserved and protected to the maximum extent possible, and clearing should be strictly limited. We encourage the proactive replanting and hydroseeding of native vegetation in most operations.

Q-8

Q-9

9. In order to protect local groundwater subbasins, we believe that the DEIR should reflect City support for the connection of existing septic tanks to sewer and a restrictive policy on developments that propose to rely on onsite subsurface disposal systems for waste disposal (p. 5.7-9).

If you have any questions, please contact me at (951) 782-3234, or Glenn Robertson of my staff at (951) 782-3259.

Sincerely,

Glenn Robertson, for

Mark G. Adelson, Chief
Regional Planning Programs Section

cc: Scott Morgan – State Clearinghouse
Riverside-Corona Resource Conservation District
California Department of Fish and Game

Q: Planning/Groberts/Letters/CEQA/DEIR- City of Moreno Valley General Plan

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CITY OF RIVERSIDE

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Letter R

July 27, 2005

Cynthia Kinser, Principal Planner
Community Development Department
14177 Frederick Street
Moreno Valley, CA 92553

SUBJECT: Draft Environmental Impact Report (DEIR) for the Moreno Valley General Plan Update and Review of the General Plan Update

Dear Ms. Kinser:

The City of Riverside has reviewed the DEIR for the Moreno Valley General Plan Update in addition to the General Plan Update. The DEIR considers three alternative land use approaches and the planning area consists of the City of Moreno Valley and the City's Sphere of Influence. In reviewing the documents staff's only comments pertain to the Land Use, Air Quality, and Hazards sections of the DEIR.

Land Use

R-1 The DEIR indicates that there are three alternatives for land use proposed. All three alternatives propose Hillside Residential in some form or another for the Box Springs Mountain Park and the land to the south of the park. However, there is no description of what is expected in the Hillside Residential land use category either in the DEIR or in the General Plan. This area borders the City's sphere of influence and is visible to the City. The City would recommend that the Box Springs Mountain Park be placed in the Open Space land use designation. As well, additional information should be provided that explains what the Hillside Residential category is intended to preserve and what it will permit in terms of density and grading.

In addition, the City notes that the General Plan Update does not describe any of the land use designations or their intended purpose.

Air Quality

R-2 It is recommended the DEIR include references to the "Good Neighbor Guidelines for Siting New and/or Modified Warehouse/Distribution Facilities" prepared by the Regional Air Quality Task Force of the Western Riverside Council of Governments. Moreno Valley was a participating member in this Task Force and the Draft Guidelines were released in February 2005. These Guidelines provide goals that could become additional mitigation measures for the DEIR or policies for the General Plan.

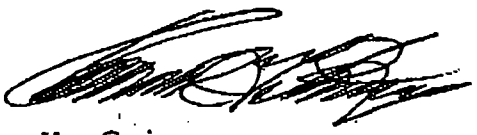
PLANNING AND BUILDING DEPARTMENT
3900 MAIN STREET • RIVERSIDE, CALIFORNIA 92522 • (951) 826-5371
FAX: (951) 826-5981 • www.riversidecа.gov

Hazards

R-3 Under "Aircraft Hazards" it should be noted that a new Airport Land Use Compatibility Plan is being prepared for the March Air Reserve Base/March Inland Port and upon its adoption new standards will become effective.

We thank you for the opportunity to review both the DEIR and the General Plan Update.

Sincerely,



Ken Gutierrez
Planning Director

c: Bradley J. Hudson, City Manager
Michael Beck, Assistant City Manager
Tom DeSantis, Assistant City Manager
Ronald Loveridge, Mayor
Riverside City Council Members

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Letter S

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PLANNING
CITY OF MORENO VALLEY

July 25, 2005

Ms. Cynthia Kinser
Principal Planner
Community Development Department
14177 Frederick Street
Moreno Valley, California 92553

Dear Ms. Kinser:

Re: Comments to the Draft Environmental Impact Report (DEIR) SCH #2000091075

At the public meetings of five years ago, Moreno Valley residents strongly spoke for an alternative similar to number 3. The Sierra Club has found it sad that the City has delayed this process for all this time to push Alternative #2 at every possible opportunity. In the meantime the maps and data have become old and obsolete. This will result in a General Plan that is internally inconsistent and therefore inadequate.

The following are some of our concerns, which we hope will be addressed in the final EIR.

- S-1 The ideas and suggestions found in the letters written in response to the Notice of Preparation (NOP) were not followed through on or responded to in this DEIR.
- S-2 Cumulative impacts from adjacent cities and county projects were not included in your analysis, including those on the drawing boards. The lack of complete cumulative and growth-inducing impacts makes the EIR inadequate.
- S-3 Hazards from toxic plumes at March Air Reserve Base will affect development in what ways?
- S-4 Casa Loma Fault extends further north, potentially north of Highway 60. You need to include the Old Farms Road Fault, as mentioned in NOP letters. What are the appropriate land uses on either side of Gilman Springs Road near the Claremont Strand?
- S-5 When will overpasses and underpasses on Highway 60 be expanded from three lanes to five lanes? What will the Level of Service (LOS) be at buildout at three lanes and at five lanes? Why turn Highway 60 into a parking lot back to the Badlands? Alternative #3 produces 65,000 less trips daily. How can the City approve projects causing more than three lanes on Highway 60 to be necessary or more than 5 lanes to be necessary – the maximum possible?
- S-6 FEIR needs noise contours for holding patters of aircraft.
- S-7 You must factor in single-event noise. Airplane or truck noise averaged out as in CNEL appears fine, but it is not the same as an aircraft flying over your house at 2 a.m. No housing in areas above 65 CNEL. You would not want to go outdoors.
- S-8 Please try to connect Gilman Springs Scenic Roadway with San Timoteo Canyon. (Perhaps Theodore > Highland > Redlands)
- S-9 How will the proposed land use in western Moreno Valley interface with the suggested tunnel through Box Springs Mountain? How close will it come to proposed buildings? What impacts will this have on nearby land uses and residents?

S-10 • The Bi-County Corridor will slice and dice our City. What routes will it take? What routes will you deny them? Pigeon Pass? Heacock? Perris? What will you do to protect school children on their way to and from school as they walk and bicyle along the selected route? Will the plan allow through truck traffic near schools? Which schools? How will this impact those living along the route? Why doesn't the City say NO to this unwanted urbanization of our neighborhoods?

S-11 • What is the hazardous waste handler off Morrison north of Highway 60?

S-12 • Where is the Lake Hemet Dam inundation map?

S-13 • 100- and 500-year flood zones show where very low density should be the land use of choice – Why not?

S-14 • Do not allow solid concrete flood control channels. Why would you want more such ugly things going through our city?

S-15 • Moreno Valley Ranch gave up thousands of acres to Lake Perris and the San Jacinto Wildlife Area to receive the density they are building. What protection are you proposing for the world-class San Jacinto Wildlife Area (SJWA) from any development near its borders? What mitigation measures will the City take to protect each area mentioned in Table 9-6? This same table needs to better reflect the SJWA resources. The Department of Fish and Game designated this valley an Area of Special Biological Importance (p. 5.9-28) because of the diversity and abundance of raptors. What mitigations are proposed to protect this area for continued use by raptors, such as modifying power poles and setting aside more open space?

S-16 • How will you protect our wonderful viewsheds and scenic resources, which ever development seems to destroy?

S-17 • Citizen after citizen for the past five years has spoken for only a two-lane road with turning movements on Moreno Beach Drive north of Ironwood Avenue. Why do we still need to fight to protect our neighborhoods and more rural lifestyles from the urbanization of a major roadway? The City, not RCTC, makes this determination.

S-18 • Alessandro and Cactus do not and cannot pass through the SJWA. Why do you allow this on your maps?

S-19 • Nason must maintain three lanes heading south. This is necessary because of Valley View High School traffic, and it is an emergency route to the hospitals. Northbound doesn't have this need.

S-20 • LOS "C" must be what we maintain and tables 5.2-9 and 5.2-10 must reflect the actual LOS. Alternative #3 produces the least gridlock and indicates that even less intense land use might be appropriate for a more livable city. LOS "C" allows you to get through intersections with one cycle of the signal. LOS "D – F" requires two or three cycles to pass through an intersection.

S-21 • How much longer would it take to travel across our City with intersections at LOS "D – F" as opposed to "C", assuming we get stopped at all signals. Please use the two major east-west routes with the most signals. Please do the sane with the north-south routes and indicate which routes were used.

S-22 • Why produce a plan that conflicts with SCAQMD Air Quality Management Plan and/or SCAG Growth Management Plan?

S-23 • Is the data on air quality old? Is there more recent data available? If so, please use it.

S-24 • Tables 5.3-8 and 5.3-0 show alternative #3 degrades our air quality the least.

S-25 • What are the impacts of PM 10 and PM 2.5 on children and the elderly? What can this plan do to better protect them?

S-26 • Walking should be fostered and trees between roadways and sidewalks should exist on at least one side of each street to encourage this. Why not?

S-27 • Explain why the old Moreno Highlands project still exists on your maps. Why isn't the 1000+ acres purchased by CDFG and San Diego Gas and Electric not shown as open space?

S-28 • Why is the City allowing the development agreement and specific plan to have any validity when one-third of the Moreno Highlands Project is now open space?

S-29 The Sierra Club's letters of August 9, 2004 and July 15, 2005, as well as the Los Angeles Times' article dated Tuesday, March 22, 2005, need to be included as part of this letter.

S-30 The Sierra Club appreciates this opportunity to comment on Moreno Valley's General Plan DEIR. We still believe that it needs to be updated and revised to be considered adequate. We also strongly recommend that hardcopies of all maps be sent along with all disks to allow potential responders the capability of reading and understanding them. Please send hard copies of all future documents and notices of meetings as they relate to our City's General Plan to the address listed below.

Sincerely,

George Hague
Conservation Chair
Moreno Valley Group of the Sierra Club
26711 Ironwood Avenue
Moreno Valley, California 92555-1906
Phone: 951-924-0816
Fax: 951-924-4185

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Appendix to Letter S

July 15, 2005

RECEIVED
JUL 15 2005
CITY OF MORENO VALLEY

Ms. Cynthia Kinser
Principal Planner
Community Development Department
14177 Frederick Street
Moreno Valley, California 92553

Dear Ms. Kinser:

Re: Adequacies of the Draft Environmental Impact Report (DEIR)
for the City of Moreno Valley's General Plan (June 2005)

It appears throughout the document that much of it was written four or five years ago, when you first began the process – at least the data/maps used reflect this concern.

As indicated in newspaper articles as well as Sierra Club letters to and conversations with you and other sources, the City is well aware that the Department of Fish and Game purchased 1,000 acres of the original Moreno Highlands project. I believe San Diego Gas and Electric also bought a large number of acres. In spite of this, the City's maps for Alternatives 1, 2 and 3 (Figures 3-2, 3-3, 3-4) keep the high density housing on these 1000+ acres. In addition it appears that, with the exception of one map in the biological section (Figure 5.9-4), all other (more than 20) maps also misinform the public and agencies about these acres. I also believe that the disks with no hard copy of the maps such as Figure 5.9-4 make adequate analysis and valid comments too difficult.

There are also problems with old data, like Tables 5.2-2 and 5.2-3 concerning traffic in the year 2000 and the 1988 data on potential earthquakes (Table 5.6-1). You do not even acknowledge the Casa Loma fault or the Old Farm Road fault, which was included in a ten-year-old University of California paper. You have been told about the Old Farm Road fault several times since its location was identified in the eastern part of our city. If you take the time, you will find other areas where old data is used.

It appears that the EIR process was begun five year ago then stopped or significantly slowed so different projects could be approved which would prejudice the outcome of the approved alternative. The City then failed to update much of the data/maps – such as the purchase of 1000+ acres for open space instead of high-density housing -- while the process was on hold. The analysis, which should be revised throughout the documents for all three alternatives, appears to be lacking such information as circulation and is therefore misleading for all readers, which in turn will produce an inadequate Final EIR.

The Sierra Club therefore strongly recommends that the Draft EIR be revised and updated with the appropriate maps for all alternatives, or we will be left to believe that you are deliberately misleading all responders or potential responders about the true impacts and thus also misleading them about the best alternative.

Sincerely,

George Hague
Conservation Chair
Moreno Valley Group of the Sierra Club
26711 Ironwood Avenue
Moreno Valley, California 92555-1906
Phone: 951-924-0816
Fax: 951-924-4185

P.S. Where, within this document, do you fully address the environmetal justice issues of transit-oriented development and sustainable development? We believe this also must be included in your revised Draft EIR so those commenting have an adequate document on which to base their decision regarding the three alternatives.

Los Angeles Times

Tuesday, March 22, 2005

ENVIRONMENT

Reappearing Mystic Lake attracts birds

Appendix to Letter S

Winter rains fill the ephemeral wetland in the San Jacinto Valley — and with it come waterfowl by the thousands.

By Deborah Sullivan Brennan
Special to The Times

MYSTIC LAKE sweeps across the San Jacinto Valley, lapping at meadows pungent with the scent of wet grass. Hummocks seem to float above steel-gray water. A white-tailed kite hovers overhead while killdeer and greater yellowlegs skim the mud below.

Three months ago this was a dusty salt flat in dairy country, 15 miles southeast of Riverside. But winter storms filled the shallow basin to form an instant wetland.

Fleeting and capricious, Mystic Lake appears every few years at the whims of weather, one of the last of many ephemeral water bodies that once covered 5 million acres of inland California, says Bob McLandress, president of the California Waterfowl Assn.

Today, about 90% of the marshes are gone.

Birds, thousands of them, flock to the lake, attracting bird watchers and hunters who know this spot, which is off Davis Road in the San Jacinto Wildlife Area.

"For many years I thought that Mystic Lake was a hidden haven," says Tom Seward, 50, a sporting goods sales manager from Rancho Cucamonga, who has hunted at the lake since the early 1990s. "Few people knew about it; getting access was hard. But if you did, it was a little slice of heaven."

Mystic Lake pools in a shallow depression of the San Jacinto River after heavy rain. Just 5 or 6 feet deep on average, the lake at its fullest covers more than 3,000 acres, spills over surrounding roads, and floods nearby duck ponds.

Even in dry years the rural San Jacinto Valley is an important stop on the Pacific Flyway. Open grasslands attract raptors while private duck clubs lure waterfowl when the lake is dry.

But when Mystic Lake emerges, it's a naturally shimmering beacon for waterfowl.

"You add water to this place and there can be an amazing bloom of birds," says wildlife biologist Chet McGaugh of Riverside.

On a recent afternoon, a northern harrier swoops over a patch of alkali goldfields, a deep yellow flower common at the lake. Red-tailed hawks circle above; ducks raft on the water, and a flock of curlew flap across nearby ponds.

Tony Metcalf, a biology professor at Cal State San Bernardino, says birders at Mystic Lake counted more than 150 species annually between 1990 and 2003, ranking the lake as a top U.S. monitoring site by the Audubon Society. The lake, though often dry, flooded three times in the 1990s, and was moist for most of the decade.

Hunters describe watching waves of waterfowl roll across the lake, wigeons plunging like hail, or a "teal ball" of greenwings crossing the surface. McGaugh counted four types of geese after a recent storm.

"It's really an outstanding location for birds of prey, especially in wintertime," says Tom Paulek, manager of the San Jacinto Wildlife Area, a state-owned reserve that includes the lake bed and surrounding grasslands.

Twenty-two species, including egrine falcons, six owl species and numerous hawks share the airspace, sometimes launching aerial battles or competing with hunters for their quarry.

"We saw a bald eagle fighting an osprey over a fish" in midair talon lock, says Carl Cupp, 47, of La Palma, a former president of Cazadores Duck Club of Mystic Lake.

Cupp, who enjoys hunting here, describes a common problem: "If you knocked a bird down, you had to get there quick before a harrier got it.... We called that giving one to the bird gods," Cupp says.

The unpredictable nature of the lake has discouraged development.

In 1913, Frank Brown, cofounder of Redlands, erected "Brownlands" along the banks of Mystic Lake, according to author James T. Brown's book "Riverside County." Brown built the community during a dry year, but when the lake flooded, only "a few rooftops above the muddy waves" remained.

At one time, farmers diverted the San Jacinto River into earthen channels to irrigate fields, but the levees burst in storms, and the river reclaimed its natural course.

"The amazing thing is that the valley looks now like it did 100 years ago," says Harold M. Hill, a Redlands physician who has hiked and hunted the Mystic Lake area since the 1930s. He was a founder of the San Bernardino chapter of the Audubon Society and the Mystic Lake Duck Club in the 1950s.

The lake mounts its own defenses against intrusion, veiling its surface in fog and leaving a moat of mud around the shore.

"The mud at that place is brutal," Cupp says. "We got a truck stuck, and we went to get it with a tractor, and got the tractor stuck. The stuff is like glue."

Seward describes fog so dense it blocks all view of the shore, leaving boaters floating aimlessly.

"I've been lost on that lake, spending hours in a fog bank, not knowing exactly where I was," he says.

Because the lake can be inaccessible, locals say it provides solitude and serenity.

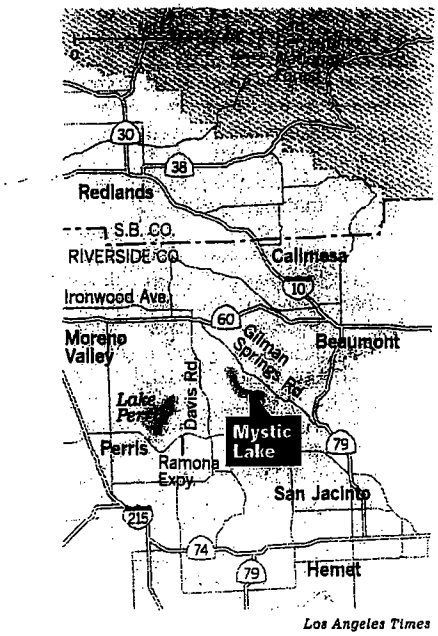
"Some areas are so beautiful ... just knowing that future generations can enjoy it means a lot to me," says Margie Breitkreuz, chairwoman of the Moreno Valley Trails Advisory Board and a regular horse rider at Mystic Lake.

On a quiet morning the lake mirrors snowy Mt. San Jacinto and rolling green hills.

If you squint past power lines and dairy farms, you can almost see the lake as explorer Juan Bautista de Anza did in 1774 when he rode into the San Jacinto Valley and described "a large and pleasing lake, several leagues in circumference and as full

Glenn Koenig *Los Angeles Times*

IT'S BACK: *Tom Paulek, manager of the San Jacinto Wildlife Area, surveys Mystic Lake: "It's really an outstanding location for birds of prey."*



Los Angeles Times

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Regional Groups Serving Riverside and San Bernardino Counties: Big Bear, Los Serranos, Mojave, Moreno Valley, Mountains, Tahquitz.

Appendix to Letter S

August 9, 2004

Cynthia Kinser
Principal Planner
14177 Frederick Street
Moreno Valley, California 92552

Re: Moreno Highlands – old and new

We believe that the purchase of 1,100 acres of the original project by Fish and Game/San Diego Gas and Electric makes very evident the need for a new EIR, Specific Plan and Development Agreement prior to any building activity.

We also believe that you cannot revise any of the old Moreno Highland's roadways/circulation elements without revising the roadways for the entire project. Working on Moreno Highland West without integrating all aspects of the entire project would be segmenting.

The addition of any lands to the SP 212-1 would also trigger the need for a new EIR, Specific Plan and Development Agreement, especially when it is more than 200 acres.

The Sierra Club is also concerned that the City of Moreno Valley is dragging out the General Plan revision to allow this project and others to prejudice the plan's final outcome.

SP 212-1 and the Development Agreement have significant lands for a business park with trigger points to start building the employment base. It is apparent that much of this acreage will no longer be a source of jobs for the area. Since it is known in advance that you are going to significantly change SP 212-1/Development Agreement, we believe that you need a new EIR, Specific Plan and Development Agreement from the very beginning.

The Sierra Club would like to be notified of all meetings open to the public regarding the old and/or new Moreno Highlands project. Please use the address at the bottom of this letter to also notify us all hard-print communications and documents related to the above projects. If this is not possible, let us know how we can help you to make it happen.
Sincerely,

George Hague

George Hague
Conservation Chair
Moreno Valley Group of the Sierra Club
26711 Ironwood Avenue
Moreno Valley, California 92555-1906
Phone: 909-924-0816
Fax: 909-924-4185

Riverside Transit Agency
1825 Third Street
P.O. Box 59968
Riverside, CA 92517-1968
Phone: (951) 565-5000
Fax: (951) 565-5001

Letter T

July 27, 2005

Cynthia Kinser, Principal Planner
Community Development Department
14177 Frederick St
Moreno Valley CA 92553

SUBJECT: Draft EIR, Moreno Valley General Plan Update – Comments from RTA

Dear Ms Kinser

Thank you for the opportunity to review the Draft Environmental Impact Report (DEIR) for the General Plan update. A copy of Riverside Transit Agency (RTA) staffs' internal review memo on this project is referenced and is attached for your information, providing more detail and analysis.

T-1

RTA generally supports the content of the General Plan with respect to transit. The following positive policy positions, in particular, are noted:

- The Plan as a whole voices moderate support for transit alternatives;
- It acknowledges a potential for further transit-related development;
- It supports continued coordination between the City of Moreno Valley and RTA;
- It acknowledges the rail commuter opportunity afforded by the extension of Metrolink;

T-2

RTA makes the following suggestions for possible further elaboration in the General Plan. These are only the highlights; more detail is provided in the attached RTA staff memo.

- RTA staff suggests adding a few paragraphs relative to the Bus Rapid Transit or "BRT" routes and stations. This service is set to begin in Moreno Valley in 2009;
- Include discussion of physical and operational characteristics that support BRT;
- Discuss the role of transit centers, transit nodes and transit oases relative to existing and proposed development patterns in Moreno Valley;
- Discuss the role of potential transit corridors in future development patterns;
- Discuss the vital "neighborhood connectivity" issue in community design;
- Mention the RTA-prepared *Design Guidelines for Transit* planning resource, found at http://www.riversidetransit.com/Downloads/RTA%20Design%20Guidelines%20v7.pdf on the RTA internet site.

Riverside Transit Agency
1825 Third Street
P.O. Box 59968
Riverside, CA 92517-1968
Phone: (951) 565-5000
Fax: (951) 565-5001

At this opportunity, RTA would like to commend Moreno Valley's staff and others who have worked with RTA over the last several years in the interests of better bus service.

T-3 In summary, RTA generally supports the Draft EIR and encourages the City of Moreno Valley to go forward with the next steps leading to adoption and implementation of the 2005 Update to the General Plan.

We look forward to receiving a copy of the final documents. If you need additional clarification or if I can be of further assistance, please call me at (951) 565-5164 or contact me online at mmccoy@riversidetransit.com.

Sincerely,

Michael McCoy
Senior Planner

Riverside Transit Agency

July 27, 2005

PLANNING DEPARTMENT MEMO

GENERAL PLAN REVIEW

To: Augustus Ajawara, RTA Director of Planning

From: Michael McCoy, Senior Planner Mike

Subject: **Draft EIR for the Moreno Valley General Plan Update -- RTA Comments**
Bus routes affected: 16, 16E 17, 18, 18A, 19, 20, 41, 35, 208 and potential local and regional future transit routes.

Summary: The City of Moreno Valley Planning Dept has issued the Draft Environmental Impact Report (DEIR) for its 2005 General Plan update. This DEIR will be one of the most important policy documents guiding land use and development decisions in Moreno Valley over the next 20 years. RTA staff has reviewed the printed Plan and the Technical Appendices on the CD with respect to transit and makes the following observations:

T-4

- **From reviewing the text, RTA staff is not sure of the "planning horizon" for this Update. There are references to 'at build out' but no applicable date is found. Many other General Plans in Riverside County are titled "General Plan 2025" or similarly, as it seems to be a common and useful practice.**

- **Overall, RTA staff suggests there could be further elaboration in the Plan and/or Appendices regarding the following transit-related topics:**

T-5

- Provide a more complete, route-by-route description or map of existing RTA transit services;

T-6

- Provide a description and map of the future BusRapid Transit (BRT) system, route and stations in Moreno Valley. A proposed BRT route would connect the Moreno Valley Mall with the RCC campus by means of Day St, a connection to the future Metrolink Station near the I-215 at Alessandro, then a lengthy traverse of the Alessandro corridor to the County Hospital, terminating at the RCC Campus, then returning over the same route. Please contact RTA staff for further information;

T-7

- Certain on-the-street physical components essential to an effective BRT service ought to be reserved in advance for eventual transit use. For example, lengthier two-bay bus turnouts and more spacious adjacent sidewalk areas need to be reserved at selected BRT stations prior to such sites being constrained by new development.

T-8

- Certain operational characteristics essential to an effective BRT service ought to be discussed in the General Plan. For example, implementation of the traffic signal pre-emption concept, queue-jumping lanes at selected locations or the continuation of the green light (signal priority) for BRT vehicles (only) could be made City policy;

T-9

- Please include a discussion and description of concepts such as transit center, transit oasis, transit node, transit corridor, transit-friendly development and transit-oriented development. These components are briefly discussed in paragraph 5.7.4, for example, in the Appendix.

T-10 Provide a basic description and purpose for the City's primary Transit Center in the vicinity of the Moreno Valley Mall. Recent discussions suggest the existing Transit Center near the Home Town Buffet restaurant could be moved to Town Circle;

T-11 Describe potential locations of other lesser *de facto* or proposed Transit Centers or Nodes such as at the RCC Campus, the Moreno Valley City Hall and at the County Medical Center, for example. A minor Transit Center features three or more converging bus routes;

T-12 Transit Centers and Nodes may be tied to such transit-friendly land uses such as mixed-use development, senior citizens housing, medium-to-high density residential uses, employment centers, institutional uses and other similar projects;

T-13 RTA staff commends the General Plan Team for raising the possibility of innovative Transit Oases in Moreno Valley, however – on page 5.2-14 some additional discussion is requested to make a clearer distinction between what exactly is a Transit Oasis and a Transit Center.

T-14 Regarding the March JPA site near the I-215 interchange with Alessandro, RTA staff is not aware of any proposals there that would qualify as a 'transit oasis'. Most of the nearby land has already been designated for conventionally designed commercial and high-quality industrial uses by the surrounding jurisdictions. The Riverside County Transportation Commission is taking the lead on station design along this new 25-mile Metrolink commuter rail route. Any transit center at the proposed "Moreno Valley-March-Alessandro" station would likely be limited to vehicle parking and passenger waiting areas.

T-15 Transit Oases need not always be placed along rail routes. Other potential sites such as adjacent to the 60 Freeway in eastern Moreno Valley or along the BRT corridor could be explored if tied to express-type bus service. About 40 acres is the minimum required for an effective transit oasis. Menifee and Lake Elsinore are nearby communities currently pursuing some form of transit oasis efforts. Now is the time to plan for transit oases in appropriate locations, especially near transit corridors and near central activity areas of some of the larger Specific Plans being proposed around the City. Please contact RTA staff for further information if desired;

T-16 Daily Amtrak long-distance rail passenger services may be accessed from Moreno Valley by means of a connecting dedicated Amtrak bus connecting service that stops at a convenience store at the northeast quadrant of the I-215 and Alessandro freeway interchange. The public is generally unaware of this service. The buses connect primarily with trains to Northern California and the Pacific Northwest;

T-17 Riverside Transit Agency continues to provide advisory services to local governments regarding transit, especially physical planning issues that affect safety, convenience, compatibility and attractiveness of transit stops and adjacent land uses. The City of Moreno Valley stands out as one of the most consistent and effective jurisdictions in the RTA service area that regularly and routinely submits new development projects to RTA staff for review, comment and advisories.

T-18 RTA offers standard "Design Guidelines for Bus Transit" on its internet site at http://www.riversidetransit.com/Downloads/RTA%20Design%20Guidelines%20v7.pdf

T-19 The discussion of transit in the General Plan needs to include mention of the concept of "neighborhood connectivity" to local bus routes. Perhaps this can be addressed in the Objective 5.8 section on pedestrian facilities. Buses usually operate along arterial streets and stop at signalized intersections with other arterials. However, in residential neighborhoods, high walls often block easy access from the interior of the subdivision out to the bus stop. A lengthy hike around the perimeter of the tract then becomes necessary and

T-19 (cont.)

tends to defeat ease of access or even penalize potential bus riders. The solution is to require a pedestrian pathway or cul-de-sac that "touches" the arterial to provide easy access to bus routes in the vicinity of the signalized intersection. The General Plan should state "Through the development review process by the local transit agency, safe and convenient pedestrian access should be provided from the interior of development projects out to the perimeter streets where bus routes occur or are planned".

T-20

Overall, the Draft EIR is generally supportive of improved transit services and access thereto. At this opportunity, RTA staff wants to commend the City of Moreno Valley's elected and appointed officials, their staff, the consultant and the General Plan team as a for their cooperation with RTA over the last several years in the interests of better bus service. It is noted that many important projects in Moreno Valley have been referred to RTA staff for review in the last few years, for which the bus agency is appreciative.

In summary, RTA generally supports the Draft EIR and encourages the City of Moreno Valley to consider the above list of suggested text additions and go forward with adoption and implementation of its General Plan for 2025.

INITIAL REVIEW INFORMATION - Review completed date: July 27, 2005.

Documents received at RTA: June 20, 2005;
Reply-by Date: July 31, 2005
City Council Agenda Date: Probably late 2005;
Thomas Guide Map page grid: Not applicable;
Case Numbers: State Clearinghouse Number is 2000091075;
Contact Planner: Ms Cynthia Kinser, Principal Planner (951) 413-3206
Applicant: City of Moreno Valley, CA
Applicant's Consultant: P & D Consultants of San Diego CA

RTA PLANNING FOLLOW-UP:

___ Standard "Acceptable" letter to jurisdiction without comments

___ Standard "Acceptable" letter to jurisdiction with compliments or positive advisories

√ Letter with advisories re transit issues

Letter sent: Date: 7/27/05

SECOND REVIEW:

Review materials placed in archive files: Date: _____

Letter U

Pete and Arlene Weaver
11630 Redlands Blvd
Moreno Valley Ca 92555
951-924-6603

RECEIVED
JUL 28
CITY OF MORENO VALLEY

July 25, 2005

Cynthia Kinser
Principal Planner
Community Development Department
14177 Frederick St.
Moreno Valley Ca 92553

SUBJECT: GENERAL PLAN UPDATE

My name is Peter Weaver I currently reside at 11630 Redlands Blvd. I own approximately 11 acres on the southeast corner of Kalmia Avenue and Redlands Blvd. I write this letter to inform the council members I strongly support alternative plan #2.

I would like to explain the reason why council members should support alternative plan #2.

U-1

On the southwest corner of Kalmia and Redlands, the Mormon Church has built a beautiful building. It is landscaped and well maintained. This is a direct result of development. Controlled development similar to this site enhances the city appearance. The majority of open land in the east end of our city is full of weeds and creates an unsightly appearance.

North of the church on Redlands Blvd. is a large lot, which is, zoned R-1. I am assuming this large lot will soon be another development designed to attract upscale executive type homes on 1-acre lots who would like to own a horse or two. South of the church on Redlands Blvd is zoned the same where Pacific Communities is building new homes on either half or one acre lots.

Directly to the north of my property on Redlands Blvd and Highland Streets are 10 homes all on approximately 1-acre lots. Some of these homes have a horse. Directly to the north of those homes is our city's equestrian center.

Under the cities current general plan my 11 acres of property is zoned RR which is one house for every 2-1/2 acres. Under the current zoning laws if I chose to develop my 11 acres I could effectively split the lots and build no more than four homes. The city would require me to improve the 600 feet along Redlands Blvd and approximately 600 feet on

U-1 (cont.)

the north side of my property on Kalmia. This includes curbs, gutters, lighting and sidewalks.

Costs associated with the improvements would undoubtedly be passed along to the four lots. The costs would be too high to ever consider development thus leaving the 11 acres undeveloped and generally produce weeds.

If you survey the general public the majority of the people do not want a lot more than one acre in size. They are too much too take care of; if you take pride in your property and keep the weeds off. I currently maintain the 600 feet along the front side of my property. I do this because I take pride in my property. I don't want tumbleweeds on my 11 acres of property I don't want trash along the ditch. I take pride in my property. I spray weeds regularly along the road so the general appearance is clean and weed free.

Choosing alternative plan #2 will allow development to take place. It will match the existing zoning laws that currently surround my property. Lots directly to the south, north and west of me are all on 1-acre parcels. Choosing alternative plan #2 makes sense, allows development of one acre lots which could allow horses and match the surrounding lots that border my property lines.

Planned development will assist in preventing the tumbleweeds currently aplenty in the northeast quadron of our city. Allowing homes to be built on either R-1 or R-2 lots allow homeowners to develop lots and have a rural lifestyle at the same time. Leaving the current zoning at RR will prevent development from taking place due to the costs associated with improvement of the roads, gutters, and other required city improvements.

I understand advocates are against the rezoning maintaining a rural lifestyle surrounding the equestrian center. Choosing alternative plan #2 will maintain a rural lifestyle and allow development at the same time. It makes sense and is the best plan for our city.

Changing the general plan to alternative plan #2 will allow development and be compatible with the parcels surrounding my 11 acres. Additionally it will be compatible with the equestrian center and allow controlled development to include homes with lots still large enough to have horses.

I strongly support alternative plan #2 and encourage you to vote in this manner.

Peter and Arlene Weaver

Letter V

TO: Cynthia Kinser, Principal Planner

FROM: Margie Breitkreuz

DATE: July 27, 2005

RE: General Plan Update

The following is presented in response to requests for community input on the general plan. Over the years as the general plan has been reviewed, the city has received input from the community members. I hope these comments are being considered at this time as well.

V-1
- Adopt Option 3 land use map.

V-2
- Rezone the area between Moreno Beach to the west, Quincy to the east, Ironwood to the north to a minimum of one acre parcels. This is an area for animal keeping. There are sufficient one-acre parcels. Larger lot sizes are needed to lower density.

V-3
- Annex all areas in the northern boundary of Moreno Valley including Reche Canyon. Provide for multiuse trails in these areas.

V-4
- Maintain Moreno Beach north of Ironwood to as a two-lane road (one lane each direction). The area is zoned for animal keeping and larger lot sizes. Does not warrant a larger road.

V-5
- Reconsider the elimination of Sinclair as a north/south overpass. When Sinclair was eliminated, it was thought that Moreno Beach would not have a large volume of traffic. The Walmart and other shopping entities, plus apartments has changed the volume of use. Sinclair was to be an overpass with no freeway ingress and egress, connecting north and south portions of the city—available for multiuse traffic (bikes, pedestrians, horseback riders). Similar crossing exists at Indian north of Sunnymead Bouelvard.

V-6
- Areas zoned for animal keeping shall be designated as Primary Animal Keeping Areas which will include the items established by the city's ad hoc committee reviewing animal keeping zoning. (Refer to Mark Gross, city planner.).

V-7
- Establish zoning to respect irreplaceable natural assets which define community character. This would include but not be limited to:

  – *Appropriately zone all hillside areas.*

V-7 (cont.)

- *Hillsides and ridgelines contain appropriate routes for equestrian and pedestrian trails which can be acquired by the city to its greatest advantage through dedication.*
- *Minimize hillside disturbance and potential problems such as construction scars, erosion, increased runoff and downstream flood hazards.*
- *Roadway grades shall not exceed 10 percent.*
- *Ribbon or rolled curbs shall be used except where vertical curbs are deemed necessary for safety or drainage as determined by city.*
- *The location and installation of all utilities shall minimize disruption of the natural terrain and shall not be within designated natural areas.*
- *Site plans shall show preservation of prominent natural features, native vegetation and open space in a manner compatible with the surrounding neighborhood, minimizing alteration of terrain necessary for development.*
- *Site plans for development of property on steep slopes shall take into account the visual impact on surrounding properties.*
- *No grading, engineered slopes, housing construction, streets, utilities, or other man-made features shall be permitted within identified ridgeline areas.*
- *Primary ridgelines are the highest undeveloped and visually dominant ridgelines in a viewshed, recognized by the continuous horizon line formed against the sky. The primary ridgelines are an exhaustible and precious scenic resource of the city and its citizens worthy of preservation for the welfare of all the citizens. As the hillsides continue to be developed, proper planning is necessary to protect primary ridgelines from grading activities.*
- *Parcel maps, building plans, and grading plans for any property with primary ridgelines within its boundaries shall include provisions for the complete preservation of such primary ridgeline areas in their natural state.*
- *Secondary ridgelines provide a significant visual backdrop or landmark at the community or neighborhood level. Secondary ridges are lower "branches" or "fingers" of the primary ridgelines which extend in different directions, or separate lower ridgelines that provide a visual foreground feature for primary ridgelines or form the boundary of a watershed. The character of secondary ridgelines must be maintained through the course of development to protect their importance at a community or neighborhood level.*
- *Tentative tract and parcel maps, building plans, and grading plans for any property with secondary ridgelines within its boundaries shall include provisions for the complete preservation of such secondary ridgeline areas in their natural state.*

Letter W

Cynthia Kinser, Principal Planner
Planning Division
City of Moreno Valley
P.O. Box 88005
Moreno Valley, CA 92552-0805

July 28, 2005

RECEIVED
JUL 29 2005
PLANNING
CITY OF MORENO VALLEY

Re: Draft EIR for Moreno Valley General Plan Update (State Clearing House No. 2000091075)

Dear Ms. Kinser:

W-1 Notice of this document (DEIR) was not provided to me by the City, even though I specifically requested to be notified of any documents and updates of the General Plan in my letter of Sept. 28, 2000 (which I attach to this letter, and which is explicitly acknowledged by the City as having been received on page 5.6-3 of the DEIR). I learned of the DEIR's existence only through a third party. Therefore the current review period for this DEIR is invalid under CEQA, and it has to be formally re-issued and extended.

As in 2000, I remain concerned about inadequate analysis of geotechnical issues, their impacts and proposed mitigation in the city's General Plan.

The highly active San Jacinto fault zone occurs in the eastern part of the city (northern San Jacinto Valley and western Badlands). This tectonically active area is the most subject to future development by the city (up to 10,000 homes). My concerns are:

W-2 1) The DEIR relies on Alquist-Priolo maps of the San Jacinto Valley that are over 30 years old (last updated in 1974), but numerous geological studies of the area have appeared in print and online since then.

W-3 2) In 1995 the existence of the new active Farm Road fault in the valley was published (ref. 1 below). It does not appear on the Alquist-Priolo maps, but this fault raises the potential for large earthquake propagation across the valley. Evidence of the active nature of this and other faults in the valley is provided by a growing bulge that has recently appeared on Alessandro Road in the middle of the valley, between Theodore Street and Gilman Springs Road. *This runs contrary to the claim made on p. 5.6-4 of the DEIR that the activity of the fault is not established.*

W-4 3) USGS studies identify high subsidence rates (1 inch per year) and high liquefaction potential in the valley (refs. 2, 3, 4), as well as the establishment of a large, growing ephemeral lake (Mystic Lake) in wet years. *These data contradict statements made on page 5.6-9 of the DEIR that subsidence, shallow groundwater and liquefaction are less than significant impacts.*

W-5 4) A 2000 geological map of the Santa Ana quadrangle (ref. 5) shows an extensive system of active ground fissures and cracks up to 5 feet wide, 80 feet deep and a mile long in the valley, caused by tectonic subsidence and groundwater removal.

W-6 5) A 1995 paper (ref. 6) documents a slow-moving active landslide (creep) along Gilman Springs road on the eastern side of the valley. *The constant repairs necessary to this part of the road testify to its activity, and contradict the doubt implied by the DEIR statement on page 5.6-3 of the DEIR that the landslide "reportedly exists".*

W-7 6) A 1993 State Special Publication on planning scenarios for earthquakes (ref. 7) identifies the eastern part of the city (San Jacinto Valley and Badlands) as having the *highest possible potential for seismic shaking, damage and landslides in Southern California.* This makes that part of the city unique in its seismic hazards, and thus worthy of the highest standard of geotechnical impact analysis.

W-8 7) The potential level of groundshaking during a seismic event is far greater than that assumed in the DEIR. The correct level of seismic shaking can be determined from the USGS/CGS Probabilistic Seismic Hazards Assessment (PSHA) Model online at:
http://www.conservation.ca.gov/cgs/rghm/pshamap/pshamain.html
The correct predicted level of groundshaking is extremely high, making the seismic hazard impacts far more significant than are claimed in the DEIR.

W-9 Sadly, the DEIR has only a few inadequate pages discussing geotechnical issues, and fails to address all of the new published data listed above. There is no new, updated geotechnical appendix to support analysis, impact assessment and mitigation claims. Two consulting reports cited on page 5.6-10 of the DEIR [1. Earth Consultants International. *Slope and Soil Instability Hazards-County of Riverside*, August 1, 2000. 3. Martin, Jay and Reeder, Wessly (Gary S. Rasmussen and Associates) "Engineering Geology Investigation; Tentative Tract No. 24721; South of Eucalyptus Avenue, east of Redlands Boulevard; Moreno Valley, CA (1989).] are not included in the DEIR or its technical appendices and thus not made available to the public to use in assessing the adequacy of the DEIR.

W-10 The DEIR claims on pages 2-3, 2-10 and 2-11 that adherence to both the Alquist-Priolo legislation and Uniform Building Code will reduce seismic hazards to a "less than significant level". But this claim is not justifiable and directly contradicts other statements made in the DEIR.

W-11 The DEIR on page 5.6-7 clearly defines the nature of a significant seismic impact:

"*For the purposes of this EIR, a significant impact would occur if implementation of General Plan Alternatives 1, 2, or 3 would:*

• *Expose people or structures to unacceptable risks of major geologic, seismic or*

soils hazards that could not be overcome by using reasonable construction and/or maintenance practices."

W-11 (cont.)

Yet on page 5.6-6 the DEIR states that this impact cannot be mitigated by construction practices:

"However, the UBC does not provide 100 percent protection against seismic damage."

and it also states that exposure to seismic hazards cannot be avoided:

"A major earthquake associated with any of these faults could result in moderate to severe groundshaking in the planning area. Damage to buildings and infrastructure could be expected as a result of groundshaking during a seismic event."

"Table 5.6-1 depicts the seismic data for regional faults that could affect the planning area. As depicted, the maximum credible earthquake from these faults ranges from 6.8 to 7.4."

"Most loss of life and injuries that occur during an earthquake are related to the collapse of buildings and secondary damage. Seismic groundshaking can also result in substantial structural damage and loss of income."

If development is allowed, damage will occur and people will be injured or killed, by the DEIR's own admission. By the DEIR's own criteria, *the proposed mitigation cannot overcome the significance of the impact.* The claim that mitigation of seismic impacts to "less than significant level" has been achieved is invalidated by the DEIR's own statements.

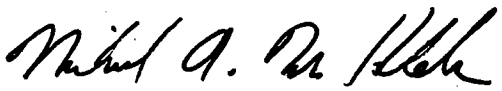
This inconsistency is compounded by the fact that the DEIR assumes erroneously low probabilities of groundshaking, far below those predicted by the current USGS/CGS Probabilistic Seismic Hazards Assessment (PSHA) Model.

The eastern end of the city occurs within the highest possible seismic shaking zone identified by both the state and the county, along the most seismically active fault zone in Southern California, and this coupled with the established liquefaction, collapse and landslide potential in that part of the city (San Jacinto Valley, Badlands) expose *any* structures intended for human habitation to extremely high risk for damage, injury and death, both within and outside of the 30-year-old Alquist-Priolo zones. *The only feasible alterative that would mitigate these hazards to a "less than significant level" would be a complete lack of future residential, commercial, and industrial development in the northern San Jacinto Valley and western Badlands.*

I ask that these comments be incorporated into the public record for review of this general plan, and hereby incorporate all references cited above and below (and their contained references) into the review process for this general plan. I also ask that I be kept informed in writing of all notices, meetings and actions regarding this general plan.

W-12

Sincerely,



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1. Park, S.K. et al. 1995, Delineation of intrabasin structure in a dilational jog of the San Jacinto fault zone, southern California; Jour. Geophysical Research, Vol. 100, No. BA, p. 691-702.
2. Morton, D.M., 1977, Surface deformation in part of the San Jacinto Valley, southern California; Jour. Research U. S. Geological Survey, Vol. 5, No. 1, p. 117-124.
3. Morton, D.M., 1992, Subsidence and ground fissures in the San Jacinto basin area, Southern California; U.S.G.S. Subsidence Interest Group Conf., Abstracts, p. 29-31.
4. Morton , D.M., Matti, J.C., 1993, Extension and contraction within an evolving divergent strike-slip fault complex: the San Andreas and San Jacinto fault zones at their convergence in southern California; Memoir Geol Soc. America, 178, p. 217-230.
5. Morton, D.M., 2000, Preliminary Digital Geologic Map of the Santa Ana 30' x 60' Quadrangle, Southern California; U.S.G.S. Open-File Report 99-172. http://wrgis.wr.usgs.gov/open-file/of99-172
6. Morton, D.M., and Sadler, P.M., 1989; Landslides flanking the northeastern Penninsular Ranges and in the San Gorgonio Pass area of southern California; in Sadler, P.M., and Morton, D.M. (Eds.) Landslides in a Semi-Arid Environment; Inland Geological Society Publ., Vol. 2, p 338-355.
7. Toppozada, T.R., et al., 1993, Planning scenario for a major earthquake on the San Jacinto fault in the San Bernardino area; Calif. Dept. of Conservation, Div. Mines and Geology, Special Publ. 102, 250 pp.

Attachment: comment letter of Sept. 28, 2000 requesting notification of availability of DEIR

Sept. 28, 2000

Jeff Specter, Associate Planner
Community and Economic Development Department
City of Moreno Valley
P.O. Box 88005
Moreno Valley, CA 92552-0805

Re: Comments on draft Moreno Valley General Plan

Dear Mr. Specter:

I have been a resident of the city of Moreno Valley since 1985, and a Geologist at UCR since 1984. I would like to identify several technical issues to be included for analysis in the draft Moreno Valley General Plan (as recently outlined at public scoping sessions held in Moreno Valley). My comments comprise seven pages, including a list of published technical literature cited at the end.

The General Plan needs to consider the impacts of Moreno Valley's unique geological features on future development, especially with regard to insuring public safety and

health as well as the City's long-term economic well-being. The major geological features in and near the City are:

1) The San Jacinto fault zone, an Alquist-Priolo fault hazard zone, is the most active earthquake fault zone in all of California. This fault zone lies at the eastern edge of the City, where potential development pressure is the greatest.

2) The San Jacinto Valley, the most rapidly-subsiding sediment-filled basin in California, contains the ephemeral Mystic Lake and is also located at the eastern edge of the City.

General Plan analysis of the impacts of these features on future development must go beyond a simple compilation of the standard state Alquist-Priolo zone maps for seismic hazards, many of which are more than a decade out of date. The analysis also must go beyond simple consideration of FEMA flood zone maps, some of which are also out of date.

These standard hazard maps are out of date because they do not include information from several important *new* studies of seismic and flood hazards in San Jacinto Valley and Reche Canyon, all published in the scientific literature within the past decade.

Public health and safety, especially with regard to the planned construction of schools, hospitals and residential units, cannot be achieved (mitigated to a reasonable level) by a hazard map that is incomplete, inaccurate and seriously out of date. Scientific advances in our knowledge of seismic and other geotechnical hazards occur quickly, and the information in the general plan must be kept up to date with such advances.

In fact, the state's Alquist-Priolo guidelines and legislation require that general and specific plans by lead agencies include analysis based not only on the existing state hazard map zones, but also on all other relevant published information on faults and hazards inside and outside of those map zones (Hart, 1992). This is because many recent deadly and costly seismic events have occurred on faults that were recognized but not yet officially zoned on hazard maps by the state, or were not recognized to be active. The recent Landers, Northridge, Hector Mine and Napa Valley earthquakes are good examples.

Geotechnical Hazards

In particular, there are several specific geotechnical hazards that must be addressed by the City's draft hazard map and general plan:

1) seismic shaking zones and building codes
2) the Casa Loma fault
3) the Farm Road fault
4) a slowly-moving landslide along Gilman Springs Road
5) chronic subsidence and liquefaction in San Jacinto Valley
6) the growing size of Mystic Lake

1) Seismic Shaking Zones

San Jacinto Valley and Reche Canyon lie within at least Riverside County Seismic Hazard Zone IV(B), due to their proximity to the active San Jacinto and San Andreas fault zones. Hazard maps and analysis should depict these shaking zones and their implications for the adherence of development to the Uniform Building Code.

Within this type of hazard zone, the types of land use that may be proposed (including Critical Land Uses (e.g., hospitals), Essential Land Uses (e.g., schools) and Normal to High Risk Land uses (e.g., large apartments)) will potentially encounter levels of ground shaking that exceed the Uniform Building Code by factors of 2 to more than 5.

Such a level of shaking cannot be mitigated to a level of insignificance by any technical means known to humans. Moreover, there is a significant hazard from vertical ground acceleration that is not compensated for by current building codes, and also a large potential for amplification of such energy from even moderate earthquakes within valleys (such as San Jacinto) with thick sediment fill (Mueller, 1994; Seismic Safety Commission, 1995; USGS, 1996). Analysis of these hazards from recent earthquake events needs to be made in light of their constraints on planning within these types of seismic shaking zones.

2) Casa Loma fault

The Casa Loma fault strand of the San Jacinto fault zone has been depicted on previous Riverside County seismic hazard zone maps. It runs up the west side of San Jacinto Valley, almost to Highway 60.

The eastern Claremont strand of the San Jacinto fault zone and the companion parallel western Casa Loma strand are important, especially given that the Farm Road fault runs between them, thereby easing the potential propagation of ground rupture across the entire San Jacinto Valley (Park et al., 1995). This allows for a much larger earthquake event along this part of the San Jacinto fault zone.

Geologic consulting reports filed with both the County and the City of Moreno Valley for the recent gas pipeline project (Southern California Gas Pipeline No. 6900) and the Moreno Highlands Specific Plan must be analyzed for their information on the extent of this and related faults.

3) Farm Road fault

The Farm Road fault was recently discovered in the San Jacinto Valley by Park et al. (1995). Because this active fault runs medial to the major bounding faults of the San Jacinto fault zone, and because this fault runs under a major southwest U.S. natural gas transmission and compression plant located in that valley, analyses of its potential impact on ground rupture propagation and corresponding implications for public health and safety (such as gas line rupture and ignition) must be made.

4) Landslides on Gilman Springs Road

Morton and Sadler (1989) have documented the existence of an active, slowly-moving landslide along Gilman Springs Road in the San Jacinto Valley. This landslide is not shown on the draft seismic hazard maps.

Damage from this creeping landslide forces the frequent repair of this road by the County, and will continue to impact any plans for infrastructure (buildings, roadways, pipelines) along the west side of this valley. Its existence is a reflection of the chronic tectonic subsidence problem that plagues this valley (see next section).

In addition, Morton and Sadler (1989) document the existence of several older and possibly active landslides along Gilman Springs Road.

5) Subsidence and Liquefaction in San Jacinto Valley

The San Jacinto Valley is among the most seismically active of the major strike-slip fault zone valleys in southern California and has a strain rate of 20 mm per year, comparable to the San Andreas fault zone (WGCEP, 1988; Morton and Matti, 1993; Park et al., 1995).

The overproduction of groundwater from the valley's sediment fill causes the sediment aquifer layer to collapse and the valley floor to sink at a rate much faster than the normal tectonic subsidence. Morton (1977, 1992) has reviewed the data on the effects of groundwater withdrawal this century on the valley's overall subsidence, noting that the total land subsidence rate is an astounding 1-2 inches per year. Perhaps the most tangible example of the seriousness of this problem was the abandonment of an MWD dam in the valley in the 1960s, after it sank 2-3 feet (Morton, 1977).

In addition, numerous ground cracks and fissures up to a mile long, 5 feet wide and 80 feet deep have developed in the valley since the 1950s and have grown in length and number. Morton (2000) has just recently published a new geologic map of the ground fissure distribution.

These long-term geologic features are endemic to the valley and therefore cannot be mitigated to a level of insignificance by humans. They will place severe public safety constraints on any infrastructure (buildings, roadways, pipelines, dams) that may be planned for the valley.

6) Growing size of Mystic Lake

The extremely rapid rate of geologic deformation in the San Jacinto Valley has resulted in formation of a strike-slip "pull-apart basin" that has developed along parallel fault strands in the San Jacinto fault zone. Such basins or "holes" in the crystalline basement rock commonly become larger and deeper, developing into topographically low valleys along strike-slip fault zones that are rapidly filled in with sediment and water. Local examples include the Salton Sea (along the San Andreas fault zone) and Lake Elsinore (along the Elsinore fault zone). Mystic Lake is a similar example, forming at the "low spot" in the San Jacinto Valley because of this natural tectonic subsidence along the northern San Jacinto fault zone.

Normally the uninterrupted supply of stream and river sediment into such sinking valleys would nearly keep up with the rate of tectonic subsidence, so that even though the valley's underlying crystalline basement subsides, the growing thickness of infilling sediment acts to compensate for it. Over time, the valley surface would therefore remain at a low but relatively constant elevation. In the case of the San Jacinto Valley, however, two discretionary human activities are preventing this natural geologic compensation from taking place.

The first activity is groundwater withdrawal, as mentioned in the previous section above. The second activity is the non-regulated upstream diversion of the San Jacinto River from its natural

historic course into Mystic Lake (and out through the San Jacinto Wildlife Area). This diversion has cut off the main natural compensating supply of sediment into the subsiding basin and has increased the total land subsidence rate to a level well above that due to tectonic deformation and groundwater withdrawal.

In other words, the northern San Jacinto Valley already has a natural tendency to subside tectonically because of the geologic setting, but groundwater withdrawal and river diversion have exaggerated this tendency, leading quite expectedly to increased flooding problems. A major growing sinkhole is being created by the combination of tectonic deformation and human activities.

Because of these two human activities, Mystic Lake has become deeper and larger in area each time it has formed this century (Doug Morton, U.S.G.S., personal communication), and will continue to enlarge within the valley as long as the activities continue.

The only options to reverse this trend are to stop the diversion of the river and stop the excessive groundwater withdrawal, thus allowing the natural compensation for tectonic subsidence to take place. Planning for this part of the valley must take into consideration these issues and the chronic flooding problems that will occur there.

California's existing emergency response plan for a major earthquake

In 1993, the State of California made a major effort to plan for a major earthquake on the San Jacinto Fault zone (Toppozada et al., 1993). This massive study considered the impact of geology, soil, and human infrastructure on the resulting damage estimates and identifies specific areas of high risk, including areas subject to liquefaction in Riverside County. Impacts on transportation corridors and emergency response networks were also identified.

This major hazard analysis includes large areas covered by the draft Moreno Valley general plan and its data and conclusions must be integrated with the draft general plan. Schools, hospitals, high-density housing, major transportation corridors, and economically significant commercial development projects should not be slated for the areas depicted as high risk by this important State study.

This impact is made even more relevant by the important recent nationwide study by FEMA (2000), which identified the Riverside area as having the second highest potential for monetary damage from earthquakes in all of the United States. This safety and economic risk to Riverside exists because of the proximity of that City's costly development and infrastructure to major faults and sediments that are subject to shaking. The City of Moreno Valley could find itself in a similar position of risk as its development proceeds.

Geological Impacts on Economic Development

The impacts of geological features on the economic development and well-being of the City must be assessed by the general plan. The City cannot afford to allow overly ambitious development plans, and the assumed or promised tax revenues from those projects, to run into serious completion problems because of presently foreseeable geotechnical issues.

The most recent example of this type of planning problem (and consequent unrealized tax revenue) was the Moreno Highlands Specific Plan. The developer for this project suddenly

pulled out, one week after receiving their first soil and geologic trenching reports from their consultants. These trenches apparently identified serious geotechnical problems that would be associated with building out the project, such as active faulting and liquefaction. The amount and cost of geological engineering (e.g., major earthmoving and set-backs) that would be required to address these problems may have been a major impetus for their sudden withdrawal from the project. Both the developer and City were warned about these issues, but chose to ignore their significance. Any future development of the specific plan area will likely encounter similar problems.

Fault Hazards are *Not* The Same Everywhere

It is very common for non-geotechnical persons to assume that southern California is rife with active faults, and that earthquake and liquefaction hazards therefore must exist equally everywhere in the region. "Why should we be worried about earthquake hazards when they are everywhere in southern California?" I have often been asked. Nothing could be farther from the truth!

Such an easy, false philosophy about the pervasiveness of geotechnical hazards is dangerous. Time and again, in places like Loma Prieta, Mexico City, Landers, Northridge and Napa, we have seen that the combination of localized fault zones (with high shaking potential) and unstable (collapsible) soils and sediments can create death and costly damage during earthquakes (Seismic Safety Commission, 1995; USGS, 1996).

Specific localized zones of high risk do exist near major fault zones, and they can be mapped out when sufficient resources are applied to the issue. This is why Alquist-Priolo legislation exists in the first place, explicitly recognizing the importance of local geology and the mapping out of such hazards.

Moreno Valley is indeed unfortunate to exist virtually on top of a major earthquake fault zone and a major sediment-filled valley filled with very unstable soils and sediments. The economic future of the City will partly depend on wise and prudent recognition of this fact, and will benefit from smart planning for the consequences.

Thank you for considering my comments on the draft hazard map for the Moreno Valley General Plan. I ask that these comments be incorporated into the public record for review of this general plan, and hereby incorporate all references cited above and below (and their contained references) into the review process for this general plan. I also ask that I be kept informed in writing of all notices, meetings and actions regarding this general plan.

Sincerely,

Michael A. McKibben, Ph.D.
23296 Sonnet Drive
Moreno Valley, CA 92557

References Cited

FEMA, 2000, HAZUS 99: Average Annual Earthquake Losses for the United States; Federal Emergency Management Agency, FEMA 366, September 2000, 32 pp. http://www.fema.gov/nwz00/nwz00_51.htm

Hart, E.W., 1992, Fault-rupture hazard zones in California; Calif. Div. Mines and Geol., Special Publ. 42, 32 pp.

Morton, D.M., 1977, Surface deformation in part of the San Jacinto Valley, southern California; Jour. Research U. S. Geological Survey, Vol. 5, No. 1, p. 117-124.

Morton, D.M., 1992, Subsidence and ground fissures in the San Jacinto basin area, southern California; Abstracts and Summary, U.S.G.S. Subsidence Interest Group Conference, Edwards Air Force Base, Antelope Valley, Nov. 18-19, p. 29-31.

Morton, D.M., 2000, Preliminary Digital Geologic Map of the Santa Ana 30' x 60' Quadrangle, Southern California; U.S.G.S. Open-File Report 99-172.
http://wrgis.wr.usgs.gov/open-file/of99-172

Morton, D.M., 1992, Subsidence and ground fissures in the San Jacinto basin area, Southern California; U.S.G.S. Subsidence Interest Group Conf., p. 29-31.

Morton , D.M., Matti, J.C., 1993, Extension and contraction within an evolving divergent strike-slip fault complex: the San Andreas and San Jacinto fault zones at their convergence in southern California; Memoir Geol Soc. America, 178, p. 217-230.

Morton, D.M., and Sadler, P.M., 1989; Landslides flanking the northeastern Penninsular Ranges and in the San Gorgonio Pass area of southern California; in Sadler, P.M., and Morton, D.M. (Eds.) Landslides in a Semi-Arid Environment; Inland Geological Society Publ., Vol. 2, p 338-355.

Mueller, C., 1994, Ground Motion; Earthquakes and Volcanoes, Vol. 25, U.S. Geological Survey, p. 75-84.

Park, S.K. et al. 1995, Delineation of intrabasin structure in a dilational jog of the San Jacinto fault zone, southern California; Jour. Geophysical Research, Vol. 100, No. BA, p. 691-702.

STATE OF CALIFORNIA

Governor's Office of Planning and Research

State Clearinghouse and Planning Unit

Arnold Schwarzenegger
Governor

Sean Walsh
Director

Letter X

August 2, 2005

RECEIVED
AUG 03 2005
CITY OF MORENO VALLEY

Cynthia Kinser
City of Moreno Valley
14177 Frederick Street
Moreno Valley, CA 92553

Subject: Moreno Valley General Plan Update
SCH#: 2000091075

Dear Cynthia Kinser:

The State Clearinghouse submitted the above named Draft EIR to selected state agencies for review. On the enclosed Document Details Report please note that the Clearinghouse has listed the state agencies that reviewed your document. The review period closed on August 1, 2005, and the comments from the responding agency (ies) is (are) enclosed. If this comment package is not in order, please notify the State Clearinghouse immediately. Please refer to the project's ten-digit State Clearinghouse number in future correspondence so that we may respond promptly.

Please note that Section 21104(c) of the California Public Resources Code states that:

X-1

> "A responsible or other public agency shall only make substantive comments regarding those activities involved in a project which are within an area of expertise of the agency or which are required to be carried out or approved by the agency. Those comments shall be supported by specific documentation."

These comments are forwarded for use in preparing your final environmental document. Should you need more information or clarification of the enclosed comments, we recommend that you contact the commenting agency directly.

This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act. Please contact the State Clearinghouse at (916) 445-0613 if you have any questions regarding the environmental review process.

Sincerely,

Terry Roberts

Terry Roberts
Director, State Clearinghouse

Enclosures
cc: Resources Agency

1400 TENTH STREET P.O. BOX 3044 SACRAMENTO, CALIFORNIA 95812-3044
TEL (916) 445-0613 FAX (916) 323-3018 www.opr.ca.gov

Document Details Report
State Clearinghouse Data Base

SCH# 2000091075
Project Title Moreno Valley General Plan Update
Lead Agency Moreno Valley, City of

Type EIR Draft EIR

Description The project is an update to the Moreno Valley General Plan - a comprehensive plan for the physical development of the City. It includes maps, goals, objectives, policies, and programs covering a range of topics, including, land use, circulation, safety, conservation, economic development, housing, noise, open space, and public facilities. Three potential land use map alternatives are analyzed in the DEIR. Alternative 1 is the existing General Plan. In comparison to Alternative 1, Alternative 2 includes less land for commercial and office uses to better match the demand for such uses, more land for multiple-family housing to promote a greater variety of housing opportunities and more land for business park/industrial uses to enhance local employment opportunities. Alternative 2 also includes changes to the circulation plan, including addition of a future freeway overpass at Graham Street and elimination of planned overpasses at Quincy Street and Sinclair Street. Alternative 3 would allow more low-density single-family housing (2 or fewer dwellings/acre), less office development, less business park development and less conventional (5 dwellings/acre) single-family housing than Alternative 2. Alternative 1 would create the highest level of environmental impact and Alternative 3 would generate the lowest level of impact.

Lead Agency Contact

Name Cynthia Kinser
Agency City of Moreno Valley
Phone (951) 413-3206 **Fax**
email
Address 14177 Frederick Street
City Moreno Valley **State** CA **Zip** 92553

Project Location

County Riverside
City Moreno Valley
Region
Cross Streets State Route 60 and Perris Boulevard
Parcel No.
Township **Range** **Section** **Base**

Proximity to:

Highways State Route 60, I-215
Airports March ARB
Railways BNSF
Waterways San Jacinto River
Schools Moreno Valley USD, Val Verde USD
Land Use A complete range of uses existing within the planning area and are planned for under the existing general plan and zoning designations.

Project Issues Agricultural Land; Air Quality; Cumulative Effects; Traffic/Circulation

Reviewing Agencies Resources Agency; Regional Water Quality Control Board, Region 8; Department of Parks and Recreation; Native American Heritage Commission; Department of Health Services; Department of Housing and Community Development; Office of Emergency Services; Department of Forestry and Fire Protection; Department of Fish and Game, Region 6; Department of Water Resources; California Highway Patrol; Caltrans, District 8; Caltrans, Division of Aeronautics; Department of Conservation

Date Received 06/16/2005 **Start of Review** 06/16/2005 **End of Review** 08/01/2005

Note: Blanks in data fields result from insufficient information provided by lead agency.

State of California—Business, Transportation and Housing Agency ARNOLD SCHWARZENEGGER, Governor

DEPARTMENT OF CALIFORNIA HIGHWAY PATROL
Riverside Area
8118 Lincoln Avenue
Riverside, CA 92504
909-637-8000
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(800) 735-2922 (Voice)

Letter Y

July 21, 2005

File No.: 840.11513.11513

RECEIVED
JUL 27 2005
STATE CLEARING HOUSE

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State Clearinghouse
1400 Tenth Street, Room 121
Sacramento, CA 95814
Reference: SCH# 2000091075

Dear Sir or Madam:

This letter is in response to the Environmental Impact Report, City of Moreno Valley, General Plan, State Clearinghouse number 2000091705. A review of this plan revealed some of the traffic data used was obsolete and not current.

Y-1 Currently, State Route 60 through the proposed area is a six lane freeway (three lanes in each direction). In order to effectively handle the proposed increase in population growth State Route 60 would need to be widened to support ten lanes of traffic (five in each direction). A review of California Transportation Department's Average Daily Traffic (ADT) Counts for the Riverside Area revealed a 7.1% increase each year over the past three years for all interstate and state routes. This fact is not clearly indicated in the Impact Report.

The Riverside Area respectfully requests the State Clearinghouse consider these issues when reviewing this proposed project.

Please direct any questions to Lieutenant Rick Meier at (951) 637-8000.

F. J. MEIER, Lieutenant
Acting Commander

cc: Inland Division
Special Projects Section

RESPONSE TO LETTER A: SOUTHERN CALIFORNIA GAS COMPANY, JUNE 23, 2005

A1: Comment noted. The City understands that future projects will be provided service in accordance with the policies and extension rules on file with the California PUC and that because Gas Company facilities are in the area, extension of gas service to new developments would not, in itself, be expected to cause a significant effect on the environment. The issues raised by this comment letter do not change the overall analysis, conclusions, or mitigation requirements contained within the EIR. No change to the EIR is required as a result of this comment.

RESPONSE TO LETTER B: STATE OF CALIFORNIA HEALTH AND HUMAN SERVICES AGENCY DEPARTMENT OF HEALTH SERVICES, JUNE 28, 2005

B1: Comment noted. No specific plans to develop a new water supply well or make modifications to the existing domestic water treatment system is proposed at this time. The City understands that any amendments to the water system permit must be reviewed and approved by the CDHS Riverside District Office and that future developments may be subject to separate environmental review. The issues raised by this comment letter do not change the overall analysis, conclusions, or mitigation requirements contained within the EIR. No change to the EIR is required as a result of this comment.

RESPONSE TO LETTER C: MORONGO BAND OF MISSION INDIANS, AUGUST 16, 2005

C1: Mitigation Measure C1 will ensure that projects in areas with the potential for significant historic, prehistoric archaeological, and paleontological resources such as the areas identified in the reports as "prehistoric site complex" areas will be reviewed for impacts to these resources pursuant to the California Environmental Quality Act Guidelines. No change has been made to the project mitigation as a result of this comment.

C2: The referenced paragraph has been revised as follows:

Human occupation of Southern California may date as far back as 10,000 years. However, there is no evidence of human activity in the Moreno Valley region prior to about 2,300 years ago. By the time the Spanish began to explore California, descendents of the Shoshonean people, the Luiseño, held the territory that currently includes the Moreno Valley planning area. However, other groups such as the Serrano and Cahuilla were also in the area. The most important habitation sites in Moreno Valley and the western San Jacinto Valley were at Perris Reservoir.

This revision does not change the overall analysis, conclusions, or mitigation requirements contained within the EIR.

C3: The referenced paragraph has been revised as suggested. This revision does not change the overall analysis, conclusions, or mitigation requirements contained within the EIR.

C4: The referenced paragraph has been revised as suggested. This revision does not change the overall analysis, conclusions, or mitigation requirements contained within the EIR.

C5: The referenced paragraph has been revised as follows:

No known human remains were identified in the *Study of Historical and Archaeological Resources for the Revised General Plan* report prepared by Archaeological Associates. In accordance with State law, the County Coroner will be contacted if human remains are inadvertently discovered.

This revision does not change the overall analysis, conclusions, or mitigation requirements contained within the EIR.

C6: The referenced paragraph has been revised as suggested. This revision does not change the overall analysis, conclusions, or mitigation requirements contained within the EIR.

C7: Please see Response C1.

C8: The City will remove Appendix F from publicly-available copies and will not post the appendix on the City's website. However, the report may be made available to other archeological consultants preparing archaeological reports for projects within the Planning Area as determined appropriate by the Planning Director.

RESPONSE TO LETTER D: FRIENDS OF THE NORTHERN SAN JACINTO VALLEY (LETTER 1), JULY 14, 2005

D1: The City respectfully disagrees with this comment. A development agreement remains on the property that protects the rights of the parties of the agreement from such things as the City changing the Specific Plan without the consent of the property owners. Although the State now owns 1,000 acres of the Moreno Highlands Specific Plan (MHSP) and it is unlikely that the land will be built upon, the City does not have the consent from all the parties of the development agreement to change the underlying land uses in the Specific Plan to reflect the MSHCP and the State's purchase. Therefore, the maps in the General Plan and EIR accurately reflect the currently approved Specific Plan for the area. Additionally, because the maps and analysis in the EIR reflect the area consistent with the land uses approved in the MHSP, the EIR provides a worst-case scenario analysis of impacts associated with development of the area. No change to the mapping or analysis in the General Plan EIR is required as a result of this comment. Should all parties of the development agreement consent to the change in land uses in the future, the City will pursue a General Plan Amendment (GPA) and appropriate environmental analysis of the GPA at that time.

D2: As described in Response D1 above, the EIR accurately reflects the land uses in the MSHP area that are identified in an approved Specific Plan and associated development agreement. Although the City agrees that it is unlikely that the area will ever be developed, the inclusion of the area as shown provides a worst-case scenario for the analysis of impacts. No change to the EIR is required and thus no new comment period will be provided.

RESPONSE TO LETTER E: SIERRA CLUB, SAN GORGONIO CHAPTER, JULY 15, 2005

E1: Please see Response D1 regarding the Moreno Highlands project. The general comment that the document must have been written four or five years ago cannot be adequately responded to because no specific examples are given. However, it should be noted that technical studies were prepared in late 2004 through 2005, and the document was largely written and completed in early 2005 to reflect the information and policies contained in the proposed public review Draft General Plan. Existing baseline data from 2000 is established in the EIR consistent with CEQA Guidelines Section 15125(a).

Additionally, although all maps within the document were provided on disk, hard copies of the EIR were also available at the City's Community and Economic Development Department and the Moreno Valley Branch Library. Both of these locations were noted on page 1-2 of the EIR.

E2: As described in Response E1, the Year 2000 was established as the existing baseline conditions consistent with CEQA Guidelines Section 15125(a). The information in Table 5.6-1 is still accurate today, and the Farm Road Fault is identified and discussed on page 5.6-4 of the EIR. As described by the California Geological Survey in Letter H, the California Geological Survey has not yet zoned the "Farm Road strand" as an active fault; therefore, it is not mapped as such on Figure 5.6-2. No change is required to the EIR as a result of this comment.

E3: Please see Response E1 above. No alternative has been approved by the City at this time; rather, this EIR analyzes three alternatives at an equal level of detail throughout the EIR and two additional alternatives in Section 6.0. Additionally, Section 5.2 analyzes traffic/circulation impacts of each of the three alternatives in detail.

E4: No revisions are required to the EIR based on the issues raised in this comment letter.

E5: Nothing in CEQA requires an EIR to analyze the environmental justice issues of a proposed project. However, the proposed General Plan includes policies and programs related to improving transit-oriented development, such that the Riverside Transit Agency (RTA) in its letter dated July 27, 2005 (Letter T) provided general support for the proposed General Plan and minor recommendations for elaborating on some of the policies and programs within the Plan. Sustainable development is a term that covers a variety of issue areas, often addressed on a more regional scale. However, the proposed General Plan includes a variety of programs for conserving and enhancing important resources

that in turn make development more sustainable. No change to the EIR is required as a result of this comment.

RESPONSE TO LETTER F: RIVERSIDE FLOOD CONTROL AND WATER CONSERVATION DISTRICT, JULY 18, 2005

F1: Comment noted. This introduction summarizes the contents and applicability of the proposed General Plan and no further response is required.

F2: The referenced paragraphs have been revised as follows to respond to Comment F2 and F3:

The Riverside County Flood Control and Water Conservation District (RCFCWCD) has prepared Master Drainage Plans for ~~all the cities~~ watershed areas in western Riverside County generally at the request of cities or in unincorporated areas where drainage infrastructure is necessary for existing or planned development. These documents analyze drainage flows and make recommendations for improvements. When fully implemented, MDP facilities will provide adequate drainage outlets and will relieve those areas within the MDP boundaries of the most serious flooding problems.

A flood control system has been constructed within much of Moreno Valley to direct runoff from developed areas and prevent flooding. Flood control deficiencies have been identified and improvements have been proposed in the Master Drainage Plans (West End, Sunnymead Area, Perris Valley and the Moreno Valley Master Drainage Plan). A master drainage plan has not been adopted for the area generally located east of Theodore Street.

These revisions do not change the overall analysis, conclusions, or mitigation requirements contained within the EIR.

F3: Please see Response F2 above.

F4: The referenced paragraph has been revised to clarify that the repair and maintenance program refers to RCFCWCD-owned facilities on an as-needed basis.

This revision does not change the overall analysis, conclusions, or mitigation requirements contained within the EIR.

F5: The reference to "a flood that might occur once in one-hundred years" has been deleted on Page 5.13-27. This revision does not change the overall analysis, conclusions, or mitigation requirements contained within the EIR.

F6: Comment noted. The applicable language has been revised to indicate that development will not be precluded in this area but must coordinate with the District. This revision does not change the overall analysis, conclusions, or mitigation requirements contained within the EIR.

F7: The applicable paragraph on page 5.13-27 has been revised as suggested. This revision does not change the overall analysis, conclusions, or mitigation requirements contained within the EIR.

F8: The extension of infrastructure associated with development allowed pursuant to the General Plan is assumed throughout the EIR at a program-level of analysis. The City agrees that future development projects within rights-of-way may require coordination with the District and/or an encroachment permit if within a District right-of-way. The appropriate CEQA analysis will also have to be part of the approval process associated with the extension of any future infrastructure project.

F9: Comment noted. The Santa Ana Watershed Project Authority and National Pollutant Discharge Elimination System programs are described on pages 5.7-9 and 5.7-10 of the EIR.

F10: Comment noted.

RESPONSE TO LETTER G: RIVERSIDE COUNTY TRANSPORTATION COMMISSION (RCTC), JULY 19, 2005

G1: As discussed in Section 5.2 of the DEIR, General Plan Land Use Alternatives 2 and 3 improve the balance of trip productions to attractions over the existing Circulation Element. This improved trip balance is the result of improved jobs to housing balance, and will result in reduction of total vehicular miles of travel on the state freeway system, inclusive of SR-60. In addition, the proposed Circulation Element promulgates the City's continued participation in a number of regional transportation programs intended to mitigate traffic impacts to the state freeway system. (Please see the proposed Circulation Element programs 5-10 through 5-13.) Consequently, implementation of General Plan Land Use Alternative 2 or 3 will result in a reduction in total number of future trips generated in the City, with consequent benefits to SR-60.

G2: The City of Moreno Valley General Plan Traffic Study (Traffic Study), contained in Volume II Appendix B of the DEIR, forecasts build-out Average Daily Traffic (ADT) on Theodore Street to be no higher 27,500 trips per day. This is the maximum build-out forecast for Theodore Street regardless of the General Plan Land Use Alternative assessed. The design capacity assumed for a Minor Arterial in high employment areas and areas in the vicinity of SR-60 is 22,250-33,750 ADT; and the ultimate design capacity for a Minor Arterial, assuming LOS "E", is 25,000-37,500 ADT. Consequently, a designation of Minor Arterial is considered appropriate for projected ultimate conditions on Theodore Street. As noted in Response G1, the proposed General Plan is expected to result in fewer trips on SR-60.

G3: The proposed Circulation Element promotes convenient, safe and efficient bus and rail transportation systems. Major bus and rail programs addressed through the proposed Circulation Element include: the RTA public bus service; the Transit Oasis, which has been promoted as part of the RCIP; and future commuter rail along the RCTC rail line located west of Moreno Valley, parallel to I-215. The City is an active participant in each of these regionally sponsored programs, each of which are expected to reduce SOV use. Quantification of potential SOV use reductions are not included in the Traffic Study forecasts, noted in response to comment #2, above. However, it is realistic to expect that successful implementation of these transit programs could result in less vehicle trips than projected in the Traffic Study.

As of 2004, a Transit Center in the vicinity west of I-215 and south of Alessandro Boulevard has been the focus of March Joint Powers Authority; however, this does not preclude consideration of alternative Transit Center locations.

The proposed Circulation Element contains two goals. Goal 1 focuses on vehicular circulation, and Goal 2 focuses on alternatives to single occupant

vehicular travel. In support of Goal 2, the proposed Circulation Element promulgates programs 5-10, 5-14 and 5-15, which promote regional activities that support SOV use reduction.

G4: The DEIR states that RCTC owns the rail line located west of Moreno Valley, parallel to I-215. RCTC is requesting that this rail line be referred to as the San Jacinto Branch Line (SJBL), which currently provides Burlington, Northern & Santa Fe (BNSF) freight service to the region. RCTC also requests that the commuter rail serving the future Alessandro Blvd. train station be identified as the Metrolink Perris Valley Line (PVL). This additional information provided by RCTC is incorporated herein as part of the EIR. This revision does not substantially change the overall analysis, impact conclusions, or mitigation requirements of the EIR.

G5: As discussed in the DEIR, the combined effect of the City's proposed land use and transportation polices would be to reduce traffic volumes on most freeway and major arterial facilities within the City of Moreno Valley. Although regional growth and traffic may result in future traffic increases along SR-60 and I-215, the proposed General Plan will result in a reduction in total number of trips generated in the City, which consequently benefits to SR-60 and I-215. In addition, pursuant to Section 15130(a)(3) of the CEQA Guidelines, a project's contribution to traffic is less than cumulatively considerable if the project is required to implement or fund its fair share of a mitigation measure or measures designed to alleviate the cumulative impact. The City has in place the TUMF and DIF, which establish a fair share contribution for new development in order to facilitate build-out of the planned circulation systems. Consequently, cumulative impacts related to the project are less than considerable, and no mitigation is necessary.

Mitigation TR-1, which as RCTC notes supports implementation of signalization, lane widening, turning lanes and channelization, is proposed to provide congestion relief on City arterials; it is not offered as mitigation for future highway traffic or cumulative impacts. As discussed in the DEIR, the proposed General Plan will not result in significant adverse impacts to highways or significant adverse cumulative impacts. Consequently, no mitigation measures are required to address highway or cumulative impacts.

G6: The proposed Circulation Element includes 21 programs that support its goals to improve vehicular circulation and reduce SOV use. Through these programs, the proposed Circulation Element supports preservation of corridors and locations for future roadways and transit facilities.

G7: Mitigation TR-1 offers a comprehensive program of studies and improvement measures expected to reduce impacts to local roadway levels of service. However, although this mitigation measure is expected to improve local roadway levels of

service, it is not known at this time if these improvements would reduce all local arterial traffic capacity deficiencies to less than significant levels. Consequently, the DEIR concludes that project impacts to local roadway levels of service would be considered significant after mitigation. No other feasible mitigation measures relative to local roadway levels of service have been identified. Regarding other traffic and circulation issues addressed in the DEIR, no mitigation measures were found to be warranted.

RESPONSE TO LETTER H: DEPARTMENT OF CONSERVATION CALIFORNIA GEOLOGICAL SURVEY, JULY 29, 2005

H1: Responses to the detailed comments provided in this comment letter are provided below.

H2: In preparation of the City's General Plan Safety Element and Geology/Soils section of the EIR, staff researched numerous studies regarding geology and seismicity in the region and within Moreno Valley. Four of these reports are noted in the references portion of Section 5.6 of the EIR. The City feels the detail provided in the General Plan and EIR is adequate to allow for future project-specific review of development and mitigation of geologic and seismic hazards in the community. Additionally, the commenter's letter is now part of the Final EIR and thus readily available for future reference by the staff and the public. The information provided in CGS Special Publication 102 is thus noted and will be made available for staff use in the processing of future projects.

H3: According to the commenter in H1, this comment letter addresses the General Plan and not the EIR. Therefore it is unclear to which map or graphical errors the commenter is referring because the Safety Element does not contain a geologic map, per se. The Seismic Hazards Map provided in the General Plan illustrates faults zoned by the CGS. The CGS Recommendations also address the General Plan and not the content or adequacy of the EIR and no further response is required. The bibliography provided by the commenter is part of the Final EIR, and thus readily available to staff and the public.

H4: It is not clear if this comment addresses the General Plan or EIR. The EIR includes Figure 5.6-1, which illustrates the Planning Area geology, and supportive text on page 5.6-3 describing the geologic and soils characteristics.

H5: The Draft EIR describes the potential earthquake scenarios for Moreno Valley along the San Jacinto, Elsinore, and San Andreas faults and assesses the impacts associated with soil and slope stability, subsidence, fault rupture, groundshaking and liquefaction. The impacts associated with soil and slope stability, fault rupture, and groundshaking are considered significant in the EIR. Two mitigation measures are provided to address these significant impacts, one of which requires geologic studies to be performed during the review of future development projects. None of the information provided in this comment letter (hereby incorporated into the Final EIR by reference) substantially changes the significance conclusions or mitigation requirements for geologic and seismic hazards associated with the proposed project.

H6: This comment does not specifically address the content or adequacy of the EIR and no further response is required. However, references to the Alquist Priolo Earthquake Special Studies Zones will be corrected as suggested. The Farm Road

Fault, which has not been officially zoned by the CGS, is not currently mapped in the General Plan. Studies are ongoing regarding this fault and should this fault be zoned by CGS, it will be added to the General Plan map through a General Plan Amendment. The impacts of any such amendment would be assessed at the time the General Plan Amendment is proposed.

H7: Although the City has seen no evidence of liquefaction events occurring in the community nor has any geotechnical report recently submitted to the City identified liquefaction hazards, the Riverside County General Plan does identify a range of liquefaction susceptibility in Moreno Valley ranging from very low with deep groundwater in the northern and eastern portions of the community to very high with shallow groundwater generally west of Perris Boulevard. Because of this conflicting information, the City has decided be conservative and incorporate the County's liquefaction data into the City's General Plan and identify potential risks associated with liquefaction in Section 5.6 of the EIR. The City Engineer routinely requires project proponents to evaluate the potential for land settlement when conducting foundation investigations, which would address this potential impact. Additionally, as suggested by the commenter, the City has modified Mitigation Measure GS1 and Policy 6.1.1 of the General Plan as follows:

> **GS1.** The City shall reduce the fault rupture and liquefaction hazards through the identification and recognition of potentially hazardous conditions and areas as they relate to the San Jacinto fault zone and the high and very high liquefaction hazard zones. During the review of future development projects, the City shall require geologic studies and mitigation for fault rupture hazards in accordance with the Alquist-Priolo Special Study Zones Act. Additionally, future geotechnical studies shall contain calculations for seismic settlement on all alluvial sites identified as having high or very high liquefaction potential. Should the calculations show a potential for liquefaction, appropriate mitigation shall be identified and implemented. (**Policy 6.1.1**).

The revisions to the analysis of the EIR and the proposed mitigation will reduce any potential liquefaction hazards to a level less than significant. It should also be noted that the area subject to high and very high liquefaction potential according to the County's mapping is largely developed, and the new General Plan policies and land uses will not affect this existing development. Additionally, although new non-residential development may occur in the vacant lands in this area, no new residential development is expected in this area. Therefore, potential impacts to new homes and residents will not occur.

H8: This comment does not address the content or adequacy of the EIR and no further response is required.

H9: The EIR indicated that a portion of the Planning Area has experienced subsidence in the past. However, the area is located within the San Jacinto Wildlife Area or within the designated floodplain, where the risk of injury or loss of life due to subsidence is considered low.

H10: This comment does not address the content or adequacy of the EIR and no further response is required.

H11: This comment does not address the content or adequacy of the EIR and no further response is required.

H12: This comment does not address the content or adequacy of the EIR and no further response is required.

H13: This comment does not address the content or adequacy of the EIR and no further response is required.

H14: This comment does not address the content or adequacy of the EIR and no further response is required.

RESPONSE TO LETTER I: CENTER FOR BIOLOGICAL DIVERSITY, AUGUST 1, 2005

I1: Comment noted. For a response to the specific issues raised in this letter, please see responses I1 through I24.

I2: Comment noted. As described in more detail in the responses below, the City disagrees that the EIR is inadequate to meet either the procedural or substantive mandates of CEQA. For responses to the specific issues raised in this letter, please see the responses below.

I3: The DEIR analyzes a reasonable range of alternatives including three land use alternatives analyzed at an equal level of detail throughout the EIR and two additional alternatives presented and discussed in Section 6.0 Alternatives. The three alternatives analyzed throughout the EIR address the same land area because the General Plan establishes policies and land use designations for lands within the probable long-term physical boundaries of the City, including all lands within its current jurisdictional limits and its existing sphere of influence.

In addition to the alternative land use development scenarios proposed by the three alternatives analyzed throughout the EIR, two additional alternatives were developed. The Increased Preservation of Agricultural Land alternative would result in fewer acres being developed for urban uses, while the Reduced Density Alternative would result in approximately 10 percent fewer homes and population in Moreno Valley yet the same amount of land disturbed for urban development. The EIR does not reject the Increased Preservation of Agricultural Lands alternative for any reason, yet simply notes that the alternative would not reduce any of the project impacts to a level less than significant, nor would it achieve all project goals to the same degree as the preferred alternatives.

Additionally, the EIR found that regional traffic impacts would likely be greater because development may occur in less remote areas if less land is made available for development within Moreno Valley. With the abundance of vacant land in the region, it is likely that developers would prefer large expanses of vacant land to infill parcels, which are more likely to be smaller and more expensive to develop. Therefore, the reasoning within the EIR is sound with regards to this issue.

The EIR does not make any claims with regard to urban sprawl. The Moreno Valley General Plan establishes land use designations consistent with the biological protection goals of the MSHCP and does not propose urban uses within the MSHCP preserve areas. The direct and indirect impacts of new development, including residential and non-residential development located adjacent to preserve areas were analyzed in Section 5.9 Biological Resources of the EIR. The mitigation proposed, including compliance with the MSHCP will reduce these

potentially significant impacts to biological resources to a level less than significant.

Riverside County, including even many of its more urbanized areas, is still actively farmed. Because of this, the EIR addresses impacts to agricultural resources. As described in the EIR, the loss of farmlands as a result of urban development is a significant impact that cannot be fully mitigated at either the project or cumulative level. Should the City Council wish to approve the project and certify the EIR, they will have to adopt a Statement of Overriding Considerations to address this significant and unavoidable impact.

I4: The EIR does not reject the Increased Preservation of Agricultural Lands alternative for any reason, yet simply notes that the alternative would not reduce any of the project impacts to a level less than significant, nor would it achieve all project goals to the same degree as the preferred alternatives. Although not analyzed at an equal level of detail to the three primary alternatives analyzed in the EIR, Section 6.2 provides a full analysis of this alternative in accordance with CEQA. The Council is still free to consider this alternative during the public hearings for the project.

I5: Pages 5.9-32, 5.9-62, 5.9-63, 5.9-87 and 5.9-88 of the EIR identify the conservation goals for the San Jacinto Wildlife Area (SJWA), potential impacts, and mitigation measures for impacts to the SJWA. The EIR concludes that direct impacts would be limited in this area under each of the three Alternatives since a large portion of this area is designated Floodplain or is in State of California Department of Fish and Game ownership and will be maintained in its natural state. Indirect impacts (such as increased lighting, traffic, water runoff, noise, and predatory domestic animals) to sensitive resources are also analyzed in the EIR. As described in the EIR, the MSHCP includes guidelines to reduce the effects of development along the urban/wildlands interface. Due to the biological value of the San Jacinto Core Reserve, MHSCP § 6.1.4, Guidelines Pertaining to the Urban/Wildlands Interface, would apply to any development proposed adjacent to the reserve and would provide protection to the reserve from indirect effects. Implementation of the MSHCP and the proposed mitigation will reduce potential impacts to the SJWA to a level less than significant for each of the alternatives. Because the MSHCP and proposed mitigation adequately addresses this impact, no alternative is required to reduce this impact to a level less than significant.

I6: The EIR identifies significant and unavoidable impacts to traffic, air quality, and agricultural resources, not to loss of open space, fragmentation and loss of natural habitats, or water resource availability. Nothing in the General Plan precludes clustered development of the type suggested by the commenter. Additionally, the General Plan proposes higher density housing around transit hubs and along transit routes. The proposed General Plan also includes policies and programs related to improving transit-oriented development, such that the Riverside Transit

Agency (RTA) in its letter dated July 27, 2005 (Letter T) provided general support for the proposed General Plan and minor recommendations for elaborating on some of the policies and programs within the Plan.

I7: First, the analysis in the EIR provides a comparison of the existing conditions at the time of the issuance of the NOP pursuant to CEQA Guidelines Section 15125(a) to the future conditions associated with each of the General Plan land use alternatives. The air quality analysis is adequate as presented.

In regard to the biological assessment, the EIR's biological resources analysis was compiled using known or potential occurrence of species as determined by existing information, field surveys, and predictions of occurrence based on suitable habitat presence and species range. Experts were consulted where a lack of species-specific information existed. The commenter is generally accurate when they state that the DEIR is not based on species-specific surveys for threatened, endangered, and sensitive plants. However, some field surveys were conducted and the methodology employed for the assessment is typical of a program level biological assessment. Furthermore, extensive efforts were put into collecting information for the development of the MSHCP and that data contributed to the EIR. It would not be practicable to attempt site-specific data collection for the entire study area, nor would that data effectively change the conclusions of the EIR as the General Plan Update as all subsequent discretionary projects within the study area would still be subject to the MSHCP. The United States Fish and Wildlife Service (USFWS) and California Department of Fish and Game (CDFG) concurred with the development of the MSHCP, the MSHCP plan has been through the CEQA review and approval process, and an implementing agreement has been approved; thus, reliance upon the MSHCP's biological data, supplemented with additional site specific data should not be considered a faulted approach. Perhaps most importantly, site-specific data collection is required as part of the MSHCP review and compliance process.

The development application review process requires that development applications be submitted to the City of Moreno Valley (City). The City's planning staff must determine whether the project is consistent with the MSHCP. Any proposed discretionary project must comply with the MSHCP § 6.1.2, measures to protect species associated with riparian/riverine areas and vernal pools; § 6.1.3 protection of narrow endemic plant species; and any additional survey requirements outlined in § 6.3.2. Additionally, indirect effects of projects on the MSHCP Conservation Area shall be addressed per MSHCP § 6.1.4, Guidelines Pertaining to the Urban/Wildlands Interface. For any instance where the MSHCP was deemed to have insufficient information to consider a covered species "adequately conserved", additional data collection is required, specifically habitat suitability assessments. The general development application review process outlined in the MSHCP, has been deemed adequate to allow for take under the plan and provides a sound basis for ensuring adequate future

conservation under the proposed Moreno Valley General Plan Update, as the General Plan policies and EIR mitigation require future development to comply with the MSHCP.

I8: The proposed project is the adoption and implementation of the updated General Plan. No other specific project, development, or activity is proposed at this time. Despite this, the EIR rightfully examines the expected "secondary" effects of adoption of the new plan policies and land use designations, namely the level and type of development that could potentially occur within the planning area by buildout. As an information document, the EIR provides a program-level analysis of impacts to all environmental issue areas required by CEQA. Volume I of the EIR provides more than 400 pages of text (100 pages on biological resources alone), over 60 tables, and about 30 figures analyzing existing and future conditions associated with buildout of the General Plan. Because it is unclear exactly where and when development will occur, site specific analysis is not feasible nor particularly telling at this level of analysis. For these reasons, the EIR is adequate as a program-level disclosure and information document. Because the commenter does not identify any particular issues that are deficient, no more specific response can be provided.

I9: As stated previously, the USFWS and CDFG concurred with the development of the MSHCP, the MSHCP plan has been through the CEQA review and approval process, and an implementing agreement has been approved; thus, reliance upon the MSHCP's biological data, supplemented with additional site specific data should not be considered a faulted approach for a program level review. The comments state that "the MSHCP itself requires site-specific analyses of impacts-the very analyses that this EIR is attempting to direct back to the MSHCP" and goes on to state that this ensures that "no meaningful analysis of the impacts…will ever be conducted". However, nothing in the proposed General Plan Update proposes specific development at this time. In fact, when specific development is proposed, the City will require all projects to comply with the MSHCP compliance, which in turn would require site-specific surveys. As stated within the comment, "the analysis of environmental impacts in the MSHCP was programmatic, and as such the implementation of the MSHCP does not eliminate the requirement under CEQA to conduct and disclose project-level, species specific analyses in an EIR"; similarly, the General Plan Update analysis is programmatic and does not eliminate the requirement under CEQA to conduct and disclose project-level, species specific analyses, on the contrary, it relies upon this. Relying upon the approved and adopted MHSCP is no different than relying upon compliance with existing federal, state, or local regulations to ensure that future, project-specific impacts are assessed and mitigated accordingly, an approach frequently used and accepted in the compilation of CEQA documents.

Also, see response to I-12.

I10: Please see response I9 above.

I11: As previously stated, nothing in the General Plan proposes site specific development at this time. Because it is unclear exactly where and when development will occur, site specific analysis is not feasible nor particularly telling at this level of analysis. Site specific design and mitigation measures for biological resources consistent with the MSHCP will occur at the time specific projects are brought forward. The MSHCP has been designed to achieve regional preservation goals and compliance with the MSHCP will ensure important plant and animal species, including wildlife corridors, are protected. The general development application review process outlined in the MSHCP, has been deemed adequate to allow for take under the plan and provides a sound basis for ensuring adequate future conservation under the proposed Moreno Valley General Plan Update, as the General Plan policies and EIR mitigation require future development to comply with the MSHCP.

I12: As previously stated, nothing in the General Plan proposes site specific development at this time. Because it is unclear exactly where and when development will occur, site specific quantitative analysis is not feasible nor particularly telling at this level of analysis.

Please see response I5 for a discussion of impacts to the San Jacinto Wildlife Area Core Reserve. Like the San Jacinto Wildlife Area, impacts and mitigation measures associated with the Badlands are also discussed throughout section 5.9 Biological Resources of the EIR.

The suggested mitigation measures are repetitive of existing state, local, and federal regulations as well as mitigation goals found within the MSHCP. Because it is unclear exactly where and when development will occur, identifying site specific design requirements and mitigation is not feasible nor particularly telling at this level of analysis. Site specific design requirements and mitigation measures for biological resources consistent with the MSHCP will occur at the time specific projects are brought forward. The general development application review process outlined in the MSHCP, has been deemed adequate to allow for take under the plan and provides a sound basis for ensuring adequate future conservation under the proposed Moreno Valley General Plan Update, as the General Plan policies and EIR mitigation require future development to comply with the MSHCP.

I13: This comment again addresses the lack of site specific, quantitative impact analysis. Volume I of the EIR provides more than 400 pages of text (100 pages on biological resources alone), over 60 tables, and about 30 figures analyzing existing and future conditions associated with buildout of the General Plan. Because it is unclear exactly where and when development will occur, site

specific analysis is not feasible nor particularly telling at this level of analysis. For these reasons, the EIR is adequate as a program-level disclosure and information document.

I14: This comment again addresses the lack of site specific, quantitative impact analysis. Volume I of the EIR provides more than 400 pages of text (100 pages on biological resources alone), over 60 tables, and about 30 figures analyzing existing (baseline) and future conditions associated with buildout of the General Plan. As previously discussed in the above responses to comments, the nature of the proposed project (update/alteration of land use designations), does not allow for any type of quantitative analysis as there are no assurances that subsequent development will take place at an accurately predictable rate or pattern. Therefore, it is required that subsequent projects perform site-specific analysis to ensure that development remains consistent with the MSHCP goals and policies and does not result in take of uncovered sensitive species. The general development application review process outlined in the MSHCP, has been deemed adequate to allow for take under the plan and provides a sound basis for ensuring adequate future conservation of the identified species as the General Plan policies and EIR mitigation require future development to comply with the MSHCP.

Additional portions of this comment were addressed previously under I-12.

I15: As previously discussed in the above responses to comments, the nature of the proposed project (update/alteration of land use designations), does not allow for any type of quantitative analysis as there are no assurances that subsequent development will take place at an accurately predictable rate or pattern. Potential pollutants and runoff impacts vary greatly depending upon the specific type of development proposed, grading required, materials used, etc. None of these factors is known for any particular parcel at this time. Because of this, the City requires that future development projects be reviewed pursuant to CEQA and conform to the City's permit requirements at the time specific projects are brought forward. The commenter is correct in stating that nothing in NPDES provides an exemption from CEQA. Accordingly, all discretionary projects will be reviewed pursuant to CEQA.

I16: Impacts to surface water resources, including drainages and wetlands and their associated plant and animal species, are analyzed both in Section 5.7 Hydrology/Water Quality and 5.9 Biological Resources. Mitigation required in both sections (HW1, HW3, B2, and B4) will reduce potential water quality impacts to a level less than significant. Impacts to groundwater recharge levels and quality are analyzed in Section 5.7 Hydrology/Water Quality. Mitigation Measures HW1 and HW3 will reduce potential groundwater impacts to a level less than significant.

I17: The commenter sites requirements for specific development projects. As previously noted, no specific development is proposed at this time. However, water supply was analyzed in Section 5.13 of the EIR and estimated assumptions for future water demand were given. As described in Section 5.13, future water supplies (including projected demand from the General Plan) should be considered adequate to meet demand. No agency identified an uncertainty for water supply for the area and the City works with the water agencies to conserve water and expand the use of reclaimed water and other acceptable sources of irrigation water.

I18: Impacts associated with Hazardous Air Pollutants (HAPs) are more appropriately analyzed at the project level because they vary greatly depending upon type of use and location with respect to sensitive receptors. Analyzing potential impacts associated with HAPs is infeasible at this level because no specific development project, operational, or construction activity is proposed at this time.

The most relevant health effects of the analyzed air pollutants are summarized in pages 5.3-4 and 5.3-5 as well as discussed throughout Section 5.3. Impacts to sensitive receptors are described on page 5.3-16. Ten mitigation measures are proposed to reduce impacts; however, due to the regional nature of air quality impacts, a significant unavoidable impact was identified as remaining.

I19: The EIR states on page 5.3-16 that " . . .implementation of the General Plan could violate the existing federal, state, and local air quality standard and conflict with the SCAQMD Air Quality Management Plan or SCAG Growth Management Plan." As also stated in the EIR, the City will continue to implement state-mandated air quality regulations, as well as SCAQMD Air Quality Management Plan (AQMP) regulations such as Rule 403. However, as also stated in the EIR, combined emissions from Moreno Valley and surrounding areas are expected to continue to exceed state and federal standards even with continued implementation of the AQMP. This was considered a significant and unavoidable regional air quality impact to which the project contributes.

I20: SCAQMD acknowledges (slightly) O_3 and nitrogen deposition effects on plants and agriculture in their latest air quality guidance handbook. Although high concentrations of O_3 and nitrogen deposition can have negative effects on plants and ecosystem, nitrogen deposition is a regional concern that is being studied by regional, state, and federal air pollution agencies and is not a local issue that the General Plan could have any substantial effect on. No information has been provided by the commenter nor has the City discovered in any research, that nitrogen deposition has any negative effect on human health.

I21: In addition to existing laws and regulations applicable to development in the planning area, the EIR identifies ten mitigation measures addressing operational, vehicular, and construction-related emissions. Seven mitigation measures (AQ7

through AQ10) specifically address reducing vehicular emissions, only three of which are more policy-oriented language supporting transportation and transit improvements region-wide. The City's development review process ensures projects comply with existing laws and regulations as well as specific design and mitigation measures at the time specific projects are proposed. However, because the local and regional impacts of new growth cannot be reduced to a level less than significant, the EIR identified a significant and unavoidable impact to air quality at a project level and in the cumulative scenario. The comment regarding impacts to water quality and supply are discussed in responses I15 through I17 above.

I22: The EIR analyzes air quality impacts to criteria pollutants in light of the cumulative setting and identifies the long-term air quality impact as significant and unavoidable due to cumulative effects in combination with air emissions within the South Coast Air Quality Basin as a whole. This analysis is presented in section 5.3 and 7.1 of the EIR. Please also see responses I18 through I21 above.

I23: As described in the responses above, the commenter has provided no substantial evidence that the EIR is "basically inadequate and conclusory in nature". Because of this, no new information is required to be added to the EIR that meets any of the criteria identified in CEQA Guidelines Section 15088.5. No recirculation of the EIR is required.

I24: For the reasons described in the responses to comments above, the City respectfully disagrees with the commenter's assertions and thus no revised Draft EIR will be issued.

RESPONSE TO LETTER J: FRIENDS OF THE NORTHERN SAN JACINTO VALLEY (LETTER 2), AUGUST 1, 2005

J1: As stated on pages 5.8-6 and 5.8-9 of the EIR, no land within the Planning area is currently under a Williamson Act contract.

J2: The proposed General Plan and the land use alternatives analyzed in the EIR reflect the appropriate City designation based on the existing land use. No change to the General Plan or EIR analysis is required as a result of this comment.

J3: The impacts of the proposed Circulation Plan, including future improvements to the circulation system, are evaluated in the EIR. As described in Section 5.1, no circulation element roadway is anticipated to divide an established community. Potential impacts to residents as a result of the proposed circulation system are mostly associated with air quality and noise, which are addressed in Sections 5.3 and 5.4 of the EIR, respectively. Upon its completion, Pigeon Pass Road and all other connectors to the Bi-County Corridor will meet or exceed all applicable safety standards; the additional traffic will not directly reduce safety. To maintain safety, the City maintains a crossing guard system, supplemented by school-zone signing and markings to notify drivers to use caution.

J4: As described in the EIR, all new development allowed under the General Plan will be required to provide parkland or fees equal to three acres per 1,000 residents, which is consistent with the Quimby Act. The City is unsure of which 40-acre park the commenter is referring so no response is possible.

J5: The traffic study was completed in late 2004 with the traffic analysis in the EIR completed in June 2005, not 2000. The 2000 data identified in Tables 5.2-5.2-2 and 5.2-3 establish the existing conditions, which is consistent with the timing of circulation of the Notice of Preparation for the project, and thus consistent with the intent of CEQA Guidelines Section 15125(a).

J6: This comment does not address the content or adequacy of the EIR and no further response is required. However, the City will comply with State regulations with regard to SB 221, SB610, and AB901 for water supply assessments.

J7: No issues raised within this comment letter provide substantial evidence that the EIR is inaccurate or invalid.

RESPONSE TO LETTER K: SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS (SCAG), JULY 27, 2005

K1: Comment noted. The City will notify SCAG of the Final EIR.

RESPONSE TO LETTER L: STATE OF CALIFORNIA DEPARTMENT OF FISH AND GAME, EASTERN SIERRA-INLAND DESERTS REGION, AUGUST 1, 2005

L1: Comment noted. Responses to the agency's detailed comments are found below.

L2: Comment noted. This comment accurately represents the MSHCP and EIR contents.

L3: The City as a signatory to the MSHCP will comply with the mitigation requirements and obligations as detailed in the MSHCP and the Implementing Agreement. As noted by the commenter in L5, the City's specific responsibilities are detailed in the section of the Implementing Agreement entitled Permittees' Take Authorization and Obligations. There is no need to duplicate these requirements as they are already listed in a publicly available document.

L4: The requested information is documented in the MSHCP and need not be repeated in this EIR to gain a proper understanding of the project's potential impacts and mitigation requirements. The noted agencies will work together to reduce impacts to sensitive species in accordance with the signatory take authorization and obligations identified in the Implementing Agreement to the MSHCP. Ultimate responsibility will fall to the lead agency as determined through the project process.

L5: Please see response L3 above.

L6: Please see response D1 explaining the development agreement that exists on this property. Notwithstanding that agreement and the perceived inconsistency, text on page 5.9-88 the EIR clearly states that the "land use designation is just a technicality. The SJWA is operated by CDFG for wildlife conservation purposes and Moreno Valley does not have jurisdiction over the area. It would not be subject to development, regardless of the designations or road alignments shown on the Moreno Valley General Plan. Therefore, none of the proposed land use alternatives would have a direct effect on the SJWA".

L7: It is the intent of the City not to duplicate mitigation measures and all measures included in the EIR will be implemented through the Mitigation and Monitoring and Reporting Program (MMRP) adopted by the City. However, the Hydrology/Water Quality section of the EIR will be revised to include reference to Mitigation Measure B4. Please also see L3 above.

RESPONSE TO LETTER M: GERALD M. BUDLONG (LETTER 1), JULY 27, 2005

M1: Comment noted. Please also see response to Letter N.

M2: Comment noted.

M3: Comment noted. This comment does not address the content or adequacy of the City's General Plan or EIR and no further response is required.

M4: Comment noted. This comment does not address the content or adequacy of the City's General Plan or EIR and no further response is required.

M5: This area is designated primarily for Rural Residential with some land designated Commercial as well. Although these designations were clear in the Biological Resources Report in Volume II of the EIR, the land use maps in Volume I will be revised to more clearly distinguish between the designations.

M6: Elimination of the corridor is not anticipated under the proposed DEIR as any subsequent development would be required to comply with the MSHCP, which specifically addresses the corridor described in comments M-2 and M-3 (as Core H and Proposed Core 3) and requires conservation within the appropriate sub unit, cell group, and cell to ensure assembly of the Proposed Core 3 and connectivity to Core H. It is a goal of the MSHCP to avoid creating biological islands; thus, compliance with the plan should avoid such an impact.

RESPONSE TO LETTER N: GERALD M. BUDLONG (LETTER 2), AUGUST 1, 2005

N1: Comment noted. Please see Responses N2 through N21 for detailed responses to these comments.

N2: The sphere of influence (SOI) boundary shown in the General Plan and EIR represents the proposed SOI for the planning period of the General Plan. There are no plans to extend the SOI boundary as far east as Laborde Canyon at this time. Should the SOI be extended in the future, the proposed boundary adjustment would have to undergo separate environmental review pursuant to the California Environmental Quality Act (CEQA) during which time the hazards associated with extending development into any new areas would be analyzed.

N3: This comment does not address the content or adequacy of the EIR. Since the area in question was developed prior to the analysis of the proposed General Plan, it is considered part of the existing setting and is not under the purview of this EIR analysis.

N4: The EIR recognizes that dam inundation is a potential flood hazard throughout several portions of the planning area, however the potential for significant damage to occur as a result of dam failure is remote. As described in the EIR on page 5.5-6 and illustrated on Figure 5.5-2, even with instantaneous failure of Lake Perris Dam with the reservoir at or near capacity, only a very small area south of Nandina Avenue along the Perris Valley Storm Drain and the Mystic Lake area would be subject to dam inundation. This area is proposed primarily for non-residential development by each of the three Land Use Alternatives.

Consistent with the commenter's findings, according to the Division of Dam Safety website, "the Department of Water Resources (DWR), with support from expert consultants, has identified potential seismic safety risks in a section of the foundation of Perris Dam. **There is no imminent threat to life or property** [emphasis DWR's]**.** However, in the interest of ensuring the maximum public safety for those using and living downstream of the lake, the state has determined that it is necessary to lower the water level while additional analysis is performed.

The reservoir level will be lowered over a period of several weeks. When completed, reservoir water storage will be reduced by about 42% (approximately 52,362 acre-feet) and surface reservoir area will be reduced by about 18% (410 acres)." (downloaded by P&D Consultants August 15, 2005) With the lowering of the reservoir, the area subject to inundation will be further reduced during the study period. Once the findings of the studies are known, additional studies could be required to obtain further information about the identified deficiencies or the state may directly proceed to develop repair alternatives. In either case, DWR will be working closely with other involved agencies, including Metropolitan Water

District of Southern California, the California Department of Parks and Recreation, Department of Fish and Game, and the Department of Boating and Waterways, on the appropriate next steps." (Source: Lake Perris and Perris Dam Fact Sheet 2005, California Department of Water Resources downloaded by P&D Consultants August 15, 2005).

Additionally, as further described on page 5.5-4 of the EIR, the City of Moreno Valley is required by Section 8589.5 of the California Government Code to have in place emergency procedures for the evacuation and control of populated areas within the limits of inundation below dams. In addition, real estate disclosure upon sale or transfer of property in the inundation area is required under AB 1195 Chapter 65 passed on June 9, 1998. These existing regulations and City of Moreno Valley policies reduce the potential for significant dam failure flood hazards to a level less than significant.

N5: This map has been modified accordingly. This modification does not change the analysis or conclusions of the EIR.

N6: The stated figure is being update to reflect the conditions cited by the commenter. This modification will not increase any impacts identified in the EIR. In fact less of an area will now be identified as potentially subject to high fire hazards than was identified in the FEIR. Additionally, fiscal effects of the proposed project need not be analyzed in an environmental impact report.

N7: The City will consider the new AICUZ Report when adopted by the Air Force. Any changes to the Plan resulting from the newly adopted AICUZ Report would have to be processed through a General Plan Amendment with the appropriate level of environmental review at that time.

N8: The figure has been revised and is included in the Final EIR. However, this change does not affect the overall analysis, impact conclusions, or mitigation requirements identified in the EIR.

N9: Comment noted. The City proposes land use designations in these areas that include open space or non-residential uses.

N10: All faults currently zoned as active by the California Geological Survey (CGS) (see Letter H) have been identified and analyzed in the General Plan and EIR. The Farm Road Fault, which has not been officially zoned by the CGS, is not currently mapped in the General Plan. Studies are ongoing regarding this fault and should this fault be zoned by CGS, it will be added to the General Plan map through a General Plan Amendment. The impacts of any such amendment would be assessed at the time the General Plan Amendment is proposed.

N11: All faults currently zoned as active by the California Geological Survey (CGS) (see Letter H) have been identified and analyzed in the General Plan and EIR. The Box Springs Fault, has not been officially zoned by the CGS.

N12: The references to eliminating the Casa Loma Fault are unclear as the General Plan and DEIR discuss the Casa Loma Fault (a strand or branch of the San Jacinto Fault), and no references to the fault being "dead" or "eliminated" are contained within either of the city's Draft documents. The County's General Plan eliminates the Casa Loma Fault and Reche Canyon Faults from their maps of Moreno Valley due to lack of evidence. Similarly, these faults have been excluded from the City's exhibits of active faults.

N13: Please see Response N12.

N14: Please see Response N12. Further, the City has not seen or been provided any written evidence by a qualified geologist that the Casa Loma fault does extend beyond the Earthquake Fault Zone.

N15: Please see Response N12.

N16: Please see Responses N4 and N5 above.

N17: Comment noted. This correction has been made to the Final EIR.

N18: Comment noted. Figure 5.7-2 will be revised accordingly. The proposed revision to the basin map does not affect the overall analysis, impact conclusions, or mitigation requirements identified in the EIR.

N19: Copies of these documents were distributed to these agencies and no comment was received from either one.

N20: The shaded areas in Figure 5.11-1, including the northern end of the Planning Area illustrate the dominant scenic resources in or visible to the community. Although they are not specifically identified, Reche Peak and Olive Hill are within the areas shaded on Figure 5.11-1 and generally discussed on page 5.11-1.

N21: Page 5.11-1 discusses the important scenic resource of the San Bernardino and San Gabriel Mountains, including the fact that "winter snows on the mountains often offer a striking view". No change to the General Plan or EIR is proposed in response to this comment.

RESPONSE TO LETTER O: SAN BERNARDINO VALLEY AUDUBON SOCIETY, JULY 27, 2005

O1: Please see Response D1. The direct and indirect impacts to sensitive biological resources and wildlife corridors in the Planning Area are based on the worst-case development scenario presented in the EIR. Future transportation upgrades ultimately will be determined by need based on future specific development projects as they are proposed, not solely based on existing modeled data. As future development and transportation projects are proposed, the impacts of these projects, including direct and indirect impacts to biological resources will be assessed pursuant to CEQA. Additionally, future projects within the Planning Area must comply with the mitigation requirements established by the MSHCP, which provides for buffering of significant biological resources, where appropriate.

O2: All faults currently zoned as active by the California Geological Survey (CGS) (see Letter H) have been identified and analyzed in the General Plan and EIR. The Farm Road Fault, which has not been officially zoned by the CGS, is not currently mapped in the General Plan. Studies are ongoing regarding this fault and should this fault be zoned by CGS, it will be added to the General Plan map through a General Plan Amendment. The impacts of any such amendment would be assessed at the time the General Plan Amendment is proposed.

O3: Pages 5.9-32, 5.9-62, 5.9-63, 5.9-87 and 5.9-88 of the EIR identify the conservation goals for the San Jacinto Wildlife Area (SJWA), potential impacts and mitigation measures for impacts to the SJWA. The EIR concludes that direct impacts would be limited in this area under each of the three Alternatives since a large portion of this area is designated Floodplain or is in State of California Department of Fish and Game ownership and will be maintained in its natural state. Indirect impacts (such as increased lighting, traffic, water runoff, noise, and predatory domestic animals) to sensitive resources are also analyzed in the EIR. Also, as described in the EIR, the MSHCP includes guidelines to reduce the effects of development along the urban/wildlands interface. Implementation of the MSHCP and the proposed mitigation will reduce potential impacts to the SJWA to a level less than significant.

Because the San Timoteo State Park and Lake Perris are outside of the Planning Area, the proposed General Plan does not propose any uses adjacent to these areas.

O4: As explained in Responses O1 through O3 above, nothing in this comment letter provides substantial evidence that the EIR is outdated or incomplete and no revision to this EIR is proposed as a result of this comment letter.

RESPONSE TO LETTER P: STATE OF CALIFORNIA DEPARTMENT OF PARKS AND RECREATION, INLAND EMPIRE DISTRICT, AUGUST 1, 2005

P1: Please see Comment N6 in response to the fire hazards figure.

Figure 5.7-1 is not intended to illustrate potential sources of drainage, although Lake Perris is identified on the figure and in the text. The text on page 5.7-1 will be revised to explicitly state that Lake Perris is a potential source of drainage waters flowing to developed areas. This change does not affect the overall analysis, impact conclusions, or mitigation requirements identified in the EIR.

RESPONSE TO LETTER Q: CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD, SANTA ANA REGION, JULY 29, 2005

Q1: The "Environmental Setting" section of the Section 5.7 describes the RWQCB's Basin Plan and Beneficial uses of the project affected watersheds and groundwater basins. A discussion of the RWQCB's Basin Plan and the federal and State antidegradation policies have been added to the "Existing Regulations" section of Section 5.7. Additionally, the impact analysis has been revised slightly to explicitly state the project's potential for impacts associated with the water quality objectives and beneficial uses as defined in the Basin Plan. None of the information added changes any of the impact conclusions or mitigation proposed as the City actively complies with the requirements of the Basin Plan and other applicable State and federal requirements.

Q2: General storm water flows and the City's major drainage facilities are illustrated in Figure 5.7-1. Because no specific development projects are proposed and the and the amount and location of grading to occur is unknown at this time, no more specific drainage plan can be shown. However, please note that mitigation measure HW2 requires the City's storm drain system to conform to the Riverside County Flood Control and Water Conservation District master drainage plans and the requirements of the Federal Emergency Management Agency. This measure will assure the City continues to work to provide an adequate drainage system in the City.

Q3: Mitigation Measure HW3 requires the City to comply with the provisions of its permits issued by the RWQCB for the protection of water quality pursuant to the National Pollutant Discharge Elimination System. This includes permit no. CAS618033. Additionally, as the commenter notes, the DEIR describes the NPDES/MS4 program on pages 5.7-9 and 5.7-10. The water quality impact discussion on page 5.7-11 has been revised to explicitly indicate that implementation of Mitigation Measure HW3 will be a crucial part of the city's participation in local municipal compliance with the Board's pending TMDL for nutrients and pathogens entering Canyon Lake. The project's potential impact to Canyon Lake was previously identified in the DEIR. This comment confirms that the NPDES permits, including the MS4 permit are the primary tools to address potential impacts to surface water quality, including Canyon Lake. This revision does not change the analysis, potential impact or mitigation requirements of the EIR.

Q4: Mitigation Measure HW1 requires the City to implement NPDES Best Management Practices relating to construction of roadways. Pursuant to the provisions of its permits issued by the RWQCB (Mitigation Measure HW1), all future development and significant redevelopment in the Planning Area will be required to implement non-point sources pollution control measures. The analysis on page 5.7-11 has been revised to clarify that BMPS are required both during

construction and for the life of the project. During the city's review of project BMPs and when determined appropriate, the City will encourage BMPs that use the principles of low impact development.

Q5: This comment does not address the content or adequacy of the EIR and no further response is required. However, during the development review process, the City advises applicants of the need to comply with the noted permit programs. The city also has several pages of its website devoted to storm water pollution prevention and the NPDES.

Q6: The City feels that the DEIR is not the appropriate location for detailed guidelines or requirements for holding ponds and constructing wetlands as requirements for these may change over time. During the review of future development projects, the City will comply and ensure applicant compliance with the MS4 permit requirements and recommendations for holding ponds and constructed wetlands, including minimum detention times.

Q7: The City will preserve and protect native vegetation in compliance with the Western Riverside County Multi-Species Habitat Conservation Plan (MSHCP) and associated state and federal permits (Mitigation Measure B2). Mitigation Measure B3 also requires projects, where feasible, to minimize impacts on sensitive habitat. During the review of development and construction projects, the City will consider, where appropriate, carrying roadways or pipelines over ravines, arroyos and slope drainages, rather than through them.

Q8: The City will preserve and protect native vegetation in compliance with the Western Riverside County Multi-Species Habitat Conservation Plan (MSHCP) and associated state and federal permits (Mitigation Measure B2). Mitigation Measure B3 also requires projects, where feasible, to minimize impacts on sensitive habitat, including native vegetation.

Q9: The City's practice is to support the connection or conversion of existing septic systems to sewer when sewer systems are available. Where groundwater subbasins are identified appropriate disposal systems for waste disposal are evaluated.

RESPONSE TO LETTER R: CITY OF RIVERSIDE, JULY 27, 2005

R1: A substantial portion of the Box Springs Mountain Park is designated as Open Space under each of the three alternatives, with the remainder proposed for Hillside Residential. As described in *Chapter 9 Goals and Objectives* of the General Plan, the Hillside Residential category is intended for low density residential development with a maximum density of one dwelling unit per acre. The intent of the designation is to minimize grading in areas with slopes greater than 10 percent. The City feels the current designations are appropriate for the Box Springs Mountain area and no changes to the land use map are proposed in response to this comment.

R2: These comments do not address the content or adequacy of the EIR and the mitigation identified in the EIR is adequate to address the program-level impacts identified. No change to the General Plan or EIR has been made as a result of this comment.

R3: Comment noted. Please refer to Response N7.

RESPONSE TO LETTER S: SIERRA CLUB, SAN GORGONIO CHAPTER (LETTER 2), JULY 25, 2005

S1: It is not clear which ideas and suggestions are referred to by the commenter; therefore, it is not possible to respond in detail to this comment. However, the responses to the NOP were reviewed during preparation of the General Plan and EIR and taken into consideration where appropriate.

S2: It is not clear how the commenter determined that cumulative impacts from adjacent jurisdictions were not included in the EIR analysis. Consistent with CEQA and the program-level nature of the EIR, cumulative impacts from regional growth were accounted for using the regional growth projections method and SCAG forecasts for the region consistent with the 2004 Regional transportation Plan (RTP). The City's traffic model assumes build-out of land near Moreno Valley's limits in accordance with Riverside County and SCAG (Southern California Association of Governments) land-use assumptions; thus, cumulative traffic impacts are accounted for. Growth-inducing impacts of the proposed project are analyzed in section 7.2 of the EIR and were determined significant to areas surrounding the Planning Area.

S3: Potential hazards such as toxic plumes are heavily regulated by several federal, State, and regional agencies and are the responsibility of the hazardous waste generator. Development pursuant to the General Plan will not increase any hazards associated with toxic plumes at March Air Reserve Base. All contaminated wells on and off-base have been closed since 1988 and a groundwater containment system has been installed to prevent off-site groundwater migration. The removal of abandoned underground storage tanks and contaminated soil was completed by the Air Force in 1992. (Source: EPA Website, Region 9, updated February 2, 2005, downloaded by P&D Consultants August 16, 2005). Additionally, with the base realignment and use of only a portion of the site for ongoing reserve activities, ongoing hazards associated with the Reserve Base are further reduced.

S4: The mapping and analysis provided in the EIR is accurate based on currently zoned faults. As described on page 5.6-4 of the EIR, it has been speculated that the Casa Loma Strand might extend northwest of the Alquist Priolo Fault Zone, but geologic studies completed to-date have been unable to show that the fault extends beyond the zone. Additionally, the Farm Road Fault is identified and discussed on page 5.6-4 of the EIR. As described by the California Geological Survey in Letter H, the California Geological Survey has not yet zoned the "Farm Road strand" as an active fault; therefore, it is not mapped as such on Figure 5.6-2. The alternative land use maps identify the uses considered appropriate along Gilman Springs Road within the City's Planning Area. As stated on page 5.6-4 of the EIR, existing state law and city regulations and practices require most development applications within the Alquist-Priolo Zone to include geologic

reports addressing potential surface rupture due to faulting. No structure for human occupancy is permitted to be placed across the trace of an active fault, nor generally within 50 feet of any active fault trace.

No change is required to the EIR as a result of this comment.

S5: State Route 60 is a regional transportation facility; the City controls neither the timing nor the scope of improvements to it. However, city policy is to advocate funding and completion of improvements that enhance connections between Moreno Valley and points west.

S6: Figure 5.4-1 illustrates noise contours associated with aircraft activity at the March Air Reserve Base ARB. The noise contours take into account all aircraft activity at the ARB.

S7: The analysis of single-event noise is not required by CEQA and the noise contours shown reflect a realistic average exposure to noise levels in the Planning Area. Additionally, each of the General Plan land use alternatives proposes either open space or non-habitable Business Park uses within and adjacent to the ARB Noise Impact Area. No homes are proposed within the direct flight path of the ARB.

S8: This comment does not address the content or adequacy of the EIR and no further response is required. However, Eucalyptus Avenue is planned to provide such a connection (Gilman Springs to Eucalyptus to Redlands).

S9: The General Plan does not propose any buildings specifically, but would allow limited Hillside Residential development in the vicinity of the proposed tunnel. The tunnel would be outside Moreno Valley's city limits and would not be planned, designed, or constructed by the City of Moreno Valley. The environmental impacts of the proposed tunnel will have to be evaluated by the agency responsible for constructing the tunnel at the time a specific alignment is chosen and plans for the tunnel move forward.

S10: If constructed, the Bi-County Corridor would skirt the western city limits and tunnel under Box Springs Mountain. It would possibly connect to Pigeon Pass Road and Reche Canyon Road. More information is available from the Riverside County Integrated Plan website (www.rcip.org) or by contacting the Riverside County Transportation and Land Management Agency at (951) 955-1800. As described in Section 5.1, no circulation element roadway is anticipated to divide an established community.

By State law, trucks cannot be prohibited from using the Bi-County Corridor and its connecting facilities, by state law.

The additional traffic would not directly reduce safety near schools. To maintain safety, the City manages a crossing guard program, supplemented by school-zone signing and markings to notify drivers to use caution.

The impacts of the proposed Circulation Plan, including future improvements to the circulation system, are evaluated in the EIR. Potential impacts to residents as a result of the proposed Circulation system are mostly associated with air quality and noise, which are addressed in Sections 5.3 and 5.4 of the EIR, respectively.

S11: The mapping information provides is based on the U.S. EPA Envirofacts database and is meant to show the approximate location of hazardous materials sites. The text on page 5.5-1 describes the number and types of businesses that this may entail. The intent is not to call out one specific business or address out of the 40 or so identified in the EIR.

S12: Figure 5.5-2 of the EIR shows all potential dam inundation areas in the Planning Area. Moreno Valley is not subject to inundation from the Lake Hemet Dam.

S13: This comment does not address the content or adequacy of the EIR. However, a majority of 100-year and 500-year flood plain areas are either designated as Floodplain, Open Space, very low density residential (rural residential categories) or for non-residential development such as Commercial and Business Park. Any development allowed in these areas must comply with existing programs to reduce flood hazards.

S14: It is unclear to where in the EIR or General Plan the commenter is referring as no concrete lined channels are proposed by the project. Because this comment does not address the content or adequacy of the EIR, no further response is required.

S15: The MSHCP determined the appropriate boundaries of the SJWA based on the number and limit of sensitive resources in the area. Surrounding areas and additional areas need not also be kept free from development. As shown in Table 5.9-6, indirect impacts to the San Jacinto Wildlife Area will be limited to field and croplands, which are not generally considered sensitive resources. Also, mitigation for all direct and indirect impacts of future development will be required as described on page 5.9-90 of the EIR. Compliance with the MSHCP and associated State and federal permit requirements will largely ensure protection of the resources identified.

S16: Impacts to viewsheds and scenic resources are analyzed in Section 5.11 Aesthetics. This section recognizes that new development has the potential to impact these resources. Mitigation Measures A1 through A6 are proposed to reduce potential impacts to these resources to a level less than significant.

S17: Regional modeling efforts and the transportation analysis performed for the General Plan and EIR indicated the need for Moreno Beach Boulevard south of the SR-60 as a primarily a 6-lane Divided Major Arterial and north of the SR-60 as a four-lane Arterial. The DEIR has evaluated the impacts of this roadway as such. Riverside County's Circulation Element includes Reche Canyon Road as a Mountain Arterial (which can be two-lane or four-lane). Moreno Beach Drive is intended as a four-lane facility north of State Route 60 to provide a connection to Reche Canyon Road.

S18: Alessandro and Cactus are necessary east-west routes through the City. The Circulation Plan shown on Figure 5.2-1 and in the General Plan show that Alessandro runs north of the SJWA and Cactus loops north at Redlands Boulevard before it hits the western boundary of the SJWA. Neither of these roadways are proposed to pass through the SJWA.

S19: The Moreno Valley Traffic Model predicts acceptable level of service for Nason Street as a four-lane facility between Fir Avenue and Alessandro Boulevard with completion of the preferred land-use plan. Nason Street is planned for six lanes between Alessandro Boulevard and Cactus Avenue, near the hospital.

S20: It is unclear what the commenter means by ". . .Tables 5.2-9 and 5.2-10 must reflect the actual LOS." The City establishes an LOS C or an LOS D as acceptable depending upon roadway type and location. LOS D is commonly established as the acceptable criteria for more urban areas and heavier traveled roadways. As described in Section 5.2, LOS D is applicable to intersections and roadway segments that are adjacent to freeway on/off ramps, and/or adjacent to employment generating land uses. LOS C is applicable to all other intersections and roadway segments. Boundary intersections are assumed to be LOS D.

Tables 5.2-9 and 5.2-10 reflect the roadway design capacities for LOS C and LOS D and the projected volumes and volume to capacity (V/C) ratios, indicating that several roadway segments will exceed the City's LOS standards based on the proposed roadway type and overall circulation plan. It is also not correct to state that LOS D-F requires two to three cycles to pass through an intersection, although it can generally be stated that the worse the LOS, the longer the wait. Additionally, the commenter is generally correct in stating that Alternative 3 is the less intense land use alternative, as shown in Tables 5.2-11 and 5.2-12.

Level of Service 'D' is described by the Transportation Research Board's *Highway Capacity Manual* (2000 Ed.) as follows: 'At LOS D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, and high v/c ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.

S21: The requested analysis has not been performed because it would not reflect any potentially "real" conditions in the City. Signals are synchronized such that one would not be stopped at every signal and no route is expected to experience failing (level of service D, E, or F depending upon roadway)for the entire length of the roadway within the Planning Area. No revision to the traffic analysis has been made as a result of this comment. Additionally, the City's level of service standard is "C" except under certain conditions (near freeway interchanges and in high-employment centers).

S22: It is not clear in which way the commenter believes the Plan conflicts with the stated regional plans. However, it should be noted that regional plans and projections such as the SCAQMD AQMP and SCAG Growth Management Plan generally incorporate planning data from a jurisdiction's adopted plans. In this case, the most recent regional plans and projections would have reflected the adopted General Plan (or Alternative 1). Because the project proposes changing the land uses from the adopted General Plan, the proposed land uses and accompanying population assumptions would likely vary from the assumptions for Moreno Valley that are reflected in the SCAQMD and SCAG plans. This is not uncommon when new General Plans are proposed and regional agencies are often updating their plans and projections to reflect such new information.

S23: No specific concern regarding the data is identified by the commenter. The analysis provides a comparison of the existing conditions at the time of the issuance of the NOP pursuant to CEQA Guidelines Section 15125(a) to the future conditions associated with each of the General Plan land use alternatives. The air quality analysis is adequate as presented.

S24: Comment noted.

S25: The impacts of PM 10 and 2.5, including impacts on children and the elderly are identified in Table 5.3-4. The EIR includes 10 mitigation measures intended to address and minimize air quality impacts, including those associated with PM 10 and 2.5. No additional mitigation has been identified by the commenter to further reduce PM 10 and 2.5 impacts.

S26: This comment does not address the content or adequacy of the EIR.

S27: Please see Response D1.

S28: Please see Response D1.

S29: These items are provided as Appendices to this letter for the public record. The letter dated July 15, 2005 has been responded to as Letter E above. The appendices to this Letter S do not raise any issues that have not already been responded to herein or in Letter E.

S30: Nothing raised in this comment letter provides substantial evidence that the DEIR needs to be revised to be considered adequate.

Additionally, although all maps within the document were provided on disk, hard copies of the EIR were also available at the City's Community and Economic Development Department and the Moreno Valley Branch Library. Both of these locations were noted on page 1-2 of the EIR.

The City will keep the Sierra Club notified of actions related to the General Plan and will make hard copies of the Final document available to the public.

RESPONSE TO LETTER T: RIVERSIDE TRANSIT AGENCY, JULY 27, 2005

T1: Comment noted.

T2: This comment does not address the content or adequacy of the EIR and no further response is required. However, Policy 5.8.1, advocates express-bus service, supports deployment of Bus Rapid Transit in Moreno Valley.

T3: Comment noted. The City looks forward to continuing to work with RTA to improve transit service in Moreno Valley.

T4: This comment does not address the content or adequacy of the EIR. The Plan generally provides a twenty year blueprint for growth, although actual buildout according to the proposed land uses will not likely occur within the next twenty year period and perhaps not until about 2050.

Comments T5 through T19 below generally address the content of the General Plan and not the content or adequacy of the EIR. The responses below are provided as a courtesy in response to RTA's review of the General Plan. Nothing in the responses below require the addition of significant new information to the EIR.

T5: A route-by-route map would not suit the purposes of the General Plan document, as bus routes are added, changed, and removed regularly; and thus such a map would quickly be out-of-date. Further, the General Plan is a city policy document, and including such a map may imply the City maintains approval authority over transit lines.

T6: The proposed BRT route alignment should be discussed with City of Moreno Valley staff prior to planning for deployment. Day Street is unimproved between Cottonwood Avenue and Alessandro Boulevard and may not be suitable for BRT buses; specifically, it may be deficient in roadway width, vertical alignment, and/or structural cross-section. Therefore, it is inappropriate to discuss the routing of this line in the General Plan at this time.

T7: In accordance with Policy 5.8.1, Moreno Valley will support reserving future right-of-way for BRT stations. Specific station locations should be proposed to the City and accepted prior to reserving right-of-way.

T8: Policy 5.8.1 serves to support deployment of said BRT-related design features.

T9: This comment does not address the content or adequacy of the EIR and no further response is required. However, please note that Paragraph 5.7.4 in the General Plan Traffic Study appendix is identical to Policy 5.8.1.

T10: An entitlement application for modifications to the Moreno Valley Mall is currently under review; as part of the work, the mall will undertake the transit center relocation as described in the comment. City staff and the project applicant will coordinate the transit center relocation with the RTA. Since this work is still pending, no specific discussion is recommended for inclusion in the General Plan or EIR.

T11: The City will support transit deployment in accordance with all policies under Objective 5.8 (encourage development of an efficient public transportation system for the entire community).

T12: Comment noted.

T13: The General Plan and EIR have been modified to provide this additional clarification. This clarification does not change the analysis, mitigation requirements or conclusions of the EIR.

T14: The General Plan and EIR have been modified to provide this additional clarification. This clarification does not change the analysis, mitigation requirements or conclusions of the EIR.

T15: The City's proposed land-use plan does not include provisions for substantial, dedicated transit centers; however, the City will continue to consider their inclusion as part of larger developments in accordance with policies 5.8.4 and 5.8.5. Also, Section 5.2.4.1 of the General Plan has been edited to specifically define the relationship between a Transit Oasis and commuter transit facilities. It is our understanding, based on reviewing the RCIP documents, that the term 'Transit Oasis' refers to a feeder system of buses rather than a dedicated land use. The revised text reflects this understanding. This change does not affect the analysis, mitigation, or conclusions of the Draft EIR.

T16: Comment noted.

T17: Comment noted.

T18: Comment noted.

T19: RTA's recommended policy is noted. This comment does not address the content or adequacy of the EIR.

T20: Comment noted. The City looks forward to continuing to work with RTA to improve transit service for residents of Moreno Valley.

RESPONSE TO LETTER U: PETE AND ARLENE WEAVER, JULY 27, 2005

U1: Comment noted. The City acknowledges the commenter's general support for Alternative #2, which was analyzed in detail in the Draft EIR. Because this comment does not address the content or adequacy of the EIR, no further response is required.

RESPONSE TO LETTER V: MARGIE BREITKREUZ, JULY 27, 2005

V1: Comment noted. The City acknowledges the commenter's general support for Alternative #3, which was analyzed in detail in the Draft EIR. Because this comment does not address the content or adequacy of the EIR, no further response is required.

V2: This comment does not address the content or adequacy of the EIR, and no further response is required. The area between Moreno Beach Drive and Quincy Street, and between Ironwood and Locust Avenues is partially improved with ½ acre lots and is currently zoned RA2 (Residential Agriculture – 2 dwelling units per acre); this zone permits animal keeping. The General Plan will not impact the animal keeping provisions. The area north of Locust Avenue is proposed to be changed from R2 (2 dwelling units per acre) to R1 (1 dwelling unit per acre).

V3: This comment does not address the content or adequacy of the EIR, and no further response is required.

V4: Please see Response S17.

V5: The Sinclair Street overcrossing of State Route 60 is proposed for removal from the City's Circulation Element primarily because the proposed land-use plan anticipates less commercial and industrial land use (and therefore less traffic) around Sinclair Street than the currently adopted plan. This resulted in the removal recommendation for two reasons: First, were it to be constructed, the traffic model predicts little vehicular traffic would use it (even upon build-out of the City); and second, its elimination is not predicted to cause adjacent facilities (both overcrossings and intersections) to operate below the City's level of service standard. The traffic model that was used to analyze the Circulation Element is closely tied to the proposed land uses, as is required by state law.

V6: This comment addresses Zoning regulations and not the General Plan or General Plan DEIR and no further response is required.

V7: This comment identifies several policy recommendations for the General Plan that if included by the City will not worsen any environmental impacts analyzed in the EIR. The City will consider the proposed recommendations and incorporate the recommendations into the Plan where appropriate and where not already covered by similar policy language. The City will also provide the following policy within the General Plan: Future development in hillside areas shall occur in a manner that will maintain natural open space areas, protect significant landforms and other natural resources, protect views from existing development, retain opportunities for views from development sites, preserve and enhance vistas from public places, and minimize the extent and occurrence of erosion and other potential hazards of development in areas of steep topography.

RESPONSE TO LETTER W: MICHAEL A. MCKIBBEN, PH.D., JULY 28, 2005

W1: The City regrets that the commenter did not receive direct notice of the draft EIR's availability; however, a Notice of Availability was published in The Press Enterprise on June 17, 2005 and copies of the document were provided at the public library and at City Hall. Since no specific extension period was requested and the commenter was clearly able to provide formal written comments a few days prior to the end of the 45-day public review period, no formal extension has been granted by the agency.

W2: Comment noted. The Seismic Hazards map identified in the EIR illustrates all faults currently zoned as active by the California Geological Survey (CGS) (see Letter H). The Farm Road Fault, which has not been officially zoned by the CGS, is not currently mapped in the General Plan. Studies are ongoing regarding this fault and should this fault be zoned by CGS, it will be added to the General Plan map through a General Plan Amendment. The impacts of any such amendment would be assessed at the time the General Plan Amendment is proposed.

W3: Please see Response W2 above.

W4: The EIR identified the potential for subsidence in the Planning Area; however, the area is located within the San Jacinto Wildlife area or within the floodplain where the risk of injury and loss of life is minimal. Please see response H7 regarding liquefaction potential in the Planning Area.

W5: Comment noted. Evidence of subsidence and shallow groundwater were both noted as existing conditions in the Planning Area.

W6: The language used in the EIR was not meant to imply doubt. The term "reportedly" was used because we were referring to a fact reported by another in a specifically footnoted comment (commenter's own letter dated September 28, 2000). The term used does not change the conclusions in the EIR regarding hazards associated with landslides.

W7: As described in Section 5.6 of the EIR, future development in the Planning Area will be subject to geologic studies and mitigation for seismic hazards in accordance with the Alquist Priolo Earthquake Fault Zoning Act and the UBC. Based on the Threshold of Significance established in the EIR, these existing laws will reduce the exposure of people or structures to *unacceptable risks* of major geologic, seismic or soils hazards that could not be overcome by using reasonable construction and/or maintenance practices to a level less than significant. In other words, with implementation of the assumed mitigation, the level of risk in the Planning Area is not expected to be "unacceptable", therefore, the impact is less than significant. Although it is recognized within the EIR that these measures

cannot provide 100 percent protection against seismic damage, the remaining risk is not "unacceptable". Please also see Response W8 in regard to ground shaking.

W8: The three pages of ground motion data provided by CGS in their comment Letter H (see Comment H5) is hereby incorporated by reference into the Final EIR. This information does not change the significance conclusions or proposed mitigation in the EIR. Please also see Response W7 above.

W9: Not all references contained within an EIR need to be provided as appendices to the report. In instances where small portions of a larger report were used as reference materials, a simple bibliography of the note or reference is provided. This is the case with the references in question.

W10: Please see Response W7 above.

W11: Please see Response W7 above.

W12: Comment noted.

RESPONSE TO LETTER X: STATE OF CALIFORNIA GOVERNOR'S OFFICE OF PLANNING AND RESEARCH, AUGUST 2, 2005

X1: This letter acknowledges that the DEIR complied with the State Clearinghouse review requirements for draft environmental documents. No further response is required.

RESPONSE TO LETTER Y: DEPARTMENT OF CALIFORNIA HIGHWAY PATROL, RIVERSIDE AREA, JULY 21, 2005

Y1: The analysis used to plan the City's circulation system assumes State Route 60 would be a 10-lane facility at build-out. This facility is under the purview of other agencies and thus not discussed in great detail in the City's planning document beyond how it affects the City's land use and planning efforts.