

103

NATURAL DISASTER PROTECTION ACT OF 1993

(103-52)

Y 4. P 96/11:103-52

Natural Disaster Protection Act of...

HEARING

BEFORE THE

SUBCOMMITTEE ON

WATER RESOURCES AND ENVIRONMENT

OF THE

COMMITTEE ON

PUBLIC WORKS AND TRANSPORTATION

HOUSE OF REPRESENTATIVES

ONE HUNDRED THIRD CONGRESS

SECOND SESSION

ON

H.R. 2873

TO AMEND THE ROBERT T. STAFFORD DISASTER RELIEF AND EMERGENCY ASSISTANCE ACT TO PROVIDE FOR AN EXPANDED FEDERAL PROGRAM OF HAZARD MITIGATION, RELIEF, AND INSURANCE AGAINST THE RISK OF CATASTROPHIC NATURAL DISASTERS, SUCH AS HURRICANES, EARTHQUAKES, AND VOLCANIC ERUPTIONS, AND FOR OTHER PURPOSES

FEBRUARY 23, 1994

Printed for the use of the
Committee on Public Works and Transportation



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103D CONGRESS
1ST SESSION

H. R. 2873

To amend the Robert T. Stafford Disaster Relief and Emergency Assistance Act to provide for an expanded Federal program of hazard mitigation, relief, and insurance against the risk of catastrophic natural disasters, such as hurricanes, earthquakes, and volcanic eruptions, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

AUGUST 4, 1993

Mr. MINETA (for himself and Mr. BOEHLERT) introduced the following bill; which was referred jointly to the Committees on Public Works and Transportation and Banking, Finance and Urban Affairs

FEBRUARY 2, 1994

Additional sponsors: Mr. GIBBONS, Mr. YOUNG of Alaska, Mr. SHAW, Mr. BACCHUS of Florida, Mr. PORTER, Mr. QUILLEN, Mr. RAVENEL, Mr. SUNDQUIST, Ms. BROWN of Florida, Mr. MICA, Mr. MCCOLLUM, Mr. UNDERWOOD, Mr. JOHNSTON of Florida, Mr. PETERSON of Florida, Mr. HUTTO, Mr. CANADY, Mr. KNOLLENBERG, Mr. LIPINSKI, Mr. EWING, Mr. DEUTSCH, Mr. DEFazio, Mr. COOPER, Mr. BROWN of California, Mr. BURTON of Indiana, Mr. HASTINGS, Mr. MILLER of Florida, Mr. TAYLOR of North Carolina, Mr. HOBSON, Ms. EDDIE BERNICE JOHNSON of Texas, Mr. LAUGHLIN, Mr. FILNER, Mr. STARK, Mr. GORDON, Mr. BILIRAKIS, Mr. LEWIS of Florida, Mr. CLINGER, Mr. OBERSTAR, Mr. LEVY, Mr. LEWIS of California, Mr. KLECZKA, Mr. GENE GREEN of Texas, Mr. SWIFT, Ms. MOLINARI, Mr. RAHALL, Mr. CALLAHAN, Mrs. LLOYD, Mr. BACHUS of Alabama, Mr. STENHOLM, Mrs. MEEK, Mr. DERRICK, Mr. MINGE, Mr. TANNER, Ms. DUNN, Mr. CALVERT, Mr. VOLKMER, Ms. ROS-LEHTINEN, Mr. TORRICELLI, Mr. JEFFERSON, Mr. CLYBURN, Mr. DIAZ-BALART, Mr. SWETT, Mr. FARR of California, Mr. CLEMENT, Mr. SPENCE, Ms. CANTWELL, Mr. BORSKI, Mrs. FOWLER, Mr. WELDON, Mr. CONDIT, Mr. BLILEY, Mr. ENGEL, Mr. FOGLIETTA, Mr. DOOLITTLE, Mr. FORD of Tennessee, Mr. HAYES, Mr. GILLMOR, Mr. TUCKER, Mr. COSTELLO, and Mr. EDWARDS of California

(VII)

A BILL

To amend the Robert T. Stafford Disaster Relief and Emergency Assistance Act to provide for an expanded Federal program of hazard mitigation, relief, and insurance against the risk of catastrophic natural disasters, such as hurricanes, earthquakes, and volcanic eruptions, and for other purposes.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*

3 **SECTION 1. SHORT TITLE.**

4 This Act shall be cited as the “Natural Disaster Pro-
5 tection Act of 1993”.

6 **SEC. 2. FINDINGS AND PURPOSES.**

7 Section 101 of the Robert T. Stafford Disaster Relief
8 and Emergency Assistance Act (42 U.S.C. 5121) is
9 amended as follows:

10 (a) In subsection (a), by—

11 (1) striking “and” in paragraph (1);

12 (2) inserting “and” following the semicolon in
13 paragraph (2);

14 (3) inserting the following new paragraph be-
15 fore “special measures”:

16 “(3) because catastrophic natural disasters,
17 such as major hurricanes, earthquakes, and volcanic
18 eruptions, pose particular problems in terms of sub-
19 stantial long-term consequences, ill-equipped pre-

1 paredness efforts, lack of hazard mitigation meas-
2 ures (such as enforced building codes), and inad-
3 equate insurance and reinsurance coverage;”;

4 (4) inserting “promoting hazard mitigation
5 compliance and in” after “affected States in”; and

6 (5) inserting “insurance and reinsurance cov-
7 erage,” after “rendering of aid, assistance,”.

8 (b) In subsection (b), by—

9 (1) inserting before the semicolon in paragraph
10 (1) “by including State hazard mitigation compli-
11 ance, Federal primary insurance, and Federal excess
12 reinsurance programs”;

13 (2) inserting after “preparedness” in paragraph
14 (2) “, hazard mitigation compliance,”;

15 (3) striking the second “and” in paragraph (3)
16 and inserting in lieu thereof “, hazard mitigation,
17 emergency first response”;

18 (4) striking “insurance coverage” in paragraph
19 (4) and inserting in lieu thereof “multi-hazard pri-
20 mary insurance coverage with premiums based on
21 risk”;

22 (5) inserting before the semicolon in paragraph
23 (4) “and creating a Federal excess reinsurance pro-
24 gram in partnership with the private-sector to speed
25 rebuilding following a catastrophic natural disaster”;

1 (6) inserting before the semicolon in paragraph
2 (5) “and the adoption and enforcement of multi-haz-
3 ard building codes, and improved first responder ca-
4 pabilities”; and

5 (7) inserting after “disasters” in paragraph (6)
6 “and a self-sustaining funding mechanism to help
7 States pay for hazard mitigation.”.

8 **SEC. 3. DEFINITIONS.**

9 Section 102 of the Robert T. Stafford Disaster Relief
10 and Emergency Assistance Act (42 U.S.C. 5122) is
11 amended as follows:

12 (a) In paragraph (7) add “the Federal National
13 Mortgage Association, and the Federal Home Loan Mort-
14 gage Corporation,” following “United State Postal Serv-
15 ice,”.

16 (b) Add at the end the following new paragraphs:

17 “(10) The term ‘critical facilities’ means
18 schools and structures essential to emergency serv-
19 ices necessary for post natural disaster recovery (in-
20 cluding hospitals, fire and police facilities, temporary
21 shelters, and emergency operating and preparedness
22 centers).

23 “(11) The term ‘Director’ means the Director
24 of the Federal Emergency Management Agency.

1 “(12) The term ‘disaster-prone State’ means
2 any State determined by the Director pursuant to
3 section 701 to be a hurricane-prone, windstorm-
4 prone, earthquake-prone, volcanic eruption-prone, or
5 flood-prone State.

6 “(13) The term ‘earthquake’ means any shak-
7 ing or trembling of the crust of the earth caused by
8 underground seismic forces or by breaking and shift-
9 ing of rock beneath the surface.

10 “(14) The term ‘earthquake-prone State’ means
11 a State determined by the Director pursuant to sec-
12 tion 701 to have an exposure to the earthquake
13 peril.

14 “(15) The term ‘Federal assistance’ means any
15 form of financial aid, including grants, loans, loan-
16 guarantees, subsidies, insurance, and payments, pro-
17 vided by a Federal agency.

18 “(16) The term ‘first responder’ means those
19 fire fighting, police, and emergency medical person-
20 nel with the statutory authority to engage in and
21 provide immediate emergency response services.

22 “(17) The term ‘flood’ or ‘flooding’ means a
23 general and temporary condition of partial or com-
24 plete inundation of normally dry land areas from the
25 overflow of inland or tidal waters or the unusual and

1 rapid accumulation of runoff of surface waters from
2 any source.

3 “(18) The term ‘flood-prone State’ means a
4 State determined by the Director pursuant to sec-
5 tion 701 to have an exposure to the flood peril.

6 “(19) The term ‘hurricane’ means a non-frontal,
7 warm core, low pressure atmospheric system
8 having a definite organized circulation, including any
9 associated windstorm events occurring within 72
10 hours before and after the hurricane, with sustained
11 wind speeds of 74 miles per hour or greater and offi-
12 cially declared to be a hurricane by the National
13 Hurricane Center.

14 “(20) The term ‘hurricane-prone State’ means
15 a State determined by the Director pursuant to sec-
16 tion 701 to have an exposure to the hurricane peril.

17 “(21) The term ‘hurricane zone’ means an area
18 within a State identified by the Director as being
19 subject to major risk from the hurricane peril.

20 “(22) The term ‘insurance industry’ means all
21 private insurers and private reinsurers.

22 “(23) The term ‘lifelines’ means critical public
23 infrastructure, including highways, bridges, water
24 transportation and treatment facilities, electric

1 transmission systems, pipelines, and telecommuni-
2 cations networks.

3 “(24) The term ‘local community’ means a po-
4 litical subdivision of a State which has zoning and
5 building code jurisdiction over a particular area
6 which is exposed to the hurricane, windstrom, earth-
7 quake, volcanic-eruption, or flood peril.

8 “(25) The term ‘multi-hazard coverage’ means
9 policies, riders, or endorsements of insurance issued
10 on Federal paper pursuant to subtitle A of title VIII
11 that provide indemnity, in whole or in part, for the
12 loss, destruction, or damage of residential property.

13 “(26) The term ‘ordinance or law coverage’
14 means insurance coverage for the increased cost of
15 construction to repair or rebuild structures and the
16 cost of demolition due to the enforcement of any
17 ordinance or law, such as building codes.

18 “(27) The terms ‘private insurer’ and ‘private
19 reinsurer’ mean any insurer or reinsurer that is (A)
20 licensed or admitted to write property and casualty
21 insurance or reinsurance within a State, or (B) is a
22 branch of an insurer or reinsurer organized or incor-
23 porated in a country other than the United States
24 that is entered through and licensed by a State to
25 conduct insurance or reinsurance business. In the

1 case of an insurance exchange or group of unincor-
2 porated underwriters, the term means an underwrit-
3 ing syndicate, notwithstanding the licensed or admit-
4 ted status of the insurance exchange or group of
5 unincorporated underwriters.

6 “(28) The term ‘residential property’ means
7 any (A) 1- to 4-family residential structure (includ-
8 ing mobile or manufactured homes) and the personal
9 property therein, and (B) personal property of occu-
10 pants of residential structures (including condomin-
11 iums, cooperatives, and apartment structures).

12 “(29) The term ‘seismic zone’ means an area
13 within a State identified by the Director as being
14 subject to major risk from the earthquake peril.

15 “(30) The term ‘State residual insurance pool-
16 ing program’ means any State-authorized joint un-
17 derwriting or joint reinsurance association, risk pool,
18 residual market mechanism, or other type of State-
19 sanctioned entity providing property insurance cov-
20 erage against hurricanes, earthquakes, volcanic
21 eruptions, or tsunamis.

22 “(31) The term ‘substantially modified building
23 construction’ means additional or improvements to
24 an existing structure which constitute at least a 50
25 percent increase in the overall value of the structure.

1 “(32) The term ‘supplemental losses’ means
2 claim and loss adjustment expense payments for the
3 multi-hazard coverage issued pursuant to subtitle A
4 of title VIII that exceed the accumulated amounts in
5 the Primary Insurance Program Fund.

6 “(33) The term ‘tsunami’ means an ocean wave
7 generated by underwater disturbances in the earth’s
8 crust, primarily earthquakes and submarine volcanic
9 eruptions.

10 “(34) The term ‘volcanic eruption’ means the
11 expulsion, as a result of natural causes, of molten
12 rock, rock fragments, gases, ashes, mud, lava flows,
13 and other natural substances through an opening in
14 the crust of the Earth.

15 “(35) The term ‘volcanic eruption-prone State’
16 means a State determined by the Director pursuant
17 to section 701 to have an exposure to the volcanic
18 eruption peril.

19 “(36) The term ‘volcanic zone’ means an area
20 within a State identified by the Director as being
21 subject to major risk from the volcanic eruption
22 peril.

23 “(37) the term ‘windstorm’ means an atmos-
24 pheric disturbance marked by high velocity move-

1 ments of air, such as a tornado, but does not include
2 a hurricane.

3 “(38) The term ‘windstorm-prone State’ means
4 a State determined by the Director pursuant to sec-
5 tion 701 to have an exposure to the windstorm
6 peril.”.

7 **SEC. 4. DISASTER ASSISTANCE AMENDMENTS.**

8 Title IV of the Robert T. Stafford Disaster Relief and
9 Emergency Assistance Act (42 U.S.C. 5121 et seq.) is
10 amended as follows:

11 (a) In section 404 (42 U.S.C. 7170e), add “(a) HAZ-
12 ARD MITIGATION GRANTS.—” following the section head-
13 ing and add the following new subsections at the end:

14 “(b) HAZARD MITIGATION INITIATIVES.—Consistent
15 with this title and other existing Federal law, the Director
16 shall develop programs to carry out the following multi-
17 hazard mitigation and emergency management
18 initiatives—

19 “(1) the development of model building codes
20 and other hazard mitigation measures for cata-
21 strophic natural disasters, such as hurricanes, wind-
22 storms, earthquakes, volcanic-eruptions, or floods,
23 which are based on both preventing personal injuries
24 and mitigating property damage;

1 “(2) adequate training and licensing of archi-
2 tects, engineers building inspectors, building code
3 enforcement personnel, planners, and similar profes-
4 sionals to ensure proper compliance with hazard
5 mitigation standards;

6 “(3) expanded research to strengthen building
7 codes and promote development of cost-effective
8 building technologies and related hazard mitigation
9 measures;

10 “(4) the transfer of hazard mitigation tech-
11 nology to States, local communities, and other per-
12 sons, such as private building contractors, respon-
13 sible for the implementation and enforcement of
14 hazard mitigation measures;

15 “(5) aid for Federal, State, and local emergency
16 response operations following natural disasters which
17 could include the acquisition of additional facilities,
18 equipment, and personnel as well as resources for
19 training and public assistance; and

20 “(6) education to enhance public awareness of
21 the risk of and hazards from natural disasters and
22 ways to mitigate the personal, physical, and eco-
23 nomic losses.

24 “(c) FEDERAL REGULATIONS.—Within 18 months of
25 the date of enactment of the Natural Disaster Protection

1 Act of 1993, the Director, in coordination with other Fed-
2 eral agencies, shall issue final multi-hazard mitigation reg-
3 ulations necessary to carry out the hazard mitigation ac-
4 tivities described in subsection (b). Such regulations shall
5 be issued pursuant to the provisions of subchapter II of
6 charter 5 of title 5, United States Code.”.

7 (b) In section 405 (42 U.S.C. 5171), add the follow-
8 ing new subsection at the end:

9 “(d) **FEDERALLY-CONNECTED BUILDINGS.**—All new
10 buildings owned or leased by any Federal agency or receiv-
11 ing Federal assistance shall meet the newest edition of the
12 relevant building code requirements, including relevant
13 building and housing codes and performance building
14 standards. Within 18 months of the date of enactment of
15 the Natural Disaster Protection Act of 1993, the Director,
16 in coordination with other Federal agencies, shall issue
17 final regulations necessary to carry out this subsection,
18 pursuant to the provisions of subchapter II of chapter 5
19 of title 5, United States Code.”.

20 (c) In section 406 (42 U.S.C. 5172), add the follow-
21 ing new subsection at the end:

22 “(g) **MITIGATION NON-COMPLIANCE PENALTY.**—No
23 public assistance disaster funds under this section shall
24 be provided to any local community which has failed, with-
25 in 5 years from the date of enactment of the Natural Dis-

1 aster Protection Act of 1993, to comply with the multi-
2 hazard building and safety codes described in section
3 702(a) and the flood performance standards described in
4 section 702(b).”.

5 (d) In section 407 (42 U.S.C. 5173), add the follow-
6 ing new subsection at the end:

7 “(e) MITIGATION NON-COMPLIANCE PENALTY.—No
8 public assistance disaster funds under this section shall
9 be provided to any local community which has failed, with-
10 in 5 years from the date of enactment of the Natural Dis-
11 aster Protection Act of 1993, to comply with the multi-
12 hazard building and safety codes described in section
13 702(a) and the flood performance standards described in
14 section 702(b).”.

15 **SEC. 5. MULTI-HAZARD MITIGATION PROGRAM.**

16 The Robert T. Stafford Disaster Relief and Emer-
17 gency Assistance Act (42 U.S.C. 5121 et seq.) is amended
18 by adding at the end the following new title:

19 **TITLE VII—MULTI-HAZARD MITIGATION**
20 **PROGRAM**

21 **“SEC. 701. IDENTIFICATION AND DESIGNATION OF DISAS-**
22 **TER-PRONE STATES.**

23 “(a) INITIAL IDENTIFICATION.—The Director, con-
24 sistent with existing Federal law, shall identify States

1 which are prone to damages from the following natural
2 disaster perils—

3 “(1) hurricanes;

4 “(2) windstorms;

5 “(3) earthquakes;

6 “(4) volcanic eruptions; and

7 “(5) flooding.

8 “(b) DESIGNATION BY PERIL.—The Director shall
9 designate all States identified pursuant to subsection (a)
10 as disaster-prone States, and separately designate States
11 as hurricane-prone, windstorm-prone, earthquake-prone,
12 volcanic eruption-prone, or flood-prone, as appropriate,
13 within 1 year of the date of the enactment of the Natural
14 Disaster Protection Act of 1993. The Director shall cause
15 a listing of such States to be published in the Federal Reg-
16 ister and in widely circulated local newspapers in the ap-
17 plicable States before the expiration of such 1-year period.

18 “(c) FINAL NOTIFICATION.—The designation for
19 each State under subsection (b) shall become final for the
20 purposes of this Act 6 months after such designations are
21 published in the Federal Register. The Director shall
22 notify the chief executive officer of each such State des-
23 ignated, in writing, before the expiration of such 6-month
24 period.

1 “(d) ONGOING DESIGNATION AND NOTIFICATION.—

2 Based upon any additional hurricane, windstorm, seismic,
3 volcanic, or flood information that from time-to-time be-
4 comes available, the Director may designate States (not
5 designated under subsection (b)) having an exposure to
6 hurricane, windstorm, earthquake, volcanic eruption, or
7 flood perils. Any such States shall be designated pursuant
8 to the terms of subsection (b) and notified pursuant to
9 terms of subsection (c).

10 “(e) APPEAL.—Any State aggrieved by a final deter-
11 mination as a disaster-prone State, pursuant to sub-
12 sections (c) or (d), may, after exhausting administrative
13 remedies, appeal such determination to any United States
14 district court for a district located within the State, not
15 more than 60 days after receipt of notice of such deter-
16 mination. The scope of review by the court shall be as pro-
17 vided under chapter 7 of title 5, United States Code. Dur-
18 ing the pendency of any such litigation, all determinations
19 of the Director shall be effective and final for the purposes
20 of this title unless stayed by the court for good cause
21 shown.

22 **“SEC. 702. BUILDING AND SAFETY STANDARDS.**

23 “(a) MULTI-HAZARD BUILDING AND SAFETY
24 CODES.—At a minimum, each State designated as a hurri-

1 cane-prone State, a windstorm-prone State, or an earth-
2 quake-prone State shall either—

3 “(1) for all new and substantially modified
4 building construction in that State, adopt the rel-
5 evant natural disaster hazard mitigation portions of
6 the newest edition of the National Building Code,
7 the Standard Building Code, or the Uniform Build-
8 ing Code and other relevant building and housing
9 codes and standards, including the national consen-
10 sus safety codes of the National Fire Protection As-
11 sociation (specifically the National Electrical Code,
12 the National Fuel Gas Code, the Flammable and
13 Combustible Liquids Code, and the Standard for the
14 Storage and Handling of Liquefied Petroleum
15 Gases); or

16 “(2) certify that the State’s local communities
17 have adopted and are enforcing building codes which
18 meet or exceed the minimum natural disaster hazard
19 mitigation portions of any of the 3 model building
20 codes and other building and housing codes and
21 standards described in paragraph (1) for all new and
22 substantially modified building construction in that
23 State.

1 “(b) FLOOD PERFORMANCE STANDARDS.—At a min-
2 imum, each State designated as a flood-prone State shall
3 either—

4 “(1) adopt the relevant flood minimum per-
5 formance standards, flood-proofing, and other flood
6 protection measures authorized pursuant to the Na-
7 tional Flood Insurance Act of 1968, as amended (42
8 U.S.C. 4001 et seq.), which minimize flood damage
9 for new and substantially modified building con-
10 struction located in flood-prone local communities; or

11 “(2) certify that all the State’s flood-prone local
12 communities have adopted and are enforcing the
13 minimum performance standards described in para-
14 graph (1) for new and substantially modified build-
15 ing construction.

16 **“SEC. 703. STATE MITIGATION PLANS.**

17 “(a) GENERAL AUTHORITY.—Each State designated
18 as a disaster-prone State shall either—

19 “(1) develop a mitigation plan which establishes
20 the State’s plan with accompanying schedules for
21 improving the State’s ability to reduce the hazards
22 of future natural disasters, such as hurricanes,
23 windstorms, earthquakes, volcanic-eruptions, or
24 floods; or

1 “(2) designate an existing mitigation plan
2 which includes the processes described in subsection
3 (b).

4 “(b) CONTENT OF STATE MITIGATION PLANS.—
5 Each State mitigation plan shall include, at a minimum,
6 a process for—

7 “(1) verifying compliance with the multi-hazard
8 building and safety codes described in section 702(a)
9 and the flood performance standards described in
10 section 702(b) to ensure these building standards
11 are being enforced;

12 “(2) identifying, consistent with the National
13 Flood Insurance Act, as amended (42 U.S.C. 4001
14 et seq.), the areas within the State which have some
15 risk from the hazards of natural disasters, including
16 hurricanes, windstorms, earthquakes, volcanic erup-
17 tions, and floods, and further categorizing at-risk
18 areas based on the degree of risk;

19 “(3) establishing priorities by risk and location
20 of which types of structures, including State build-
21 ings, lifelines, and critical facilities, may be in need
22 of hazard mitigation;

23 “(4) identifying which hazard mitigation meas-
24 ures, such as building codes, non-structural mitiga-
25 tion, and retrofitting, for each of the natural disas-

1 ter perils that are most cost-effective and most likely
2 to prevent personal injury and reduce property
3 losses;

4 “(5) improving the emergency response to natu-
5 ral disasters, which shall include capabilities for fire
6 fighting, search and rescue, and the provision of
7 shelters, communications, and medical relief;

8 “(6) expediting the rebuilding of lifelines and
9 the recovery by individuals and the State’s business
10 and commercial sector;

11 “(7) encouraging the development of local com-
12 munity-based hazard mitigation plans;

13 “(8) achieving compliance with and enforcement
14 of the Federal multi-hazard mitigation standards or
15 requirements set forth in regulations promulgated by
16 the Director pursuant to this Act; and

17 “(9) developing standards and guidelines for
18 the safe staffing, operations, and regular training of
19 first responders for disaster emergency mitigation.

20 “(c) SUBMISSION OF STATE MITIGATION PLANS TO
21 FEMA.—Within 2 years of being designated disaster-
22 prone pursuant to section 701, each disaster-prone State
23 shall submit its completed mitigation plan to the Director.

1 **“SEC. 704. COMPLIANCE BY STATES.**

2 “(a) DEFINITION OF COMPLIANCE STATE.—A disas-
3 ter-prone State shall be considered a compliance State for
4 purposes of this title, if within 5 years of the date of enact-
5 ment of the Natural Disaster Protection Act of 1993, the
6 State is certified under subsection (b)(3) as a compliance
7 State and, where appropriate, if its compliance status has
8 been renewed pursuant to the terms of subsection (b)(4).

9 “(b) DETERMINATION OF COMPLIANCE.—

10 “(1) STATE SUBMISSION OF CERTIFICATION.—
11 Within 3 years of being designated disaster-prone
12 pursuant to section 701, each disaster-prone State
13 shall submit a certification to the Director stating
14 whether the State has—

15 “(A) substantially complied with, and is
16 substantially enforcing, the multi-hazard build-
17 ing codes provisions of section 702(a) and the
18 flood performance standards of section 702(b);
19 and

20 “(B) started implementing its mitigation
21 plan, including the specific processes described
22 in section 703(b).

23 “(2) REVIEW BY DIRECTOR.—The Director
24 shall review each certification submitted under para-
25 graph (1) to determine whether it is an accurate
26 manifestation of the submitting State’s substantial

1 compliance with, and enforcement of, the hazard
2 mitigation measures described in sections 702 and
3 703.

4 “(3) COMPLIANCE DETERMINATION.—If the
5 Director determines that the State certification is
6 substantially accurate and the State has substan-
7 tially adopted and is substantially enforcing and car-
8 rying out the applicable hazard mitigation measures
9 described in sections 702 and 703, the Director shall
10 promptly certify the State as a compliance State for
11 purposes of subsection (a). If the Director deter-
12 mines that the State certification is substantially in-
13 accurate, the Director shall promptly return the cer-
14 tification submission to the State with suggested
15 changes for obtaining certification as a compliance
16 State.

17 “(4) COMPLIANCE RENEWAL.—The Director
18 shall review the compliance with, and enforcement
19 of, the applicable hazard mitigation measures by
20 each compliance State meeting the requirements of
21 subsection (a) not less than once every 2 years and
22 shall renew compliance certificates under the terms
23 of paragraph (3) as appropriate.

24 “(5) REGULATIONS.—The Director shall issue
25 final regulations not later than 18 months after the

1 date of the enactment of the Natural Disaster Pro-
2 tection Act of 1993 describing the criteria to be used
3 in determining whether a State is a compliance
4 State.

5 (c) PENALTIES FOR NON-COMPLIANCE.—The follow-
6 ing penalties shall become effective 5 years from the date
7 of enactment of the Natural Disaster Protection Act of
8 1993:

9 “(1) NO MITIGATION FUNDS.—Funds from the
10 Self-Sustaining Mitigation Fund under section 705
11 shall not be made available to any State which has
12 not been certified as a compliance State.

13 “(2) HIGHER PREMIUMS AND DEDUCTIBLES.—
14 Premium rates and deductibles assessed under the
15 Primary Insurance Program of subtitle A of title
16 VIII shall be increased, as determined by the Direc-
17 tor under the plan of operation of section 821 and
18 consistent with actuarially sound requirements of
19 section 804, for all policyholders residing in a State
20 which has not been certified as a compliance State.

21 “(3) NO ASSISTANCE OR FEDERAL BUILD-
22 INGS.—No Federal assistance shall be provided to
23 any new Federal building or new Federally leased,
24 assisted, or regulated building covered under Execu-
25 tive Order 11988 (“Floodplain Management”, May

1 24, 1977) and Executive Order 12699 (“Seismic
2 Safety of Federal and Federally Assisted or Regu-
3 lated New Building Construction”, January 5, 1990)
4 which is located in a State which has not been cer-
5 tified as a compliance State.

6 **“SEC. 705. SELF-SUSTAINING MITIGATION FUND.**

7 “(a) ESTABLISHMENT.—

8 “(1) A percentage of the annual multi-hazard
9 coverage premiums collected under the Primary In-
10 surance Program under subtitle A of title VIII and
11 the excess reinsurance premiums collected under the
12 Reinsurance Program under subtitle B of title VIII
13 shall be deposited, on a quarterly basis, in a sepa-
14 rate fund to be known as the Self-Sustaining Mitiga-
15 tion Fund.

16 “(2) The Director shall set the percentage de-
17 scribed in paragraph (1) which shall be at least 5
18 percent, but shall not exceed 10 percent, unless the
19 Director determines that the amounts in the Pri-
20 mary Insurance Program Fund established under
21 section 805 and the Reinsurance Fund established
22 under section 815 are sufficient to provide for any
23 probable expected losses from future hurricanes,
24 earthquakes, and volcanic eruptions.

1 “(3) Interest on amounts in the Self-Sustaining
2 Mitigation Fund shall be credited to the Fund.

3 “(b) USE.—Amounts in the Self-Sustaining Mitiga-
4 tion Fund shall be available, to the extent provided in ap-
5 propriations Acts, to the Director to use as follows:

6 “(1) STATE SUPPORT.—The Director shall pro-
7 vide amounts in the Fund as financial assistance to
8 each disaster-prone State, unless 5 years from the
9 date of enactment of the Natural Disaster Protec-
10 tion Act of 1993 has passed and that State has not
11 been certified as a compliance State under section
12 704.

13 “(A) Each State’s share of such financial
14 assistance shall be based solely on a pro rata
15 formula of the Primary Insurance Program pre-
16 miums collected pursuant to subtitle A of title
17 VIII from the policyholders residing in that
18 State.

19 “(B) Such financial assistance shall be
20 used by disaster-prone States to support hazard
21 mitigation activities described in sections 702
22 and 703 and any activities required by the Fed-
23 eral regulations issued pursuant to section 404.
24 Priority shall be given to those hazard mitiga-
25 tion activities necessary to bring the State into

1 compliance with the building standards of sec-
2 tion 702, including the adequate enforcement of
3 such standards.

4 “(C) Disaster-prone States shall transfer a
5 percentage, as established in Federal regula-
6 tions, of such financial assistance to local com-
7 munities to support activities necessary to en-
8 sure State compliance with the hazard mitiga-
9 tion requirements of this title.

10 “(D) The Director shall from time-to-time
11 conduct audits to ensure that disaster-prone
12 States and local communities are using such fi-
13 nancial assistance to support the hazard mitiga-
14 tion activities described in subparagraphs (B)
15 and (C).

16 “(2) FEDERAL SUPPORT.—A portion of the
17 amounts in the Self-Sustaining Mitigation Fund, as
18 determined by the Director, may be used to support
19 Federal hazard mitigation and emergency manage-
20 ment activities described in section 404.

21 “(c) FEDERAL REGULATION.—Within 12 months of
22 the date of enactment of the Natural Disaster Protection
23 Act of 1993, the Director shall issue final Federal regula-
24 tions, pursuant to the provisions of subchapter II of chap-

1 ter 5 of title 5, United States Code, necessary to carry
2 out this section.

3 **“SEC. 706. NATURAL DISASTER MITIGATION AND PLANNING**
4 **ADVISORY COMMITTEE.**

5 “(a) **ESTABLISHMENT.**—There is established an inde-
6 pendent advisory committee within the executive branch
7 to be known as the Natural Disaster Mitigation and Plan-
8 ning Advisory Committee (in this section referred to as
9 the ‘Committee’). To the extent not contradicted by the
10 provisions of this section, the Committee shall be subject
11 to the provisions of the Federal Advisory Committee Act
12 (5 U.S.C. Appendix 2). The establishment of the Commit-
13 tee shall not result in the creation of any new permanent
14 staff or new office facilities.

15 “(b) **MEMBERSHIP.**—The Committee shall be com-
16 posed of 20 members appointed by the Director. The
17 members shall be chosen from among citizens of the
18 United States and shall include—

19 “(1) 1 individual who is a metropolitan fire
20 chief;

21 “(2) 1 individual who is a State fire marshal;

22 “(3) 1 individual who is a volunteer fire fighter;

23 “(4) 1 individual who is an organized labor rep-
24 resentative of the fire services;

1 “(5) 1 individual who is a search and rescue
2 expert;

3 “(6) 1 individual who is a State director of
4 emergency medical services;

5 “(7) 1 individual who represents the interests of
6 the model building code bodies;

7 “(8) 1 individual who is a State emergency
8 manager;

9 “(9) 1 individual who is a local emergency
10 manager;

11 “(10) 1 individual who is a flood plain
12 manager;

13 “(11) 1 individual who represents the interests
14 of law enforcement;

15 “(12) 1 individual who is an architect;

16 “(13) 1 individual who is a builder;

17 “(14) 1 individual who is a structural engineer;

18 “(15) 1 individual who represents a building
19 trades labor union;

20 “(16) 1 individual who is a recognized seismic
21 hazard mitigation expert;

22 “(17) 1 individual who is a recognized wind
23 hazard mitigation expert;

24 “(18) 1 individual who represents the interests
25 of consumers;

1 “(19) 1 individual who represents the private
2 insurers; and

3 “(20) 1 individual who represents the insurance
4 agents.

5 “(c) VACANCIES.—A vacancy on the Committee shall
6 be filled in the manner in which the original appointment
7 was made.

8 “(d) CHAIRPERSON.—The Director shall designate a
9 chairperson of the Committee from among members
10 selected for appointment to the Committee.

11 “(e) SELECTION.—Not later than 180 days after the
12 date of the enactment of the Natural Disaster Protection
13 Act of 1993 and after consulting with the State and local
14 emergency management community, the Director shall ap-
15 point the members of the Committee.

16 “(f) FUNCTIONS OF THE COMMITTEE.—The Com-
17 mittee shall advise the Director on hazard mitigation and
18 disaster planning, including the development and imple-
19 mentation of the multi-hazard mitigation programs cre-
20 ated pursuant to this title. The Committee shall review
21 and comment on all draft Federal regulations issued by
22 the Director pursuant to this title.

23 “(g) RESPONSIBILITIES OF THE DIRECTOR.—The
24 Director shall fully cooperate with the Committee and pro-
25 vide the Committee with access to personnel and informa-

1 tion as the Committee considers necessary to carry out
2 its functions. The Director shall request comments from
3 the Committee on any questions regarding operation of
4 multi-hazard mitigation programs established under this
5 title.”.

6 **SEC. 6. FEDERAL INSURANCE PROGRAMS.**

7 The Robert T. Stafford Disaster Relief and Emer-
8 gency Assistance Act (42 U.S.C. 5121 et seq.) is amended
9 by adding after title VII as set forth above, the following
10 new title:

11 **“TITLE VIII—FEDERAL INSURANCE**
12 **PROGRAMS**

13 **“Subtitle A—Primary Insurance Program**

14 **“SEC. 801. BASIC AUTHORITY AND PROGRAM OPERATION.**

15 “(a) ESTABLISHMENT.—To carry out the purposes of
16 this subtitle, the Director shall establish and carry out a
17 national multi-hazard insurance program (in this title re-
18 ferred to as the ‘Primary Insurance Program’) to provide
19 insurance against loss resulting from physical damage to
20 or loss of real property or personal property related there-
21 to, in any State or States, arising from any earthquake
22 and volcanic eruption (including any fire proximately
23 caused by such volcanic eruption).

24 “(b) IMPLEMENTATION.—In carrying out the Pri-
25 mary Insurance Program, the Director shall arrange for

1 participation, on other than a risk-sharing basis, by pri-
2 vate insurers, insurance agents and brokers, insurance
3 adjustment organizations, and other persons. The Direc-
4 tor may take any actions reasonably necessary and appro-
5 priate to carry out this subtitle, including the making of
6 contracts, the employment and compensation of persons,
7 the acquisition of real and personal property, and the rea-
8 sonable auditing of private insurers participating in the
9 Primary Insurance Program limited to matters directly re-
10 lated to their participation in such program.

11 “(c) INSURANCE PRACTICES.—Any actions of the
12 Director under this subtitle shall be consistent with stand-
13 ard insurance practices and generally accepted accounting,
14 actuarial, and underwriting principles.

15 “(d) FLOOD INSURANCE STUDY.—The Director shall
16 evaluate the feasibility and benefits of including flood as
17 a covered peril under the national multi-hazard insurance
18 program. Such evaluation shall include an examination of
19 whether to integrate existing flood insurance policies is-
20 sued under the National Flood Insurance Act of 1968, as
21 amended (42 U.S.C. 4001 et seq.), into the multi-hazard
22 coverage policy issued under this subtitle. The Director
23 shall submit a report, including any recommendations, to
24 the Congress within 1 year of the date of enactment of
25 the Natural Disaster Protection Act of 1993.

1 “(e) IMPROVED PARTICIPATION IN FEDERAL FLOOD
2 INSURANCE PROGRAM.—

3 “(1) NOTIFICATION REQUIREMENT.—Agents
4 and brokers or private insurers participating in the
5 Federal flood insurance program pursuant to the
6 National Flood Insurance Act, as amended (42
7 U.S.C. 4001 et seq.), shall promptly notify the Di-
8 rector of any policyholder who refuses to purchase
9 Federal flood insurance if such policyholder is re-
10 quired pursuant to such Act to purchase such cov-
11 erage as a condition of receiving any Federal assist-
12 ance for acquisition or construction of the insured
13 property and the agent, broker, or private insurer
14 knows of such requirement.

15 “(2) FEMA OBLIGATION.—

16 (A) GENERAL AUTHORITY.—Within 180
17 days of receiving a notification of any non-com-
18 pliant policholder as described in paragraph (1),
19 the Director shall take necessary and appro-
20 priate steps consistent with the National Flood
21 Insurance Act, as amended (42 U.S.C. 4001 et
22 seq.), to assure said policyholder purchases the
23 required Federal flood insurance coverage.

24 “(B) REPORT TO CONGRESS.—Within 180
25 days of enactment of the Natural Disaster Pro-

1 tection Act of 1993, the Director shall submit
2 a report to Congress of any additional sanc-
3 tions, or other measures, deemed necessary and
4 appropriate to assure policyholders purchase
5 the required Federal insurance coverage under
6 subparagraph (A).

7 “(3) REGULATIONS.—Pursuant to the provi-
8 sions of subchapter II of chapter 5 of title 5, United
9 States Code, the Director shall issue any regulations
10 necessary to carry out this subsection.”.

11 **“SEC. 802. SCOPE OF PROGRAM.**

12 “(a) ELIGIBLE PROPERTIES.—In carrying out the
13 Primary Insurance Program, the Director shall make
14 multi-hazard coverage available only for residential prop-
15 erties that are located in earthquake and volcanic erup-
16 tion-prone States as determined by section 701.

17 “(b) ADDITIONAL TYPES OF PROPERTIES.—If the
18 Director makes an affirmative finding, in consultation
19 with the Federal Insurance and Reinsurance Advisory
20 Committee established pursuant to section 822, that the
21 private insurance industry cannot adequately provide cov-
22 erage to other types of properties, the Director may rec-
23 ommend to Congress that multi-hazard coverage under
24 this subtitle be made available to cover other types of
25 properties.

1 **“SEC. 803. TERMS AND LIMITATIONS OF INSURANCE**
2 **COVERAGE.**

3 “(a) **TERMS.**—Pursuant to the plan of operation es-
4 tablished under section 821 and after consultation with
5 the Federal Insurance and Reinsurance Advisory Commit-
6 tee established under section 822, the Director shall estab-
7 lish, by regulation, the general terms and conditions of
8 insurability for properties eligible for multi-hazard cov-
9 erage under section 802. Such regulations shall meet the
10 requirements of this section and may include—

11 “(1) the type and locational classification of
12 such eligible properties;

13 “(2) specific insurability definitions for eligible
14 properties;

15 “(3) the specific types of damage that may be
16 covered by such insurance;

17 “(4) appropriate premium rates consistent with
18 the actuarial requirement of section 804;

19 “(5) appropriate loss-deductibles including vari-
20 able deductibles based on the existence of loss-reduc-
21 tion measures that affect the risk of loss;

22 “(6) appropriate limits on coverage for each
23 classification of eligible properties;

24 “(7) appropriate minimum coverage amounts
25 for each classification of eligible properties, which
26 may not be less than the outstanding principal bal-

1 ance of the mortgage loan securing the property or
2 the maximum coverage limit for the property under
3 paragraph (6), whichever is less; and

4 “(8) any other terms and limitations relating to
5 such residential property insurance coverage that
6 may be necessary to carry out the purposes of this
7 subtitle.

8 “(b) HAZARDS COVERED.—The multi-hazard cov-
9 erage under this subtitle shall cover any damage to cov-
10 ered eligible property, including debris removal, additional
11 living expenses incurred as a result of direct damage to
12 the premises, and ordinance and law coverage up to the
13 policy limits set by subsection (a)(5) with additional ordi-
14 nance and law coverage available pursuant to the plan of
15 operation under section 821, proximately caused by—

16 “(1) an earthquake, except for any fire proxi-
17 mately caused by an earthquake;

18 “(2) a volcanic eruption, including any fire
19 proximately caused by a volcanic eruption; and

20 “(3) a tsunami associated with an earthquake
21 or volcanic eruption.

22 “(c) PROGRAM PARTICIPATION.—Upon the issuance
23 of regulations establishing the plan of operation under sec-
24 tion 821, any private insurer may participate in the Pri-
25 mary Insurance Program regardless of whether such pri-

1 vate insurer provides any insurance to residential property
2 policyholders.

3 “(d) OBLIGATIONS OF PARTICIPATING INSURERS.—

4 Any private insurer electing to participate in the Primary
5 Insurance Program shall provide to all its residential prop-
6 erty policyholders for residential property determined to
7 be eligible under subsection (a) and located in earthquake
8 and volcanic eruption-prone States either—

9 “(1) the multi-hazard coverage under this sub-
10 title, or

11 “(2) coverage on its own behalf that is equiva-
12 lent to the multi-hazard coverage provided under
13 this subtitle at rates established for the coverage
14 under this subtitle.

15 “(e) OBLIGATIONS OF NON-PARTICIPATING INSUR-
16 ERS.—Any private insurer electing not to participate in
17 the Primary Insurance Program shall notify, pursuant to
18 regulations adopted by the Director, all of its residential
19 policyholders in earthquake and volcanic eruption-prone
20 States of its non-participation in such program, and of
21 the absence of insurance and reinsurance protection for
22 multi-hazard coverage under this title.

23 **“SEC. 804. ACTUARIALLY SOUND RATES.**

24 “(a) ESTABLISHMENT OF RATES.—The Director
25 shall from time-to-time establish and prescribe by regula-

1 tion on a State, risk zone, or other appropriate basis, actu-
2 arially sound rates for types or classes of property eligible
3 for multi-hazard coverage and the terms and conditions
4 under which such rates apply.

5 “(b) CONSULTATION.—In carrying out this section,
6 the Director shall consult with the Federal Insurance and
7 Reinsurance Advisory Committee established under sec-
8 tion 822 and may enter into contracts, agreements, or
9 other arrangements to utilize the services of the United
10 States Geological Survey, the National Oceanic and At-
11 mospheric Administration, and other relevant Federal,
12 State, and local governmental agencies, and other persons.

13 “(c) CONSIDERATIONS.—The Director shall establish
14 actuarially sound rates under this section based on—

15 “(1) considerations of the risks involved, includ-
16 ing an examination of any of the following factors
17 which are deemed relevant—

18 “(A) the severity and frequency of earth-
19 quakes by seismic zone and States in which the
20 insured property is located, including known
21 differences in risks from active faults and
22 known susceptibility to landslide, site amplifi-
23 cation, and liquefaction;

24 “(B) the risk of damage associated with a
25 volcanic eruption by volcanic zone and States in

1 which the insured property is located, including
2 proximity to known lava flows;

3 “(C) the risk of damage associated with a
4 tsunami caused by an earthquake or volcanic
5 eruption;

6 “(D) the value of the insured property;

7 “(E) the age of the structures located on
8 the insured property;

9 “(F) the construction type of the struc-
10 tures located on the insured property, including
11 woodframe, masonry, and masonry veneer;

12 “(G) the architectural type of the struc-
13 tures located on the insured property, including
14 soft first floor, box construction, and split level;

15 “(H) hazard mitigation measures followed
16 in the construction or subsequent retrofitting of
17 residential property structures; and

18 “(I) any other relevant criteria; and

19 “(2) application of accepted actuarial and rate-
20 making principles that reflect the risks involved, an-
21 ticipated insurance-related administrative and oper-
22 ating costs and loss and loss-adjustment expense
23 payments, contributions from the Self-Sustaining
24 Mitigation Fund established under section 705, and
25 provision for adequate reserves.

1 “(d) MINIMIZATION OF CROSS-SUBSIDIZATION.—To
2 the maximum extent practicable, the rates established
3 under this section shall be actuarially sound and shall re-
4 sult in a minimum of cross-subsidization by reasonably re-
5 flecting the risk of damaging earthquakes, volcanic erup-
6 tions, and tsunamis, as appropriate, in total and for each
7 subclassification of policyholders.

8 “(e) ACTUARIALLY SOUND REQUIREMENT.—In set-
9 ting and adjusting rates under this section, the Director
10 shall provide that, over an extended period of time, ex-
11 pected expenditures from the Primary Insurance Program
12 Fund under section 805(c) do not exceed expected receipts
13 of the Primary Insurance Program Fund under section
14 805(b).

15 “(f) LIMITATIONS.—

16 “(1) To the maximum extent practicable, any
17 rate classification system developed by the Director
18 to establish actuarially sound rates under this sec-
19 tion shall be—

20 “(A) cost effective and shall not impose
21 costs for the initial establishment or the subse-
22 quent administration of the rating plan that are
23 disproportionate to the size of the insurance
24 premiums collected; and

1 “(B) simple and easy to understand, iden-
2 tify, and use by insurance agents and policy-
3 holders.

4 “(2) The premiums collected under the Primary
5 Insurance Program shall not be used to establish
6 highly specific geographic rating zones and micro-
7 zonation maps for the earthquake, volcanic eruption,
8 and tsunami perils.

9 **“SEC. 805. PRIMARY INSURANCE PROGRAM FUND.**

10 “(a) ESTABLISHMENT.—There is established in the
11 Treasury of the United States the Primary Insurance Pro-
12 gram Fund (in this section referred to as the ‘Insurance
13 Fund’) for the purpose of carrying out the Primary Insur-
14 ance Program under this subtitle.

15 “(b) CREDITS OF FUND.—The Insurance Fund shall
16 be credited with—

17 “(1) insurance premiums received by the Direc-
18 tor under the Primary Insurance Program (less any
19 amounts credited to the Self-Sustaining Mitigation
20 Fund under section 705) and interest earned on pre-
21 miums, as provided in subsection (e);

22 “(2) any amounts borrowed under section 806;

23 “(3) any amounts appropriated to the Insur-
24 ance Fund; and

1 “(4) any interest earned on amounts invested
2 under subsection (d).

3 “(c) USES OF FUND.—Amounts in the Insurance
4 Fund shall be available for—

5 “(1) payments for losses and loss adjustment
6 expenses under subsection (f);

7 “(2) payments for insurance company expense
8 allowances paid (including agents’ commissions,
9 State premium taxes, and companies’ administration
10 expenses);

11 “(3) any and all administrative and operating
12 expenses in carrying out the Primary Insurance Pro-
13 gram; and

14 “(4) principal and interest payments on
15 amounts borrowed under section 806 for supple-
16 mental losses, if any.

17 “(d) INVESTMENT OF AMOUNTS.—The Director may
18 request the Secretary of the Treasury to invest any
19 amount in the Primary Insurance Program Fund in obli-
20 gations issued or guaranteed by the United States, as the
21 Director considers appropriate.

22 “(e) INSURANCE PAYMENTS TO FUND.—Private in-
23 surers issuing multi-hazard coverage shall remit the pre-
24 miums collected, less the insurers’ expense allowances (as
25 provided for in the plan of operation under section 821),

1 to the Director on a quarterly basis 30 days after the end
2 of the quarter, according to the procedures prescribed in
3 the plan of operation. Such private insurers shall maintain
4 a separate, interest-bearing account for the premiums to
5 be submitted to the Director. The interest collected on this
6 account shall be forwarded to the Insurance Fund with
7 the premiums on a quarterly basis.

8 “(f) REIMBURSEMENT OF INSURERS.—

9 “(1) REQUIREMENT AND PROCEDURE.—The
10 Director shall reimburse private insurers providing
11 multi-hazard coverage pursuant to this subtitle from
12 amounts made available from the Insurance Fund.
13 Reimbursement for all claim payments up to and in-
14 cluding the policy limits of coverage and for all loss
15 adjustment expenses paid as a result of an earth-
16 quake, volcanic eruption, or tsunami, as appropriate,
17 shall be made as follows:

18 “(A) The Director shall reimburse insurers
19 within 30 days of the date any claim payments
20 and loss adjustment expense payments are
21 made pursuant to the Federal Government’s
22 obligations.

23 “(B) If the gross reimbursements exceed
24 amounts available in the Insurance Fund,
25 amounts borrowed from the Treasury of the

1 United States under section 806 shall cover the
2 supplemental losses.

3 “(2) REGULATIONS.—The Director may issue
4 regulations establishing the general method or meth-
5 ods by which proved and approved claims for losses
6 may be adjusted and paid for damages covered by
7 the multi-hazard coverage issued under this subtitle.
8 The claim practices of the Insurance Fund shall be
9 subject to and conform with any applicable State in-
10 surance unfair trade practices statutes. Judicial re-
11 view of a decision of the Director regarding reim-
12 bursement of a private insurer shall be available
13 pursuant to section 821(e).

14 “(g) OBLIGATIONS.—All multi-hazard coverage pro-
15 vided through the Primary Insurance Program under this
16 subtitle shall constitute obligations of the United States.
17 The full faith and credit of the United States is pledged
18 for the full payment and performance of such obligations.
19 The private insurers participating in the program shall
20 bear no risk and shall assume no liability for the multi-
21 hazard coverage provided through the program.

22 “(h) STATUS OF FUND.—Any premiums collected for
23 deposit in the Insurance Fund shall be exempt from all
24 taxation now or hereafter imposed by the United States,
25 by any territory, dependency or possession thereof, or by

1 the State, county, municipality, or local taxing authority,
2 except that the insurance policies issued by or in conjunc-
3 tion with the Federal Government pursuant to this title
4 shall be subject, where applicable, to State insurance pre-
5 mium taxes.

6 **“SEC. 806. BORROWING FROM TREASURY.**

7 “(a) **AUTHORITY.**—To the extent that the accumu-
8 lated assets, including any return on investments, in the
9 Primary Insurance Program Fund established under sec-
10 tion 805 are insufficient to pay claims and expenses, the
11 Director shall issue, from time-to-time, to the Secretary
12 of the Treasury, notes and other obligations to cover the
13 insufficiency; except that the amounts of such obligations
14 outstanding at any one time shall not exceed such sums
15 as the Congress may provide acting upon the rec-
16 ommendation of the Director.

17 “(b) **INTEREST RATE.**—Obligations under subsection
18 (a) shall bear interest at a rate determined by the Sec-
19 retary of the Treasury, taking into consideration the cur-
20 rent average market yield on outstanding marketable obli-
21 gations of the United States of comparable maturities.

22 “(c) **DEPOSITS.**—Any amounts borrowed by the Di-
23 rector under this section shall be deposited in the Primary
24 Insurance Program Fund established under section 805.

1 “(d) REPAYMENT.—Any amounts borrowed under
2 this section shall be recouped, including interest on the
3 borrowed funds, in future premiums for multi-hazard cov-
4 erage pursuant to the plan of operation established under
5 section 821. The Secretary of the Treasury shall grant ex-
6 tensions in repayment schedules that the Director advises
7 the Secretary are necessary.

8 **“SEC. 807. INSURANCE MITIGATION INCENTIVES.**

9 “In carrying out the Primary Insurance Program
10 under this subtitle and pursuant to the plan of operation
11 established under section 821, the Director shall provide
12 for the following insurance mitigation incentives which
13 shall conform with the actuarially sound rate requirements
14 of section 804:

15 “(1) Charging lower premiums or deductible
16 amounts for any residential property located in an
17 earthquake-prone State which meets the seismic
18 building standards under section 702(a).

19 “(2) Charging lower premium rates or deduct-
20 ible amounts for any residential property located in
21 an earthquake-prone State that passes a seismic
22 safety inspection and meets the requirements of the
23 seismic mitigation standards established in title VII.

24 “(3) Charging lower premium rates or deduct-
25 ible amounts for new residential property not con-

1 structured in volcanic zones in a volcanic eruption-
2 prone State.

3 **“Subtitle B—Reinsurance Program**

4 **“SEC. 811. BASIC AUTHORITY AND PROGRAM OPERATION.**

5 “(a) ELIGIBILITY.—

6 “(1) PROVISION OF COVERAGE.—Upon the is-
7 suanee of regulations establishing the plan of oper-
8 ation under section 821, the Director shall make
9 available to eligible entities excess reinsurance cov-
10 erage for any direct and indirect losses under the
11 covered lines set forth in section 813 that arise from
12 a hurricane, earthquake, volcanic eruption, or tsu-
13 nami.

14 “(2) ELIGIBLE ENTITIES.—The following enti-
15 ties are eligible to purchase the excess reinsurance
16 coverage:

17 “(A) Any private insurer participating in
18 the Primary Insurance Program under subtitle
19 A.

20 “(B) Any private reinsurer which reinsures
21 any private insurer participating in the Primary
22 Insurance Program under subtitle A.

23 “(C) Any workers’ compensation fund op-
24 erated by a State.

1 “(D) Any State residual insurance pooling
2 program.

3 “(b) TERMS.—The reinsurance contracts issued by
4 the Federal Government pursuant to this subtitle shall
5 contain terms and conditions similar to those generally
6 used in private catastrophic reinsurance contracts.

7 “(e) JUDICIAL REVIEW.—Judicial review of a deci-
8 sion of the Director regarding payment of claims shall be
9 made available pursuant to section 821(e).

10 “(d) SINGLE ENTITIES.—Any private insurer and re-
11 insurer companies or United States affiliates under the
12 same ownership or management or part of the same hold-
13 ing company system, as determined under the plan of op-
14 eration established under section 821, shall be considered
15 a single entity for purposes of this subtitle.

16 **“SEC. 812. LEVELS OF RETAINED LOSSES.**

17 “(a) INDUSTRY-WIDE ELIGIBILITY.—Excess reinsur-
18 ance under this subtitle shall be available to all private
19 insurers and private reinsurers eligible for reinsurance
20 pursuant to section 811(a)(2) as follows:

21 “(1) INDUSTRY RETAINED LOSSES.—The Rein-
22 surance Fund established under section 815 shall
23 provide excess reinsurance when, as determined by
24 the Director pursuant to the plan of operation under
25 section 821, the insurance industry is likely to incur

1 gross losses in the lines covered in section 813(a)
2 arising from hurricane, earthquake, volcanic erup-
3 tion, and tsunami events occurring during any 12-
4 month period that exceed 15 percent of the consoli-
5 dated industry surplus as regards policyholders; pro-
6 vided that, only such separate events which will like-
7 ly result in industry gross losses of at least
8 \$1,500,000,000, adjusted annually in accordance
9 with the percentage change in the Consumer Price
10 Index, shall be aggregated to reach the 15-percent
11 level.

12 “(2) INDIVIDUAL COMPANY RETAINED
13 LOSSES.—After the insurance industry has sustained
14 gross losses described in paragraph (1), the Reinsur-
15 ance Fund established under section 815 shall pay
16 to an individual private insurer or private reinsurer
17 95 percent of qualifying losses in excess of 15 per-
18 cent of the consolidated surplus as regards policy-
19 holders of the private insurer or private reinsurer.

20 “(b) INDIVIDUAL INSURER ELIGIBILITY.—

21 “(1) INDIVIDUAL INSURER RETAINED
22 LOSSES.—If subsection (a) is not applicable, a pri-
23 vate insurer or private reinsurer shall be eligible for
24 excess reinsurance coverage and reimbursement from
25 the Reinsurance Fund established under section 815

1 if the insurer or reinsurer has incurred gross losses
2 from a single—

3 “(A) earthquake, volcanic eruption, or tsu-
4 nami event that is included in the lines covered
5 in section 813(a) and that exceeds 20 percent
6 of the consolidated surplus as regards policy-
7 holders of the private insurer or private rein-
8 surer; or

9 “(B) hurricane event that is included in
10 the lines covered in section 813(a) and that ex-
11 ceeds 20 percent of the consolidated surplus as
12 regards policyholders of the private insurer or
13 private reinsurer, except that the workers’ com-
14 pensation and earthquake lines of coverage
15 under section 813(a) shall be excluded.

16 “(2) REINSURANCE FUND PAYMENTS.—After
17 the private insurer or private reinsurer has sustained
18 gross losses described in paragraph (1), the Reinsur-
19 ance Fund established under section 815 shall pay
20 95 percent of qualifying losses, as defined in sub-
21 section (d), in excess of 20 percent of the consoli-
22 dated surplus as regards policyholders of the private
23 insurer or the private reinsurer.

24 “(3) LIMITATION OF REINSURANCE FUND PAY-
25 MENTS.—The payments by the Reinsurance Fund

1 under this subsection shall be limited to 200 percent
2 of the consolidated surplus as regards policyholders
3 of the private insurer or private reinsurer.

4 “(c) STATE INSURANCE PROGRAMS.—Excess rein-
5 surance under this subtitle shall be available to each State
6 workers’ compensation program and State residual insur-
7 ance pooling program eligible for reinsurance pursuant to
8 section 811(a)(2) as follows:

9 “(1) INDUSTRY LOSSES.—The Reinsurance
10 Fund established under section 815 shall provide ex-
11 cess reinsurance when, as determined by the Direc-
12 tor pursuant to the plan of operation under section
13 821, the insurance industry is likely to incur gross
14 losses in the State served by the eligible State insur-
15 ance program arising from hurricane, earthquake,
16 volcanic eruption, and tsunami events occurring dur-
17 ing any 12-month period that exceed 10 times the
18 sum of the direct earned premiums for the lines of
19 coverage described in sections 813(a) (2), (3), (4),
20 and (5) or \$10,000,000,000, adjusted annually in
21 accordance with the percentage change in the
22 Consumer Price Index, whichever amount is less.

23 “(2) MINIMUM LOSSES.—Such lessor amount
24 described in paragraph (1) must equal at least

1 \$500,000,000, adjusted annually in accordance with
2 the percentage change in the Consumer Price Index.

3 “(3) RETAINED LOSSES.—After the insurance
4 industry has sustained gross losses described in
5 paragraph (1), the Reinsurance Fund established
6 under section 815 shall pay to an individual State
7 workers’ compensation program or State residual in-
8 surance pooling program 95 percent of qualifying
9 losses in excess of the lesser amount described in
10 paragraph (1).

11 “(d) QUALIFYING LOSSES.—For the purpose of this
12 subtitle, “qualifying losses” includes—

13 “(1) the losses and loss adjustment expenses in-
14 curred by a private insurer, private reinsurer, State
15 workers’ compensation fund, or State residual insur-
16 ance pooling program, and

17 “(2) any assessments, surcharges, or other li-
18 abilities imposed by any State residual insurance
19 pooling program or guaranty fund,
20 attributable to hurricanes, earthquakes, volcanic erup-
21 tions, and tsunamis occurring during any 12-month period
22 encompassing the events described in subsections (a)(1)
23 and (c)(1) or the event described in subsection (b)(1)
24 reduced by—

25 “(1) any collectible reinsurance recoverable, and

1 “(2) an appropriate percentage of any
2 uncollectible reinsurance arising from the event as
3 set in the plan of operation to be issued by regula-
4 tion under section 821.

5 “(e) OBLIGATIONS.—All reinsurance contracts issued
6 under this subtitle shall constitute obligations, in accord-
7 ance with the terms of such reinsurance, of the United
8 States. The full faith and credit of the United States is
9 pledged for the full payment and performance of such
10 obligations.

11 “(f) DEFINITIONS.—For purposes of this subtitle:

12 “(1) The term ‘consolidated industry surplus as
13 regards policyholders’ means the consolidated sur-
14 plus as regards policyholders of the property and
15 casualty insurance industry (excluding life insur-
16 ance) for the calendar year immediately preceding
17 the hurricane, earthquake, volcanic eruption, or tsu-
18 nami events described in subsection (a)(1) as deter-
19 mined by the National Association of Insurance
20 Commissioners or other credible source and pub-
21 lished annually in the Federal Register by the
22 Director.

23 “(2) The term ‘consolidated surplus as regards
24 policyholders’ means the surplus as regards policy-
25 holders of the private insurer, private reinsurer, or

1 group of private insurers and/or reinsurers (exclud-
2 ing life insurance) based on financial data submitted
3 to the National Association of Insurance Commis-
4 sioners or other credible source and published annu-
5 ally in the Federal Register by the Director for the
6 calendar year immediately preceding the hurricane,
7 earthquake, volcanic eruption, or tsunami event or
8 events described in subsections (a)(1) and (b)(1).

9 “(3) The term ‘direct earned premiums’ means
10 the direct earned premiums for certain lines of prop-
11 erty and casualty insurance coverage as published in
12 the National Association of Insurance Commis-
13 sioners Fire and Casualty Annual Statement filed
14 with the applicable State department of insurance
15 for the most recent calendar year available preceding
16 the hurricane, earthquake, volcanic eruption, or tsu-
17 nami events described in subsection (e)(1).

18 “(4) The term ‘gross losses’ means all losses
19 and loss adjustment expenses, prior to deducting any
20 private reinsurance recoverables.

21 “(5) The term ‘subject net written premium’
22 means direct and reinsurance premiums received by
23 private insurers and private reinsurers, less pre-
24 miums paid for ceded reinsurance, for all lines of
25 coverage listed in section 313(a), except the workers’

1 compensation and earthquake lines of coverage shall
2 be excluded for the purposes of setting actuarially
3 sound rates for hurricanes.

4 “(6) The term ‘uncollectible reinsurance’ means
5 reinsurance proceeds due and payable in accordance
6 with the terms of the reinsurance contract which are
7 not paid within 12 months of the due date.

8 **“SEC. 813. LINES OF INSURANCE.**

9 “(a) COVERED LINES.—The Director shall provide
10 reinsurance coverage to private insurers, State workers’
11 compensation funds and State residual insurance pooling
12 programs for all of the following lines of insurance appear-
13 ing in the National Association of Insurance Commis-
14 sioners Fire and Casualty Annual Statement:

15 “(1) Fire.

16 “(2) Allied Lines.

17 “(3) Farmowners Multiple Peril.

18 “(4) Homeowners Multiple Peril.

19 “(5) Commercial Multiple Peril.

20 “(6) Ocean Marine.

21 “(7) Inland Marine.

22 “(8) Earthquake.

23 “(9) Workers’ Compensation.

24 “(10) Other Liability.

25 “(11) Products Liability.

1 “(12) Aircraft (All Perils).

2 “(13) Glass.

3 “(14) Burglary and Theft.

4 “(15) Boiler and Machinery.

5 “(16) Reinsurance.

6 Reinsurance coverage must be purchased for all covered
7 lines of insurance and in all affected hurricane, seismic,
8 or volcanic rating zones in hurricane-prone, earthquake-
9 prone, or volcanic eruption-prone States with the rates for
10 such coverage set by the Director, pursuant to section
11 814.

12 “(b) OTHER LINES.—The Reinsurance Fund estab-
13 lished under section 815 shall provide reinsurance cov-
14 erage to private reinsurers for all of the lines of insurance
15 referred to in subsection (a) as well as other lines of insur-
16 ance appearing in the National Association of Insurance
17 Commissioners Fire and Casualty Annual Statement, as
18 determined by the Director in the plan of operation pursu-
19 ant to section 821 and in consultation with the Federal
20 Insurance and Reinsurance Advisory Committee estab-
21 lished under section 822.

22 **“SEC. 814. ACTUARIALLY SOUND RATES.**

23 “(a) ESTABLISHMENT.—Using generally accepted ac-
24 tuarial principles, the Director shall establish the rates for
25 the excess reinsurance coverage and adjust the rates when

1 necessary. To the maximum extent practicable, such rates
2 shall be actuarially sound and shall result in a minimum
3 of cross-subsidization, consistent with the infrequency of
4 catastrophic hurricanes, earthquakes, volcanic eruptions,
5 and tsunamis. In setting and adjusting the rates, the Di-
6 rector shall provide that, over an extended period of time,
7 expected expenditures from the Reinsurance Fund under
8 section 815(c) do not exceed expected receipts of the Rein-
9 surance Fund under section 815(b).

10 “(b) CONSULTATION.—In carrying out this section,
11 the Director shall consult with the Federal Insurance and
12 Reinsurance Advisory Committee established in section
13 822 and may enter into contracts, agreements, or other
14 arrangements to utilize the services of the United States
15 Geological Survey, the National Oceanic and Atmospheric
16 Administration, and other relevant Federal, State, and
17 local governmental agencies, and other persons.

18 “(c) CONSIDERATIONS—In setting or adjusting such
19 actuarially sound rates, the Director shall provide for a
20 minimum degree of cross-subsidization among classes of
21 reinsureds by reasonably reflecting the differences in risk
22 of and vulnerability to loss from hurricanes, earthquakes,
23 and volcanic eruptions that would be subject to payment
24 from the Reinsurance Fund established under section 815,
25 by giving due consideration to the following:

1 “(1) The premium rate volume of the reinsured
2 by line of insurance under section 813(a) by hurri-
3 cane, seismic, or volcanic zone or State in which the
4 risks insured or reinsured by the reinsurer are lo-
5 cated.

6 “(2) The proportion of the total expected
7 amount of payments for qualifying losses and loss
8 adjustment expenses by line of insurance under sec-
9 tion 813(a) by hurricane, seismic, or volcanic zone
10 or State expected for each reinsured.

11 “(3) The nature, scope, and adequacy of the
12 private reinsurance or retrocessional reinsurance
13 purchased by the private insurer, private reinsurer,
14 State workers’ compensation fund, or State residual
15 insurance pooling program in light of its manage-
16 ment expertise and the number, size, concentration,
17 and location of its risk exposures by lines of insur-
18 ance under section 813(a).

19 “(4) The payback of losses sustained by the Re-
20 insurance Fund established under section 815 due to
21 payments made to a private insurer, private rein-
22 surer, State workers’ compensation fund, or State
23 residual insurance pooling program.

24 “(5) The ratio between subject net written pre-
25 mium and consolidated surplus as regards policy-

1 holders for each private insurer and reinsurer during
2 the most recent calendar year.

3 “(6) The nature of the risk for each private in-
4 surer and reinsurer insured under coverages re-
5 ported in the National Association of Insurance
6 Commissioners Fire and Casualty Annual Statement
7 filed with the applicable State department of insur-
8 ance for the most recent calendar year and covering
9 the lines of businesses listed in section 813(a).

10 “(d) LIMITATION.—Any rate classification system
11 used by the Director under this section shall be cost-effec-
12 tive and shall not impose costs for the initial establishment
13 or the subsequent administration of the rating plan that
14 are disproportionate to the size of the insurance premiums
15 collected.

16 “(e) QUARTERLY PAYMENT.—Premiums paid to the
17 Reinsurance Fund for reinsurance coverage under this
18 subtitle shall be paid on a quarterly basis and shall be
19 accumulated in the Reinsurance Fund, to be managed
20 pursuant to section 815.

21 **“SEC. 815. REINSURANCE FUND.**

22 “(a) ESTABLISHMENT.—There is established in the
23 Treasury of the United States the Reinsurance Fund for
24 the purposes of carrying out the Reinsurance Program
25 under this subtitle.

1 “(b) CREDITS OF FUND.—The Reinsurance Fund
2 shall be credited with—

3 “(1) any reinsurance premiums received by the
4 Director under the Reinsurance Program;

5 “(2) any amounts borrowed under section 816;
6 and

7 “(3) any amounts earned under subsection (d).

8 “(c) USE OF FUND.—The Reinsurance Fund shall be
9 available to the Director for—

10 “(1) payments for qualifying losses under the
11 Reinsurance Program under this subtitle;

12 “(2) any and all administrative and operating
13 expenses in carrying out the Reinsurance Program;
14 and

15 “(3) principal and interest payments on
16 amounts borrowed from the Treasury under section
17 816, if any.

18 “(d) INVESTMENT.—The Director shall request the
19 Secretary of the Treasury to invest any amounts in the
20 Reinsurance Fund in obligations issued or guaranteed by
21 the United States, as the Director considers appropriate.

22 “(e) STATUS OF FUNDS.—Any reinsurance premiums
23 collected for deposit in the Reinsurance Fund shall be ex-
24 empt from all taxation now or hereafter imposed by the
25 United States, by any territory, dependency or possession

1 thereof, or by any State, county, municipality, or local tax-
2 ing authority.

3 **“SEC. 816. BORROWING FROM TREASURY.**

4 “(a) **AUTHORITY.**—To the extent that the accumu-
5 lated assets, including any return on investments, in the
6 Reinsurance Fund are insufficient to pay claims and ex-
7 penses, the Director shall issue, from time-to-time, to the
8 Secretary of the Treasury, notes and other obligations to
9 cover the insufficiency; except that the amounts of such
10 obligations outstanding at any one time shall not exceed
11 such sums as the Congress may provide acting upon the
12 recommendation of the Director.

13 “(b) **INTEREST RATE.**—Obligations under subsection
14 (a) shall bear interest at a rate determined by the Sec-
15 retary of the Treasury, taking into consideration the cur-
16 rent average market yield on outstanding marketable obli-
17 gations of the United States or comparable maturities.

18 “(c) **DEPOSITS.**—Any amounts borrowed by the Di-
19 rector under this section shall be deposited in the Reinsur-
20 ance Fund.

21 “(d) **REPAYMENT.**—Any amounts borrowed pursuant
22 to this section shall be recouped, including interest on the
23 borrowed funds, in future rates for excess reinsurance cov-
24 erage pursuant to the plan of operation established under
25 section 821. The Secretary of the Treasury shall grant ex-

1 tensions in repayment schedules that the Director advises
2 the Secretary are necessary.

3 **“Subtitle C—Program Administration**

4 **“SEC. 821. PLAN OF OPERATION.**

5 “(a) DEVELOPMENT.—The Director shall develop a
6 plan of operation to ensure the fair, reasonable, and equi-
7 table administration of the Primary Insurance Program
8 Fund established under section 805, the Reinsurance
9 Fund established under section 815, and other activities
10 under this title.

11 “(b) CONTENTS.—The plan of operation shall set
12 forth the specific policy and programmatic details for op-
13 erating the Primary Insurance Program created under
14 subtitle A and the Reinsurance Program created under
15 subtitle B, including all guidelines, criteria, definitions,
16 clarifications, and procedures necessary to carry out this
17 title.

18 “(c) ESTABLISHMENT.—

19 “(1) SUBMISSION OF DRAFT TO ADVISORY COM-
20 MITTEE.—Not later than the expiration of the 12-
21 month period beginning on the date of the enact-
22 ment of the Natural Disaster Protection Act of
23 1993, the Director shall submit a draft of the plan
24 of operation to the Federal Insurance and Reinsur-
25 ance Advisory Committee established under section

1 822. Before issuing any regulations under paragraph
2 (2), the Director shall consider any recommenda-
3 tions made by such Advisory Committee regarding
4 the draft plan of operation.

5 “(2) REGULATIONS.—Not later than the expira-
6 tion of the 18-month period beginning on the date
7 of the enactment of the Natural Disaster Protection
8 Act of 1993, the Director shall issue final regula-
9 tions establishing the plan of operation under this
10 section, subject to the provisions of subchapter II of
11 chapter 5 of title 5, United States Code. In issuing
12 regulations under this paragraph, the Director shall
13 cause to be published in the Federal Register a de-
14 scription of any differences between the rec-
15 ommendations of the Federal Insurance and Rein-
16 surance Advisory Committee established under sec-
17 tion 822 and the regulations (including the guide-
18 lines, criteria, definitions, clarifications, and proce-
19 dures under the plan) developed by the Director.
20 The description shall contain, for each such dif-
21 ference, an explanation of why the recommendations
22 of the Federal Insurance and Reinsurance Advisory
23 Committee were not included in the proposed regula-
24 tions.

1 sions of this section, the Committee shall be subject to
2 the provisions of the Federal Advisory Committee Act (5
3 U.S.C. Appendix 2). The establishment of the Committee
4 shall not result in the creation of any new permanent staff
5 or new office facilities.

6 “(b) MEMBERSHIP.—The Committee shall be com-
7 posed of 7 members appointed by the Director. The mem-
8 bers shall be chosen from among citizens of the United
9 States and shall include—

10 “(1) 1 individual who represents the interests of
11 consumers;

12 “(2) 1 individual who is a State emergency
13 planner;

14 “(3) 1 individual who is a State insurance com-
15 missioner;

16 “(4) 1 individual who represents the interests of
17 the private insurers;

18 “(5) 1 individual who represents the interests of
19 the private reinsurers;

20 “(6) 1 individual who represents the interests of
21 the insurance agents; and

22 “(7) 1 individual who is a professional actuary.

23 “(c) VACANCIES.—A vacancy in the Commission shall
24 be filled in the manner in which the original appointment
25 was made.

1 “(d) CHAIRPERSON.—The Director shall designate a
2 chairperson of the Committee from among members se-
3 lected for appointment to the Committee.

4 “(e) SELECTION.—Not later than 180 days after the
5 date of the enactment of the Natural Disaster Protection
6 Act of 1993 and after consulting with the insurance indus-
7 try and the State and local emergency management com-
8 munity, the Director shall appoint the members of the
9 Committee.

10 “(f) FUNCTIONS OF THE COMMITTEE.—The Com-
11 mittee shall review the draft plan of operation established
12 under section 821. Within 120 days after receiving the
13 draft plan of operation, the Committee shall submit to the
14 Director written comments and recommendations for any
15 changes to the plan. After regulations establishing the
16 plan of operation have been issued, the committee shall
17 submit a written report not less than once every 180 days
18 to the Director and the Congress evaluating the operation
19 of the Federal insurance programs established under this
20 title and making recommendations for any actions relating
21 to such programs. The Committee shall provide counsel
22 to the Director regarding actuarial and insurance related
23 services pursuant to sections 804(b) and 814(b). The
24 Committee shall respond as soon as practicable to all re-

1 quests of the Director made pursuant to subsection (g)
2 or section 821(e).

3 “(g) RESPONSIBILITIES OF THE DIRECTOR.—The
4 Director shall fully cooperate with the Committee and pro-
5 vide the Committee with access to personnel and informa-
6 tion as the Committee considers necessary to carry out
7 its functions. The Director shall request comments from
8 the Committee on any questions regarding operation of
9 the Federal insurance programs established under this
10 title.”.

○

NATURAL DISASTER PROTECTION ACT OF 1993

[PROPOSALS TO PROVIDE FOR AN EXPANDED FEDERAL PROGRAM OF HAZARD MITIGA- TION AND INSURANCE AGAINST THE RISK OF CATASTROPHIC NATURAL DISASTERS]

WEDNESDAY, FEBRUARY 23, 1994

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON WATER RESOURCES AND ENVIRONMENT,
COMMITTEE ON PUBLIC WORKS AND TRANSPORTATION,
Washington, DC.

The subcommittee met, pursuant to notice, at 9:44 a.m., in room 2167, Rayburn House Office Building, Hon. Douglas Applegate (chairman of the subcommittee) presiding.

Mr. APPLGATE. We will get the committee moving on here, because we are running a little bit behind. The chairman is a little late, but he will be in very shortly. He is on his way.

Although this hearing was scheduled before the Northridge, California earthquake, recent events highlighted the need for the Nation to find better ways to prepare for a disaster and provide reliable assistance afterwards. Today, we will look forward to hearing the testimony of the Federal Emergency Management Agency and private and State officials on proposals to provide for an expanded Federal program of hazard mitigation and insurance against the risk of catastrophic natural disasters.

Much of today's testimony will center around H.R. 2873, the Natural Disaster Protection Act. This bill addresses the problem of disasters that could overwhelm the insurance industry as well as better mitigation measures to prepare for disasters throughout the country.

During the last hours of the first session of the Congress, our committee was able to pass through the House and the Senate a bill that would improve the Nation's ability to assist in mitigation efforts for the Midwest. The bill, which was signed by the President, increased Federal assistance to people who have been flooded out of their homes and who volunteer to move out of their homes—out of harm's way—to higher ground.

Of course, it is very impractical, no matter how much one may want, for all the people in California to move to eastern Ohio where it is nice and safe. However, retrofitting and other mitigation measures can be encouraged. We look for the witnesses' comments on how best to encourage such measures.

Before we hear from today's witnesses, I would like to turn to our sit-in, acting minority member from Pennsylvania.

Mr. CLINGER. Thank you very much, Mr. Chairman. Thank you for calling this hearing.

I would ask at this time that a statement by Mr. Boehlert might be entered into the record at this point.

[Mr. Boehlert's prepared statement follows:]

THE HONORABLE SHERWOOD BOEHLERT
OPENING STATEMENT
THE NATURAL DISASTER PROTECTION ACT
FEBRUARY 23, 1994

MR. CHAIRMAN,

I WOULD LIKE TO BEGIN MY REMARKS BY THANKING YOU AND CHAIRMAN MINETA FOR HOLDING THESE CRITICAL HEARINGS. OVER THE LAST TWELVE MONTHS MILLIONS OF OUR FELLOW AMERICANS HAVE HAD THEIR LIVES DEVASTATED BY THE FORCES OF NATURE. FLOODS IN OUR NATION'S HEARTLAND, EARTH QUAKES IN THE WEST, AND VIOLENT STORMS IN THE EAST --- NO PART OF AMERICA IS IMMUNE TO NATURAL DISASTERS.

THE NATURAL DISASTERS THAT WE HAVE WITNESSED OVER THE PAST YEAR HAVE TWO VERY IMPORTANT ELEMENTS IN COMMON THAT I LOOK FORWARD TO EXAMINING FURTHER DURING TODAY'S HEARING.

FIRST, THE DAMAGE CAUSED BY THESE NATURAL DISASTERS COULD HAVE BEEN REDUCED SIGNIFICANTLY BY PROPER DISASTER MITIGATION MEASURES. BILLIONS OF DOLLARS IN PUBLIC AND PRIVATE LOSSES COULD HAVE BEEN PREVENTED. HIGHLIGHTING THIS POINT ARE STUDIES THAT HAVE BEEN DONE AFTER SOME OF OUR MOST RECENT DISASTERS. STUDIES OF THE DESTRUCTION LEFT IN THE WAKE OF HURRICANE ANDREW FOR EXAMPLE INDICATED THAT OVER 1/3 OF THE LOSSES THAT OCCURRED COULD HAVE BEEN PREVENTED IF THE BUILDING CODES THAT WERE ON THE BOOKS IN SOUTHERN FLORIDA HAD BEEN ENFORCED.

WE NEED TO DO MUCH MORE IN THE AREA OF DISASTER MITIGATION AND THE NATURAL DISASTER PROTECTION ACT IS AN IMPORTANT STEP IN THAT DIRECTION.

THE SECOND ELEMENT COMMON TO THE NATURAL DISASTERS OF THE RECENT PAST HAS BEEN THE ENORMOUS FISCAL BURDEN THEY HAVE PLACED ON THE FEDERAL GOVERNMENT. BILLIONS OF DOLLARS IN FEDERAL DISASTER RELIEF HAVE BEEN PROVIDED IN JUST THE LAST YEAR.

MORE HAS TO BE DONE TO PROVIDE THE AMERICAN PEOPLE WITH ADEQUATE NATURAL DISASTER INSURANCE. MILLIONS OF AMERICANS LACK APPROPRIATE NATURAL DISASTER INSURANCE --- AND IN THIS INSURANCE VACUUM THE FEDERAL GOVERNMENT --- THE AMERICAN TAXPAYER --- INEVITABLY BECOMES THE INSURER WHEN DISASTER STRIKES.

THE NATURAL DISASTER PROTECTION ACT --- H.R. 2873 --- IS A COMPREHENSIVE APPROACH AIMED AT ADDRESSING THE MANY PHYSICAL AND FISCAL CHALLENGES THAT NATURAL DISASTERS POSE TO SOCIETY. I BELIEVE THAT H.R. 2873, WITH SOME MODIFICATION, IS AN EXCELLENT VEHICLE FOR IMPROVING OUR NATION'S PREPAREDNESS AND RESPONSE TO NATURAL DISASTERS.

BEFORE I CLOSE, I WOULD LIKE TO THANK THOSE IN THE EMERGENCY RESPONSE AND INSURANCE FIELDS WHO HAVE BEEN WORKING TO IMPROVE OUR NATION'S NATURAL DISASTER PROGRAMS. I LOOK FORWARD TO HEARING FROM THESE DEDICATED GROUPS TODAY.

Mr. CLINGER. I have a couple of comments. I think we all hope that we learn from our experiences. With regard to disasters, we certainly have a lot of experience to learn from. Particularly in recent months, it has been one after another. I think we are fortunate, as a committee, that Chairman Mineta has very first-hand knowledge of the strengths and weaknesses of the Federal disaster preparedness and response programs. I noted his introduction of the legislation which we are considering today to improve and augment these programs. I am pleased to be a cosponsor of that bill.

Mr. Chairman, I would like to quickly share with you and the members of the committee an idea I put forth in the 101st Congress in the months following the Loma Prieta earthquake. That is, to help families prepare for and react in natural disasters by encouraging the placement of essential disaster response information in telephone books. It is my understanding that this is already done in California and has been very effective out there. I believe other States would be well served by this example.

In fact, Mr. Chairman, I suggest to the committee that Americans who do not live in California or the southeastern coastal zone could be operating under some misconception that they need have no concern and not have to prepare for an earthquake, hurricane, or any other kind of natural disaster. Many Pennsylvanians, for example, would probably be surprised to learn that there is a very high probability that the eastern United States would experience a major earthquake sometime in the coming decade or that the devastation would spread across not one but many States because of the geologic nature of the east.

Placing disaster information in every home may help to counteract this misconception as well as provide a tangible source of information for when a disaster actually occurs.

My office and I have been working with Dr. Sheldon Alexander, the professor of geosciences at Penn State University, to develop legislation encouraging the placement of disaster survival guides in telephone directories. At such time the committee actually moves disaster mitigation legislation, I would hope that the committee will include some of our language.

I thank you.

Mr. APPLGATE. Thank you very much, Bill.

Mr. de Lugo.

Mr. DE LUGO. Thank you very much, Mr. Chairman.

First, I want to thank you for holding this hearing on this very important issue. I want to commend Chairman Mineta for this legislation and for taking the lead.

Last month we heard a great deal on this issue. News reports out of Los Angeles following the Northridge earthquake showed families with destroyed homes, displaced in the streets with nowhere to turn, in despair because like so many others they did not have earthquake insurance. They just couldn't afford it and now they are left with nothing.

But we heard a lot about disaster insurance a few years ago, too. In 1993 after the Midwest floods, in 1992 after Hurricane Iniki, and in 1989 after Hurricane Hugo. Mr. Chairman, I don't think we need another disaster to remind us of the insurance crisis that already exists in this country.

In 1989, Hurricane Hugo slammed into my district in the Virgin Islands and left behind pure devastation, particularly on the island of St. Croix. It was the worst hurricane of this century. There was nothing to compare with it. And it may very well be the worst hurricane in recorded history that hit my district.

In no time, insurance companies who had offered wind storm insurance pulled out of the island, leaving my constituents holding the bag in many cases. People who had paid their insurance premiums year after year, who never made a claim, were left with absolutely nothing. The support they invested in and expected was not there when they needed it most.

Today the situation is not much better. The limited coverage that does exist is available only at wildly prohibitive rates with high deductibles. Average rates for property insurance has gone from 0.5 percent of property value pre-Hugo to over 2 percent, close to 2.5 percent. A typical increase is reflected in the homeowner now paying \$5,700 for a policy that cost \$1,100 in 1989. And they are the lucky ones. Many cannot get coverage at all.

I hear from so many of my constituents who call the office or stop me in the street to share their horror stories, families who purchased their homes many years ago cannot afford to pay the insurance premiums and cannot hardly afford to live in the house they fully own. For those families actually trying to buy a home, homeowner's insurance is just not readily available. They can't get a mortgage without it.

Home ownership is the glue that holds our communities together. When you talk about crime and all these social problems we have, one of the basic things that holds a community together and gives it its strength is the ability to own your own home. But most financing requires insurance. If you can't get the insurance, mortgage companies and the banks won't give you the mortgage. Therefore, the young people—younger than I am, anyway—are locked out of the housing market.

I am bringing all this to your attention, Mr. Chairman, because I believe the perception does exist today that there is no real problem obtaining wind storm insurance. For the most part, it is more readily available on the mainland, although availability in high risk areas, like several of the coastal States, is dwindling. In low risk areas, of course, there is no problem. But we don't buy insurance for low risk areas. That is not the reason people buy insurance.

I am here to tell you and tell this committee that a wind storm crisis does exist. It exists in my district. I know my colleagues from the high risk coastal States can tell you that the viability of their wind storm insurance pools is being threatened.

Mr. Chairman, I have been following the situation in the Virgin Islands and have concluded the following:

The solution to the wind storm insurance crisis we suffer requires a Federal role. It must include the availability of primary wind storm insurance coverage through a Federal plan. It must make such insurance available at affordable premiums to homeowners and to business owners.

Mr. Chairman, it must come soon.

One of the proposals on the table today will authorize FEMA to work with the States in creating a strong mitigation program. It also creates a primary insurance program for earthquakes and volcanoes. The reinsurance program in the bill covers several natural disasters, but again says nothing about wind storm.

While this bill will stop loss on the potential liability of the insurance industry, it will not necessarily improve the availability of coverage for consumers, which is what my constituents need. We need to get the insurance companies where they are most needed to provide the type of coverage that is needed by the citizens.

I spent years expanding the FHA program in the Virgin Islands to increase opportunities for home ownership, and I coordinated with the banks and other lending institutions. Now some of the people that I tried to help still can't get homes because they can't get that wind storm insurance.

Last year, I introduced a bill, H.R. 764, which would direct FEMA to create a plan similar to the national flood insurance program to cover wind storm damage. But because of the urgency of this problem, I later proposed that we simply extend the national flood insurance program to include wind storm coverage where it is not available in the primary market in areas determined by FEMA to be at significant risk for severe wind storms.

No new program would need to be created, and the inclusion can be accomplished easily because adjusting a claim for wind storm damage is fundamentally the same as adjusting a claim for flood during a hurricane. I still believe this can be done.

Mr. Chairman, I commend you for holding this hearing. But I am also urging that you and my colleagues keep in mind the very real problem that my constituents have down there. If we are going to create a primary insurance program for certain natural disasters, I ask that we include wind storm in this package—not just hurricane insurance, but wind storm, which is causing most of the damage in my district during the hurricanes.

We will need help stabilizing our wind storm prices. I think this subcommittee and this Administration must play a role.

I thank you for this time.

Mr. APPLGATE. I thank the gentleman from the Virgin Islands. The gentleman from New Hampshire, Mr. Zeliff?

Mr. ZELIFF. Thank you, Mr. Chairman. Certainly the recent earthquake in California gave us a chilling reminder of the devastation that can happen from large scale natural disasters. The earthquake that rocked the San Fernando Valley and Los Angeles has reinforced the need for a more proactive approach in the way in which we respond to natural disasters.

I want to commend you and Chair Mineta and Sherry Boehlert for introducing a straightforward proposal to improve our capacity to plan ahead for natural disasters. By taking a more proactive approach in mitigating the costs of natural disasters, we certainly can go far to reducing the suffering and misery that accompanies them. I think it is about time we move forward.

Thank you, Mr. Chairman.

Mr. APPLGATE. I thank the gentleman. The gentleman from Louisiana, Mr. Hayes?

Mr. HAYES. Good morning.

I will be very brief, because I would like to hear the beginning of the witnesses here.

The observation I would make is two-fold. The first is purely political. I noticed that I am the only Democratic Member of Congress on this particular row who has not announced their retirement from this institution. I wonder if the chairman invited me to this seat for some particular purpose for which I am not aware.

Secondly, I would like to make a brief observation regarding the statement made by my colleague from the Virgin Islands. It alluded to the obvious tie between financial institutions, the security instruments, mortgages, and the way the Federal Government will have policy on the impact to landowners of natural disasters. If we continue to have no policy at all other than a reaction to a natural disaster, and if we continue to have losses mounting from insurance payments when such disasters fall over short and briefer periods of time, then we are going to create an uncertainty in financial markets that is going to make tremendous and very negative impacts on those who currently have mortgages and suddenly find that those instruments can be called if they are not able to show what happened when a disaster occurred, and the likelihood of such a disaster occurring.

I think that in this area of Congress where we specialize in different committees we tend to have a tunnel vision where we don't look from one committee to another. Suddenly, someone who serves on Banking is not looking, as we are not looking at their world, and tying the two together and recognizing prior to such an incident that we had better be planning for it.

The comments that were made clearly illustrate—both in my area of southwest Louisiana, coastal California, and all of the Atlantic coast, coastal America, as well as the Virgin Islands—that we are just on the edge of the thin ice of an emergency which is a natural consequence of natural phenomenon, but an economic emergency when the unavailability or unaffordability of insurance, in effect, denies people not only existence to borrow in the future, but it denies them the right to finance their current mortgages and could place them in a situation of economic loss and economic collapse.

So I also applaud Chairman Mineta for taking on this issue and trying to provide both a framework for policy planning for a committee like his in Public Works, but also a framework for economic policy planning to avoid what could be a monetary catastrophe of equal proportion.

Mr. APPLGATE. I thank you very much.

Now we will recognize our distinguished leader on the minority side—if you like to be called that—Mr. Boehlert.

Mr. BOEHLERT. Thank you, Mr. Chairman.

I understand that my statement has already been inserted in the statement, so I won't repeat that.

But I do want to say that I think it is extremely important what we are about today. The present system is a rather mindless one. I happen to think that we should be a little more creative and do a better job of addressing disasters and preparing for them long before they occur.

And it is not confined to just the coastal areas—or in the case of earthquakes to California. It is a serious national problem. We have to face up to that. We need to do a better job of planning to put the resources in place to respond as we must.

I look forward to hearing today's witnesses. I know there is some reluctance on the part of FEMA to enter into this proposal enthusiastically. Let's hope we can increase the level of enthusiasm. I want to ensure them a high degree of cooperation.

I think together we can fashion a program that will pass the test of sanity. That isn't always the case with products that come out of this Congress.

Thank you.

Mr. APPELATE. Thank you, Mr. Boehlert.

Before I recognize Mr. Poshard, I wonder if the FEMA people would all come up to the front table. We will get things ready to go.

The gentleman from Illinois, Mr. Poshard?

Mr. POSHARD. Thank you, Mr. Chairman.

Mr. Chairman, I would like to ask permission to have my entire statement entered into the record.

Mr. APPELATE. Without objection, your prepared statement will appear in the record.

Mr. POSHARD. I want to thank you, Mr. Chairman, Chairman Mineta, and Mr. Boehlert for putting this bill forward and holding the hearings. I represent a large rural district in central and southern Illinois. We are in what is called "Tornado Alley". It seems that every year we have disastrous tornadoes run through the middle of our district. We are surrounded on each side by the Ohio and Mississippi rivers. I think everyone in this country is aware of the flooding situation that folks have in the interior of the country with respect to those two great rivers and what we have gone through over the last year.

We are in the second most active fault zone in the country with the New Madrid Fault with respect to earthquakes. We are continually being told that we should be in preparation for an earthquake somewhere in the neighborhood of six to seven points on the Richter Scale. We have many small earthquakes during the year that cause considerable damage, but folks in our area of Illinois, southern Illinois, Missouri, Kentucky, and so on keep expecting the so-called "Big One" and we are hopeful to be in a proactive position as opposed to a reactive position with this sort of a national emergency potential.

I am hopeful that this bill will seek the kind of national mitigation and reinsurance program that we need to make sure that people can get affordable insurance in these emergency zones of the country and that insurance companies and the Government can spread the risk so that we don't have to break the caps that we have established in the budget negotiations over the past couple of years to react to these kinds of situations.

Thank you, Mr. Chairman.

[Mr. Poshard's prepared statement follows:]

OPENING REMARKS OF THE HON. GLENN POSHARD
SUBCOMMITTEE ON WATER RESOURCES AND ENVIRONMENT
February 23, 1994
9:30 a.m.

MR. CHAIRMAN AND MEMBERS OF THE SUBCOMMITTEE, I AM PLEASED TO BE HERE THIS MORNING TO HEAR THE TESTIMONY FROM THE FEDERAL EMERGENCY MANAGEMENT AGENCY AND OTHERS REGARDING HAZARD MITIGATION.

CHAIRMAN MINETA AND CONGRESSMAN BOEHLERT HAVE INTRODUCED H.R. 2873, THE NATURAL DISASTER PROTECTION ACT. THIS BILL REPRESENTS AN IMPORTANT STEP IN THE DIRECTION OF A NATIONAL DISCUSSION ON THE ROLE OF BOTH THE FEDERAL AND STATE GOVERNMENTS IN PROVIDING ASSISTANCE TO CITIZENS IMPACTED BY A NATURAL DISASTER. IT IS VITAL THAT CONSIDERATION BE GIVEN TO HELP THE HOMEOWNERS AND BUSINESSES TAKE STEPS TO HELP MITIGATE THE EFFECTS OF A NATURAL DISASTER.

I AM KEENLY INTERESTED IN THIS BILL BECAUSE THE 19th DISTRICT OF ILLINOIS IS IN THE NEW MADRID FAULT, THE SECOND MOST ACTIVE EARTHQUAKE ZONE IN THE COUNTRY. RUINOUS TORNADOS HAVE HELPED GIVE MY AREA THE NICKNAME, "TORNADO ALLEY". OF COURSE, THE ENTIRE COUNTRY IS AWARE OF THE GREAT FLOOD THIS YEAR ON THE MISSISSIPPI RIVER.

MY DISTRICT IS AT TREMENDOUS RISK FROM NATURAL DISASTERS, AND SO I THANK YOU, MR CHAIRMAN, FOR YOUR WORK ON THIS ISSUE AND FOR HOLDING THIS HEARING. I LOOK FORWARD TO THE TESTIMONY FROM THE VARIOUS WITNESSES.

Mr. APPLGATE. Thank you very much, Mr. Poshard.

The gentleman from Arkansas, Mr. Hutchinson.

Mr. HUTCHINSON. Thank you, Mr. Chairman.

I want to thank you also for calling the hearing. I think that certainly the Los Angeles earthquake reminds all of us of the impending disasters that any part of the country could face. In my part of Arkansas, we also are in "Tornado Alley". We also are on the New Madrid Fault and are vulnerable to the same kind of big earthquake that other parts of the country have experience, California particularly.

The risk that we have in continuing to—react to one of these natural disasters, is that we continue to add to the deficit and to increase the national debt in our desire to be compassionate, helpful, and to meet the needs of people. I think it reemphasizes the need we have to find a better way to handle these kinds of situations. I hope that that is what will be the result of this hearing and this legislation.

I want to again thank the chairman for calling this hearing and look forward to the testimony.

Thank you, Mr. Chairman.

Mr. APPLGATE. Thank you, Mr. Hutchinson.

Does one of the big three retirees have anything they would like to add?

Mr. Valentine.

Mr. VALENTINE. Yes, Mr. Chairman, I do briefly.

I would like to begin by saying that the big three retirees will commend our sound judgment to the gentleman from Louisiana. [Laughter.]

Not really.

Mr. Chairman, I want to say something that needs to be said in connection with this. I think the initiative represented by this legislation is worthy. I don't represent any part of the coastline of the State of North Carolina, but Cape Hatteras and the Outer Banks—a large portion of my State is much more exposed to the whims of nature than any part of the United States.

If we are going to undertake this initiative and involve the Federal Government in some type of insurance program to a greater extent than the Federal Government is involved today, I think we ought to try to have some protection that where we wait to see how much of the damage will be repaid under legislation of this kind before the dust settles, coming in here with emergency legislation, which piles on top of whatever might be expended or utilized in a program such as this.

When the Congress adopted emergency legislation to aid the hurricane victims in Florida, Louisiana, and elsewhere in that part of the country within a few days after the winds had subsided, it was physically impossible for anybody to have a reasonable judgment as to how much Federal money was needed. But we were up here bailing out the money to send down in the midst of criticism that funds that were available were not being properly administered.

If this is to be another layer of Federal funds dumped on these disasters, then I think we ought to be careful about it. Nobody wants to be put in a position of having to even seriously question

whether we send Federal dollars to earthquake victims in California or to hurricane victims in other parts of the country. But I think sometimes that we are too quick.

I don't personally think that there is any way that anybody can have a reasonable judgment as to how much money is needed in California to help those people out of their tragic situation. But we have already sent billions of dollars. If we are going to do something like this, the taxpayers are entitled to some understanding that it will take the place of what I think is in many instances a blind decision motivated to a large extent by politics.

Thank you, Mr. Chairman.

Mr. APPLGATE. Thank you, Mr. Valentine, for your forthright views.

Mr. Hamburg.

Mr. HAMBURG. I have no statement.

Mr. APPLGATE. Our distinguished chair has arrived. Mr. Mineta?

The CHAIR. Thank you very much, Doug. They usually refer to me as the late Norm Mineta.

Thank you very much for the leadership you have exhibited as Chair of this Subcommittee on Water Resources and Environment and for holding these hearings when the Northridge earthquake is still fresh on our minds.

I hope it will help us find ways to deal with natural disasters more effectively in the future. Earthquakes, tornadoes, floods, hurricanes, and volcanic eruptions will occur. The only question is how we can better prepare for them.

I visited the disaster area shortly after the earthquake hit Northridge last month. I saw the devastation that such a natural disaster can cause: people made homeless, homes consumed by fires, collapsed bridges and other public facilities, injured victims not receiving prompt medical treatment because the transportation system had broken down or because the hospitals were badly damaged, and horrendous traffic tie-ups when consumers tried to get to work.

I experienced the same thing in 1989 when we had the Loma Prieta earthquake in our area. But what I saw in the Northridge earthquake was a moving experience. I am determined to do something about alleviating the suffering of the people as well as reducing the cost of these disasters.

Mother Nature has not been kind to us these past few years. A number of large scale natural disasters have severely affected many of our communities. The Loma Prieta earthquake and Hurricane Hugo in 1989, Hurricanes Andrew and Inikee in 1992, the Midwest floods in 1993, and the Northridge earthquake this year are only the most widely reported ones. But there have been many other less well-known disasters that were equally damaging to other victims.

Data show that natural disasters requiring Federal assistance are occurring more frequently. Between 1979 and 1988, an average of 25 disasters have been declared by the President every year. But that number jumped to 31 in 1989 and continued to rise to 38 in 1990, 43 in 1991, and 45 in 1992.

These disasters seem to be more severe, inflicting greater losses than ever before. Even with its relatively slow development, the Midwest floods last year took some 50 lives, inundated some 23 million acres, and did about \$15 billion of property damage. The cost of the Northridge earthquake is now estimated at more than \$20 billion.

The cost to the Federal Government increases alongside the rising costs of natural disasters. Because of the current tight budget situation, there is resistance in Congress to appropriate additional funds to provide assistance to victims and affected communities.

How we can minimize deaths, injuries, and property damage is one issue that must be seriously addressed. Some have suggested more stringent mitigation measures backed by strong sanctions as a way to answer this issue. We should certainly look closely at that, but there are at least three other problems.

First, many people lack insurance protection against natural hazards. For example, only 25 percent of the families in California have earthquake insurance. Nationwide, it is about 10 percent. Along the Atlantic and Gulf coasts as well as in Puerto Rico and the Virgin Islands, many homeowner insurance policies specifically exclude hurricane or wind storm coverage.

When a disaster strikes, people without insurance protection stand to lose everything. Most end up relying on Federal disaster assistance to help them recover. But with only limited resources, it is impossible for the Federal Government to make disaster victims whole again. So we should find ways to expand insurance coverage to include natural hazards and to make sure that individuals and businesses purchase the insurance.

Second, some insurance companies, particularly those that are small and have exposure concentrated in areas affected by disasters, may suffer substantial financial losses or even become insolvent. That, for example, has prompted some companies to reduce their underwriting exposure or to withdraw entirely—for example, from the Florida market—in the aftermath of Hurricane Andrew. As a result, many people wanting to obtain insurance protection have far fewer choices now regarding which company they like to use, what coverage they wish to get, how much deductible they may want to take, and how much premium they must pay.

In extreme cases, people could face the threat of a total loss of insurance availability, as was the case in Hawaii after Hurricane Inikee.

So we need to make sure that that does not happen. After all, insurance is the most useful protection people can have when disaster strikes. We should take steps to make natural disaster hazards insurance coverage available on a widespread basis to make sure that people actually have that coverage and to guard against insolvency on the part of insurance companies. When a major disaster strikes, the policyholders turn to their insurance companies expecting payment.

Third, losses incurred by Government in a natural disaster when public facilities are damaged or destroyed often far exceed those incurred by private individuals and businesses. That was obvious in the Loma Prieta and Northridge earthquakes. These costs are straining the Federal Treasury. The State and local governments

are similarly affected. In view of the tight fiscal situation faced by all levels of government, minimizing losses becomes paramount.

Since 1991, we have encountered growing resistance in Congress to appropriate money outside the mandatory spending cap to pay for urgent disaster relief and infrastructure repair and reconstruction. While we will probably always need to have the ability to seek emergency supplemental appropriations after a disaster, we need to develop alternatives which require us to seek emergency supplementals less often and for far lesser amounts.

So these are some of the problems that we must address.

I introduced H.R. 2873, the Natural Disaster Protection Act, last August. While the bill does not deal with all the issues I have just outlined, I believe it nevertheless represents an important first step toward addressing the problem.

The Public Works and Transportation Committee is working with the private sector, State officials, local government officials, and the Administration in order to fashion a comprehensive solution to this serious and very complicated problem.

I am hopeful that we will obtain from our witnesses today valuable information that will help us develop a new strategy to better manage natural disasters. We cannot afford to simply go on dealing with disasters the way we have in the past.

So again, let me thank you, Mr. Chairman and Mr. Boehlert, the ranking Republican on this subcommittee, for their leadership for holding these hearings today on such an important issue.

Thank you very much.

Mr. APPELATE. Thank you very much, Mr. Chairman.

Mr. Horn?

Mr. HORN. No statement.

Mr. APPELATE. Before we proceed to hear from our witnesses today, I would like to place in the record at this point the statement of our colleague from West Virginia, the Honorable Nick J. Rahall.

[Mr. Rahall's prepared statement follows:]



OPENING STATEMENT
HON. NICK J. RAHALL, II (D-WV)

HEARING ON H.R. 2873, THE NATURAL DISASTER PROTECTION ACT
BEFORE THE SUBCOMMITTEE ON WATER RESOURCES AND THE ENVIRONMENT
FEBRUARY 23, 1994

MR. Chairman, as a cosponsor of the bill H.R. 2873, I am pleased to be with you today for this hearing, and to have this impressive array of professionals as our witnesses. I welcome each of you, and look forward to hearing your testimony.

First, I would like to echo a statement made by the distinguished Chairman of the Public Works Committee, and author of H.R. 2873, my friend Norm Mineta, for it is at the heart of why we are here today:

Norm Mineta's family, for 70 years, was engaged in the insurance business, and he has stated that he learned one most important lesson from that business:

"Never to underestimate the importance of insurance -- not just to the individual policyholder, but also to our communities."

The most devastating effects on any community, from flooding, fire, hurricanes, tornadoes, or earthquakes is two-fold: property loss, and loss of life. But during the human turmoil that follows, there is the often greater loss in terms of raw emotion, and in terms of personal security and dignity.

It has become painfully obvious that we must enable the Federal government, in partnership with insurers and property owners, to assure a quick and reliable response using a prospective insurance program.

In the past we have reacted to natural disasters. Under the Chairman's bill, we can respond to them in both human and monetary fashion.

Why has the time come for this kind of an insurance partnership?

Because we live in perilous economic times, when dollars that were scarce to begin with are scarcer still.

Also, prior to 1987, we in the United States had never experienced a disaster with an insured loss greater than \$1 billion.

This year, after the Los Angeles earthquake, damage estimates are upwards of \$30 billion -- and final estimates are not yet in.

For the future, we need not only to assist people in areas where natural disasters are prone to occur to have insurance ahead of time, but we must enable all the players on the stage of a major disaster to be able to afford the costs of that coverage.

And the need to form this partnership now, is not just to protect property owners against losses, but to protect the insurance industry against failure resulting from ever escalating costs of paying for major disasters that are occurring with more and more frequency.

The bill before us is one that will create a strong connection between state and local emergency services, and between states and the Federal government, the insurance industry, taxpayers and homeowners.

We owe it to ourselves to fully and faithfully consider this legislation -- and I use the term "ourselves" in the context of the Members of the House and Senate who must try to act quickly every time a disaster of major proportions hit any of the States and districts we represent.

But Members who represent States outside the disaster area are beginning to flag in their interest to commit their constituents' tax dollars to help out because of budgetary constraints. We witnessed that during the often acrimonious debate on the California earthquake relief bill.

We heard more about PAY-GO during that debate than we did about being the Good Samaritans we normally are and want to be.

I, for one, am deeply aware that there, but for the Grace of God, goes West Virginia, which has had its own share of natural disasters.

We can, through this legislation, make the financial risks for both insurers and the newly insured, bearable. We can quickly return disaster areas to normalcy, without the waiting, without the insecurity, the fear and the emotional and spiritual pain of families who don't know what to do, or what future awaits them.

Let's start building our reserves now for the next major disaster in a manner that doesn't assume that the Federal government is the sole responder against Acts of God which are beyond human control.

Thank you Mr. Chairman

Mr. APPLEGATE. Our first witness is Ms. Jane Bullock, assistant to the director, Federal Emergency Management Agency.

**TESTIMONY OF JANE BULLOCK, ASSISTANT TO THE
DIRECTOR, FEDERAL EMERGENCY MANAGEMENT AGENCY**

Ms. BULLOCK. Good morning, Mr. Chairman and members of the committee. It is my pleasure to appear before you today to talk to you about the opportunities we have to reduce the future loss of lives and property from natural disasters through mitigation and to comment on the Natural Disaster Protection Act of 1993.

I would like to start by acknowledging the strong support FEMA received from Members of Congress, both during the immediate response to the Northridge earthquake, but also as we worked with you to pass the President's supplemental package of aid. Your quick action on the President's request is aiding us in making as smooth a recovery as possible in California. Your interest in the legislation that we will be considering this morning also begins a dialogue that we believe is vitally important.

Today, as individuals, as communities, and as a Nation we stand at a critical crossroads. The time has come to face the fact that this Nation can no longer afford the cost of natural disasters. We can no longer afford the economic costs to the small businessmen, to our local governments, to the American taxpayer. We can no longer afford the social costs to our communities, to our families, to individuals. From south Florida to southern California, to the Midwest, the question remains: Isn't it time for us to do what must be done to reduce the cost of future disasters?

We recognize that we cannot control nature. We will always have earthquakes, hurricanes, and floods. But we do know that we can control the corresponding losses. We can and must work to design and build our communities better and out of harm's way. It is time for us to change the focus from disaster response to disaster mitigation.

We know mitigation works. There are vivid examples in the Northridge earthquake. Both the CALTRANS bridge retrofit project and the Los Angeles retrofit ordinance for commercial and residential structures are examples of mitigation programs that work.

We also know that mitigation can save the taxpayers money. The national flood insurance program, which FEMA administers, requires that communities pass flood plain management ordinances to participate in the program. We have estimated that these ordinances have resulted in an annual reduction in flood damages of approximately \$516 million. The flood insurance program offers a mandate for mitigation in exchange for insurance coverage.

Your passage last year of the amendments to the Stafford Act to expand mitigation coverage under 404 is an important step to providing additional funding to State and local governments to accomplish cost-effective mitigation measures in the post-disaster environment.

If we know mitigation works, then why isn't mitigation more widely practiced? We must go back to priorities and incentives. The current approach does not provide incentives to take proactive mitigation measures. With the exception of the flood insurance program

where it is required in return for insurance, our current approach only provides for mitigation after a disaster has happened.

We need to consider a more comprehensive strategy for mitigation, especially in a pre-disaster environment, a strategy that will mitigate all natural hazards, a strategy that reduces risks in three ways: through siting and construction practices; through relocation, elevation, or retrofit of existing hazardous structures and infrastructure; and through prudent rebuilding in a post-disaster environment.

We believe the strategy must be cost-effective and tailored to the degree of risk. The strategy must also consider positive incentives to State and local governments and individuals for making the investment in mitigation. For example, this committee may want to consider incorporating incentives for mitigation actions that local governments take before a disaster as part of a disaster assistance formula they receive after a disaster.

The development of this comprehensive strategy is the highest priority in FEMA. We would welcome input from the committee as we proceed.

As noted earlier, since 1989, the Nation has experienced an unprecedented series of natural disasters from hurricanes Hugo, Andrew, and Inikee, the California fires, the Northridge earthquake, the Midwest floods, and the winter storms. The escalating costs of these events require us to look to ways to reduce the Federal outlay for disaster response and assistance. H.R. 2873 is one such approach.

The goals of H.R. 2873 are laudatory and carry widespread support, namely to reduce the loss of life and property, to reduce the need for disaster assistance through widespread purchase of insurance, and to assure the post-disaster availability of insurance.

We appreciate the work that has gone into this bill and hope to build on it. We are concerned, however, whether these goals will be achieved by this bill. Our concerns are focused in three areas: number one, the efficacy of the mitigation provisions; number two, the extent to which the primary insurance program would effectively spread risk and reduce the need for disaster assistance; and number three, the potential for the reinsurance program to become an open-ended obligation of the Federal Government to companies whose solvency and practices are regulated by the States.

H.R. 2873 includes no compelling penalties or incentives for States or localities to enact mitigation measures prior to a disaster. The mitigation measures in the bill do not address the most significant disaster assistance outlays. Existing construction, public facilities, and lifelines are the single largest at-risk sector of our society today.

The primary insurance program also raises questions. There is no current availability crisis in earthquake insurance for homeowners in California or elsewhere. People simply don't buy earthquake coverage. The price of the coverage will decline significantly only if all of those at risk must purchase the coverage. Yet the bill

does not require that all homeowners subject to any level of earthquake risk purchase earthquake insurance. Without such a requirement for widespread coverage, we will not see many more people purchasing the insurance and we will still be looking at significant disaster outlays.

The most difficult part of the bill, from our perspective, however, concerns reinsurance. First, we are concerned that there are no limits to the Federal outlay in the event of an earthquake or other natural disaster or multiple disasters. Second, we believe the program could become a Federal Government guarantee of the solvency of complex financial institutions whose finances, practices, and risk management policies are regulated at the State level rather than the Federal level. These two problems strongly suggest the need to look at alternatives.

We recognize that this is an extremely complex problem and complex legislation. We need to thoroughly understand the issues, identify our options, and design the best program possible. Congress clearly recognizes this and has, among other steps, established a bipartisan task force to look into the funding of disasters. We want to work very closely with this task force.

Within the Administration, we have been actively working as an interagency team to provide options and alternatives to address the issues raised in the bill. We also recognize, most importantly, that it is in the best interest of all parties that these options and alternatives be pursued in partnership with State and local governments, with the insurance industry, with consumer groups, builders, developers, and the banking industry.

We applaud your initiative in holding this hearing. It has served to encourage discussion of these complex issues among all of us.

In closing, I would like to say that the human suffering and economic hardship that results from disasters can be reduced, but we must act now. We must act before it is our neighbor's house that burns, before our children's school collapses in an earthquake, before our community is devastated by a hurricane. It is time for each of us to assume responsibility for the future safety of our community and our people.

We are committed to the task of doing this and ask you to work with us on it.

That finishes my testimony. Thank you very much. I will be pleased to answer any questions.

Mr. APPLGATE. Thank you very much, Ms. Bullock.

First of all, let me just say that—of course, we do have rules and regulations here in the committee, as you do in your agency. We delayed this meeting at the request of FEMA for almost 30 days. With all that time, I thought it would have been adequate time. We nevertheless didn't get your testimony until last evening. We really haven't had a chance to really go through all it is that you would like to do.

But the rules are in place to make the hearing as beneficial as possible to the legislative process and to our members. I certainly hope that FEMA, as well as any other agency, would not be tardy with their testimony. We like to have that in just as quickly as possible so that we have an opportunity to analyze it.

Ms. BULLOCK. Yes, sir. I apologize for the delay.

Mr. APPLGATE. There are a number of questions that we will be asking. Let me ask you first, in anticipation of all this, Does the Administration have a recommended plan or direction they want to take in order to do what it is that we are trying to do here? It is obvious that you are not too crazy about the legislation that is before us, but what is it that the Administration is going to recommend? Or are they?

Ms. BULLOCK. First of all, the hearing certainly has been a catalyst for us to start talking about it. This is an issue that FEMA has been working on, particularly from a mitigation standpoint, for quite a long time.

We do have a very involved interagency team that has been put together that is meeting on a regular basis that is developing options to look at a mitigation program and an insurance program and options for an insurance program and options for a reinsurance program. We are on a fast track. We recognize that there is an urgency to this. We are very actively working on it.

The national mitigation strategy that I mentioned earlier in my testimony has the highest priority in FEMA. The director of FEMA is committed to having that done this year.

Mr. APPLGATE. You have a whole agency to do it, and you have all these people, and we had Mr. Mineta and Mr. Boehlert put together their plan in a relatively short period of time. Why can't you get that done?

Ms. BULLOCK. I think the issues are extremely complex. What we don't want to do is preclude ourselves from designing the best possible program that will complement what already exists in legislation as well as serve not only the benefits of the consumers but also the benefits of the Federal Government.

Mitigation, prior to the recent earthquakes, has begun to be on the front agenda. I think now is the time to really take advantage of the fact that people recognize the benefits of mitigation. I think we are working on it.

Also, we are a small agency. We do believe that our first priority over the past months has been to respond to the victims of the Northridge earthquake. That is where we have been putting most of our efforts. But I can guarantee you that James Lee Witt is committed to having an alternative and some suggestions done in the very near future.

Mr. APPLGATE. I assume what you're saying is that what is before us is not the best designed program.

Let me just say this. You say, "We know that mitigation works and some of the most vivid examples come from the Northridge earthquake." We do know that. But you say that this bill does little to increase the number of States or localities that will enact or enforce mitigation measures, which means that there is not much—in the opinion of FEMA—contained in this bill to do that. Yet they do set aside, for instance, a building code enforcement, which requires State compliance of the building codes and mitigation plans. Then they go down through and mention some of the things that are necessary that can be done.

Funds would be made available contingent on States accepting one of the several model building and safety codes designed to make new construction less vulnerable to hurricanes, wind storms,

et cetera. States would be required to comply with building codes within 5 years. It would include detailed steps for identifying at-risk structures.

Then if the States failed to meet that, they would have higher premiums and deductibles, lose assistance for any new Federal building or Federal-lease building, wouldn't receive a share of mitigation funds, and some would not be eligible for disaster insurance. However, that doesn't seem like a real political option to me. It doesn't seem like political reality, regardless of what happens, that we would deny any local area disaster assistance.

Are you saying that you don't think any of this really ties it down tight enough to say that this is really going to help develop mitigation plans?

Ms. BULLOCK. I think it is a start. Building codes are clearly important for new construction. As I mentioned, the problem we see with earthquakes and hurricanes is that we have to look at infrastructure, life lines, which often are not covered by building codes. We have to look at public facilities, which are often not covered by building codes. We also must look at the existing hazards within the United States.

The penalties and compliances that are included in the bill cause us to question. Higher premiums or lower premiums would only be workable if in fact there was widespread purchase of insurance so it served as an incentive. Since the bill does not require purchase of insurance, we find those incentives to be probably minimum.

Our other concern is that the penalties, in terms of the loss of disaster assistance—and I think we share your skepticism as to the political reality of that—the penalties only fall to local governments, holding the States harmless. Yet the States are required for the certification.

I think there is some progress made in that mitigation program, but it is far from where we really need to be if we want to reduce loss of life and property, but more important if we want to reduce our disaster costs. Once again, that is getting to the necessity of finding a way to pre-event mitigate and concentrate on existing hazard structures and infrastructure.

Mr. APPLIGATE. The Mitigation Act of 1993—can you give us an update of what has happened with that? What kind of success or failures have we had?

Ms. BULLOCK. Actually, I would consider it one of our success stories.

As you know, we have been very actively working in the Midwest. We are currently working with over 166 different communities, thanks to the action this committee has taken. But it has also given us another opportunity. We are approaching our use of 404 funds in a very different way in California for the first time. With the catalyst of the additional funding being made available, we are now looking at mitigation right as we go out and do our damage inspections. Now that we know there is a certain amount of money available, communities and local boards are much more interested.

When we go out and do a damage survey for a building, our inspectors are not only looking at the damage, but they are also now recommending mitigation measures. So we have managed to work

through the fact that there is an increased availability of funding under 404 to provide mitigation up front rather than having the process be as long as it has.

I think it is a real success and we are very pleased that the committee took the action it did.

Mr. APPLEGATE. Thank you very much for your information.

Mr. Boehlert.

Mr. BOEHLERT. I must echo the chairman's disappointment at not having a more timely response from FEMA. I appreciate that you're just overburdened right now with some other problems, but it seems to me that this is sufficiently serious to warrant more attention.

The hardest thing to do is to take a piece of blank paper and start developing something. I think we have made life a lot easier for you because Mr. Mineta and I have developed a plan that you have some reservations about. But it seems to me it is a hell of a lot easier now for you to go forward in a timely manner now that you have something to start with. I would hope that we could get some specificity because impassioned pleas like you have at the end of your testimony are wonderful. I wanted to stand up and salute and wave the flag, but that is at the end of a statement that acknowledges that you haven't really done anything on the problem yet.

With that preamble, do you have any projected costs as to what it would cost FEMA to implement this bill, as proposed?

Ms. BULLOCK. First let me say, Congressman Boehlert, I have had the pleasure of working with your staff for 5 years on the national earthquake hazard reduction program.

Mr. BOEHLERT. So you know that I am not a newcomer to this.

Ms. BULLOCK. That's right. I know you are not a newcomer. I know you have been very active in the past on this issue. We appreciate your comments.

The costs of implementing this bill are a critical concern to FEMA, especially when you look at the potential for the reinsurance program. The responsibilities that would be given to FEMA under this program would probably make us the world's largest reinsurer, which would require substantial administrative burdens to hire actuaries, people who could check the books of businesses of those we would be reinsuring.

It is a very good question and one that we discussed at length yesterday, if we could come up with a viable figure. Frankly, I don't have one. We will give it some more thought and provide it to you. But it is a great concern to us that the cost of implementing this program could be extremely large.

Mr. BOEHLERT. But you don't have the estimates yet, so this is just a feel that you have right now?

Ms. BULLOCK. I think when we think about the exposure of the Federal Treasury and the requirements to ensure that the exposure to the Federal Treasury—again, under the reinsurance program in particular—will require that we set up a mechanism to audit, rate, and look at the books of business of every single insurance company we would be reinsuring.

Mr. BOEHLERT. What about the exposure we now have? This is America. When we have a disaster, like an earthquake or hurricane, our hearts bleed and we pour out and want to respond. The exposure is virtually unlimited right now, yet we have no planning for it. We know as sure as you and I are talking right now exchanging points of view that some day in the not-too-distant future—probably sooner rather than later, unfortunately—we are going to have another natural disaster. We know that the American response is going to be the same as it has always been in the past. We want to help those who really have proven need. Exposure to the taxpayers is unlimited now.

The problem is that this is a mindless way to do it. We are not preparing for it. So Mr. Mineta and I are trying to develop a plan that will prepare us for the future.

What I am seeing from FEMA doesn't make me very happy because in a very pleasant, nice way you are saying, "We don't like your plan. We don't have a better proposal, and we don't have time just yet to get around to it." That isn't quite good enough.

Maybe I am being a little bit unfair to you, but I am just really unhappy with the response to date.

Ms. BULLOCK. I think we would wholeheartedly agree with you that we need to look at a different way to do this. I think the Administration is working very actively right now, and we are on a very fast track. I also believe that FEMA and James Lee Witt have echoed the sentiment that the only real way to reduce disaster costs is through mitigation. We have currently no mechanism to pre-fund mitigation. We have no incentives to State and local governments for them to undertake mitigation actions except in the flood program where it is mandated.

We know there is a history that mitigation requires tough political choices. It requires the loss of a short-term economic gain for a long-term investment. We really need to provide incentives to mitigate in a pre-disaster environment. That is where we will see the reduction in losses.

Mr. BOEHLERT. I can't agree more. Therefore, I would hope that you could come up with some specific recommendations. When you have testimony that says, "There are no compelling incentives or penalties for States or localities to enact mitigation measures prior to a disaster," I agree with you. Then I would hope that you would come up and say, "Here is what we recommend."

Ms. BULLOCK. I can guarantee that we will.

The CHAIR. Would my colleague yield on that?

Mr. BOEHLERT. I would be glad to yield to the chair.

The CHAIR. I think this is the third time you have mentioned a flood insurance mandate. Yet as I understand it, only about one in five of the folks in the flood plain have insurance. If the flood insurance is mandated, why do you feel that this one in five in the flood plain is even more successful than what may be contemplated under this kind of a natural disaster program as far as flood insurance is concerned? If only one in five have flood insurance, it seems to me that we are still paying a lot out of disaster funds in flood-prone areas.

Ms. BULLOCK. Congressman Mineta, I think that is a good point. I think two of the things we learned out of the Midwest floods is

that we have not done a good job marketing flood insurance. The second thing we have learned is that there has not been the level of enforcement necessary to assure the people who should have and who should purchase flood insurance continue to purchase it. Enforcement of that mechanism has fallen to the lenders in terms of reviewing mortgages.

Mortgages, as we know, are bundled and sold. There has been a lack of strong enforcement of that requirement. It is something that we are beginning to address. But we have also not done a good job marketing it.

The CHAIR. Thank you.

Mr. BOEHLERT. Mr. Chairman, I will come back later on. I want to give others a chance. I do wish to reserve some time, if I may.

Mr. APPLGATE. Chairman Mineta.

The CHAIR. Thank you very much, Mr. Chairman.

First of all, in the flood insurance program, who does the rate-making?

Ms. BULLOCK. FEMA does.

The CHAIR. And to that extent, you feel that you don't have the capabilities to do that in terms of earthquake coverage?

Ms. BULLOCK. I think it is something we need to look at. Currently, we don't have the actuarial support in house, but it could be attained through the marketplace.

The CHAIR. I assume that before the flood insurance program came into being that you did not have that capability at FEMA, either.

Ms. BULLOCK. Right.

The CHAIR. So it is something that you can—

Ms. BULLOCK. It can be attained through the marketplace, yes.

The CHAIR. One of the things you said in your statement is that it is time to change the focus from disaster response to mitigation. Yet in the absence of this bill, is there any kind of measure that we have to deal with mitigation?

Ms. BULLOCK. Other than the flood program, it is only secondary in some cases. For example, under the national earthquake hazard reduction program, which FEMA also is involved in, we do provide money to States and localities to do limited mitigation measures—things like identifying their existing hazardous buildings and things of that sort.

The CHAIR. Even following up on that, to the extent that you have that in a present program, what penalties are there if States don't do anything?

Ms. BULLOCK. That is a good question.

As far as I know, other than the flood program, there are no penalties for State and local governments if they don't enact mitigation measures.

The CHAIR. And under this bill that we have here, it seems to me that this bill calls for the most far-reaching mitigation measures. To the extent that States do not undertake certain mitigation measures, the penalty is that they don't get disaster relief. To that extent, isn't that pretty forceful in terms of saying to States that they had better respond in some way?

Ms. BULLOCK. The penalties are only for public assistance and the penalties are only on local governments. The States are held

harmless. We do have significant disaster outlays for State structures in different disasters.

The CHAIR. As compared to what we have today, how does that measure up?

Ms. BULLOCK. I think it is a penalty that would carry some teeth.

The CHAIR. How many States have model building codes?

Ms. BULLOCK. A study was done in 1992 that estimated approximately 39 States have adopted State-wide building codes that correspond to one of the three major model building codes.

Of those States, many States—in fact, in almost all States—the enforcement falls to the local community. Number two, local communities often have the option to take part in pieces of the code and delete them. For example, we find a lot of local governments delete the seismic parts of the code. But we do know that at least 39 States currently have adopted one of the three major model building codes.

The CHAIR. When I was on the City Council in San Jose, we adopted what was referred to as a dangerous building ordinance. It required the retrofitting and bringing up to current standards all commercial buildings. That was in 1967. There have been a number of adjustments to that local ordinance in San Jose to require that the latest seismic safety be incorporated, including mandating retrofit of existing commercial structures.

Believe me, that in 1967—this blue mark here came from that experience. [Laughter.]

The CHAIR. But I think we found that in the Loma Prieta earthquake that that really paid for itself to the community, to the owners of those buildings, and to the insurance companies. To the extent that that was already in place, had already minimized, again, the kind of outlays that would have otherwise been required from public assistance funds.

So it seems to me that what we're doing here is trying to deal with leveraging on mitigation, leveraging on State building codes, leveraging on creation of the largest public fund for disasters.

To the extent you say that the \$80 billion earthquake projected by insurers would result in Federal payments of \$50 billion or more, again it seems to me that here we have a requirement that the insurers would be contributing every year to reduce their exposure over a period of time. The bill says that to the extent there is a shortfall in the fund, those funds would be borrowed but repaid by the insurers with interest.

It seems to me that that goes a long way so that it isn't just transferring. You seem to imply that this is a free ride for the insurance companies in the sense of FEMA assuming the exposure. I just don't fully understand that part of your testimony.

Ms. BULLOCK. We have people working on what they believe the rates would be appropriate for this program as currently written, and how fast the fund would be developed to cover the \$80 billion earthquake that has been discussed. Our preliminary information shows that it would probably take us almost 30 years to collect enough in the premiums to cover that sort of event.

Our other concern is that our understanding of the reinsurance mechanism in the bill would not necessarily make reinsurers come

back in and repay if they are paid out. In other words, if their solvency is such that they don't have adequate funds to come back and repay, they have an option of dropping out of the program in the bill as it is currently written. So they could get reinsurance from the Federal Government to cover their losses, and then drop out of the program.

The CHAIR. But to the extent that they have to still repay—

Ms. BULLOCK. I think the bill needs to be clarified on that point, Congressman.

The CHAIR. It seems to me that they have to repay with interest on the portion borrowed to take care of that shortfall. So, to that extent, the insurance companies are not let off the hook.

Would you say that the States should be mandated to adopt a model building code?

Ms. BULLOCK. I think we need to go beyond the State and we must look at where mitigation occurs, which is at the local community level. I also think the Federal Government, if they are to take the exposure that we currently have under the disaster assistance program and would potentially have under an insurance program, should get something in return for that. If that is a requirement on the part of a State or local government that they take certain mitigation measures, we would be supportive of that.

The CHAIR. But there is no limit today on the Federal financial outlay for disasters. It seems that there is no limit under financial disaster assistance under current law. This bill does in fact modify—or could be modified—to address this issue a little more directly, as you have indicated.

But, again, this bill goes a lot farther than where we are today. We ought to be able to build on what I think is a good start on doing something about natural disasters.

I have some other questions. Hopefully, we will have another round. I will yield for the present time.

Thank you very much.

Mr. APPLGATE. Thank you, Mr. Chairman.

Mr. Ewing, do you have any questions?

Mr. EWING. No questions, Mr. Chairman.

Mr. APPLGATE. Mr. Valentine.

Mr. VALENTINE. Thank you, Mr. Chairman.

I wonder if the Administration—if you can answer this—has any plan to recommend to the Congress that we begin to budget in a realistic way for these natural disasters that come along almost every few months. That is, rather than to come to Congress with emergency legislation that is off-budget, that is money from nowhere, that we face the reality that the Congress is going to do the right thing and is going to assist fellow human beings that have lost property and take that into account.

Why not put \$10 billion, \$15 billion, or \$20 billion into the budget every year and tax the American people to pay for it? Wouldn't that be—I don't mean to suggest that this isn't a good start—but wouldn't that be an improvement over the situation that we have now and the situation we would have if this legislation passes?

Ms. BULLOCK. I think we all recognize that we absolutely must do something about this situation. That is why Congress has set up their bipartisan task force. We plan to work very closely with that

task force. Also, that is why the Administration has put their team together.

Mr. VALENTINE. Do you think it realistic for the Congress and for the citizens to expect that if that happened and a disaster occurred that your agency and others could—with discretion and sound judgment—disperse those funds and not say, “Well, we got this money and we certainly don’t want to have any left. Nobody can predict. We might be lucky and we might not need to use this \$10 billion or \$15 billion.”

Could the Congress and the citizens expect the agency to say, “If we don’t use it, we will turn it back in?”

Ms. BULLOCK. I think if we want to look at pre-funding disaster assistance through an insurance mechanism or any other mechanism, we should look at it very closely. We should also look at it as a requirement to purchase. Otherwise, people will not buy it. We also have to look at how we can provide incentives for people to buy it and to mitigate it.

I think if that is what we are looking at and this bill takes us a step toward looking at it—that is on the table now and everybody is looking at it very carefully. We all recognize the severity of the problem we are facing.

Mr. VALENTINE. Let me say finally, Mr. Chairman, that many people share the view I have, they just won’t express it. I don’t want to ever be in a position of being a legislator that will not address and will not be willing to make available funds to alleviate human suffering of this kind.

But to just say that it comes out of thin air, or it is off-budget, and to make these decisions as to how much is needed within 2 or 3 days after the disaster has ended, I just don’t think that is the way to do business.

Thank you, Mr. Chairman.

Mr. APPLEGATE. Thank you very much, Mr. Valentine.

Mr. Gilcrest.

Mr. GILCREST. Thank you, Mr. Chairman.

I have an understanding of what mitigation means as far as wetlands is concerned. The statement was made earlier about mitigating in a pre-disaster environment or to change disaster relief to mitigation.

Could you explain or give an example of what mitigation means in an earthquake disaster?

Ms. BULLOCK. A perfect example is what Chairman Mineta was talking about. The city of Los Angeles passed a retrofit ordinance that would require the 6,000 structures that they had determined were hazardous from an earthquake perspective to be retrofitted. Of the 6,000 structures, about 700 of them were destroyed, but 1,600 of them, which were private homes, went through this earthquake fine, as did the rest of them.

What it means is strengthening a building from an earthquake perspective. It means potentially not siting a building on a known earthquake fault, especially a critical facility such as a hospital or a school. It also means non-structural mitigation.

The damage we saw in the Northridge earthquake to the schools was predominantly not structural. It was the fact that there hadn’t

been enough non-structural mitigation done, such as ceiling tiles and ceiling lights being put in.

For the private homeowner, it would be bracing a water heater to their house. Most of the non-structural mitigation options are very reasonable. In fact, a lot of the retrofit options are not cost-prohibitive.

The city of West Hollywood undertook an aggressive retrofit for their commercial and residential structures. I think the average they had was \$8 to \$10 per square foot for residences and \$10 to \$12 per square foot for commercial structures. That is not cost-prohibitive.

In terms of new construction, we estimate to strengthen a building for seismic design, it only costs up to 2 percent of the total cost of the building. I think there has been a misperception of the cost.

Clearly, when you design a mitigation program, you design it commensurate with the risk. We wouldn't retrofit in Tennessee to the same extent that we retrofit in California. I think those things have to be carefully looked at. But that is an example of what we would consider an earthquake mitigation measure.

Mr. GILCHREST. And in order for that to be implemented, there needs to be some type of incentive, information, or education for people to understand how positive mitigation can be to prevent disasters?

Ms. BULLOCK. I think it requires two things. First of all, it does cost money and it is not a priority. So we must provide incentives for State and local governments to take those actions. Also, in most cases—as with the Los Angeles retrofit ordinance—it requires an action on the part of the local government to pass such an ordinance, to recognize they have a problem.

Mr. GILCHREST. Taking this particular bill into consideration, what is positive or negative about this particular bill as far as providing the incentive needed for that type of mitigation to occur? Even to the point of having some understanding that there shouldn't be anymore development in a particular area, or there shouldn't be a hospital built in a particular area—does the bill address that?

Ms. BULLOCK. No, I don't think it does. It doesn't really mandate anything. It gets to the idea of building codes through a compliance issue that is tied to premiums. As I said earlier, if you don't have mandatory purchase of insurance, people won't buy, so they won't put pressure on their local government to enact the appropriate codes.

I think the incentive in the bill is the natural disaster mitigation fund, which we think is a good idea. Our concerns about that particular fund is that in order for the director to assure that he has adequate funds in the primary insurance program, he will have to collect such premiums before he will then turn around and give money back to the States to do mitigation measures.

As I mentioned earlier, based on just preliminary looks, we are saying that it is going to take us 30 years to possibly get to that point, which means that the States will not have an ability to tap into this fund.

The other thing is that the amount in the mitigation fund has changed anywhere from \$1.5 billion to \$900 million, depending

upon the estimates you are talking about. Dividing that over 50 States, it still doesn't provide us with enough of a leverage.

One of the things we are looking very closely at is providing the leverage through existing Federal construction funds and providing leverages that perhaps State and local bonds could be given a favorable tax credit.

There are a lot of options that we are, as we are here, looking very, very carefully at.

Mr. GILCHREST. Thank you very much.

Mr. APPLGATE. Thank you very much, Mr. Gilchrest.

Mr. Geren.

Mr. GEREN. Thank you, Mr. Chairman.

I first want to comment Mr. Mineta and Mr. Boehlert for helping to bring this issue before us. The last 4 years have made it painfully obvious that we cannot continue on the course we have been on. I think we are all in the bottom of the learning curve on H.R. 2873 and on this whole initiative because we have been doing things the old way forever.

I just have some questions about how the bill would work. I don't know if Ms. Bullock is the best person to ask these questions to, but I would like to raise a couple of points you have raised and ask you to comment on them.

You mentioned in your opening statement that without mandatory insurance requirements we may not accomplish what we intend to accomplish. How would this bill work on that point? If you wanted to be insured, you would have to assume the financial obligation of mitigation—or your community would. And if you don't take out insurance, you would probably still end up having the Federal Government come in and protect you ultimately. It seems to me that that is a flaw in this approach. You raised that point in your initial comments.

How would it work if someone lived in a flood plain or hurricane-prone area and just chose not to avail himself or herself of disaster insurance? If this bill were in place, what would happen to that person?

Ms. BULLOCK. This bill does not incorporate flood insurance. It includes a study on how we would incorporate the flood insurance program into this program. But one of the things you said that I think is significant is that the primary insurance program only covers earthquakes. It does not cover hurricane winds. So I am somewhat at a loss.

Mr. GEREN. Then just use the earthquake as an example. If someone lived in an earthquake-prone area and chose not to purchase insurance, chose not to participate in any insurance program, under this bill what would be the emergency measures available to help that person if he lost his house?

Ms. BULLOCK. I think it is somewhat unclear. That is part of what we have been struggling with when looking at the bill. But we do know that you as an individual could still get disaster assistance because the penalties in the primary program are limited to public assistance to local governments and communities. So you would still be eligible for emergency grants under FEMA's programs, plus a loan for your home under SBA.

Mr. GEREN. Where is the incentive to purchase insurance, then? If the Federal Government is going to come in and cover all of your losses anyway, what have we accomplished in encouraging people to participate in this expanded insurance program?

Ms. BULLOCK. I think the intent is that it would become a part of a homeowner's policy. So you would purchase it as part of your homeowner's policy. Our problem with that is that it would require that we go to 50 States and mandate to the States that they put this coverage on their homeowner's policy.

Mr. GEREN. Would that require separate legislation in order to accomplish that?

Ms. BULLOCK. The Federal Government has not been involved with regulation of the insurance industries to the point of that type. I am not sure how that would be accomplished, but our reading of the bill—if we are to make these additional perils on a homeowner's policy, which is how we would spread the risk—we would have to mandate that the regulators at the State level who regulate the insurance industry have this as part of the homeowner policy in that State.

That is something that the Federal Government has not to this point done.

Mr. GEREN. If you didn't do that, it would seem to me that we would still be in a position to have to come in and cover all those people who don't have the insurance. I worry that if we only have the similar rates of participation in insurance that we have now that we really wouldn't have avoided the problem we are trying to avoid, and that is having to do a huge supplemental appropriation at the next disaster.

Does this bill help us get more people insured, in your opinion?

Ms. BULLOCK. At this point, I don't think it does because it doesn't mandate the purchase of insurance, which means that we won't get a spread of risk, which means we won't have lower rates, and we may not have lower deductibles, which is part of the reason people don't purchase earthquake insurance in California now.

Mr. GEREN. In California with the last earthquake, how did we handle the uninsured homeowner with the earthquake relief we passed? What options were available to that person to have their losses covered?

Ms. BULLOCK. We do ask people when they apply for disaster assistance if they have insurance.

Mr. GEREN. And if they say no?

Ms. BULLOCK. Depending on their economic level, they are eligible for individual family grants, temporary housing, and then dependent upon their ability to repay, they are eligible for an SBA loan to rebuild their house.

Mr. GEREN. If they do have insurance?

Ms. BULLOCK. That is factored in and in some cases our disaster assistance can supplement that.

Mr. GEREN. In this last earthquake, would you have been better off to have had insurance, or would it have mattered in terms of the type of compensation you got for your loss, ultimately?

Ms. BULLOCK. I would probably rather provide that particular answer for the record because I am not an expert in our disaster program. But one of the things we did know, that this earthquake

occurred in an urban area, some parts of which were low income. Low income people normally do not purchase insurance. So a substantial amount of the area that was hit was in an area where insurance probably would not have been purchased, especially not at the cost that earthquake insurance is currently costing in California.

Mr. GEREN. I guess the concern I have is that whatever we end up doing in this area we need to have incentives in the program that encourage people to take responsibility for the threats that are out there. If this bill doesn't have incentives in it, I would certainly like us to try to develop some so that we can encourage more people to actually assume the financial responsibility for the threats that are certainly foreseeable.

Thank you, Mr. Chairman.

Mr. APPLGATE. Thank you, Mr. Geren.

Mr. Hamburg.

Mr. HAMBURG. Thank you, Mr. Chairman.

I really appreciate your testimony and I appreciate the work of Mr. Boehlert and Mr. Mineta to bring this issue before the committee and the Congress. It is really obvious that we are in a period of time when these kind of natural disasters are going to continue to happen.

I have a good friend who has sold me insurance for the last 25 years. He has come up to my house and checked it out for its earthquake-proofness and told me that at least the State Farm Insurance Company is anticipating continuation of this trend we are in. His advice to me was to get all my debts paid off and to be ready for what is coming. I certainly thank Mr. Myers for that.

I used to be a county supervisor. One of our responsibilities, of course, was land use planning. I realize this bill doesn't deal with flooding, but I would like to just ask a general question in terms of FEMA's incentives to local governments to prohibit development in hazardous areas.

What is the penalty that FEMA enacts when local governments ignore flood zone requirements in terms of allowing construction in flood zones?

Ms. BULLOCK. If they are participating in the flood insurance program, then we will assume they have passed an ordinance that requires certain criteria for what it can and cannot put in the floodway or the special flood hazard area. If we find out that they are not enforcing that ordinance, they are put on probation from the program. Potentially, if they don't take such actions as necessary to get off probation, they are suspended.

If they are suspended from the program, the availability of flood insurance is no longer there, and there are some penalties—should a disaster strike—under our disaster assistance program.

Mr. HAMBURG. I remember that we would always get into these controversies on the board about what was the flood zone—between the floodway and the flood zone. There were always these gray areas where developers would try to encroach into the flood zone.

We have talked a little bit about the extent to which this bill deals with mandating purchase of insurance by individuals. Of course, it doesn't do that. I think you pointed out that that is one of the weaknesses.

Do you agree with the California model, however, in which insurance companies are required by the State to offer earthquake coverage? Do you think that other States should adopt similar requirements of insurance companies?

Ms. BULLOCK. I think most companies across the United States will sell and do sell earthquake insurance. There is not an availability problem. It is that many people don't buy it. As an example, when the Browning prediction of about 3 years ago said that there was going to be a major earthquake on the New Madrid Fault, insurance companies in the central United States went crazy selling earthquake insurance. And it was sold in some cases for as low as \$26 for a year.

What we found was that immediately after the Browning prediction didn't come through, substantial numbers of people cancelled those policies or never renewed them.

So earthquake insurance is available throughout the United States, in the Virgin Islands, Hawaii, and Puerto Rico. It is simply not purchased because people don't believe that an earthquake will ever happen where they live.

Mr. HAMBURG. Does the secondary mortgage market purchase mortgages that are on properties which do not carry hazard insurance? Do they look at that kind of issue when they decide whether to purchase loans?

Ms. BULLOCK. I am not an expert in this area, so the only thing I can tell you is that there has certainly been a heightened interest on the part of Freddie Mac, Fannie Mae, and some of the other institutions to look more carefully at the kinds of properties they are buying, especially after the Midwest floods.

The requirement for looking at whether the property you are buying has flood insurance has always been there. It has been one of the problems in the program where we have not had good lender compliance. It goes back to Chairman Mineta's one in five ratio.

Mr. HAMBURG. It certainly seems that that is a point where a lot of pressure could be applied on potential homeowners to purchase the kinds of insurance they need.

Lastly, I want to say that I appreciate your concerns about limiting the exposure of the Federal Government in these kinds of situations. I really think this is something we need very badly to move forward on, and move forward in such a way that the insurance industry can continue to serve its role, but that the Federal Government does not face these fiscal disasters as we have over the past few years. I appreciate your efforts to move forward on this as quickly as possible.

Thank you, Mr. Chairman.

Mr. VALENTINE. Thank you very much, Mr. Hamburg.

I will say that this discussion and our exchange has been extremely interesting and very informative. I think we will have just another go-around. I think the chairman and Mr. Boehlert may have a couple of additional questions.

Mr. Geren had pointed out something that was of interest that you can throw out the mitigation programs and the insurance programs to these people, but they can say, "I don't want to participate in it." I am not sure there are any real incentives or any way

to force them to do that. So they just throw themselves to the Federal Government. If anything happens, the Federal Government is going to come in and take care of them. They feel they can save the cost of compliance.

So obviously there must be something where the people themselves will participate. Those who are in earthquake-prone zones, hurricane zones, flooding, or whatever it is—perhaps they need a bigger stick of some kind. I am not sure what it is, but FEMA has said that this bill doesn't adequately address the problems. Yet you don't have your own answer and have not worked on that as yet.

What about the possibility of going through financial institutions where there would be restrictions on mortgages? What kind of a viable option would that be?

Ms. BULLOCK. I think that is certainly the option that we see in the flood program. I think it is a very viable option to address the single family homeowner and to address multi-family homes. I think there are other options to address the public infrastructure, and that is to tie the disbursement of Federal construction funds to taking some actions.

We do have an Executive Order for seismic safety that requires Federal buildings to incorporate seismic design. I think perhaps it is time to look at expanding that Executive Order to cover State and local buildings, that contingent upon construction funds that you do look at the hazards.

But I do think the mortgage market does provide a very good option—as seen in the flood program—if we have appropriate enforcement through the financial and lending community. I think we now have their attention because of the floods and earthquakes.

I do believe that is a viable option and that is one thing we are looking at for the individual homeowner and small businessman. But we do need to look at another set of options and incentives to address where our disaster costs are going, and that is public facilities and life lines.

Mr. APPELEGATE. We would probably have an easier time trying to address that through something federally supported, but I wonder if we could tie it in to State-supported. Really everything is tied in under FDIC, isn't it?

Ms. BULLOCK. A lot of it is.

The Administration team, as we speak, is looking very closely at that and looking at options we can present because we know it must be done.

Mr. APPELEGATE. Mr. Boehlert, do you have something further?

Mr. BOEHLERT. No, I think we have served the purpose for this hearing today. We have your attention and the Administration's team is actively pursuing something.

Can you give some hint on the timetable for when we might see something definitive?

Ms. BULLOCK. I was certainly hoping you wouldn't ask that question.

I think a lot of us feel that if we don't have something done by June we haven't done our job.

Mr. BOEHLERT. A lot of us up here would share that point of view. [Laughter.]

Ms. BULLOCK. We are working on a pre-June time frame.

Mr. BOEHLERT. I don't think it is necessary for any more verbal sparring. You know where we are and we know where we would like you to be. You have it on a fast track and that is very important. Thank you.

Mr. APPLGATE. Mr. Mineta.

The CHAIR. Thank you, Mr. Chairman.

Let me just very quickly say that no one on their own likes to buy insurance. My dad was in the insurance business from 1920 and I was actively in the business after I came out of the Korean War and until I sold the insurance agency in 1990. It is the kind of product you have to sell. It is not something that people necessarily buy.

But in this instance, I think we are trying to say to all the participating insurance companies, "You have to include as part of your coverage earthquake, volcano, tsunami as part of that coverage," it seems to me that goes a long way in terms of spreading the risk and therefore the cost will be able to go down.

What would be the case if we were to just say that all homeowner policies would be required to have this kind of coverage. FEMA doesn't have to get into ratemaking. FEMA doesn't have to have a mitigation fund. As another way of looking at it, we would require that all policies would have to have these kind of coverages.

Ms. BULLOCK. That would be a Federal mandate to the State regulators of insurance. I think that certainly it is the Congress' prerogative to look at that, but it is a large issue that the Federal Government has never mandated to State insurance regulators. I think it is something that must be carefully considered.

The CHAIR. Would you think that that is a less desirable way than through, let's say, the mortgage financing mechanism to require that everybody have flood insurance? Right now, evidently, we're saying that you must have flood insurance, and yet only 20 percent of the people in the flood plain have flood insurance. I am not sure that that is very successful when we know that 25 percent of the people are carrying earthquake insurance, although 25 percent sounds a little better than 20 percent.

But in any event, it is required under the mortgage policies, and yet we have only 20 percent there. On the free market basis, we have 25 percent covered for earthquake at a very high premium.

It seems to me that if we say the policies would be required—or let's say if we do it the other way, through mortgage insurance, or anybody with a mortgage would be required to have earthquake, tsunami, and volcanic coverage as well.

Ms. BULLOCK. I think they are both very good options.

The reason the Federal Government got into the flood insurance program business was because there was no availability of flood insurance in the private market. That is why the Federal Government went into that program.

I think you have to look at the options, what we have seen in that program, and also look at other means. I think we really need to look at the options, and we need to look at the options as tying it to what we really want to do, which is to mitigate first.

The CHAIR. As you have indicated, the Administration has now created this interagency task force on this issue. That task force,

as I understand it, includes FEMA as well as other agencies and departments.

Ms. BULLOCK. That's correct.

The CHAIR. As you have just indicated, we all agree on the basic objectives of improving mitigation, expanding primary insurance coverage, and improving the ability of the insurance company to survive these increasing numbers of disasters and increasing in terms of the cost of these disasters. So we are trying to make sure that the insurance companies are going to be able to survive the big one, and be able to pay out their claims based on their policy obligations.

It seems to me that it is important that we all now focus on the very difficult and complex questions of exactly how we can best carry out the agreed upon objectives and how we go from here.

I would very simply like to ask if we have your commitment, FEMA's commitment, and the task force's commitment that we will work together, that you will work with us to try to find the best ways of meeting these kinds of objectives.

Ms. BULLOCK. You have our commitment.

The CHAIR. I also assume that we have your agreement that the status quo is not the best way to deal with disasters and that we need to legislate a better way to do it.

Ms. BULLOCK. I think we will look forward to working with this committee, in particular, because of your jurisdiction over the Stafford Act and your knowledge of disaster assistance, to work with you on potential changes that need to be made to any of our legislation.

The CHAIR. Thank you very much, Ms. Bullock.

Thank you very much, Mr. Chairman.

Mr. APPLEGATE. Thank you very much, Mr. Chairman.

I think you can see that we are dealing with an extremely complex subject. Every time you come up with an idea that sounds like it might be good, there are always loose ends and you don't really capture everybody within that. I appreciate your commitment and willingness to work together to try to come up with a program. It is going to be awhile before I think we are truly going to be able to do it.

In saying that, too, let me also say that I would like to compliment your agency and James Lee Witt for the outstanding work that you do. I think you have upgraded that agency to an agency that has provided the service for which it was formed. I think you have done a very good job. That is not to say that you are perfect, but you are good. [Laughter.]

Ms. BULLOCK. I will be very happy to carry those comments back to James Lee Witt.

Mr. APPLEGATE. Thank you. I may be in for a grant. [Laughter.]

Thank you very much for coming in, Ms. Bullock. We appreciate it.

Ms. BULLOCK. Thank you.

Mr. APPLEGATE. Now we will move to the first panel, Jack Weber of the Natural Disaster Coalition; Stan McKinney of the National Emergency Management Association; Courtney Wood of Independent Insurance Agents of America; and Dr. Frances Winslow with the city of San Jose, California.

TESTIMONY OF JACK WEBER, EXECUTIVE DIRECTOR, NATURAL DISASTER COALITION; STAN M. McKINNEY, DIRECTOR, SOUTH CAROLINA DIVISION OF EMERGENCY PREPAREDNESS, NATIONAL EMERGENCY MANAGEMENT ASSOCIATION; COURTNEY WOOD, PRESIDENT, INDEPENDENT INSURANCE AGENTS OF AMERICA; AND FRANCES E. WINSLOW, PH.D., DIRECTOR, OFFICE OF EMERGENCY SERVICES, CITY OF SAN JOSE, CA

Mr. WEBER. Thank you very much, Mr. Chairman.

My name is Jack Weber and I am the director of the Natural Disaster Coalition. It is a real pleasure to be here today.

I would like to thank Congressman Mineta and Congressman Boehlert for their leadership in the introduction of H.R. 2873 to the more than 100 Members of Congress who are already cosponsors and to all the groups working so hard on its behalf.

We have obviously talked an awful lot about the events in Los Angeles and the recent earthquake. That is natural and appropriate. But let's not forget the victims of the Midwest floods or Hurricane Andrew, Inikee, or Hugo. Especially, let's not forget the taxpayers. After every one of those events—after the rubble was cleared and the claims paid, after emergency supplementals were signed by the President and the cameras moved on—we did forget.

We didn't improve Federal policy on natural disasters. We didn't explore the issue of how to reduce losses or reduce the taxpayers' burden. We did nothing expect wait for the next one.

So the next one came the way it always does. And here we are again.

So this time, Mr. Chairman, while the memories are still fresh, let's remember all the disasters and all the victims. Let's see what we can and should do to make next time a little less tragic.

Speaking about the burdens to Federal taxpayers from the ever rising costs of Federal disasters, we have prepared a chart that I think would be instructive for the committee to take a look at, and also to our audience, which shows the rising cost of Federal supplemental disaster assistance over the last 10 years. As you can see, it is almost a straight linear projection up. That is for a number of reasons that we have discussed today that we will be going into in greater detail—I hope—but it is a question that we really need to ask. What should we be doing to start that graph trending downward?

Instead of waiting for disasters, we should be anticipating them. I must say that in this regard, we agree and would like to echo the comments made by the witness from FEMA. We should be concerned with how to reduce losses. Mitigation is a critical element in any plan to revamp disaster policy.

But whereas FEMA seems to think that mitigation is the end-all and be-all, we think it is only part of the answer. We also need to consider ways for improving the rate at which people living in risk-prone areas insure themselves against loss so the burden does not fall exclusively on taxpayers.

We need to be concerned with improving the capacity of State and local governments to prepare and respond to disasters, with how they can better enforce building codes, and even how they can mitigate and retrofit. But we must also find a means to pay for it

in a budget environment where even the most laudable programs are unfunded. And lest we not forget, we must also begin preparing for worst case disasters that could strain our current public and private institutions to the breaking point.

So what are we doing? Not enough. Few States have adopted model building codes that could reduce property losses and save lives. Almost nobody buys earthquake or flood insurance. But then again, why should they? The Government pays regardless to the tune of \$300 per United States taxpayer over the last 6 years alone.

What can we do about it? We can see to it that in the future States and localities do a better job of establishing and enforcing model building codes. Today only 13 States have these model codes in place. The Mineta legislation would create concrete incentives to all 50 States to adopt these model building codes. We know that when those codes are adopted, we will reduce losses significantly. That is what the natural disaster protection does.

We also need to see that there is a cost-sensible plan for reducing losses and the way to pay for it. There is no piece of legislation pending in this Congress that shows how we can pay for the types of mitigation activities that are necessary. This is the only legislation that creates a mitigation fund, funded not by taxpayers but by private industry that would provide, for example, in the case of California, three times the money the State pays today for retrofitting hazardous structures, for better enforcement of their building codes, and those types of activities.

We can see to it that everyone at risk pays their fair share and buys appropriate insurance. I know that our friends at FEMA also agree with this concept. We are on the same page on this issue. The intent on this legislation is to get every homeowner living in an at-risk area to have the requisite insurance where they live. If they live in an earthquake area, we want to have five out of five homeowners purchasing that coverage. If they live in a flood area, they ought to be buying flood insurance. That is the goal and the intent of this legislation. We would hope that in the months ahead, as we sit down with FEMA and members of this committee, we get this legislation to accomplish just that.

Under H.R. 2873 States and communities will get concrete incentives to adopt the uniform building codes and fire safety standards I have already discussed to replace the mish-mash that exists today. They get funding to enforce the codes and implement plans for reducing losses, up to \$150 million a year under the legislation as presently written.

To give you an idea how much that money is, at the time of Hurricane Andrew the entire State budget for Florida in dealing with natural disasters and hurricanes was \$2 million. The loss in Florida from Hurricane Andrew was \$16.5 billion of insured losses and closer to \$25 billion or \$30 billion in overall losses. Yet the State only had \$2 million to direct toward disaster loss reduction. This bill would send to Florida between \$25 million and \$30 million to do just that.

The bill also helps to correct the egregious problem of homeowners who fail to buy supplementary earthquake insurance. This bill will make it a part of a standard homeowner's insurance policy.

There was a discussion here earlier about whether or not this legislation mandates insurance or whether it should.

The concept we believe works most appropriately is the standard homeowner's insurance policy. Mr. Chairman, 97 percent of all homeowners in this country buy private homeowner's insurance. We have a Federal flood insurance program that is supposedly mandated by the Federal Government and yet only one out of five homeowners living in flood plain areas actually buy that coverage. So a Federal mandate does not equate to getting everybody insured.

The earthquake situation is equally poor at this time. Only about one out of five homeowners in California purchase supplementary earthquake insurance. This legislation talks about standardizing a homeowner's policy—the same policy we all buy—to make sure that the perils where you live are included in that policy automatically. There are already 17 perils that are included in a standard homeowner's policy. This legislation would add earthquake and quite possibly—depending upon the study that FEMA does—flood insurance down the line.

This bill also deals with the problem, however remote, of a megacatastrophe, an event that levels San Francisco or blows away Miami or New York. I have another graph that I would like to show the committee that shows the probable cost of natural disasters around the country.

We have been talking about the last 5 years and how bad it has been, but I must point out a couple of things. In the case of Hurricane Andrew, Andrew really hit an area quite south of Miami and Fort Lauderdale. In fact, the strongest sustained winds from that storm were only about 80 miles an hour within the city limits of Miami. Yet it still caused \$16.5 billion worth of loss. Had that storm moved about 40 miles north, we would have seen closer to \$50 billion from that event.

We talk about the Los Angeles earthquake and the tragedy it has wrought, and yet the earthquake that destroyed San Francisco in 1906 was 200 times more powerful than the Los Angeles earthquake. We have been lucky up until this time. The events that we have seen over the last few years have really only been a taste of what we may be seeing.

According to the United States Geological Service, there is a 50/50 chance of 7.5 earthquake occurring in this country over the next 30 years. According to the National Weather Service, we will see in the next 10 years a cycle of increased hurricane activity in this country which dwarfs what we have seen over the last generation, that is part of a cycle we have seen over history, that we have been in a period of low activity for hurricanes and we are entering a period of high activity. We are not ready for it.

This legislation would allow a plan to deal with these types of megacatastrophes. It is this issue of what happens in the big one that is creating many of the problems we have in insurance markets today. There is an insurance crisis already brewing in Hawaii, South Carolina, Florida, some parts of New York, and New Jersey. In fact, last year over 1 million homeowners in Florida were threatened with losing their homeowner's insurance coverage. And in the

State of Hawaii, about 45 percent of the residents of that State have had difficulty obtaining homeowner's insurance at all.

H.R. 2873 solves this problem with a plan already in place in other disaster-prone parts of the world, including Japan. Under the program, insurance companies would pool their resources via premiums they would pay into a national catastrophic disaster trust fund. State-sponsored insurance entities could also participate, such as one that could be created in the Virgin Islands to take care of Delegate de Lugo's problems.

If a megacatastrophe occurs—say, an event 50 percent worse than our worst disaster in history, Hurricane Andrew—insurers could draw from the money they had paid into that fund. Every year, insurers participating in the program would pay premiums set actuarially by the Government. We estimate that the fund would grow by more than \$1 billion a year. If a megacatastrophe struck in the near term, the fund could borrow to meet its obligations, but any loans—as Chairman Mineta has already pointed out—would need to be repaid by insurance companies with interest.

We believe this program recognizes reality. The reality is that an \$80 billion disaster will not only strain the limits of individual homeowners, but very likely strain the limits of insurers as well. If those insurers are unable to pay the claims from that type of disaster, the Federal Government will inevitably be drawn into bailing out those consumers who lack the insurance now and also providing disaster assistance relief.

The question is whether such a plan would increase the risks to the Government. But looked at objectively, we believe the risk is already there. In a worst case event, homeowners cannot collect on their insurance, and the Government will intervene. But without the Natural Disaster Protection Act, there won't be any money waiting in a fund and there won't be a plan in place to make sure that the Government's outlays are repaid.

That is why the Natural Disaster Protection Act is a partnership, one that recognizes that a stronger link must be made between relief and responsibility in which everyone does their share: State and local governments, homeowners, insurance companies, Congress, the White House, and FEMA. Solve one part of the equation without the others and you have solved nothing.

Mr. Chairman, H.R. 2873 is not a special interest bill supported at the margins. It has the support of the National Consumers Leagues, which I understand wanted to testify but could not because of the subcommittee's time constraints. The concepts are supported by governors like Chiles, Cuomo, and Wilson, by insurance commissioners from 20 States, by insurance companies and agents, by organized labor, by lender groups and homeowner associations, by State fire marshalls, and by the National Fire Protection Association. We must be doing something right.

That is not to say that this bill is perfect. We acknowledge that work needs to be done to correct drafting errors and clarify intent. We share some of the concerns FEMA has raised and we pledge to work with them to correct those problems. But after hearing from those who would use these minor glitches as an excuse to stall progress, let me remind you of the lessons of Andrew and Hugo,

of the Midwest floods and the Los Angeles earthquake. The clock is ticking.

Some people may be satisfied with doing a better job of processing disaster checks. We want real change. That is why today we challenge FEMA and the Administration to work with us and the committee to talk about real solutions.

How do they propose to solve the problem of funding mitigation if it is not the Mineta approach? How do they propose to increase insurance coverage for earthquakes and solve the availability problems plaguing Hawaii, Florida, New York, and South Carolina? They say there is no crisis. If that is the case, then we don't think they get it.

The clock is ticking. We are—as I know members of this subcommittee are—anxious to work with FEMA and other equally important parts of this Administration in finding ways to improve on Federal disaster policies. But we cannot afford to wait three or four congresses to address the problems we have discussed, and neither can the taxpayer.

Meaningful changes in disaster policy, as proposed by Chairman Mineta and Congressman Boehlert, are realistic, reasonable, and should be enacted this year. That is a time table that seems consistent with the goals of Speaker Foley and Minority Leader Michel's bipartisan task force on disasters, which is already at work.

In conclusion, Mr. Chairman, the time to change disaster policy in this country is at hand. And the vehicle to do it, the Natural Disaster Protection Act, is ready to get us there.

Thank you.

Mr. MCKINNEY. Thank you, Mr. Chairman and members of the subcommittee. Congressman Boehlert, I commend you and Congressman Mineta for your ongoing efforts to improve hazard management in this country.

I appear before you today as a State director of emergency management from South Carolina and a representative of the National Emergency Management Association, an organization of my counterparts from across the country.

A convincing argument can indeed be made that our Nation is more vulnerable than ever before to natural disasters. The consequences of disasters have become all too familiar to Americans. Although we continue to experience the painful realities of these tragedies, we remain in a reactive mode, only picking up the pieces after a disaster has occurred. Professional emergency managers of this country believe that we all must learn a broader lesson from these disasters and that we as a Nation must take a preventative rather than a reactive approach to this problem.

The bedrock of that approach is mitigation, which is at the very foundation of effective, proactive hazard management. The Natural Disaster Protection Act would provide the opportunity for such an approach, which will save lives and dramatically reduce losses while preventing a common related crisis that has been discussed here this morning that leaves homeowners without available, affordable insurance after a disaster strikes.

Our present approach to disaster response and recovery aid is badly flawed. We continue to respond to disasters in the most expensive and least efficient manner. With our national debt at \$4.3 trillion, here is how the business of natural disasters causes it to grow with \$6.2 billion in Federal aid for the victims of the Midwest floods last summer, \$8 billion for Hurricane Andrew, \$1.5 billion for Hurricane Inikee, and yes \$3 billion for my own State's Hurricane Hugo, and now come the earthquakes in southern California and the need for a record \$8.6 billion aid package from our Congress.

Consider this. While the quake aid package sets a new record, many seismologists say that the big one still hasn't hit California. Hurricane forecasters also worry about the so-called big one to come, saying that the devastation of Hugo and Andrew will definitely pale when such a storm hits a major population center.

Sadly, we continue spending billions to rebuild homes, roads, and other infrastructure along the same fault lines, along the same eroding beaches, and in the same flood plains. Another disaster; another drain on our Treasury.

These statistics confirm the trend of escalating costs associated with disaster response and recovery. A multibillion dollar disaster is no longer an aberration, but rather a part of the norm.

This trend will continue unless there is a dramatic change in the way we respond to the consequences of disaster. We must begin to anticipate the consequences of disaster and such consequences are highly predictable.

While disaster losses are a continuing burden on our Treasury, they are also affecting our States and communities and their people as never before. Our fastest growing communities are often among the most vulnerable. In addition, some segments of our population are more vulnerable to disasters due to the increasing numbers of special needs groups—the elderly, the poor, the homeless, and handicapped. Finally, local governments are stressed as never before while responding to catastrophic events across the country with strapped budgets and small response and recovery forces.

Together, our challenge must be to develop a national mitigation strategy that is community-based and incentive-driven that will systematically reduce our Nation's vulnerability to hurricanes, earthquakes, fires, floods, and other natural and technological hazards we may face.

The Natural Disaster Protection Act represents a comprehensive approach to developing and implementing a meaningful and workable national mitigation strategy. It is a strategy that links the availability of primary hazard insurance with improved hazard mitigation and emergency management. It also provides for an industry-financed reinsurance program. NEMA supports the concepts of this legislation and believes that it has great promise for improving our ability to manage future hazards.

Improved hazard mitigation and emergency response capabilities are key. The legislation provides a structured but flexible framework on which States can develop and carry out their own programs to effectively reduce the vulnerability of their communities to natural hazards.

While facilitating the development and implementation of a national mitigation strategy, the provisions of this legislation should serve as a catalyst to bring together key State agencies and institutions that have roles in mitigation, preparedness, and response. We feel that this process will bring focus, cohesion, direction, and a very coordinated approach to risk-reduction activities. This approach, when coupled with several other key provisions of the bill—sufficient funding, program standards, and incentives and disincentives regarding participation—will provide for meaningful and measurable progress in risk reduction.

This legislation also provides a real opportunity to improve State and local emergency management infrastructure in a balanced, State-administered program that addresses all hazards. These system improvements will provide for the enhancement for an effective and timely emergency response capability.

With a newly energized and reorganized FEMA in a leadership role—although much to our chagrin and counter to our need, the Congress continues to shrink FEMA in many instances—many States are retooling their emergency system. This bill can certainly accelerate this ongoing effort. The product should be a State-administered mitigation system that firstly anticipates the consequences of disasters; secondly sets forth a 5-year program for reducing the effects of hazards; thirdly establishes and sustains a response capability for worst case scenarios; and fourthly establishes and sustains a pre-disaster program that addresses recovery problems and issues.

The trend of escalating disaster cost is unmistakable. One primary cause is equally apparent: development continues at an unabated pace in disaster-prone areas of our Nation. A bold, congressionally-led, innovative approach is needed to address a problem so complex and multi-faceted. The Natural Disaster Act embodies an equitable, balanced, comprehensive approach to reducing the vulnerability of our communities to a broad range of natural disasters.

In the final analysis, progress in the next several years in reducing the toll of disasters will be a function of how successful we are at integrating the principles and practice of hazard mitigation into the main stream of community decisionmaking. The National Emergency Management Association supports, in principle, the Natural Disaster Protection Act of 1993 and certainly applauds the leadership of this subcommittee in its proactive effort to make our Nation safer from natural disasters.

Thank you, Mr. Chairman. I would be pleased to answer any questions you may have at the appropriate time.

Mr. WOOD. Thank you, Mr. Chairman and members of the committee.

I do want to thank you for the opportunity to appear before you today. I also want to express my thanks to Mr. Mineta and Mr. Boehlert for introducing this very vital piece of legislation.

I am Courtney Wood. I am the president of the Independent Insurance Agents of America, an organization of some 300,000 individual members and their employees who go about the practice of risk management every day of their lives.

One of those disciplines happens to be the purchase of insurance to transfer risks that individuals cannot bear themselves. We are very, very proud of the role we play in society.

Very frankly, the concepts of avoidance, transfer, reduction, and assumption are concepts that only the large and truly viable can entertain in many cases. We believe, in fact, that this piece of legislation, H.R. 2873, is a piece of legislation that we can unequivocally support as a major measure toward starting this Nation down the path of true risk management with respect to natural disasters in this country.

Very frankly, through a reinsurance mechanism, it will provide a solid industry platform for loss averaging. This will be accomplished through a good framework for mitigation guidance and standards, through building codes, financing provisions, through a support mechanism for State and local governments, together with interstate compacts, to build together a protection that will enable insurance companies to come back to the markets they have found necessary to abandon at this time. This will be accomplished through a primary earthquake program that makes the homeowner's policy available to almost everyone in this country provide earthquake insurance.

Yes, it is a great start. No, it is not a panacea. Very frankly, mitigation should be stronger and more compelling. We have heard much about that this morning and we think there are ways to make it more compelling for the local boards to enact mitigation standards and be more fully rewarded for their efforts. Very frankly, we believe markets must be further encouraged to return to those areas where they have found it necessary to withdraw because of fear with regard to their solvency.

The next major question you would ask: Would IIAA support passage of this particular piece of legislation just like it is today without further amendment? Yes, we would because the enemy of good can be found in the search for perfection. Yes, it falls short of being an elixir. One of IIAA's major goals is restoration of availability and affordability for all in this country.

Yes, this bill does address the macro issue of seeing to it that the insurance industry in this country remains strong and stable and able to support the other economic activities of this country so that our economy does not fall victim to literally a domino-type failure in the event of a major catastrophe. Yet, it doesn't draw back many companies to markets they have found necessary to withdraw from.

We believe this bill can have provisions added to it that will make it more compelling and more desirable for insurance companies to return to those markets. We believe the mitigation element that is already in the bill is not only laudable, but extremely good. Yet we believe it can be strengthened with either carrots, or maybe sticks. We believe mitigation, as part of this program, must be very, very strong.

On a couple of technical issues, we would have to point out that we think there is clarity needed in the bill with regard to reinsurance recovery by individual insurers to determine whether or not their recoveries will be based on recoveries net of reinsurance or gross. We believe it is also important for there to be clarity put into

the bill with regard to whether or not individual companies in utilizing the reinsurance mechanism may rely on an accumulation of losses over a calendar year as opposed to a single event being their touch tone.

Well, as I said before, IIAA supports this bill. We think it should be passed, but we would like to reserve the right to come back to the committee, as we continue to study some of the issues that we think will provide more enhancement to the bill from the standpoint of mitigation, and very frankly, more support and more drawing power to the individual insurance companies to return to the market so that these coverages will be available to all.

I thank you, ladies and gentlemen.

Ms. WINSLOW. Thank you for the opportunity to be with you today.

My name is Dr. Frances Winslow and I represent the city of San Jose, Congressman Mineta's hometown.

I have submitted my written testimony to you, but I would like to highlight a few issues that the Northridge earthquake brings into sharp focus. I am also a member of the State Seismic Safety Commission, and in that capacity I had an opportunity to visit the area of the quake several times.

I have provided the committee with copies of these maps, but I think these point out forcefully that the Northridge earthquake was not the big one. If you look here, the high dollar losses are in areas that are coded red, green, and bright blue. You will see they are relatively widely scattered and honestly not that many.

This map shows the buildings that were tagged red and tagged yellow. Considering the size of the city of Los Angeles, there are not a great many of them. In the event of the big one, the San Andreas 8.3 earthquake, we would have had a great deal more damage.

One reason we were able to have such efficient and effective response was that the damage was relatively localized in Los Angeles, Santa Monica, and parts of Ventura County so that other surrounding jurisdictions were able to mount effective mutual aid programs very quickly.

The students at Cal State Northridge made their own Consumer's Guide to the Earthquake. You know that you can go to Hollywood and get a map to the home of the stars. You can get a T-shirt that will show you all the right places to go so that you don't miss any of the big events. So I used this handy guide to get around and see some of the things that happened.

This headline that I got on Sunday did not make me happy. We hear that there is Federal aid for the earthquake victims, and then we find that half of the \$1.1 billion base closure money was diverted to the quake. So now the victimization in California has been equally spread between the southerners who had losses in an earthquake and the northerners who have lost \$507 million of our base closure planning money.

There are several things about the bill that we like very much. We are very impressed with the concept of pre-funded disaster assistance, which we know is a critical need and many other speakers have addressed that at length. We are also very pleased with the

reinsurance. We believe it is critically important to protect the national economy from the severe dislocation that could occur if the casualty insurers were forced to liquidate their assets.

As you know, most local governments rely heavily on the bond market to assist them in balancing their local financial arrangements. If that market were impacted by disasters, it could make it very difficult for local governments to function.

We also appreciate the opportunity to have an advisory committee to FEMA as part of this program because we believe it is important for all those that participate in the loss cycle of disaster to provide some assistance in the decisions on how this money should be spent. We believe the mitigation fund is the heart of the bill and it is what offers the greatest hope for the downturn, where the Federal Government may at some point not have to continue providing increasing amounts of disaster aid.

However, we do have a few concerns about some specific features of the bill. First of all, we would like to ask that you focus on targeted mitigation activities with the funds. We want to be sure that the mitigation money is not used to replace general fund money, that it doesn't become a mechanism for local governments to shift funding from building enforcement to some other use because now the Federal Government has picked up that cost. We also want to be sure that it is not used for the administration of programs that should be an ongoing, local obligation.

Further, we believe that there is a great need for building code development and enforcement. Again, that has been addressed at length by other speakers.

I have provided you with some photographs of some of the places I visited during the earthquake that show some of the needs for non-structural hazard mitigation that exist in California. We have a concern that California will be viewed as a model. We have taken tremendous strides in the area of building seismic safety, but we do not believe we should be penalized from the mitigation fund money because of that because we still have a long way to go in making our environment truly safe for our citizens. Having taken that important first step by trying to make our buildings safer, we need to now go back and retrofit the non-structural members.

If you will notice in the photos of schools, the ceiling systems failed in a way that resulted in potential eye injury damage to those trying to leave the building, and also provided a lot of debris in the walkways that could have caused substantial injuries.

I also provided some pictures of public building retrofits that are needed: a hospital that has substantial cracking, and most important the fire station—that was placed to serve Northridge and in fact that was called upon to rescue the people from the Northridge Meadows—suffered significant damage and cannot be used at the present time. There were four fire fighters asleep in the dormitory when the earthquake occurred at 4:30 in the morning. One of them had his nose broken from a ceiling tile that fell in his face, and one of them narrowly escaped severe injury when the brick facing along the top of the building fell and took a large piece out of the headboard of the bed in which he was asleep.

These kinds of hazards need to be reviewed, mitigated, and the expenditure of that money will have a significant, positive impact

on the ability of the community to respond quickly to the needs of disaster victims.

Second, we believe that premiums should reward both retrofitting and code compliance. We believe that there will be ways for us to work with the insurance industry and with your committee to help to provide incentives for local governments and for citizens so that when they retrofit they know that there will be something immediately coming to them as a benefit.

Third, I would like to discuss for a minute the advisory committee. That is an issue that I have not heard anyone else bring up this morning.

The bill proposes a 20-person advisory committee to FEMA. But the wording about that committee at this point seems to be a bit too general to us. We would like the advisory committee to have a strong advisory role to FEMA. We believe that the perspective of local government is often quite different from the perspective of the Federal Government, and by having this opportunity for the committee to meet together we can benefit from each other's points of view to come up with more effective uses of the funding at the Federal level.

We also believe that this committee should be based on expertise. And in order to improve the number of people that are involved, we would like to suggest that the committee be enlarged to 25 members and that it include emergency physicians, members of large city staffs, and members of voluntary agencies, all of whom are very important players in all the recent disasters we have suffered in the United States.

Finally, in exchange for reinsurance, we would like to suggest that insurance companies must lead the way in retrofitting for seismic safety in their own buildings. Beginning with the facilities that they actually own and use, we would like to see the insurance companies go forward as an aggressive partner in the effort to retrofit structures.

The Northridge quake shows clearly that it is essential to create a pre-funded disaster assistance program with a private sector base. I urge you to sharpen the focus of this bill and through it enhance public safety and create a climate in the United States of true preparedness.

Thank you for the opportunity to testify. I will be happy to answer any questions you might have.

Mr. BORSKI [assuming Chair]. Thank you, Dr. Winslow.

Let me ask a couple of questions from the entire panel.

Our committee has tried to encourage mitigation and we have a mixed record of success. One area you mentioned in your testimony was the enforcement of local building codes. How would this bill encourage local governments to take on this critical responsibility?

Mr. WEBER. Mr. Borski, first of all, I think one of the biggest problems with the issue of mitigation—which I think everybody agrees we need to do more of—is that it is very hard to find the resources to do the job. In an era where many very deserving programs compete for money both at the local, State, and Federal levels, it is very hard to find money for mitigation when we have educational problems, crime problems, and everything else.

We think the most critical part of this legislation is the creation of a privately financed mitigation fund that will make money available to the States and communities to be able to enforce these codes and do a better job. The example that springs immediately to mind I think comes from the Commissioner of Insurance in Florida who said that the local roofing inspectors in Dade County—there were six of them and they had one ladder.

I think these are illustrations of the kinds of problems that we have. You can say all you want about wanting to have mitigation, but unless you figure out a way to pay for it, the job is not going to get done.

Mr. BORSKI. Would anybody else care to comment?

Mr. MCKINNEY. To complement those remarks, it is extremely difficult for local governments to establish mitigation as a priority. With that funding, with those plans, and with the encouragement of Congress and the ability of the emergency management community we can make progress in that realm.

Mr. BORSKI. Mr. McKinney, it is my understanding that South Carolina has failed three times to pass a model building code.

Mr. MCKINNEY. We certainly have. It is extremely difficult politically to deal with in State Legislatures. I don't know that South Carolina is the only one that has had that difficulty.

I think with these incentives and the awareness and initiatives that can be undertaken by such a piece of legislation as this—hopefully that will improve that ability within the States.

Mr. BORSKI. Under the flood insurance program, only 10 percent of the homes in flood areas have flood insurance although it is required by law. In Northridge, over 40 percent of the homes did have earthquake insurance, although it is not required. How would this bill encourage more coverage?

Mr. WEBER. First of all, the problem with the flood insurance program is that there really is not a requirement for individual homeowners to purchase the insurance. Because it works outside the standard homeowner's insurance policy that everyone buys, it really isn't very practical.

We think the way to address the problem and make sure that everybody is getting this coverage is to incorporate it into a standard homeowner's policy. The way the legislation works is that for insurers to become eligible to participate in the reinsurance programs that we talked about, one of the conditions of their participation is that they must standardize their homeowner's policies nationwide to include the peril of earthquakes.

That is the way you get to the participation levels that you want. Similarly there is a provision in the bill that calls for the FEMA director to make a recommendation to Congress within a year of whether to do the same sort of thing with Federal flood insurance.

Mr. WOOD. I might also add onto that by saying that the only way we are going to get mass utilization of the coverage that is so necessary—which in and of themselves are mitigation—is to build the coverage into the standard contract that all buy—some of whom, very frankly, don't think they are subject to it. That, of course, is built into the bill with regard to earthquakes.

It is also possible, as we move forward with this particular legislation, that as mitigation standards become strong, as building

codes are further enforced, that the difference in premiums—that those who purchase insurance in areas where mitigation standards are rigidly enforced will be significantly lower and therefore an enhancement for them to be buyers in those particular areas.

Mr. WEBER. I might add one last point.

The witness from FEMA seemed to think that it would be a problem to standardize insurance to include the earthquake coverage, talking about having to go State-by-State. I might point out that the Federal flood insurance program is already mandated nationally. We don't believe there is a problem at all in a program in which insurers would be adding this to their standard homeowner's policy.

Mr. WOOD. I might add to that that very frankly in most jurisdictions today there is a very commonly available endorsement to add to the homeowner's policy itself. So it is not a big move to move into the earthquake area.

Mr. BORSKI. The gentleman from Illinois?

Mr. EWING. Thank you very much.

I would like to follow up on a couple of questions you were just dealing with.

When we talk about standardizing the building codes, not all areas of the country are subject to flood. Not all areas are subject to earthquakes. Would there be differentiation in those codes? The amount we would be spending to try to do everything across the Nation to meet an earthquake might be counterproductive.

Mr. WOOD. Absolutely. I will let Mr. Weber speak to that more specifically, but one of the provisions of the bill is that the codes that would be enforced are codes that are going to be determined at the local level to be applicable to the hazards that are inherent to that particular demographic and geographic area, and therefore then to be approved as standards that would be sufficient in that area.

Am I not right?

Mr. WEBER. Yes.

Mr. Ewing, the model building code does not require every home to be built the same way. A model code says that if you are building in an area that is subject to particular perils, for instance, that in that area you will build with the following standards. So in other words, you could have a State—say, like Texas—that has a hurricane exposure on its Gulf Coast. That doesn't mean that somebody in El Paso is going to be building a structure similar to somebody in Galveston. The codes envision that kind of diversity.

Mr. EWING. So they wouldn't be required to carry flood insurance? It would be like we currently have, that only those who live in the flood plain or are prone to flooding are required to carry flood insurance. Is that correct?

Mr. WEBER. The concept is that right now everyone in this country has a standard policy that includes 17 perils. If you live in Minnesota, you are covered against snow collapsing your roof. If you live in Ft. Myers, Florida, you have the same coverage. The difference is that you don't pay the same amount if you are in Florida for that coverage as you do in Minnesota.

The same concept is true here. Everyone would have the earthquake peril as part of their policy, but not everybody would pay the

same price. The average around the country would be about \$16. But if you lived in a State that had no earthquake risk, you would not pay an earthquake premium. People at high risk would be paying higher premiums.

Mr. EWING. Mr. Weber, the Natural Disaster Protection Act calls for consumers and insurers to provide the funds needed to respond to future natural disasters. Can you tell me how and under what circumstances these funds will be utilized? How would that work? Can you explain that a little more?

Mr. WEBER. I am not sure I understand your question. Are you referring to the mitigation fund?

Mr. EWING. Well, you said that funds needed to respond to future natural disasters will be included in the Natural Disaster Protection Act. How can we access those? When will those be utilized?

Mr. WEBER. There are two different funds. One fund is intended to help promote building code enforcement, mitigation, trying to prevent losses before they occur. That money is provided to the States and localities on an annualized basis from the premiums that are collected under the program. A percentage of those premiums are turned around and sent to the States who have complied with the building codes and the mitigation plans.

The second fund is this megacatastrophe fund, which is the one where insurance companies would be paying premiums set by the Government—that are actuarially set—into this overall program. We estimate that the premiums insurers would be paying would exceed \$1 billion a year.

That money goes into that pot year after year after year. If you were to have a disaster that exceeded certain thresholds, as set forth in the legislation, insurers would be able to draw from those funds they had already deposited in that account to help them remain liquid in the event of a big catastrophe. If the funds were not adequate to cover the loss, then that fund could go out and borrow the money. But contractually, insurers would be obligated to repay those loans before they could get out of the program.

Mr. EWING. We have a number of trust funds at the Federal level that we call trust funds but the money really isn't there. Would this money be left, set-aside, and invested, or would it be used like the Social Security Trust Fund and others?

Mr. WEBER. We share your concerns about that. We want to work with the committee to make sure that the Government keeps its hands off of these very important funds. We would pledge to work with you and Mr. Mineta to make sure that that doesn't happen. And there are ways to do it.

Mr. EWING. That would concern me, certainly.

Do we have an estimate as to how much this might save the taxpayers in disaster appropriations?

Mr. WEBER. It is difficult to say in any disaster precisely what the savings will be. We have taken a look at the recent emergency supplemental that the Congress passed. Approximately 45 percent of the money included in that supplemental went for individual assistance to homeowners who had damage from the earthquake.

If you presume that under this legislation we can get to five out of five homeowners covered by private insurance, then a good portion of that money will be saved. It will depend upon the nature

of the disaster and when it occurs, but we thin the savings will be significant.

Mr. EWING. One final question.

We always say that we are going to have Federal crop insurance or disaster insurance or whatever. Then the disaster comes along and those who didn't take it raise the political level and we pass a disaster bill. Do we think this will be any different?

Mr. WEBER. I couldn't agree with you more. That is why we need to make it a part of something that 97 percent of the homeowners in this country already have, and that is a standard homeowner's policy. The flood insurance program fails miserably because it is not part of a standard homeowner's policy. Only one out of five people who live in the flood plain, that are supposedly required and mandated by law to buy it, actually do. We think the reason for that is that people buy their homeowner's policy, but then to go after them again and tell them that they must buy an additional policy and not mandate it in a way that is meaningful, you wind up with a system where people say, "To heck with that coverage, I will wait for Uncle Sam to bail me out."

Mr. WOOD. Mr. Weber makes an extremely valid point. The public is conditioned to the reality that they need a homeowner's policy. Unfortunately, much of the public is not conditioned to the reality that that homeowner's policy doesn't include these other perils. So when you go to them, they already have their budget laid out and you say, "I want you to spend more money and buy this coverage and more money to buy this coverage." The reaction is very, very negative.

So the discipline that would be so important to this entire program is to expand both of these policies to that medium where we have a vehicle that 97 percent of the people already buy that would be providing the coverage.

Ms. WINSLOW. Mr. Ewing, I would like to provide a little more information on the earlier question you asked about the standardized building code.

In the United States today, there are four seismic zones. All the building codes with which I am familiar address those four zones in a different way so that those in zone four—like the coastal portions of California—have the most strict standards, going down to a zone one, which has the least strict. But it is important for people to realize that there is a potential for earthquakes almost everywhere in the United States. It is just that the potential is higher in some places than others because the faults are more active and moving more quickly.

If we look at the effects of past known earthquakes, when the New Madrid Fault went off the last time in the 1800s, it rang church bells in Boston and caused the Mississippi River to flow backwards. So just because you don't live near the fault doesn't mean that you couldn't be affected by the shaking or by other aspects of earthquake damage.

Mr. EWING. We all personalize things. I live in central Illinois and probably our most devastating disaster is a tornado.

I don't know if you can build a structure to withstand a tornado above ground, if it hits it. I question trying to make everybody comply with tornado-safe houses when they can just wipe out a solid

block building if it is a direct hit. That concerns me that we don't get into a bureaucratic nightmare here, trying to make everybody meet standards that will make housing and building so expensive that we may protect some things but cause more problems over here.

Ms. WINSLOW. Mr. Ewing, it would only be people in seismic zone four that would be required to build buildings that could withstand intense earthquake shaking. And all of those areas are proven seismically active areas where earthquakes occur frequently. The USGS currently has a computer system that is available that demonstrates every earthquake that occurs. The one that I am familiar with is in California, but I believe it operates in other places. Every morning you can dial up on the computer and it gives you a map that shows every earthquake that occurred by a little ring. The size of the ring is the magnitude of the earthquake.

There has not been a day that has passed since this became available to me that I have seen less than 30 earthquakes and I have often seen as many as 100. So for people who live in an environment like that, we recognize that our buildings are subject to stresses and that the potential for earthquake is quite high.

In California, we have numerous active faults that are known, but the last several earthquakes we had occurred on faults that we were not very familiar with or we didn't know about at all. So we have realized that we can't just say, "The San Andreas is over here and I live 3 miles from it so I am not very safe," or "I live 50 miles from it and I am very safe."

I think the people in Landers and Big Bear 10 years ago would have told you that they didn't have much of an earthquake risk. I will tell you that I would rather be in San Jose when the earthquake strikes than in Landers or Big Bear.

I think that is what we are looking for with our seismic zonation, to have the people in the zones of activity respond appropriately in terms of building codes so that when the inevitable strikes, they have some modicum of protection. Right now, in States like New York, which have a relatively high potential for earthquakes, there are no standards at all for masonry buildings, which is the most common kind of building because of the weather. We know from California's experience that unreinforced masonry buildings just about disintegrate in hard shaking.

Those are the kinds of things we ought to be looking at today and not going back after a disaster and bemoaning.

Mr. EWING. Maybe we could solve some of my confusion on the building codes by saying—if the ground falls out from under it, it is not going to stand. A block away, you can build a building that will withstand the shaking. I don't know how strict these codes are. I would think that you can't very well design a code that is going to build a building that will withstand the ground falling out from under it in a quake where it will withstand the shaking a block down the street.

Ms. WINSLOW. I think it is obviously true. If the dirt goes away, the building generally goes with it. The fact of most earthquakes—

Mr. EWING. I am not trying to be confrontational. I am trying to be reasonable and use a little common sense. I am not talking

about all of it, but I am saying that if a big chunk of the foundation falls away, is the building going to stand?

Ms. WINSLOW. Sometimes it still will stand for life safety, which is enough for people to get out of it. But the fact is that most earthquakes don't cause a great deal of surface rupture, which is what you're actually discussing. Most of the ruptures occur a mile or so down below the crust of the earth. It is the residual shaking that affects the things on the surface.

We have a problem in California we are familiar with called liquefaction where the water comes up through sandy soil and does take the dirt away from the building. Engineers have designed structures for life safety only. They are not reoccupiable or reusable, but people generally are able to get out of them alive.

I think the relatively few failures we had in the Northridge event are proof that our seismic safety engineering has progressed extremely well. This was a thrust fault earthquake. Most earthquakes are caused by the plates of the earth sliding past each other, they get hung up, and it is like opening a stuck door. You get a big jolt when it finally moves. But this was a thrust fault where one plate of the earth went over top of the other. So things were actually thrown up in the air and came down.

That is not the kind of design that most building codes address. Yet we had very few buildings that actually collapsed. Even those that collapsed—like the one, unfortunately, that took 14 lives at the Northridge Meadows—were occupied by hundreds of people. Only 14 of them, unfortunately, lost their lives. The ones on the second and third floor, who were in the building when it collapsed, crawled out a window.

I think it shows that we do have a lot of technological skill available to us today. Obviously, nothing is earthquake-proof, just like nothing is tornado-proof. But you can certainly design buildings to be appropriate in their ability to withstand the reasonable or expected levels of stresses that they would be expected to maintain. For the few times when the earth opens up and swallows up a building, that is such an extremely rare occurrence that I don't think anyone does try to design for that.

Mr. WEBER. But I think the Congressman makes a very important point, and that is that there needs to be balance in our approach to these things. You must realize that to mitigate involves a cost, and that cost must be reasonable compared to the risks you face.

I think strong codes do work. We have examples, for instance, that show that in the case of hurricanes—there was a study done in the early 1980s that compared two hurricanes of equal intensity. One hit the south coast of Texas and the other North Carolina. Both were the same winds, some housing stock, and yet in North Carolina where there was a very strong code in place, only about 2 percent of the homes suffered damage. In Galveston, Texas, about 70 percent of the homes suffered the damage and they had no code.

So it does work. But you are right. You can't go too far the other way and ask people that built according to the rules when they bought their home, that were in compliance with the building codes

at the time that they purchased it—you are now asking them to go and suddenly incur a lot of additional expenses.

The witness from FEMA talked about the fact that a reasonable amount of mitigation might be \$10 to \$12 per square foot for retrofitting. If you have a \$200,000 house, that is about \$15,000 to retrofit that home.

Mr. BORSKI. The time of the gentleman has expired.

The gentleman from Texas, Mr. Geren?

Mr. GEREN. Thank you, Mr. Chairman.

I would like to join with Mr. Wood and say that we can't let the perfect be the enemy of the good. I think this bill certainly is a step in the right direction. And this is the kind of debate we need—it is a complicated and tough issue. It is going to take all of us general practitioners in Congress awhile to catch up in our understanding of the bill that you all have. I thank you for taking the time to work with us on this. I commend all of you who have worked so hard on this over the last couple of years to bring this bill to the state it is in today.

I certainly commend Mr. Mineta and Mr. Boehlert for their fine work on it.

I would like to follow up very briefly on something Dr. Winslow said. You made a point that I think hardly anybody in the Congress has focused on yet, that we did rob Peter to pay Paul in that earthquake relief fund. We are going to have a difficult time meeting some of our obligations to our communities if we don't somehow restore those funds. There will be a lot of disappointed communities and I hope my colleagues on this committee all focus on that issue and we can keep the process going forward.

Let me ask a question about what you all expect the impact on the premiums to be if the earthquake coverage were forced into the homeowner's policy. Let me say that I think it is a good policy because we need to make people pay for the cost of the risks they expose themselves to. I worry, though, that the tradition of buying regular homeowner's and not buying earthquake insurance is not just because they are not used to doing it. It is because it is quite expensive.

There was one famous actor that lost his home in the earthquake that said he had given up earthquake insurance a couple of months before because it was so expensive he couldn't afford it.

If this requirement were put into practice—again, I think it is something that needs to be done—would it raise the cost of the homeowner's policy in dangerous areas to the point that you would drop considerably below this 97 percent coverage that we have now, and that it would be priced out of the reach of a whole lot of folks who have chosen to live there?

Do you have an estimate on what kind of percentage increase we would see?

Mr. WEBER. Yes, Congressman.

In fact, the reason that homeowner's insurance is generally affordable and a good deal around this country is because it spreads the risk of the peril nationwide. The problem you have with earthquake insurance today is that only the worst risks buy it, which is why it is so expensive. If we can spread that risk, we can bring the cost down significantly.

Our studies show, for instance, that in California if this bill were enacted the cost of earthquake insurance would come down, on average, by about 65 percent. That is a significant drop in the current cost. The average policy in the State today is about \$200 per year. We think it would be down to around \$60 under this program. But that is California. That is where the worst risk is.

There are States where that premium would be next to zero. There are other States where it would be \$3 to \$5 per year. So this is not an increase in the homeowner's premium.

Mr. GEREN. You are talking about a \$200 earthquake insurance policy. What would the homeowner's be for that same home?

Mr. WEBER. Probably about \$350.

Mr. GEREN. So you're talking about increasing the cost of homeowner's insurance from \$350 to \$410?

Mr. WEBER. In the case of those who do not presently buy earthquake insurance, yes. For those who buy earthquake insurance today, it would be a 65 percent reduction in that premium.

Mr. GEREN. And that right now is one out of five?

Mr. WEBER. One out of five buy it, although it depends upon the area. In the Northridge area, where the quake occurred, it was closer to 35 to 40 percent. But that doesn't get you there, either.

Mr. WOOD. The problem today, of course, is the fact that literally the spread of risk is not there. I was just thinking about the cost of earthquake insurance as an endorsement added to a homeowner's in Oklahoma, where I live. I pay \$80 a year for \$225,000 worth of protection. As a matter of fact, if we pass this particular bill, if homeowner's becomes something that 97 percent of the people have, my cost is going to go down because we are going to spread all that risk out all over this country.

So everyone who is currently buying homeowner's insurance will pay less for it. As a matter of fact, when you ask the question, Is it affordable? you have to ask the question, Is \$300 for a year's protection too much to pay if you are out in California? Everything is relative and we need to look at that.

I think it is affordable and I think it will be affordable.

Ms. WINSLOW. I think another issue about affordability is that people have a concern about the large deductible that exists right now. Most policies have 10 percent of the value of the coverage as a deductible. A lot of people that I speak with in my community are reluctant to undertake that 10 percent deductible, so they feel they will just not worry about any of it.

I think that is a mentality we can change through the mitigation fund. In San Jose, it costs about \$15,000 to retrofit a home, strap the chimney, bolt it to the foundation, install a sheer wall, and strap the water heater. Those are the most critical aspects of a home in making it survive. If we had people invest that \$10,000 or \$15,000 up front, they would make their home much less prone to be damaged at all. By bringing the cost of the premium down, they would feel that it was a good bet relative to the size of the risk they are taking.

But I have to agree with Mr. Wood. I think everything is relative. A restaurant meal for two people out is \$50. So it is \$300 for earthquake insurance for a \$350,000 home. That is six dinners. I think a lot of it depends on how you are viewing costs.

Mr. GEREN. But you are describing the situation as it is now, and yet only one out of five people do it.

Ms. WINSLOW. It is mostly because they have the wrong attitude about what the Government is going to do for them. When I go and speak to the public, they say, "Well, if I don't have insurance, the Government will come in and help me."

What they don't seem to realize is how limited that Government assistance is. You can get about \$20,000 to replace your personal possessions that you lost, and you can get about \$20,000 to fix your property. Then that is about all there is.

In San Jose, as Mr. Mineta knows better than I, the average home is somewhere in the neighborhood of \$250,000. And these are very modest. This is not anything fancy. Prices in the \$750,000 to \$1 million are not unknown in the nicer communities. So the risk exposure people are taking on themselves is pretty substantial when you see that the Federal Government is going to give them probably not much more than \$40,000 in a worst case scenario.

I think that is part of the program that needs to be behind this mitigation plan, some strong public education. A lot of people think that if they lose their house, the Federal Government will rebuild it for them. It is a terrible shock to them when they realize that \$20,000 isn't going to rebuild anything, not in Santa Clara County.

Mr. WEBER. We have talked an awful lot about making sure that everybody has insurance. I think we also need to be aware that when everybody has insurance, that means that we need to make sure that the insurance companies have the resources to be able to pay the claims in the event of a disaster. That is another important part of this legislation, which is that it is great that everybody has earthquake coverage. The idea is that through this megadisaster fund we are setting aside the reserves necessary to cover the claims in the event of the big one. That is an equally important part of this legislation.

Mr. GEREN. I assume—if we are basing our premiums on actuarially sound principles—that it would account for the big one and it would just be a question of however many years it takes for you all to be prepared and to have the reserves in place to handle the big one.

In my review of this legislation, I have hoped that this Federal fund that is supposed to stand behind the insurance companies' obligations will only be needed on a temporary basis. If you are using actuarially sound numbers—and I don't know how many years it would take you to achieve whatever that goal is that those actuarial numbers are driving you toward—that the need for the Federal Government to stand behind it would go away.

Mr. WEBER. You are absolutely right. The whole point of this fund is to provide the mechanism to collect those dollars. It also deals with the possibility that if the event occurs tomorrow—which is a random event and it could happen—that you need to have a mechanism for paying that money back. If the insurers have been wiped out and there is no mechanism to allow them to recover those funds, then you have a very real problem.

This legislation allows those companies to put the money in, allows it to build over time to be able to draw on it, and to borrow if they have to in order to make good, but then also pay it back.

Mr. GEREN. This buys you time for your actuarial predictions to work themselves out.

Mr. WEBER. Exactly.

Let's say that there is a one in 100 chance of the big one occurring. According to actuarial principles, you would set aside 1/100th every year to meet with that contingency. The problem is that the event could happen 3 years from now. That is why you need this very important provision in order to deal with that contingency.

Mr. GEREN. Thank you very much.

Thank you, Mr. Chairman.

Mr. BORSKI. The Chair thanks the gentleman.

The gentleman from California, Mr. Horn?

Mr. HORN. Thank you, Mr. Chairman.

I commend the witnesses on the excellence of their testimony. You represent a good cross section of the various views of the problem. Unfortunately, I had to be out of the room for some of this. Maybe it has been dealt with.

How do you deal with those areas that are not included in the natural disaster definition? As I look at it, just thinking of some disasters—obviously, earthquakes, volcanoes, flood, fire, typhoon, hurricane—have I missed any that are natural major disaster areas that we need to be thinking about when they access FEMA and other funds?

What are we missing?

Mr. WEBER. I don't think it is a question of missing anything. I think the intent here is to cover things that aren't already being covered in the system. Tornadoes, for instance, are already covered in a standard homeowner's policy through your wind coverage. So the issue there is not getting more people to buy insurance. The issue is making sure that the States have the mitigation dollars to help get the early warning systems and that kind of thing.

I think we have covered most of the major bases of those things that are presently not being addressed. Ironically, it is those areas which are costing so much to the Federal Government today.

Mr. HORN. I take it that hurricanes are not covered at this point. Is that correct?

Mr. WEBER. No, they very much are.

A hurricane is a wind storm peril, which is already a part of a standard homeowner's insurance policy. So in other words, everyone in Florida that has a homeowner's insurance policy is covered for hurricanes. The problem is that insurers have, in many cases, attempted to reduce their exposures in that State, so you can't buy a homeowner's insurance policy at all.

So the way we address the hurricane issue is through this megacatastrophe fund. If the insurers know that a \$50 billion event is not going to wipe them out, they will continue to write that standard policy that everyone in the State is buying. That is why 17 of the 20 members of the Florida delegation are cosponsors of this legislation, the insurance commissioner supports it, and so does the governor.

Mr. WOOD. Mr. Horn, I might also add that one of the provisions that the bill set in place the framework for is to provide standards

that individual States and individual interstate compacts can go together to build a separate and smaller fund to bridge up underneath the disaster relief reinsurance fund that is part of this bill so that we can draw those insurance companies back to those marketplaces.

As it has been said, the hurricane is nothing more than a large windstorm and it is already covered by the policy. The problem is that we have to draw the insurance companies back to those marketplaces to make that coverage more freely available again.

Mr. HORN. When we talk about standards, are we seeing a system here of certification and accreditation of those standards to meet provisions, or should we? In other words, how can we control the problem of the variation some States may have in the lax standards with regard to policies issued that corporations incorporated in that State? How do you suggest the Federal Government deal with that?

Mr. WEBER. The way it is envisioned in this legislation is that the Federal Government controls the availability and price of the reinsurance. If a company is not exercising prudent underwriting practices—if it does not have a large surplus backing up the premiums that it writes—then the Government would set a rate for that particular company to buy reinsurance which would be much higher than it would be for another entity. In fact, in some cases that additional price may be such that it is cost-prohibitive so that that company could not afford it.

But that is what we want. We want to make sure that this program is not used as a substitute for sound underwriting principles. But controlling the availability and price of reinsurance is the way to do that. You don't need to necessarily create an entire mechanism for regulating the insurance companies at the Federal level.

Mr. HORN. The only thing we would have no control over and worry about is the investment policies of those companies. Could they back up their claims? Presumably then, by agreements between companies as we have now, that problem would be solved.

Mr. WEBER. That's right. I think you need to distinguish between property and casualty insurers and some other types of insurers, for example, life insurance and such. The nature of the types of investments those companies make are inherently different largely because with property and casualty you have to pay so many claims per year.

Most of those companies invest the majority of their surpluses in municipal bonds and those types of very conservative investments. So on the property and casualty side, I think where the money is being invested is less of an issue, but it is certainly something that merits your attention.

Mr. HORN. As I understand it, the reinsurance fund kicks in when you hit 15 percent of the industry surplus or 20 percent of the individual company's surplus.

Mr. WEBER. Right.

Mr. HORN. How were those figures derived? Should they be higher if you are protecting a Federal interest?

Mr. WEBER. First of all, let me put those percentages in context.

The largest natural disaster in the United States history was Hurricane Andrew, \$16.5 billion of insured loss. That is about four

to five times greater than any other insured loss. For example, the Midwest floods were about \$3.5 billion. The quake in Los Angeles is probably only going to be an insured loss of \$2.5 billion. So we are talking about major events.

Under this legislation, 15 percent of the consolidated industry surplus translates into approximately \$27 billion with numbers that were released just last week. So in other words, we are saying that insurers would be picking up everything from zero to the \$27 billion. It would be only after that that the fund would be kicking in. So we would have to have an event that quite literally is one that we have never seen before.

It would not have triggered from Hurricane Andrew. It would not have triggered from the Los Angeles earthquake. It would not have triggered from the Midwest floods. This is only intended to deal with a truly catastrophic event.

Mr. WOOD. And one of the things that you need to keep in mind is that beyond that level—beyond that \$27 billion today—a loss that companies would be asked to respond to at that point in time very well would send a number of those companies into financial insolvency, and that would send off a chain reaction in the insolvency funds through their assessment mechanisms, which would be inadequate. So we really need to have that protection at that point in time.

Mr. HORN. Obviously, if we had a 8.0 earthquake in metropolitan Los Angeles or metropolitan San Francisco in the 9 a.m. to 5 p.m. figure, we would probably be easily meeting that ceiling. There would be thousands of lives lost and not the many dozen that we had, as tragic as those are. We were lucky. We were lucky when the Long Beach earthquake occurred in 1933. Children weren't in school. So we got away with it this time, but we can't control those things.

It would seem to me that we are in for major disasters. When you look at California this year between flood, mud, fire, earthquake—you name it. We can just see what is coming in a lot of other parts.

Mr. WOOD. That's why this legislation and its passage is so important. The longer we wait, the less time we have to manage our risk and we will be finding ourselves doing nothing but reacting to it if we don't get started.

Mr. HORN. I agree with you.

The Los Angeles River happens to flow through my congressional district. The Army Corps of Engineers said that it will not meet the test of the 150-year flood. You face the problem of whether you include everybody within a half-mile range of that river, a 1 mile range on either side. Is it strictly adjusted based on topography? Can we really predict how disastrous a particular situation will be in terms of the homes it affects in order to assure that the people there have the coverage? Or is that going to be flexible so that as long as they take a homeowner's policy and as long as these risks are mentioned everybody will be included at some standard fee? Or would those in the risk area essentially be paying more?

Mr. WEBER. That is exactly the intent. Let me give you a couple of examples of the problem that you have in trying to pinpoint where disasters occur.

The Federal Government has spent close to \$900 million in mapping flood zones. It has been a very successful program. I know you are going to be hearing from somebody from that program later on today. It has been very, very successful in what it has done.

However, about 35 percent of all the flood losses that we suffer in this country occur outside of these special flood hazard areas. In those areas, you are not even eligible to buy Federal flood insurance.

We talked about the Northridge quake. Nobody knew that there was a fault zone underlying Northridge.

So what you need to do is really expand the net as much as you can so that you don't get into the situation where you have missed the mark and people are not covered.

Mr. WOOD. I have a major risk with 135 locations. As a matter of fact, the only two flood losses they have ever had were in areas where we couldn't buy them a flood policy.

Mr. HORN. In homeowner's policies, should we have everybody being included covering all these risks and just have a standard fee for it and not try to relate it in particular zones when there are a number of zones that we don't have the slightest idea what is going on?

Mr. WEBER. We think that would be a very big mistake, principally because it is not fair to ask a resident of Iowa to be paying more for his or her insurance in order to subsidize a person who is living in an at-risk area. The key is to make sure that everyone is paying their fair share commensurate with their risk. That is what this legislation is intended to do.

Mr. HORN. Any suggestions by the other panelists? Do you all agree on that analysis?

Mr. WOOD. Very frankly, I think everyone has to pay part of the cost of these hazards that we face in this country. It has been said already this morning that over the last 6 years, just in terms of Federal disaster relief, over \$300 for every man, woman, and child in this country has been spent. So I believe we all have a small price to pay.

I do believe that those in the most hazard-prone areas are going to have to bear the material burden for the particular hazard they are most subject to, but I believe that all should pay part of the cost of this. We are all paying for it as it is today anyway.

Mr. MCKINNEY. Mr. Horn, we in the emergency management community feel the same. I think that everyone will benefit from an improved emergency management system and infrastructure that this bill will also afford a better opportunity. So while they are paying more in high risk areas, everyone is bearing a fair burden and share and everyone is benefitting from these improvements on our side of the house.

Mr. HORN. Thank you very much.

Mr. BORSKI. Thank you very much.

Ms. Shepherd.

Ms. SHEPHERD. Thank you very much.

This has been an excellent presentation. In Utah, we are not known, like California, for being an earthquake zone. We don't have them very often, but we have a very strong earthquake zone

there. We are a zone three. I keep hearing talk of upgrading us to a zone four.

My house is built on a fault, literally. Yet it has been extremely difficult to get people excited about earthquake protection and building codes and that sort of thing because it is not a very active fault. So far, nobody has any experience with it so that it is hard to get people excited about it.

We are in the process of tearing down all the schools in the county and rebuilding them, which is an enormous cost. So we have at least decided that we will protect children because they were all very much at risk.

But the questions I am going to hear in my area have to do with premiums. I was interested in your talk about premiums. I wondered how apartment owners, commercial buildings, and that sort of thing fit in as far as premium costs. How do they participate in this?

Mr. WEBER. First of all, we do draw a line between residential and commercial structures largely because a commercial policy is really hand-tailored to that particular customer. With homeowner's, people tend to buy what is standard. We think the way to address the vast majority of the problem—which is on the residential side—is to standardize the coverage that is part of the overall legislation we're discussing.

The issue on the commercial side really more relates to the issue of whether or not an insurer faced with massive claims would be able to cover them. That is what the megacatastrophe fund portion of this would be.

To give you an idea—in the State of Utah, because everyone in the State would have this as part of their coverage—we believe the cost in the State would come down, I believe, by close to 70 percent. I don't have precise figures for you, but I can say that the fact that Utah doesn't have the frequency of earthquakes that California does means that folks in your State would pay less for a comparable amount of insurance than somebody in California would. That is the whole point of an actuarial process.

What is the likelihood of an event over a given period of time? How much do you have to charge to cover it?

Ms. SHEPHERD. What happens to commercial buildings now in the case of disaster? They just get what they had covered, or does the Federal Government help them at all?

Mr. WEBER. If you are a small business person, you are eligible for a low interest SBA loan that can cover the costs of rebuilding, also benefits that would cover your cash flow if in fact that turned out to be a problem. So you are eligible for that kind of disaster relief.

You are absolutely right to ask the question about whether or not a condition of that assistance ought to be whether commercial structures are also covered for earthquakes. I think that is a point we all should look at.

But again, the more you insure, the more you have to deal with the possibility that if the worst event occurs, you must be able to pay the claim. That is where the megacatastrophe fund comes in.

Mr. WOOD. I have to agree. At some point in time we are going to have to address the commercial exposure also, but we need to start somewhere.

Ms. SHEPHERD. I have a question concerning Federal mandates on local governments. I hear about it every single time I go home. I wonder if you would comment on this bill with regard to that issue of Federal mandates.

Mr. WEBER. We couldn't agree more that it is not fair to simply say to States, "Mitigate, retrofit, and enforce," without providing them the resources to do it. That is why this legislation—as I mentioned earlier, it is the only bill pending in Congress that provides a funding mechanism that has any realistic chance of coming through.

We are taking a portion of the insurance premiums that are paid into this fund and giving them to the States to do this important mitigation work. We think that is the only way these States are ever going to get that money.

Mr. MCKINNEY. Ms. Shepherd, we certainly agree. South Carolina is in the same position as your State. We find the increasing mandates a tremendous burden upon local governments, but we presently do not have the level of funding required to implement meaningful mitigation programs and to do the sort of planning we have talked about here this morning. Nor do we have the technical expertise to implement.

This bill seems to provide the right foundation and the right sort of funding sources for State and local governments to implement meaningful programs.

Mr. WEBER. Just out of curiosity, what is your budget in South Carolina for emergency activities?

Mr. MCKINNEY. South Carolina makes less than a 10 cent per capita commitment to emergency management of State dollars. We are heavily dependent upon FEMA funding.

Mr. WEBER. The reason I mention that is that this legislation would create for South Carolina \$3 million or \$4 million in additional funds to do just this sort of thing we're talking about.

Ms. SHEPHERD. Thank you very much.

Mr. BORSKI. The gentleman from Maryland, Mr. Gilchrest?

Mr. GILCHREST. Thank you, Mr. Chairman.

Mr. Weber, you seem to say that it wouldn't be a good idea to standardize everybody's insurance premiums to include some type of earthquake amount of money to pay for these disasters. You talked about 35 percent of the people needing help with flood problems being outside the flood plain zone. But you felt that a nationwide standard for everybody to contribute to that would not be a good idea.

I think I heard Mr. Wood say that because of what was paid out in previous disasters it would be a good idea.

Mr. WEBER. Mr. Gilchrest, I think there is a misunderstanding. I did not say that. I believe exactly the same thing that Mr. Wood does, that we do need to incorporate a program across the country. I think I was responding to the question of whether or not everyone should pay the same price for that coverage. What I said earlier was that only those people at risk, and they need to be paying in accordance with the risk, wherever they live.

Mr. GILCHREST. Someone in Los Angeles, maybe, should pay \$3 into it a month and someone in Iowa should pay 10 cents into it a month?

Mr. WEBER. That is kind of a way to put it, yes.

Mr. WOOD. I don't think it would be quite that drastic, but that is the major idea.

Mr. GILCHREST. Thank you, Mr. Chairman.

Mr. BORSKI. The chair of the full committee, Mr. Mineta?

The CHAIR. Thank you very much, Mr. Chairman.

Let me thank this wonderful panel for being before us. I would just like to very quickly ask Dr. Winslow about her service on the California Seismic Safety Commission.

What kind of use does the State put mitigation funds to?

Ms. WINSLOW. The Seismic Safety Commission issues a report called "California at Risk". It is the hazard mitigation plan for the State and is revisited every 4 years with milestones that we assess annually.

Also the money that we get from the Federal Government is managed mostly at the local and county level. The State also has its own program. But the policy is set generally through the California at Risk program.

In addition, we came out with two publications in the past year—one called "The Homeowner's Guide" and the other called "The Commercial Building Owner's Guide for Earthquake Retrofitting".

There is a new law that was passed and became effective on January 1st of this year that whenever property changes hands in California now, the owner has to disclose to the purchaser the earthquake safety condition of the building. There is a specific checklist they go down. There is no requirement at the present time that they must retrofit, but they must let the buyer know what the conditions of the building are. The guide we provide them explains how to undertake mitigation measures so that if people want to work with a contractor they have a pretty good concept of what they are asking the contractor to do.

We feel that this will be an encouragement. I know in the Alameda area a realtor told me that a \$10,000 investment in retrofitting a residence raises the sale price of the property \$30,000 because the purchaser now doesn't have to worry about getting in there and right away having a reconstruction project going.

So these are some trends that are very worthwhile for other States to look at. They have been rather successful in California so far.

The CHAIR. Do those mitigation measures go beyond what you were suggesting earlier about the water heaters being strapped or the chimneys being strapped?

Ms. WINSLOW. For the homeowner's guide, those are the principal ones. Then there are some additional finer points of construction that people can check into with a contractor.

For the commercial building owner's guide we also get into issues like bolting large pieces of equipment, shelving equipment, and that sort of thing. So it is non-structural as well as structural mitigation. I know that you are personally familiar with the unreinforced masonry law that the commission sponsored after the

Loma Prieta earthquake. Someone mentioned the law that Los Angeles had passed. That was part of a State-wide program. I am sure that you know that San Jose also passed a local ordinance for unreinforced masonry buildings.

We had 156 properties, and as a result of the commission-sponsored legislation, the Legislature mandated every local government to take a look at their building stock and report back to the commission in 1988 on the number of unreinforced masonry buildings that they had. We then encouraged people to take some positive steps at the local level. The State requires that unreinforced masonry buildings be posted if they are not retrofitted so that those who are using the building at least have fair warning that it is not particularly safe.

In San Jose, the City Council—being a very progressive group—went the next step and set up a program to have current building owners of URM's undertake programs for the public safety. At the present time, 80 percent of those buildings have taken out construction permits and have begun their design phases. We are hoping that within about 6 months most of them will be in a construction phase. We only have about 10 percent of the buildings that are now requesting demolition based on the cost and reusable life of the building.

So I think this kind of program has gone a long way to make California a safer place.

In Santa Cruz the earthquake demonstrated rather clearly that unreinforced masonry buildings are one of the biggest dangers in our State. A woman was killed when she was tying her bicycle up and a brick wall fell on her. Parapets have fallen off and injured people. A student was killed at Cal State University in Los Angeles during an earthquake a couple of years ago when part of the parking structure parapet fell off and killed her.

I think the rest of the country can learn a lot from some of the programs we have tried in California that have been successful. They all require an investment of money up front, but then when the disaster occurs—and for us it is always when and not if—the cost benefit is quite high.

The CHAIR. Let me also thank Mr. Wood for being here. Having been a member for a number of years, I still continue that membership through the agency I sold my business to.

I would like to ask you about—this whole issue of reinsurance is such an arcane subject, but seeing that what we're doing in this bill is to try to make sure that the primary insurance companies are going to stay in place—that they are going to be offering the coverage—do you think that is what will happen with the reinsurance industry and the provisions that we have in this bill, that it will encourage the primary carriers to stay there as well as to get the privately insured back into the marketplace?

Mr. WOOD. We have some evidence that in certain areas of the country, the primary insurance companies—even with the provisions of the reinsurance that is built into this bill—are not enamored with the prospect of coming back into those marketplaces. We believe that we're going to have to turn to the States, utilizing this entire mitigation program as part of the support mechanism to

help build State programs to support the reinsurance that is available through the Federal program to literally create many disaster funds in some of these particularly prone areas in order to do that.

We don't believe that this program, in and of itself, is going to cause the companies to just flood back into this marketplace. They are going to have to be pretty locally based because, again, in some cases what is keeping the company out of one particular State may not keep another company out of another State. I don't think the Federal program can address that as such, but that is one of the problems that we will have yet to solve.

We just feel like this is a major step in the right direction because it will provide a proper framework. It will enable the insurance industry to see us moving forward to manage our risk of a catastrophe, and we will be able to build those frameworks and platforms at the State level.

The CHAIR. I thank all of you for being a part of this panel. I want to especially thank Mr. Weber as the executive director of this coalition for all the help you have been in this issue. I am really looking forward, frankly, to make sure that we come up with a good product.

Again, thank you very much.

Mr. BORSKI. Any further questions?

[No response.]

Mr. BORSKI. Again, let me thank you very, very much for your contribution today.

Let me welcome our next panel of Mary Griffin for the Consumers Union; Rebecca Quinn with the Association of State Flood Plain Managers; and Deane Evans representing the American Institute of Architects, and John Klein, hazard mitigation consultant.

Now that you are all seated, we will need to stand in a brief recess for a call to the House. We will be back in perhaps 15 minutes.

[Recess.]

Mr. BORSKI. Ms. Griffin, you may proceed.

TESTIMONY OF MARY GRIFFIN, INSURANCE COUNSEL, CONSUMERS UNION; REBECCA C. QUINN, LEGISLATIVE OFFICER, MARYLAND WATER RESOURCES ADMINISTRATION, ASSOCIATION OF STATE FLOOD PLAIN MANAGERS, INC.; AND DEANE M. EVANS, JR., DIRECTOR, AIA/ACSA COUNCIL ON ARCHITECTURAL RESEARCH, REPRESENTING AMERICAN INSTITUTE OF ARCHITECTS, ACCOMPANIED BY JOHN M. KLEIN, HAZARD MITIGATION CONSULTANT, SAN ANSELMO, CA

Ms. GRIFFIN. Thank you, Mr. Chairman.

My name is Mary Griffin with Consumers Union. I submitted some fairly extensive comments, so I will try to be brief today.

We thank you for the opportunity to testify today about this disaster assistance proposal. The recent series of natural disasters that have brought devastation to parts of this country have generated needed debate about how best the Federal Government can reduce the cost of disasters. We appreciate your efforts in moving the debate along.

We understand the need to look for alternatives to reduce the drain on the Federal budget from post-disaster relief, but we urge caution. Much of the cost from aid packages would not be alleviated

by this expanded insurance program. To paraphrase from a report FEMA issued in 1992, Preventing loss and minimizing the risk for proper design and site location is the ultimate and necessary solution. Otherwise, the insurance industry and the Federal Government are just compensating poor decisionmaking.

To create such a solution, the insurance industry, as well as the States and business and residential property owners must play a major role in the prevention program. The program must not only ensure loss prevention measures are put in place, but must also create incentives to guide development away from high risk areas. We are concerned that the proposal contained in H.R. 2873, while providing some positive measures, erects too wide a safety net under the insurance industry without holding the industry accountable for loss prevention and protection and ensuring the goals of disaster assistance are met.

Some of our concerns include the lack of protection for older housing stock in the mitigation program. Older housing stock is not only the most at risk of damage from disasters, but is also concentrated in the urban cores and provides housing for much of our low income population. These communities have the least amount of resources to rebuild after a disaster. There are a number of cost-effective ways to protect these structures from damage and they should be included in any program.

A mitigation fund could be established now, funded by policyholder surcharges on policies currently written by the industry. For those who cannot afford prevention measures, low interest loans or grant programs could be set up.

In addition, the primary insurance program does not include commercial properties, which are predicted to cost four times that of residential properties in damages after an earthquake.

The bill places primary responsibility for the program with the States. While we believe the States should play a key role in hazard mitigation, we are concerned that States will vary dramatically in their ability and intent to carry out loss prevention measures. Since disasters do not follow State borders, we question whether States should be the relevant geographic areas or whether disaster zones should be identified by the Federal Government to ensure similar standards are applied throughout the zones.

We are concerned about combining flood risk with earthquake and with hurricane risk. Not only could such a scheme further subvert the established flood program, but by combining several disasters into one program, the program creates perverse disincentives. The risks involved are all different in magnitude, frequency, and predictability. Combining them would create a cross-subsidization and must be further analyzed. The incentive to locate away from certain risks is lost when they are combined and it is not clear to the policyholder how much they are paying to insure against a particular hazard.

Though we generally think of property damage when thinking about the effects of disasters, other damages such as work place injuries and general liability claims also add to the loss. Insurers should be required to improve work place safety, require better

compliance with safety and health standards, and require fire safety and response training for those buildings and workers they insure.

The reinsurance program provides ultimate protection of the industry without the incentives to accurately price their products and institute loss reduction measures. For example, insurers could be required, as a condition to access the fund, to make sure that every property they insure meets certain standards.

Before any major Federal proposal is enacted, we would urge Congress to direct the appropriate agency to conduct an analysis to determine whether assistance should be in the form of a joint Government/private sector insurance effort or whether the needs of disaster-prone areas can be met through alternative mechanisms such as loans with interest rates tied to the pre-disaster prevention measures taken and assessments on activities that are related to the costs of the disaster. Such an analysis should include the capacity of the current insurance market and alternatives that enable the insurance industry to maintain capacity within the private market, such as special insurer reserves for certain catastrophes, to avoid obligating the Federal Government to possible massive liabilities.

Finally, if it is determined that a joint public/private insurance effort is the most appropriate approach, before any proposal of this kind is enacted, there must be Federal regulation of the insurance industry. We are very troubled by the prospect of a system in which the States are solely responsible for rate and solvency regulation while the Federal Government stands by ready to pick up the tab.

Thank you very much.

Ms. QUINN. Thank you, Mr. Chairman.

I am Rebecca Quinn, legislative officer of the Association of State Flood Plain Managers, and I am also the flood plain manager and the State hazard mitigation officer for the State of Maryland.

The association represents over 1,800 professionals at the State, local, and private levels and we include 12 chapters in various States. We have never counted up our collective years of mitigation experience, but I am sure that if we did so it would represent a lot.

Our members are involved in flood hazard management—that is a daily activity—and mitigation activities. We do so every day in the process of making development decisions. We firmly believe that to do it right, is to do it at the beginning of the development process.

The effectiveness of mitigation under the national flood insurance program, as was discussed earlier, is not embodied in the insurance component of the program, but in the hundreds of thousands of development decisions that are made at the local level to either keep people away from the flood plain, or if they are going to build there, to build it right the first time. We also work after flood disasters to identify opportunities to lessen future damage. These two activities together combine the concept of mitigation.

Most floods don't make the headlines and the evening news. Most do not qualify for Federal disaster assistance. So keep in

mind that anything that improves hazard management and mitigation have far-reaching effects, far beyond the big disasters and far beyond just saving Federal dollars. Mitigation, done correctly, saves private and public dollars at all levels, and of course saves lives.

Despite previous testimony that this bill is the only legislation that includes mitigation, there is another bill pending before the House and Senate that would improve flood mitigation activity.

The essence of mitigation is exactly what we do, and we have been doing it under the flood insurance program for 20 years. This is considerable experience in something that, quite frankly, is new on the Washington scene.

I want to caution you about the term "mitigation". We are certainly thrilled with the attention it is getting, but please note that just because something like a legislative proposal includes the term does not actually mean that dollars will be saved and damage will be reduced in the future. This is one of our primary concerns with H.R. 2873. We are not convinced that the proposed changes will actually result in effective mitigation, especially to existing buildings.

We are also concerned that the current tide of sentiment in the aftermath of the California earthquake, Midwest flooding, and Hurricanes Andrew and Iniki may wash away common sense. There is nothing in this bill that can change what has happened in those disasters. So there is really no reason to rush forward too quickly. There is plenty of time to exercise common sense. As I am sure you can appreciate, a small weakness enacted today could indeed propagate into a big problem.

The association believes that many questions about a multi-hazard and reinsurance program have not even been asked, much less answered. I will touch on just a few of the questions that are contained in our written testimony.

Why has so much mitigation and hazard management experience contained in the flood plain management discipline not been involved in the development of the legislation? I do want to let you know that we stand prepared to offer our experience and come forward with concrete recommendations within the time frame that has previously been identified.

We are very interested in anything that gets more people covered by hazard insurance, but not if a smoothing approach—meaning, a community might be rated at a certain risk whereas we know that people down along the rivers are subject to flooding and people up on the hills are not—has some inherent risk to it as well. We should not ask all policyholders or all taxpayers to subsidize inherently risky buildings. Existing building codes don't make land-use decisions. The code is, "If you build, here is how to build." We need to address hazards at the land-use decision level, and that is embodied by the local government. It is not a State or Federal responsibility.

Existing building codes also do not address all hazards. I must ask, Could a multi-hazard insurance program actually encourage more risky development?

With respect to folding in the current flood insurance program, we understand that a study is proposed, but quite frankly I think the wrong questions are asked. It focuses on how to fold in policies.

It doesn't ask, How do we preserve the flood hazard management aspect of the program? That is what—as FEMA testified—has led to some \$500 million plus in avoided damages each year.

We also have questioned statements that H.R. 2873 will improve compliance with the flood insurance program. What is called for is, in effect, a sanction of non-compliance by lenders with current requirements. Those requirements require lenders to require flood insurance if a home is in a flood plain. The proposed bill would simply allow lenders to circumvent the law by reporting homeowners who choose not to buy flood insurance to FEMA. You should know that this is particularly troubling because FEMA has no authority whatsoever to do anything with either lenders who don't comply or homeowners who don't buy insurance.

The association questions whether it is appropriate for the Federal Government to provide financial backing for the private insurance industry. While we can ask the question, we realize that the answers must come from others. We do, however, suggest that you question the appropriateness of any Government guarantee for an industry over which it has little control.

With regard to mitigation, the bill contains no direct authority to use the self-sustaining mitigation fund on the ground. I think a careful look at it will show that the funds are to be used for adoption of building codes and development of mitigation plans. While these are important steps in the mitigation process, these activities will not, in and of themselves, reduce future damages.

Note that just saying "adopt a building code" really does not necessarily mean much. You can't build to withstand the earth washing away from under a house. You can't build to withstand a volcanic eruption. So we must be very careful about what we expect building codes to do. I think it is also important to note that the building code organizations are independent organizations and there is no guarantee that the standards they adopt will actually address the hazards we are trying to deal with. In fact, we do have experience with one of the major building code organizations that reduced its flood plain standards below the FEMA minimum standards. Quite frankly, that caused difficulties for communities that referenced that standard but also had a federally required ordinance.

Most notably, building codes—while certainly they deal with new buildings—they do not deal with the vast majority of the existing housing stock that predate those building codes. It is these buildings that indeed sustain the most damage.

Earlier, Mr. Ewing asked about the differentiation of building standards if the risk is different across the community. I think this is a key question.

Ocean City, Maryland is certainly at high risk to strong winds. You go inland about 10 or 20 miles and you are still in the same county, but the wind risk is not the same. How do we differentiate the different risks in the building code aspect of this program?

I also must respectfully disagree with previous witnesses about how differentiation would occur. I think it is very difficult to map some of these risks. We know in flood plain management that it has been a long and expensive process. Indeed, the maps are not accurate in some cases. We are concerned with a proposal that

smooths the idea of a risk or insurance across a community—we may end up with \$850 million worth of maps that are not used. That would certainly be a bad use of Federal expenditures.

In the mode of disagreeing, I must express quite surprise and almost shock that two of the previous witnesses mentioned that flood insurance is not available in certain areas. Flood insurance is available if your community participates in the flood insurance program, whether you live smack up against the water or on top of a hill. It is available. To have an insurance industry representative say that insurance is not available certainly causes me some concern about the public perception of this program.

A new source of mitigation funding is certainly attractive and we can certainly use more funding. But we do need to make sure that the dollars will be used for the best purposes, and that they actually save damage and future dollars. A big improvement to this bill would be a section that specifically authorizes physical mitigation projects. Quite frankly, I think they were anticipated by the drafters, but the authority is not clear.

I think it also needs some provisions to allow States to identify priority projects. Otherwise scant funds—while \$150 million is a lot, when you divide it by 50, that is about \$3 million per year per State. That is scant funds. We are concerned that scant funds might have to be evenly spread across the State. That is not the way to deal with the worst problems in a priority order.

We also feel that it must be recognized that the bill does not require mitigation at State and local levels. It certainly encourages it and we appreciate that. But we feel that if there is going to be a significant Federal financial risk or liability that perhaps more direct benefits should be called for.

Another important consideration has to do with where the big bucks in Federal disaster assistance go. As was pointed out by Chair Mineta, a huge chunk pays for rebuilding damaged public infrastructure such as roads, bridges, water treatment plants, et cetera. What in H.R. 2873 would reduce those costs? Building codes do not apply to most public infrastructure. We could not identify provisions that would do so, although some certainly may agree—and I think correctly—that if the mitigation funds can be used to retrofit existing public infrastructure then there would be some savings. We would like to see some clarity.

The far-reaching implications of the concepts in H.R. 2873 must be evaluated more fully. They are intriguing and perhaps promising, but certainly only half-formed at best. The Association of State Flood Plain Managers stands ready to become an active—a very active—participant in further evaluation.

Thank you for the opportunity to testify. I will be pleased to answer any questions.

Mr. EVANS. Thank you, Mr. Chairman and members of the subcommittee.

I am Deane Evans. I am an architect and the current director of the Joint Council on Architectural Research of the American Institute of Architects and the Association of Collegiate Schools of Architecture. I appear on behalf of the AIA, a professional organization representing the Nation's architects. We appreciate this opportunity to discuss H.R. 2873, the Natural Disaster Protection Act.

I will summarize my written statement and ask that it be included in the hearing record.

Mr. BORSKI. Without objection, your prepared statement will appear in the record.

Mr. EVANS. The AIA joins with the Natural Disaster Coalition in seeking legislation to protect the economy from harmful insurance losses from natural disasters. We strongly believe, moreover, that no Federal reinsurance program should be enacted without strong mitigation provisions. It makes no sense to place the Federal Government behind billions of dollars in insurance losses without a clear national commitment to the steps necessary to prevent at least a portion of those losses.

While we would regret a decision by Congress not to enact a reinsurance program, we believe Congress should pass a natural disaster mitigation program under any circumstances. The health, safety, and well-being of the American people depend on it.

Architects serve on the front lines of hazard mitigation. We depend upon technology advances and the effectiveness of building codes to ensure the safety of the structures we design. Yet there are numerous barriers to a safer built environment. A dangerous complacency exists in many disaster-prone areas, as we have heard often throughout the course of the day. As a result, these places are often not protected by up-to-date building codes.

Furthermore, building inspectors sometimes lack adequate qualifications or regulation. Even where buildings incorporate safety measures, they are often poorly maintained.

Finally, progress in mitigating property damage through advanced technology and improved design has substantially lagged behind efforts to save lives. I think we have heard about that a little bit in some of the testimony with respect to building codes already.

Let me offer some examples. Our largest recorded earthquake—the New Madrid quake, which we have also heard about today—took place in the Missouri/Arkansas/Tennessee area. It was felt from the Rockies to the Atlantic coast. Although the area is ripe for another such quake within the next 30 years, buildings are still going up near the New Madrid Fault without adequate reinforcing or attention to seismic detailing. As we have also heard, South Carolina, still recovering from Hurricane Hugo, has no State-wide building code and only half of its counties have adopted codes to mitigate hurricane damage. In Florida, according to the Dade County Grand Jury as well as a FEMA study, shoddy construction and inadequate inspections caused significant damage.

In the technology arena, an earthquake damage mitigation technique known as base isolation—basically structural shock absorbers—is known to be very effective. Yet as late as mid-1991 only four new buildings with such technology had been constructed in the entire United States. Finally, in the Northridge earthquake school buildings in California suffered severely because they were not adequately maintained.

Because architects design much of the built environment, we care deeply about the safety of the structures we create. For this reason, we support the general thrust of H.R. 2873, particularly its call for a strong disaster mitigation program. However, for such a program

to succeed, we believe the proposed legislation requires several important changes and we suggest the following improvements.

Number one, the legislation would have mitigation apply to buildings undergoing substantial modification. We agree, but believe the definition of "substantially modified building construction" should be changed to "50 percent or more of the building's assessed value". The proposed definition would be based on increasing the value of the building by 50 percent. The differentiation is something the owner cannot determine in advance. There should also be a provision in the legislation to prevent an owner from undertaking several small renovations in a short period of time in order to avoid the mitigation requirement.

Number two, the legislation should require States to update their hazard mitigation codes periodically. As drafted, the bill appears to require that only the Federal Government construct buildings according to the latest versions of the codes.

Number three, a transition rule should be applied so that when a code change is adopted it does not apply to projects under construction or those that have already completed their design and have received a final building permit to proceed. Construction should have to begin in a timely fashion, however, say within a year, or the project should be required to get another permit.

Number four, the legislation as written would let States allow their localities to adopt building codes that are "equivalent or stronger" than the State code. Yet the legislation provides no standard to help States determine when a local code provision is equivalent or stronger than the State code. As a result, States could give code-adopting authority to localities that cannot meet the Federal requirements that they certify they are enforcing the code. They may therefore be placed in jeopardy of invoking the legislation's sanctions. We think the provision needs to be reworked and offer our assistance in doing so.

Number five, there needs to be a citizen participation for the development and approval of State hazard mitigation plans. This would mirror such processes in other laws under the jurisdiction of the Public Works and Transportation Committee. This would also enhance the ability to make sure that States are truly enforcing their plans.

Number six, the provision for FEMA's licensing and training of architects and other professionals must be dropped. This authority currently rests and should continue to rest with the States. However, FEMA should require that States establish qualifications for building inspectors engaged in life safety code enforcement and that they certify that inspectors meet those standards.

Number seven, large metropolitan areas should be allowed to adopt their own mitigation plans in consultation with their States. However, this should not necessarily extend to local adoption of disaster mitigation building codes.

Number eight, the FEMA advisory committee called for in the legislation should include only people who are prominent in their fields. No such standard currently exists in this legislation.

Number nine, technology transfer of research data should specifically go to architects and engineers. They are not currently specified in the legislation.

Number 10, the self-sustaining mitigation fund language appears to have a drafting error which would prevent it from working. The problem needs to be corrected.

Number 11, the mitigation title should require that properties on or eligible for the National Register of Historic Places be examined by qualified professionals before anybody condemns them following a disaster. Many such properties were unnecessarily lost following the Loma Prieta quake because of hasty decisions by unqualified people.

Finally, number 12, we think the legislation should direct a study of the extent to which life line facilities—such as county hospitals, water and sewer facilities, public safety buildings, and other civil engineering facilities—should be retrofitted in areas of known risk. We have heard about this before during the day as well.

This concludes my verbal testimony. Again, the AIA appreciates the opportunity to appear and I am happy to answer any questions you may have.

Mr. KLEIN. Good afternoon, Mr. Chairman and members of the subcommittee.

It is an honor to appear before you today and I thank you for the opportunity to testify about natural disaster protection. My name is John Klein and I have been involved in the real estate and construction industries for over 20 years. In recent years, I have specialized in hazard mitigation.

Most recently, I received a patent for a technology I developed which allows for a building to be hurricane and earthquake safe, yet be cost-effective and have a self-contained water supply system so that the building and surrounding area can be protected with fire sprinklers without having to rely on the public water supply.

First, Mr. Chairman, I would like to compliment Mr. Mineta, Mr. Boehlert, and the rest of the members of the committee for this legislation, H.R. 2873, because it is very necessary, yet long overdue.

If there were midair collisions in the United States every month that killed more than 300 people and injured more than 10,000 I believe in a very short time the overwhelming public demand would be to shut down the entire airline industry until the problem was identified and solved. Tragically, as a result of structure fires alone, month after month and year after year we have about the same amount of deaths and injuries as in my example. Yet it is still not seen as a national problem that deserves immediate attention.

Many areas in our Nation have building codes and regulations that are just too weak for the conditions that people living in these areas know to expect. For these reasons there are four particular points I would suggest be included in this bill.

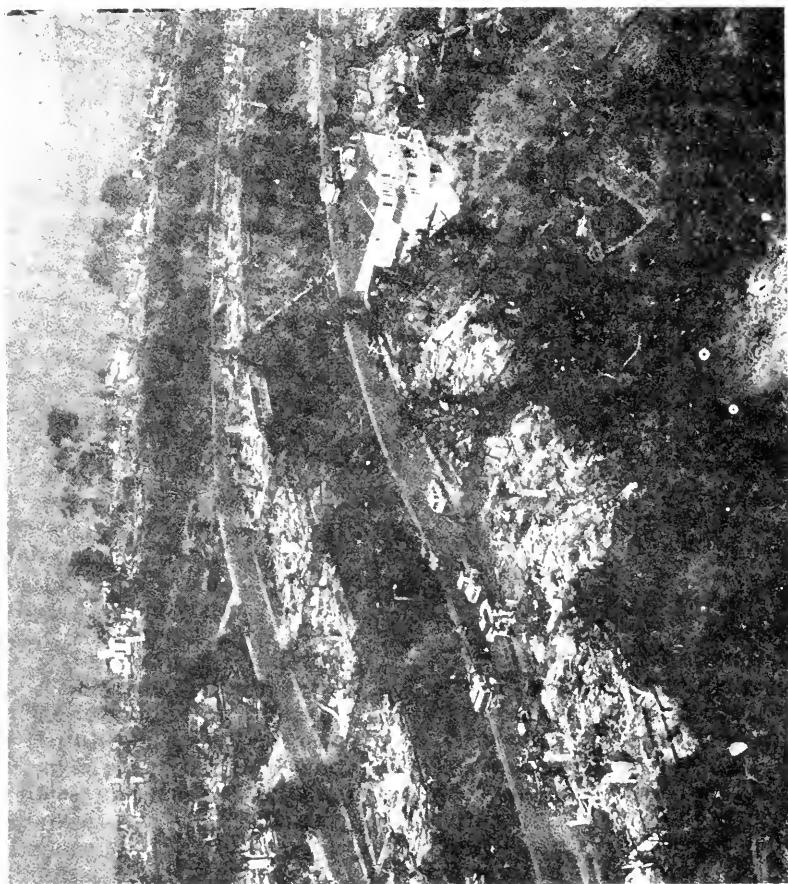
Number one, fire storms and drought must be identified as natural disaster perils.

Number two, all building codes nationwide should be immediately examined, and until then no rebuilding should take place in any area receiving Federal disaster assistance funds until building codes in that area are reviewed, analyzed, and appropriately revised.

Number three, once Federal funds are being used for reconstruction, the Federal Government must monitor the process.

Number four, the Federal Government should fund model projects to present real world examples of available technologies. All too often, the Federal Government is called upon to pay for the repeated pattern of mistakes made by State and local governments as well as individuals. This legislation represents a strong opportunity for a forceful change now so that after a disaster when rebuilding does begin, the buildings that are constructed will be less likely to burn down, fall down, or be blown down once again.

Mr. Chairman and members of the subcommittee, please refer to this photograph. I hope copies have been circulated amongst the members also.



Mr. EVANS. This is the story about the lone house that survived in a Laguna Beach neighborhood when all the other houses were destroyed by fire. This house is owned by Mr. Bui-Bender and was built in excess of the city's safety codes. Mr. Bui-Bender designed and built this house to survive a fire. Not only did it survive, but his house was completely unharmed.

Since then, photographs such as this one have appeared in various publications throughout the country. However, this is not the entire story.

In front of his house is a fire hydrant. Unlike many in the neighborhood, it worked when fire fighters needed it to. Because fire fighters were unable to douse the flames already devouring the adjacent homes, they concentrated on saving Mr. Bui-Bender's house.

This house survived a fire when its neighbors didn't because it was designed and built to survive a fire. Because of that, no public funds had to be expended whatsoever to rebuild this house.

However, let's remember that it was water that saved this house. Captain Steven Valenzuela of the Los Angeles County Fire Department said, "Fire fighting is still a real basic science. You put the wet stuff on the red stuff." [Laughter.]

Mr. KLEIN. Before public water supply systems became commonplace, rain barrels and cisterns were often found outside many American homes. Given our continuing experience with natural disasters, the time has come to resurrect the old wisdom and combine it with new technologies. Having a personal supply of water available is an important form of hazard mitigation and would have proven invaluable during the recent fires and earthquake in southern California.

I am suggesting that we must face the harsh reality that many water systems in this country are severely deficient. Their deficiencies are magnified during times of intense crisis brought on during a disaster. Many of our citizens are totally unaware of how severe this problem is and how it will affect them until after it is too late. In many communities, having a self-contained water supply system on individual properties could be accomplished for a fraction of the cost to upgrade an existing public supply system. Coupled with a back-up power supply, structures would be safer, self-sufficient, and far more reliable.

We need safer buildings as another form of health care. Requiring building to a higher standard does not cost more. It requires shifting priorities. Pointing out the safety and efficiency features in buildings should become more important than wallpaper quality and whirlpool bathtubs.

I suggest that the concepts of prevention and protection, which have been traditionally associated with health care, be applied to the entire construction industry.

The Federal Government must encourage education and innovative solutions for protection and prevention from the devastation of natural disasters.

The Federal funding of model projects is necessary to assist in the transfer of this technology to the public and present these solutions in a physical form. One way would be to build a building in an area known for many natural disasters. I don't think anyone would argue with California for a good example. And let's select a

site in a prominent area that is easily accessible and construct a model that looks like any conventional building, but which incorporates the technology available in 1994.

It is important to build this model on a human scale that everyone could relate to—a house, for example—and make it attractive and nicely landscaped, self-reliant, and include safety features, energy efficiency, and water conservation. Then let's invite architects, engineers, builders, developers, real estate brokers, bankers, insurers, elected officials, planners, building code officials, the general public—everyone. Once they are there, let's simulate a 7.0 earthquake regularly. Even set the building on fire from time to time. We will all watch as it extinguishes itself safely.

Yes, it will scare people, but they will be amazed in the process. No one will be harmed and the building will come through unscathed. People must see, touch, and feel to believe. Because if we don't show them, they may never think that a better and safer building is even possible. The investment of Federal money in solution-oriented projects will set an example of progressive leadership that the State and local governments should follow.

In closing, Mr. Chairman, once we recognize that in this country we must deal with all types of natural disasters, we stop building the wrong way, we monitor how taxpayer money is spent after disasters, and we construct real world models to transfer these technologies to the public, then the Federal Government is leading by example and showing the State and local governments and the people of this country a new path to safer living for the future.

The old expression "An ounce of prevention is worth a pound of cure" is what hazard mitigation is really all about.

Thank you very much for your time. I would be happy to respond to any questions.

Mr. BORSKI. Would anyone in the panel care to comment on anything FEMA said or the previous panel talked about?

Ms. GRIFFIN. I think one of the points FEMA made that I would like to stress also is that there are ways that the Federal Government can, right now, insure that certain mitigation measures are taken, particularly those properties or life-line infrastructures that are costing the Federal taxpayers the most amount of money. I think that could be instituted fairly quickly and could be tied to Federal construction loans. They could require the States to institute their own mitigation funds. It could be tied to gas taxes. Activities that relate to the cost associated with the risks seems to be the best way to ensure that mitigation measures are put in place.

Mr. KLEIN. There is something I didn't hear which I was hoping we would hear more about and that would be the importance of education.

I think about growing up and starting to use seat belts a number of years ago. I remember when my father installed seat belts in his 1956 Plymouth. A couple of years later I started hearing about them in school. Now here we all are using seat belts today.

I also think back that a number of years ago we had one real upset mother who lost her teenage daughter as a result of a drunk driver. Years ago, drunk driving was a joke. Today it is a Federal offense.

The automobile manufacturers market air bags and anti-lock brakes as safety features, and we buy them. We need to look at the construction industry in many respects the same way. No one is talking about how important education is. We need to put the responsibility back on individuals here and stop blaming government, insurance companies, and looking for everyone else to pick up the tab for our failures.

Ms. QUINN. When we are looking at current disaster assistance costs and a potential Federal liability under the proposed program, I think we need to look at scale.

Right now, despite previous testimony, when an individual or family has failed all the means test, the most they can get is about \$11,000. That does not rebuild \$250,000 or \$1 million homes, and yet this proposed insurance would cover the full cost of a home. So we are not talking about a comparable—it is not the same dollars we are talking about. I think it is very important when whoever is going to look at the numbers on this really look at them.

I would also like to comment on public education.

While it is important, I think it is very naive to think that public education is going to solve a lot of this problem. We know that people who live in the flood plain suffer from the it-won't-happen-to-me syndrome more than my 16-year-old driver. Quite frankly, it is "We had one last year so we are safe for 100 years." That is totally incorrect. They don't understand.

I have worked for 10 years trying to educate people on the concept of rolling the dice and having a big storm repeatedly and it just doesn't sink in. So we need to make the program easier for individuals. Education is only a part of it.

Mr. EVANS. I would like to comment a little bit further on that with respect to the education process.

I think one of the problems with education—it is a laudable goal, but I share my colleagues' concern about educating the public about the threat of natural disasters and also turning the construction industry, through education, in a new direction. It is different than the automobile industry. It is a lot different. It is much more complicated and dispersed. It is very difficult to find decisionmakers that can finally be forced into a position where they can all three, in this case, say that they will have air bags and seat belts. It is much tougher in the construction industry to effect that kind of change, unfortunately but the nature of the beast.

I think that is why a number of the comments and pieces in the legislation have to do with the codes because that is a driver of change. I think there is a perception among the public that if a building is built to code, it is going to stand up and not go down in a fire and not go down in an earthquake. I think that is why people are beginning to be concerned about enforcing codes more widely.

The fact is that they are making incremental steps, wise improvements all the time, and they are working. A number of the buildings that came down in Northridge were old code buildings and not new code buildings, not that there weren't damages in the new code ones. But they didn't kill as many people as the older code ones.

Mr. BORSKI. I thank you all for your oral testimony and your written statements, which we have here, and will consider. I also thank you for your perseverance in bearing with us today.

Thank you very much.

This subcommittee hearing is adjourned.

[Whereupon, at 2:07 p.m., the subcommittee was adjourned, to reconvene subject to the call of the Chair.]

PREPARED STATEMENTS SUBMITTED BY WITNESSES

STATEMENT OF JANE BULLOCK
FEDERAL EMERGENCY MANAGEMENT AGENCY
BEFORE THE
SUBCOMMITTEE ON WATER RESOURCES AND ENVIRONMENT
COMMITTEE ON PUBLIC WORKS AND TRANSPORTATION
U.S. HOUSE OF REPRESENTATIVES
FEBRUARY 23, 1994

(81)

Mister Chairman and Members of the Committee:

It is my pleasure to appear before you today to talk with you about the opportunities we have to reduce the future loss of lives and property from natural disasters through mitigation and to comment on the Natural Disaster Protection Act of 1993.

I would like to start by acknowledging the strong support we received from Members of Congress both during the immediate response period and also as we worked with you on passage of the President's supplemental package of aid. As with the Midwest floods, after a disaster, people want to bring stability to their lives by getting their schools reopened, their businesses functioning and their homes in order. Your quick action of the President's request is making this possible. Your interest in legislation to begin the discussion of how we make long term change is also important.

Today as individuals, as communities and as a Nation we stand at a critical crossroads. The time has come to face the fact that this Nation can no longer afford the costs of natural disasters.

We can no longer afford the economic cost to the small business owner, to the local government, to the American taxpayer. Nor can we afford the social cost to our communities, our families and individuals. From South Florida, to Southern California to the Midwest, the question remains isn't it time to do what must be done to reduce the costs of future disasters?

We cannot control nature -- we will always have floods, hurricanes, earthquakes. We do know how to control the corresponding losses. We must and can work to design and build our communities better and out of harms way. It is time for us to change the focus from disaster response to disaster mitigation.

This may not be an easy change. The reality is that mitigation can require difficult political choices and a sacrifice of short term economic gain for long term investment. But these choices must be made if we are to end the spiraling costs of natural disasters.

We know mitigation works and some of the most vivid examples come from the Northridge earthquake.

As of 1992, a report of the General Accounting Office (GAO) indicated that the California Department of Transportation (CALTRANS) had spent or planned to spend approximately \$200 million on column retrofit of bridges, Statewide. All of the structures retrofitted by CALTRANS, especially those using post-Loma Prieta retrofit research performed well in this earthquake. By comparison, the cost to FEMA of bridges damaged in the Northridge earthquake is currently estimated at approximately \$140 million. This amount doesn't include costs for Department of

Transportation (DOT), the State of California or the cost to the daily work routines of millions of commuters.

Another example, the City of Los Angeles has an ordinance requiring retrofit of unreinforced masonry structures. About 6000 commercial and residential structures have been retrofitted and performed well in this quake.

We know mitigation works and we know it can save taxpayer money. The National Flood Insurance Program (NFIP) which FEMA administers, requires that communities pass a flood plain management ordinance to participate in the program. We have estimated that these ordinances, which require siting of structures out of high risk designated floodways and elevation of structures in special flood hazard areas, have resulted in an annual reduction in flood damages of \$569 million dollars. As a tool for mitigation, the flood insurance program offers a mandate of mitigation in exchange for insurance coverage.

Your passage last year of the amendments to the Stafford Act to expand mitigation under Section 404 is an important step in providing additional funds to work with State and locals to accomplish cost-effective mitigation in the post disaster environment.

If we know mitigation works, than why isn't mitigation more widely practiced? Once again we must go back to priorities and costs. The responsibility for undertaking mitigation measures falls to State and local governments and individuals. Our discussions with experts, our experience with local officials and studies we have supported all come to the same conclusion. The current approach does not provide incentives to take proactive mitigation actions. With the exception of the flood program where it is required in return for insurance, our current approach only provides for mitigation after there has been a disaster

We need to consider a more comprehensive strategy for mitigation, especially in the pre-disaster environment.

A strategy that mitigates all natural hazards, earthquakes, hurricanes, volcanoes, mudslides, floods and urban wildfires.

A strategy that reduces risk in three ways: through siting and construction practices; through relocation, elevation or retrofit of existing hazardous structures and infrastructure and through prudent rebuilding in the post disaster environment. The strategy must be cost effective and tailored to different levels of risk. For example, houses in Minnesota don't need to be built to the same wind code as in Florida where there is a hurricane risk. The degree of seismic retrofit you do in California is more substantial than you would do in Tennessee. But almost every where, our standards must be more risk aware and more stringent.

The strategy must also consider positive incentives to State and local governments and individuals for making the investment in mitigation. We will not achieve a substantial level of risk reduction until incentives are devised that make mitigation actions attractive to decision makers. Building on this point, the Committee may want to consider incorporating incentives for mitigation actions taken by local governments before a disaster as part of the disaster assistance formula received after the event.

The development of a comprehensive strategy is the highest priority at FEMA and we welcome input from this Committee as we proceed. We believe that implementation of this strategy will significantly mitigate the effects of natural disasters on the at-risk population and infrastructure and significantly reduce Federal outlays for disaster response and recovery.

It is in this context that we would like to comment on the Natural Disaster Protection Act of 1993. Since 1989, the Nation has experienced an unprecedented series of natural disasters: Hurricanes Hugo, Andrew and Iniki, the Loma Prieta and Northridge earthquakes and the devastating Midwest floods. The escalating costs of these events requires us to look to ways to reduce the Federal outlays for disaster response.

The goals of H.R. 2873 are laudatory and carry wide spread support: namely to reduce the loss of lives and property, to reduce the need for Federal disaster assistance through widespread purchase of insurance and to assure the post disaster availability of insurance. We appreciate the work that has gone into the bill and hope to build on it.

We are concerned, however, whether these goals will be achieved by this bill. The bill also raises some important public policy questions which must be addressed as we proceed.

Our concerns with the bill are focused in three areas: the efficacy of the mitigation provisions; the extent to which the primary insurance program would effectively spread risk and reduce the need for disaster assistance; and the potential for the reinsurance program to become an open ended obligation of the Federal government to insurance companies whose solvency and practices are regulated by the States.

H.R. 2873 does little to increase the number of States or localities that will enact and enforce mitigation measures. There are no compelling incentives or penalties for States and localities to enact mitigation measures prior to a disaster. The history of the flood insurance program proves that without strong economic incentives there will be little mitigation and little reduction in the need for disaster

assistance. The mitigation measures in the bill do not address the most significant Federal disaster costs, namely the cost of public buildings and infrastructure.

Even where States and localities chose to enact mitigation measures, they are restricted to codes for new construction without any requirement for retrofit of either essential public facilities and infrastructure where such retrofit is cost effective. With an annual turnover of only 2% of our building stock, we would not realize any real mitigation benefits for 25 or more years.

The primary insurance aspects of the bill also raise questions.

There is no current availability crisis in earthquake insurance for homeowners in California or elsewhere. People simply don't buy earthquake coverage, either because of price, size of deductible or a belief that they are not exposed to the risk. The price of the coverage will decline significantly only if all those at risk must purchase coverage, yet the bill does not require that all homeowners subject to the earthquake risk purchase earthquake insurance. As you know the earthquake risk goes far beyond California and includes 39 States. It is highly unlikely that without such a requirement for widespread coverage whether as part of a homeowners insurance policy as indicated in the bill or otherwise, we will see many more people purchasing the insurance and we will still be looking at significant disaster assistance outlays.

The most difficult part of the bill from our perspective, however concerns reinsurance. First, we are concerned that there are no limits to the federal outlay in the event of an earthquake or other natural disaster. Second, we believe that the program could become a Federal government guarantee of the solvency of complex financial institutions whose finances, practices and risk management policies are subject to State, rather than Federal, regulation. For example, the \$ 80 billion earthquake projected by the insurance industry could result in Federal payments of \$50 billion or more. At the industry's projected \$1 billion per year rate of contribution to the reinsurance fund, if such a disaster occurred in our lifetime, Federal outlays would almost certainly be required with a questionable likelihood of recovery. These two problems strongly suggest the need for alternatives.

This is a complex problem and complex legislation. We need to address the appropriate role of the Federal government and the private sector in funding disaster assistance, all hazard insurance and reinsurance. We know mitigation works, but how can we support its implementation? We need to thoroughly understand these issues, identify our options and implement the best possible program.

Congress clearly recognizes this and among the other steps has established a bipartisan task force to look into the funding of disasters and the relationship between insurance and disaster relief. Within the Administration, we have been actively working as an interagency task force to provide options to address the issues raised in the bill.

We recognize that it is in the best interest of all parties that these issues and options be pursued in partnership with the insurance industry and other impacted parties such as State and local governments, consumer groups, builders and developers, realtors and the banking industry.

We applaud your initiative in holding this hearing. It has served to encourage discussion of these complex issues.

The human suffering and economic hardship that result from disasters can be reduced. It is essential, however that we must act now before it is our neighbor's home that burns, our children's school that collapses in an earthquake or our community that is devastated by a hurricane. It is time for each of us to assume responsibility for the future safety of our communities and our people.

Thank you. I will be pleased to answer any questions.



THE AMERICAN INSTITUTE
OF ARCHITECTS

Statement of

Deane Evans, AIA

on behalf of

The American Institute of Architects

before the

**Subcommittee on Water Resources and Environment
of the Committee on Public Works and Transportation
U.S. House of Representatives**

February 23, 1994

Good morning, Mr. Chairman and members of the subcommittee, my name is Deane Evans, AIA and I am today representing The American Institute of Architects (AIA). We appreciate your allowing us to present our views on natural disaster legislation.

I am Director of the Joint Council on Architectural Research sponsored by the AIA and the Association of Collegiate Schools of Architecture. Before that I was a practicing architect with Steven Winter Associates in New York City. I have fifteen years of experience in natural hazards design, particularly the field of seismic design, and have been honored to work closely with the Federal Emergency Management Administration and the National Science Foundation, among others, on seismic design issues.

The AIA is the professional organization of 56,000 members representing the nation's architects. This year the AIA celebrates its 137th birthday.

I am pleased to present our views generally on the subject of disaster mitigation, and specifically on H.R. 2873, the Natural Disaster Protection Act, now pending before this subcommittee. A companion bill, S. 1350, is now before a U.S. Senate subcommittee. We favor the general thrust of this legislation, which would provide a federally-backed disaster reinsurance program combined with a national disaster mitigation program. At the same time, there are a number of provisions that must be changed to make the legislation workable and effective, and to gain our full support. We suggest the necessary changes later in the statement.

On Martin Luther King Day, January 17, 1994, an earthquake measuring 6.7 magnitude on the Richter scale reminded us yet again how fragile our world really is. We were reminded how the forces of nature can create havoc in our built environment, knocking down in a heartbeat what we have strived for decades to build up. The Northridge Earthquake, has taken at least 57 lives, destroyed more than 15,000 apartments and homes, and is estimated to have cost upwards of \$30 billion in property and other damage. This disaster has also reminded us that even where people expect to experience a natural disaster sometime during their lives we are not as prepared as we ought to be.

Because architects design much of the built environment, we care deeply about the safety of the structures we design. AIA policy supports research that advances the technology of safe building design, the transfer of readily available research results to those who will apply it, incorporation of new technology in building codes, and official attention to building safety in the adoption and enforcement of the latest building codes.

In addition to its public policy interests, the AIA and its members have also been active worldwide in assisting rebuilding efforts following natural disasters. In recent years, AIA teams have aided Armenia and Mexico City after devastating earthquakes, and to Charleston, South Carolina, and to Florida following Hurricanes Hugo and Andrew. When the Loma Prieta Earthquake hit the San Francisco Bay area in 1989, AIA members there provided expert assistance in recovery efforts.

The AIA joins with the Natural Disaster Coalition in strongly supporting federal legislation which provides for the establishment of state disaster mitigation plans and a national program of federal disaster reinsurance. We also believe, however, that no federal reinsurance program should be enacted without strong mitigation provisions. It makes no sense to place the federal government behind billions of dollars in insurance losses without a clear national commitment to the steps necessary to prevent at least a portion of those losses. While we would regret a decision by Congress not to enact a reinsurance program, we believe Congress should pass a national disaster mitigation program under any circumstances. The health, safety, and well-being of the American people depend on it.

The design and construction industry is constantly learning better ways to make our buildings perform better in natural disasters. Architects along with other professionals continue to apply what they have learned not only to new structures but to existing ones as well. Despite the enormous damage that natural disasters have visited on American communities, our buildings are increasingly safer than they were, even ten or twenty years ago. As a result, the Loma Prieta and Northridge quakes together caused a little over a hundred deaths, while in Mexico City tens of thousands died, in Armenia the official toll was 25,000, and in Tangshan, China, in

1976, as many as 250,000 lives were lost. Yet, as the loss of life in American disasters has been reduced substantially from the potential, property damage, although comparatively less, is still tremendous.

So, despite our progress in saving lives, why do buildings still fall down, blow away, or suffer major damage? There are many reasons. Technology is an important factor. When many buildings and structures that stand today were built, we simply did not know how to do things that we know today. In some cases, the technology has existed, but the means apply it or maintain it did not. Immediately following a disaster, there is an infusion of money. Some goes to long-term mitigation, but most goes to help people put their lives back together. Several months later, memories of the disaster dim, and interest wanes, other issues claim public attention and resources, and mitigation efforts suffer. Following the Northridge disaster, schools that were retrofitted or built to new codes suffered substantial damage because inadequate funds were made available to maintain them.

Shoddy construction, inadequate inspections, and the failure of local or state government to enact the latest building codes have also contributed to a lack of building safety. The experience of South Florida in Hurricane Andrew demonstrates the impact of construction deficiencies, and apparent inadequate code enforcement. A Dade County grand jury found that 85 percent of Hurricane Andrew's destruction was related to roofing system and material failures. According to the January 1993 findings of Florida's Department of Community Affairs, nine out of ten houses in the storm lost some portion of their roofing materials. FEMA found that "Evidence of substandard workmanship included torn shingles and inadequately attached shingles." Staple connections were inadequate and in extruded-concrete and clay-tile roofs, a FEMA team found that nailing and mortar connections were flawed.

Across the country today, many states have building codes that do not apply in all places. Localities sometimes have the authority to adopt their own codes so that even in the same county numerous different codes apply, presenting the architect with a bewildering challenge to efficient practice. In some areas, jurisdictions do not require building codes or building permits. Despite the experience of Hurricane Hugo, South Carolina still has no statewide building code to mitigate future damage in newly constructed buildings in all localities. Fifty percent of the state's counties, including many at-risk, have no code protection from damaging hurricanes. In Texas, cities may adopt any of the three national model codes, but counties may not adopt any codes at all. Until recently, each of St. Louis County's cities and towns could adopt their own building code. An architect practicing in a small town in Illinois called the AIA to complain that the building code in force in that locality was so obsolete that it was no longer in print, and the only version available was a xerox copy at the local library. Virginia is one of the few states with a uniform building code that applies throughout the state. However, when inspectors at the local level receive state interpretations of the code as they apply to individual situations, the state does not notify localities when those interpretations apply broadly.

There are areas with serious risk of earthquakes that have not adopted the most effective codes. One major reason for this neglect may be a false sense of security. The result is that buildings are not meeting necessary safety standards. Buildings constructed of unreinforced masonry are notoriously susceptible to earthquake damage. In Tennessee, according to the federally-funded National Earthquake Hazard Reduction Program, a five-story, 122-room hotel constructed of unreinforced masonry was recently built in an area close to the New Madrid fault zone. Seismologists believe that there is an almost two-to-one chance that a damaging earthquake will occur in that area within the next thirty years. In 1811-12, this area was struck by an earthquake that was felt from the Rockies to the Atlantic Coast.

Many people would not think that New England is earthquake-prone. Yet it has registered earthquakes as high as magnitude 6.0, and that during any given 50-year period, an earthquake of a magnitude 5.0 has a 50/50 chance of striking in that area. With a population 10 percent denser than California, and an older housing stock often built of materials unable to withstand earthquake damage, the potential for harm is considerable, especially since about 20 earthquakes a year occur in New England. The area lags behind California in its approach to mandated seismically-sensitive building designs.

Even in places known for strict codes, there may be problems. Again, using the experience of Hurricane Andrew as an example, it was found that even accounting for shoddy construction, Dade County's code may have had weak standards for its "prescriptive" alternative for dealing with high wind speeds in such items as fastener spacing and hurricane-strap requirements.

For buildings in earthquake-prone areas, the codes emphasize flexibility, primarily for reasons of economy. Flexible structures encounter less force than a rigid building under the same ground motion, and they cost less because they are designed for less force. Yet as flexibility prevents structural damage, it can cause much more non-structural damage to things like partitions, ceilings, light fixtures, exterior cladding, rooftop-mounted air conditioning equipment and the like. Since non-structural elements account for 75 to 90 percent of a building's value as well as make it functional, the loss of these elements is no small matter.

To the extent that updated codes apply only to new or substantially rehabilitated structures, they miss the vast number of existing buildings that are at-risk. New construction expands the existing building inventory only about two percent a year.

It is also true that many houses, as well as a number of other buildings and structures, such as barns and warehouses, were built without the benefit of professional design services. Either they were developed prior to enactment of legal requirements for design services, or managed to avoid these laws. And we must note that the construction industry is inherently conservative. It takes time for a new technique or material or design methodology to be accepted and then widely applied. This is particularly true of seismic technology. Liability concerns, lack of technology transfer, human nature, and an understandably appropriate need for caution in a field concerned with life safety, all help explain the time lag.

Finally, but most importantly, there is no national program that provides for a minimum standard of law and practice for disaster mitigation. A truly effective national program is absolutely essential. The lack of one courts disaster. This fact becomes ever more clear as design and construction professionals learn more about the nature and likelihood of natural disaster phenomenon. The issue is not whether a disaster will strike. The issue is not even about where such events will occur, although there is still much to be learned about disaster phenomena. The only issue in doubt is when. The old adage that lightning does not strike twice in the same place has been replaced by the knowledge that it does, with surprising frequency, and that the same holds true for the range of disasters that threaten entire communities and even regions.

The risks may be different from one part of the country to another, but without adequate planning and the application of appropriate mitigation measures, the result will be the same--horrific losses of life and property and enormous dollar losses that threaten the economy. No section of the country is immune. Severe tornado risk covers parts of nine states, including all of Missouri and Arkansas, plus most of Oklahoma, Kansas, Iowa, and Illinois. Severe hurricane risk stretches from southern Maine down the east coast to cover all of Florida, ranging west to the southeastern third of Texas. Severe flood risk, involving thousands of square miles, covers at least fourteen states, with almost every state having sections prone to destructive, dangerous flooding. Severe earthquake risk affects not only significant areas of the west--much of Hawaii, California and parts of western Nevada and southern Alaska--but also the juncture of Missouri, Arkansas, Kentucky, Tennessee, and Alabama. The juncture of Wyoming, Idaho, and Montana is another high risk earthquake area. The entire west coast, including coastal sections of Alaska, as well as all of Hawaii are at risk of tsunamis, and volcanos are a risk to parts of the five most western states. As noted, some states face severe risks from several disaster phenomena. Few states are without severe risk from at least one disaster event. It is interesting to note that since 1700, there have been 3500 earthquakes recorded east of the Mississippi.

We have already seen the extent to which major disasters have cost this country. In 1992, natural disasters cost \$23 billion. From August of 1992 to September 1993, the cost was \$30 billion. Loma Prieta alone, in October 1989 cost over \$10 billion, claiming 62 lives and injuring 2400 people. And remember, it was centered 60 miles outside the urbanized Bay Area. Hurricane Andrew caused \$16.5 billion in damage.

The dollar costs from major disasters that would center in significantly built-up areas will be breathtaking. A Class 5 hurricane in Miami would mean \$53 billion lost, and a Class 4 hurricane in New York would cause a \$45 billion loss. As devastating as the Northridge Earthquake was to Los Angeles, it was not of the magnitude of the San Francisco Earthquake that occurred in 1906, an event that we believe would have registered 8.3 on the Richter scale. Nor was it the quake that seismologists predict will wreak widespread havoc in Los Angeles. An earthquake of 7.0 there will produce \$58 billion of damage.

Disaster mitigation saves lives. It reduces property damage. If the federal government is concerned about the impact of catastrophic insurance losses on the economy, and it should be, then a program to reduce those losses will be vital to enact. Such a program will also reduce the cost of insurance for the average consumer, in the same way that loss reduction measures in other fields affect insurance costs. Completion of a driver education course can reduce the cost of auto insurance. Living close to a fire station can reduce fire insurance costs.

The technology exists to help our built environment withstand the natural forces that threaten to destroy much of it. And the science of mitigation is improving steadily. Mitigation need not cost very much, and compared to the cost of substantial or total destruction, its price tag is small. It costs the least to incorporate these measures in new construction or substantial rehabilitation projects. Even in existing buildings that are not undergoing any major repair or alteration, there are techniques that can and should be applied in risk-prone areas and that actually cost very little, although they can provide significant protection. The preservation of infrastructure, such as docks, roadways, and bridges presents its own particular challenges.

Let me focus on the damage caused by earthquakes and some of the ways that seismic design and construction can mitigate this damage.

An earthquake pulls and pushes a building, transmitting enormous stresses up from the foundation to the rest of the building's structural systems. Unless it can transfer the energy it releases, it will crack, break, or collapse. The fact that vibrations can move both up and down, and side to side at the same time, means that a seismically safe building must be both flexible enough to move with the shock and yet be sturdy enough not to break. Tall buildings can suffer from a whipping effect, with the upper stories moving one way, and the lower stories trying to stay where they are. Buildings built on certain soil, such as soft sandy soil, like the housing units in the Mission District of San Francisco, suffer because such soil transmits the long, slow vibrations that wreak the heaviest damage.

Buildings are designed to handle significant vertical loads. After all, the building weighs heavily on its own foundation. Thus, buildings do a reasonable job of responding to the up and down motion of an earthquake. The lateral, or side-to-side forces create the biggest problem, causing such damage as the buckling of unreinforced masonry, the failure of mortar seams between unreinforced brick or block, and the collapse of "soft stories", such as first-floor garages or stores. The collapse of the Northridge apartment building that claimed so many lives was not surprising for an older building of its type. The building apparently included apartments on the garage level, and when the garage supports buckled, the building's weight also fell on occupied apartments.

Mitigation measures include: anchoring of heavy items of mechanical equipment; careful positive attachment of cladding and glazing elements to allow for independent structural movement without damage; particular attention to sprinkler systems because their failure could cause costly damage even without a fire threat; and attention to seismic detailing of the controls of elevators.

Two particularly important mitigation measures are bracing and base isolation. They are designed to resist lateral forces, and assure strong, effective connections among systems to distribute the energy from one system to another. Bracing can be particularly useful for older, one- or two-story wood frame buildings, including those with "cripple walls," those short walls often found between the foundation and the first floor. Base

isolators, or "structural shock absorbers", which generally consist of 12-24 inch square blocks of sandwiched rubber and steel layers, are placed between a building's foots and foundation walls and columns. They also contain lateral forces, and are considered a particularly useful means of reinforcing historic structures without radical alteration. As late as mid-1991, only four new buildings with such technology had been constructed in the United States.

H.R. 2873 takes a major step in increasing the margin of safety for buildings erected in risk-prone areas. The legislation accomplishes the following: It establishes requirements for state adoption and enforcement of the latest nationally-accepted standards for hazard mitigation. It requires state-adopted mitigation plans, and provides sanctions for those that fail to adopt or enforce them. It sets up a self-sustaining fund to help states pay for the costs of mitigation planning. It speaks to the need for research, technology transfer, and the involvement of professionals schooled in disaster mitigation. Coupled with the mitigation program is a primary insurance program and a federally-backed reinsurance program aimed at widening insurance coverage and preventing national economic disruption due to catastrophic insurance losses.

We believe, however, that a number of changes are necessary for the bill to achieve its intent, while respecting the realities of the design and construction fields.

- * Section 4 of the legislation contains the definitions section. The term "substantially modified building construction" refers to additions or improvements that constitute a 50 percent increase in the overall value of the structure. In some places the real estate market is so stagnant that improvements do not add value to the property. The provision is also flawed in that it requires an owner to guess whether or not his or her alteration or addition will be considered an addition to value in a subsequent property assessment, which in some places does not occur every year. Since an economic factor is necessary to make a distinction between small and large alterations, and to ensure that requirements are not so onerous that they discourage renovations generally, a different threshold should be set. We would suggest that a "substantially modified building construction" be defined as "additions or improvements that cost in excess of fifty percent of the current value of the property, as measured by the most recent official property assessment." There also needs to be a provision, similar to one in the Americans with Disabilities Act, that prevents owners from avoiding the mitigation threshold by engaging in a series of smaller-scale alterations over a brief period of time.

- * Section 202 establishes the requirement for states to adopt multi-hazard building codes. This section sets up the key mitigation provision of the legislation, so it is important that it work as intended. We believe two changes are in order:

First, it does not appear in Section 202 (a)(1) that states, in addition to adopting the newest edition of the appropriate codes, must also maintain the latest edition of those codes. One of the signal failures in the adoption of building codes across the country is that many places do not update them as they evolve. This section ought to make clear that states should update their codes, in the same manner that Section 205 (b) requires it for federally-owned and leased buildings. Interestingly, the subsequent section, which provides an alternative to adoption of one of the three national model codes, appears to imply maintenance of updated codes. It does so by providing that local communities must adopt and enforce codes that meet or exceed national model code standards.

Second, we have considered the provision that allows localities to adopt measures that are equivalent to or exceed the national model codes. We think there are some technical and practical problems with the provision. First, it appears that the alternative must involve all of a state's local communities in order to go into effect, as it states that "the State...shall...certify that the State's local communities have adopted..." That appears to be an all inclusive statement. If so, the alternative may not be easily implementable because it would require states to grant code adopting authority to all its localities in places where it does not now exist in order to take advantage of the alternative. This may decentralize such authority to precisely those places least able to accept it.

In any case, in allowing its localities to deviate from the provisions of the national model codes, a state may be setting a trap for itself. The legislation provides no means of determining how a deviation from the national code provisions is either equivalent or stronger than the national model standard. In the presence of the legislation's sanctions, a state choosing to allow its localities to adopt their own model codes may invoke the sanctions because it cannot certify what it cannot demonstrate. The Americans with Disabilities Act, which relies on a federally-established set of minimum standards, provides for a national voluntary certification process. This process would allow states or localities that maintain their own accessibility codes to know that they meet or exceed the minimums. It is not an easy process to pursue.

In addition, the federal monitoring of the state certifications would have to accommodate the fact that potentially thousands of localities would have codes that differ in one measure or another from the national model codes, and have no way of determining what constitutes a different, yet equivalent or stronger standard.

The provision permitting local adoption of building codes that differ from those adopted by the states needs to be rethought or abandoned.

- * Section 203, establishing State Mitigation Plans, requires state plans to contain a process verifying compliance with various required codes and standards prescribed in Section 202, and to ensure that these building standards are being enforced. The legislation establishes no guidance to the states in how to accomplish that. The FEMA Director should establish minimum guidelines for compliance verification and enforcement that are consistent from state to state. The AIA is aware that some states and localities do not regulate the qualifications of building inspectors, which has serious implications for building safety. We request that the legislation require state certification of the qualifications of building inspectors enforcing life/safety codes.

- * Section 203 also should add a new subsection (c) providing for a public participation process in the development of state disaster mitigation plans, with ample involvement of architects, engineers, emergency specialists, and other interests. Such a provision would parallel the requirements of other federal laws, such as the Intermodal Surface Transportation Efficiency Act, the Clean Air Act, and the National Affordable Housing Act, which make efforts to involve the citizens and groups in the preparation of federally-mandated plans that affect their communities. The provision should establish requirements that assure early and continuing involvement of the public, access to data, and public hearings adequately accessible to citizens in different parts of the state.

- * Consistent with the public participation provisions, the states should also be required to cooperate closely with their local communities, particularly their large communities, in the development of mitigation plans. Because the state plans will have substantial impact on what localities are expected to do, especially in those places where localities have their own code enforcement and public works authorities, close cooperation will ensure the highest quality plans.

- * Section 205 (a)(2) provides for FEMA training and licensing of architects, engineers, building inspectors and others. We cannot support this provision, nor any federal measure which involves federal licensing of architects. We understand that the legislation did not intend to have FEMA tread on an authority traditionally reserved for the states. States already establish standards for the licensure of architects, with appropriate standards of education and training. We do not believe that FEMA would want the responsibility nor the burden of setting up a separate licensing department for hazard mitigation practice. We do, however, support federal training opportunities for professionals involved in the disaster mitigation field, as well as the state certification of building inspectors engaged in enforcing life/safety building codes.

- * Section 205 provides for technology transfer of hazard mitigation technology to "states, local communities, and other persons, such as private building contractors, responsible for the implementation and enforcement of hazard mitigation measures." The legislation should make sure that architects and engineers are among

those specifically designated to receive FEMA technology transfer information. We would add that accredited architectural and engineering schools be enlisted in the technology transfer initiative.

- Section 206 contains a technical or drafting error in the establishment of the Self-sustaining Mitigation Fund set-aside that will cause it to fail to perform as intended. It incorrectly provides that funds set aside would be available "unless" the FEMA Director determines that amounts in the two insurance funds are sufficient to provide for any probable losses from certain disasters. The provision needs to be changed to ensure that there would always be a mitigation fund set-aside of at least 5 to 10 percent. However, funds in excess of ten percent could be made available for state mitigation programs if the insurance funds are fully capitalized.

- With respect to the FEMA Mitigation and Planning Advisory Committee established in Section 207, nominees representing particular disciplines or professions should be persons "prominent in their field, and to the extent possible specifically with respect to natural disasters.". It is vital that this group have recognized relevant expertise in the various specified fields to ensure quality and credibility in its recommendations. The architect and engineer, for example, should not only be well-known within the design professions, but should also be experienced in hazard design. The person representing consumer interests should be prominent in the field of consumer advocacy.

- A particularly important provision would be to establish a procedure whereby historic properties listed on or eligible for listing on the National Register of Historic Places would be examined by qualified professionals to determine their structural integrity prior to any condemnation action. We found that following the Loma Prieta Earthquake, hasty determinations of building integrity led to the unnecessary loss of many architecturally or culturally significant historic properties that might have been saved. They survived the destruction of nature only to fall victim to human error.

- The AIA believes that measures to retrofit existing buildings consistent with the degree of risk would be highly desirable. The legislation does not currently require such retrofit, except to the extent that it occurs as part of a planned substantial renovation. We agree, however, with our coalition partners that it would be difficult to achieve that goal. There are practical and technical complexities to imposing a retrofit requirement. For example, how does a state handle the homes of low-income people, or marginal small businesses? Does it provide a requirement for those above a certain income level or business size, while subsidizing the others? We do not think that this can be done. We hope that the insurance program, combined with greater public education and state measures may improve the ability of these structures to withstand disaster events.

At the same time, the subcommittee must be concerned that lifeline structures--hospitals, fire stations, waterworks, schools, sewage treatment facilities, and other similar buildings and facilities in high-risk areas--can function when disaster strikes. The legislation should require a study of the extent to which existing public facilities should be retrofitted in areas where known risks are high.

In sum, Mr. Chairman, we endorse the legislation, with the changes that we have noted, and stand ready to work with you and your subcommittee to adopt the most effective legislation possible.



Publisher of Consumer Reports

Testimony of

Mary Griffin
Insurance Counsel
Consumers Union
Washington, D.C. Office

before the

Water Resources and Environment Subcommittee

of the

Committee on Public Works and Transportation

House of Representatives

February 23, 1994

on the

"The Natural Disaster Protection Act of 1993"
H.R. 2873

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Mr. Chairman and Members of the Subcommittee, Consumers Union¹ appreciates the opportunity to present our views on important consumer issues relating to legislation which creates a federal natural disaster insurance program. We understand the recent spate of disasters has raised concerns about the ability of the federal government to continue to provide billions of dollars in disaster aid and the need to reassess federal disaster assistance policy. We are concerned, however, that "The Natural Disaster Protection Act of 1993" (H.R. 2873), which includes some positive measures, focuses too much on protecting the insurance industry rather than preventing and protecting against losses from catastrophic natural disasters. We urge that Congress, before it enacts any disaster assistance legislation, direct the federal government to conduct a thorough analysis and study to determine whether federal assistance should be in the form of a joint federal-private industry "insurance" effort or whether the needs of disaster prone areas and the federal government can be met through alternative mechanisms, all of which must have as their primary goal mitigation of losses.

The past few years have brought some of the worst disasters this country has had to endure for the past 100 years -- from the hurricanes that ravaged Florida and Hawaii in 1992 to the earthquake and aftershocks of last month that continue to inflict devastation on California. And the insurance industry has had to pay out a great deal of the losses, particularly in the areas affected by hurricanes. But an increase in the number of disasters does not mean that the federal government should now become the insurer of first resort for certain natural disasters and the ultimate reinsurer for the industry for most disasters. Nor should this bill be viewed as a panacea for the disaster aid currently provided by the federal government, a major part of which is allocated for public schools and other facilities and road construction, not costs taken care of by insurance coverage.

Before Congress enacts any legislation, there must be an analysis of the most appropriate approach to take that meets the primary goal for any disaster assistance program -- mitigation. Only through strong mitigation measures that involve commitments from all relevant entities can the government ever hope to decrease its future outlays for disasters. To determine how best to achieve mitigation and to understand the capacity of the current private insurance market and whether there is a need for federal assistance to that market, the following analyses must be conducted²:

¹ Consumers Union is a nonprofit membership organization chartered in 1936 under the laws of the State of New York to provide consumers with information, education and counsel about goods, services, health, and personal finance; and to initiate and cooperate with individual and group efforts to maintain and enhance the quality of life for consumers. Consumers Union's income is solely derived from the sale of Consumer Reports, its other publications and from noncommercial contributions, grants and fees. In addition to reports on Consumers Union's own product testing, Consumer Reports with approximately 5 million paid circulation, regularly carries articles on health, product safety, marketplace economics and legislative, judicial and regulatory actions which affect consumer welfare. Consumers Union's publications carry no advertising and receive no commercial support.

² In a study published by the Federal Emergency Management Agency and the National Earthquake Hazards Reduction Program in July of 1992, it was recommended that future research be conducted to determine the impact of different types of insurance arrangements and disaster assistance programs on distributional burden of future catastrophic earthquakes, including the role of mitigation

- **An analysis conducted by the federal government on the nature and scope of disasters and the most effective mechanisms for managing and distributing losses from catastrophic disasters, including mitigation proposals and how best to ensure their implementation.**
- **An objective independent review of the causes and distribution of losses from the earthquake, Hurricanes Iniki and Andrew, and other disasters, including the effect of these disasters on the primary insurance market and the capacity of the current market to provide for future disasters.**
- **A detailed study by an independent entity on the reinsurance market and the effects of various catastrophes on it to determine whether there is a need for the federal government to provide reinsurance to the private market.**

Furthermore, if Congress determines that a joint federal-private "insurance" approach is the most appropriate means to provide disaster assistance, before any proposal of this kind is enacted, there must first be federal regulation of the insurance industry. This industry is currently regulated by the states and historically has been opposed to any federal regulatory involvement. We are concerned that creating a system in which an industry whose rates, solvency and market conduct practices are regulated by the states but whose ultimate losses are insured by the federal government could result in the right hand not knowing what the left is doing, with the federal government and taxpayers coming out as the losers.

A. ASSESSMENT OF NEED FOR A FEDERAL DISASTER ASSISTANCE PROGRAM

- I. The federal government should not be involved in providing disaster assistance insurance or assisting the private insurance market in providing such protection unless it is determined that 1) the private market can no longer insure against such losses and 2) a federal insurance program is the most appropriate way to provide disaster assistance.**

Federal involvement in disaster assistance and the primary insurance market.

The federal government has been involved in providing disaster relief in several forms, such as emergency assistance from the Federal Emergency Management Agency (FEMA), the flood and crop insurance programs, and loans provided through the Small Business Administration. There are a variety of ways the government can participate in disaster assistance, all of which should have as a primary goal reducing loss through mitigation measures. But before a decision is made that the government should become involved in

in reducing losses; the effects of catastrophic earthquake on the primary and reinsurance insurance markets; and whether earthquake insurance should be mandatory or voluntary. "Indirect Economic Consequences of a Catastrophic Earthquake," a study conducted by Development Technologies, Inc. under a grant from Federal Emergency Management Agency, page 94-95.

disaster assistance as contemplated by the various disaster proposals, an independent analysis of the adequacy of the private insurance industry's capacity to provide protection must take place. Then, it must be determined whether a need for federal assistance exists and, if so, what form that assistance should take. Experience with the flood program, which is currently being reassessed, demonstrates the need to carefully analyze any new disaster assistance proposal before committing the federal government to any future obligations for disaster assistance.

Just as the country was getting over the disastrous effects of Hurricane Andrew and the floods of the mid-west, 1994 brought with it another huge disaster, the earthquake in southern California. As the federal government is finding it more and more difficult to find places in the budget to squeeze out money for these disasters, it is understandably looking for alternatives to post-disaster relief aid. While the \$8.6 billion in aid represents the highest amount appropriated for a single disaster, a large portion of the money will be used to rebuild schools, water lines and other public facilities as well as for rebuilding freeways and bridges. H.R. 2873 is intended to deal only with types of losses currently insured by the private insurance market. The majority of losses covered by the federal aid package would not be affected by the assistance provided under the bill.

And though the federal government was called on to foot the bill for the earthquakes, the private insurance industry's estimated \$3 billion in losses "have deflated insurers' hopes for a boom year in 1994"³ but are a mere blip on the screen relative to the \$15 billion bill for Hurricane Andrew. Although the losses of 1992 were a shock to the insurance industry's balance sheets and represented some of the largest losses in insurance industry history, the market has been able to absorb the losses and respond to lessons learned from the catastrophe.

Is the private insurance market continuing to write insurance to protect against losses from natural disasters? The answer is clearly, yes. Though availability of insurance from certain companies has become an issue in those parts of the country hardest hit by the disasters of 1992 and some companies' bottom lines will be offset by losses from the earthquake, for most of the country disaster assistance is readily available.⁴ While the high deductibles on earthquake insurance in California prevent many from purchasing the insurance, the market has expanded from the 1970's when less than 10% of homeowners had

³ "\$4 billion in losses from quake, freeze to wallop insurers," Business Insurance, February 7, 1994, at p. 1.

⁴ For example, as stated in a report issued by the Insurance Information Institute, "[i]t is important to note that while individual companies may pull back from coastal areas, the property insurance industry as a whole continues to supply insurance to practically every property in the United States." "The Catastrophe Reinsurance Crunch," August 20, 1993, page 5. And while some predict premium increases in the personal lines as a result of earthquake and winter freeze losses, availability should not be affected.

earthquake coverage to the current rate of 25%. And more are expected to purchase protection in response to the recent earthquake.

While the disasters of the past few years, 1992 in particular, no doubt had an effect on the primary insurance market, lessons learned from the disasters will only serve to strengthen the market in the future.⁵ One positive outcome of the industry's miscalculation of losses is the renewed interest insurers have in their actuaries' ability to estimate losses -- new models for predicting the extent of damage from winds are being churned out by the experts and information obtained from the hurricanes will enable more accurate underwriting in the future. Lessons learned from the way in which the earthquake struck and the aftershocks provide invaluable information to those predicting earthquake hazards and ways to mitigate damages.

Reinsurance -- the spreading of risk. One of the ways in which primary insurers protect themselves is through the mechanism of reinsurance, which is designed to spread the risk as far as possible to minimize losses on particular companies or sectors of the industry. At the time of the 1992 disasters, the reinsurance industry had already been hit hard by losses from the 1989 California earthquake and fires and other disasters that were not sufficiently underwritten or priced. The London market had also suffered due to problems with Lloyd's, a major reinsurer. Reinsurance rates reportedly rose and the availability of reinsurance contracted. In addition, the way in which reinsurance contracts were written subjected reinsurers to losses they did not think possible until Andrew and Iniki. Losses from the recent earthquake, however, are not expected to have a substantial impact on the reinsurance market because losses are not as high as those from Hurricane Andrew and Iniki and certain limits apply.

Although the losses from Andrew and Iniki depleted much of the reinsurance market's surplus, new capital was and continues to be infused into the catastrophic reinsurance market. Reports indicate that catastrophe reinsurance is readily available, albeit at a higher cost.⁶ As

⁵ While many argue that the disasters of 1992 caused catastrophic losses to the industry and therefore the industry needs protection, the extent and causes of such losses do not rest solely with the disasters. Inaccurate pricing, concentration of risks in certain geographical areas, and mismanagement of insurance companies all played a role in contributing to the effects of the disasters of 1992. The insurance industry failed to underwrite accurately for the extent of damage caused by the disasters. This situation has improved, however, as insurers have gathered data from the hurricane experience. Many of these problems, however, are regulatory, not economic, in nature and need to be addressed with improved regulation, not simply financial assistance.

⁶ See, e.g., "Bermuda cat facilities easing capacity crunch," *Business Insurance*, January 10, 1994, at p. 1, 18 (capacity has been restored, so much so that some programs are oversubscribed); Insurance Information Institute, "The Catastrophe Reinsurance Crunch," August, 1993, at page 1 (all signs point to an expanding market).

a result of Andrew and Iniki, reinsurers learned many lessons about their exposure and how to underwrite and contract for it in the future. And states hardest hit, e.g., Hawaii and Florida, have taken action by setting up their own state reinsurance pools or other mechanisms.

But it is difficult to determine the extent and nature of reinsurance available in the domestic and international markets because reinsurance is not subject to direct regulation. Much of the information about the reinsurance market comes from the industry itself. We believe that an independent assessment of the reinsurance markets, domestic and international, should be conducted to determine whether or not the private market is capable of underwriting catastrophic losses of a certain scope and kind. If the reinsurance market does not have the ability to underwrite, for what kinds of risks or catastrophes is this true? At what point is the reinsurance market not providing protection? Only if these questions are answered can a determination be made as to which is the most appropriate mechanism to provide the disaster assistance. This may or may not entail a private-public insurance program.

Before the federal government becomes the primary insurer for all damages resulting from certain disasters, it must conduct 1) an assessment of the availability of insurance to protect against natural disasters and the way in which this insurance is regulated, as well as the causes of the losses and insolvencies; and 2) the federal government needs to assess the most appropriate ways to provide disaster assistance, including private mechanisms such as special reserves set up to pay for damages from catastrophic earthquakes or federal or state programs (interim or permanent) to assist with losses from certain disaster-prone areas. Ways to improve such regulation, including the enactment of federal standards and ways to deconcentrate risks (for individual companies) in disaster prone areas, should be included in such an inquiry.

B. ANALYSIS OF PROPOSED DISASTER PROTECTION BILL (H.R. 2873)

The primary goal of any federal disaster assistance program must be on mitigating or preventing loss. As stated in a report issued by FEMA, "Mitigation and minimizing the risk through proper design and site location is the ultimate and necessary solution, otherwise the insurance industry and government are just compensating and encouraging poor decisionmaking."⁷ To achieve this goal, any federal proposal must provide incentives for all entities involved -- residential and commercial property owners, states, developers, the federal government and, most importantly, insurers -- to institute and enforce mitigation measures. By including a variety of disasters in the program and obligating the federal government to cover all losses from certain disasters without providing assurances that strong, appropriate mitigation measures will be put in place, H.R. 2873 falls short of achieving the goals of an effective disaster assistance program.

⁷ FEMA Report, supra note 2 at p. 135.

I. The mitigation measures contained in Title II do not go far enough to ensure the reduction of loss from natural disasters.

Though the mitigation program outlined in the proposal represents a positive step, we believe that the program does not go far enough to ensure appropriate mitigation measures are instituted. While the hazard mitigation measures contained in section 4 go a long way to involve the federal government in promoting hazard-mitigation, the proposal misses the opportunity to include the most important player in hazard mitigation -- the insurance industry. The effectiveness of a mitigation program can be gauged only by the degree to which the insurance industry is held accountable for implementing mitigation measures. While states, the federal government and residential and commercial property and business owners must be involved, it is the insurance industry that has the resources and is in the best position to ensure loss prevention. The following are some concerns about the mitigation program contained in H.R. 2873:

1. Assessment by independent entity: We believe that before the federal government establishes a mitigation program, the government, through the National Academy of Sciences or other entity, should analyze various mitigation measures to determine what the measures should be and how best to implement them. Prior to the provisions in section 4(b) and (c) being put in place, we would urge the completion of the independent analysis.

2. Incentives for insurers not included: If the federal government becomes the primary insurer for these disasters and insurers have access to reinsurance from the federal government, what incentives to mitigate will insurers have? Insurers can play a key role in loss reduction but the scheme presented in the proposal fails to provide sufficient incentives. At a minimum, insurers should be required -- as a condition of participating in either the primary or reinsurance programs -- to demonstrate that the properties they insure meet certain standards appropriate to the risk involved.

3. Effect on older housing stock: The mitigation measures do not include older housing stock, which should be expected to suffer the most extensive damage. Much of our older housing stock is concentrated in the urban cores and provides housing for much of our low income population. While certain measures may not be cost-effective, we are concerned that if mitigation measures are not applied to older housing stock, insurance premiums on such property may be more expensive and have a debilitating effect on low-income neighborhoods, some of which may go unprotected as the result of high premiums. There are a number of measures that are not costly which should be included in any

4. Enforcement: While the proposal provide a number of initiatives to promote and transfer hazard mitigation technology, it does not provide a mechanism that will ensure mitigation measures are put in place. We understand the intent of holding states responsible for complying with the mitigation program. But we are concerned that states will vary dramatically in their ability (financial and otherwise) and intent to carry out the mitigation plan. We are also concerned that local communities, particularly low-income, will be

unfairly penalized if the politics and state bureaucracy are such that those communities are not helped to be brought into compliance. In addition, the bill places responsibility with the states to develop ways to verify compliance and to identify areas within the state which are at-risk. In order to ensure uniformity of compliance and risk-area standards across the country, it may be more appropriate for a federal entity to determine the specific areas at risk as disaster zones do not necessarily follow state borders.

5. Commercial property insurance income is not available to the fund: While the reinsurance program includes insurance on commercial property, the primary insurance program does not incorporate such coverage. The damage to commercial property in large earthquakes is estimated to be four times that of residential property damage. By not including commercial properties in the primary insurance program, the mitigation program misses out on a large source of funds (% of premiums from policies that insure commercial properties for earthquake risk) that could be available for its implementation.

6. Mitigation measures affecting other types of losses should be included: Workplace injuries and general liability claims account for a number of the loss claims following disasters. Insurers should work on improving workplace safety, require better compliance with federal safety and health standards, require fire safety and response training and other programs that can affect their exposure to liability. They can do this by requiring employers and others they insure to comply with certain safety practices that minimize loss.

II. The Primary Insurance Program (Title VIII, subtitle A) represents open-ended liability for the federal government, which could be massive, and allows the private market to compete with the federal program.

1. The federal government will be obligated to cover all losses: Under the proposal, the federal government is not only responsible for natural disasters of such catastrophic proportions that they wipe out the private insurance market -- the federal government will be responsible for all losses resulting from the covered natural disasters. The states, local communities and victims who are in need of federal relief but unable to get any because the federal government has obligated itself already to mandatory, not discretionary expenditures will all be hit hard.

2. Private insurers will be allowed to compete with the federal insurance program: We are concerned that the primary insurance program will enable private insurers to profit at the expense of the public. Although one part of the primary insurance program states that private insurers will participate "on other than a risk-sharing basis," (sec. 801(b)) another section provides that an insurer can provide "coverage on its own behalf" (sec. 803(d)(2)). This sets up a situation which enables the private market to "cherry-pick" the best risks, leaving the worst risks for the federal government to pick up.

Private insurers already write coverage for the risks included in this bill. It is unclear whether they can retain such policies, allowing the federal government to pay for the losses

while they, in effect, are allowed to increase their profits on those coverages they write but do not necessarily have to pay on. Since risks often overlap, there may be confusion as to which policy covers the particular loss, and the federal government may end up paying on losses otherwise covered by private homeowners insurance.

3. The primary insurance fund covers expenses of insurers but there are no standards for controlling the level of expenses charged or determining the appropriateness of such expenses: Insurers can recoup several administrative expenses through the program off the top as the amount to be remitted to the government includes premiums "less the insurers' expense allowances" (sec. 805(e)). Are all these expenses justified? Is reimbursing the insurers for such expenses the most efficient and cost-effective means to run the program? Despite the fact that the government will be paying for expenses, including commissions to agents, there are no requirements or standards for efficiency for these expenses.

The program also allows "any private insurer" to participate "without regard to whether such private insurer provides any insurance to residential policyholders"(sec. 803(c)). If writing residential property insurance is not a prerequisite to writing contracts under the federal program, why should such business be limited to insurers at all? As has been suggested, the administration of the contracts could be awarded on a competitive bid basis, by region. This would promote competition, thereby decreasing administrative expense cost, and provide economic opportunities for the region.

4. Commercial property is not included in the primary insurance program: The primary insurance program does not cover commercial properties despite the fact that damage to commercial property from an earthquake is the most costly. If commercial property is not included in the program, how does that affect incentives to mitigate? The reinsurance program, on the other hand, includes commercial property coverage. What are the underlying reasons for this distinction?

III. The Reinsurance Program (Title VIII, subtitle B) provides insurers with complete protection, with no incentives to accurately price their products, to institute loss reduction measures, or to cover certain risks.

The reinsurance program puts the government in the role of reinsurer, subjecting the Treasury to future obligations without getting anything in return from private insurers. While there is borrowing authority from the Treasury and a promise to pay back any loans, this program exposes taxpayers to liabilities where the fund is not able to pay back the outstanding loans in a timely manner. We have several concerns about the scope of the reinsurance program, including:

1. The reinsurance program may create disincentives to accurately price and institute loss reduction measures: If the private reinsurance market can rely on a federal government bailout, companies have an incentive to underprice. This would allow them to use the money to pay out dividends to shareholders and later have taxpayers pick up the bill. In

addition, if reinsurers have protection of the federal purse, what incentive is there to implement or require loss reduction measures? There are no such requirements in the bill.

2. Setting the appropriate trigger: Before the federal government takes on future obligations, it should determine, through an independent analysis, at what point this undertaking is appropriate. The trigger currently relates to the amount of "gross losses" the industry is "likely to incur" rather than the amount of loss to surplus companies actually pay out. If the trigger relates to "gross losses," does this ignore other valid and collectible reinsurance? How is surplus calculated under the proposal? Qualifying losses include assessments and surcharges imposed by state residual pooling programs and guaranty funds. Should such funds be included in determining the losses? These questions all raise concerns about the way in which the trigger will be determined. This is a critical element of the bill which must be further analyzed.

3. Bailout of individual companies is not an appropriate role for the federal government: The program provides two important triggers, one for the industry and one for individual companies. Protection for individual companies minimizes the incentives for insurers to reinsure each other. If taxpayers are expected to pay for liabilities in excess of the fund, this should be done only on an aggregate industry basis.

4. Private reinsurers determine terms of contracts: The bill provides that reinsurance contracts issued by the federal government contain terms and conditions similar to those used in private catastrophic reinsurance contracts (sec. 811(b)). We are concerned that the private market will dictate the terms though the government is actually obliging itself under the contracts.

In addition, the proposal contains no requirement that reinsurers accept certain risks from certain hazard-prone areas. Insurers may have no added incentive to write in disaster prone areas if no requirement is attached to reinsurers' ability to access the funds.

5. Role of federal government in providing reinsurance: The purpose of reinsurance is to distribute losses as far and as widely as possible. Currently, that is done through a domestic and international reinsurance market. If the federal government becomes the catastrophic reinsurance pool, the chain of distribution will be brought to a halt at the Treasury's door. This could have severe economic consequences for the generation of capital into the private reinsurance market, particularly in the international market.

IV. By combining several natural disasters in the program, the program creates perverse disincentives.

One of the goals of any disaster assistance program is to affect locational decisions and minimize loss. One of the reasons for providing disaster assistance through an insurance mechanism is to serve as an incentive to reduce losses because the individual is charged for the risk through the premium. Cross-subsidization of risks, however, is contrary to the

purpose of insurance. By combining hurricanes, tsunamis and earthquakes, the positive incentives to locate in a less risky area or to take specific measures to reduce loss are lost because a consumer is not charged for a particular risk but for a number of risks. As stated in a report by GAO, "assistance programs should be designed to minimize incentives for poor locational decisions."⁸

The program includes risks that are not of similar predictability or of similar severity. Catastrophic earthquakes occur infrequently relative to hurricanes and windstorms. More information is available about hurricanes; hurricane exposure is more limited in its geographic scope; and advance warning systems play a role in minimizing damage from hurricanes but not from earthquakes. These risks are not similarly predictable or severe and combining them creates a cross-subsidization which is antithetical to the goals of an insurance program.

V. The Advisory Committee has a great deal of responsibility and authority but its membership is biased toward the insurance industry.

The membership of the Advisory Committee (sec. 822) is substantially tilted in favor of insurers; four out of the seven slots would conceivably represent insurer interests. Considering the major role given this Committee under the proposal and the fact that it will be financed by taxpayers and consumers, a majority of the membership must represent an ethnically and geographically diverse cross-section of the public.

C. ANALYSIS OF ALTERNATIVES IS NEEDED

The most effective way to pay for mitigation programs and losses from a disaster is to distribute the costs as widely and as appropriately as possible. This may involve a combination of programs and incentives -- e.g., minimum mitigation standards for residential property owners and subsidies or loans for those unable to afford to meet the standards; requirements that insurers meet mitigation standards; and expanded private insurance protection. Such alternatives need serious consideration and analysis before any proposal committing the federal government to massive future liabilities is enacted. Some of the alternatives include:

1. Tax protection for catastrophe reserves or reinsurance pools for the private market:

The industry has argued that it cannot maintain sufficient funds to protect against catastrophic losses whose risks are measured on a long-term basis, particularly earthquake risks, because such reserves are taxed. The appropriate federal agency should study the costs to the federal purse (the loss of tax revenue) from tax-free catastrophe reserves, with strict accountability standards, relative to the costs of setting up the program as provided in H.R. 2873. Also, the concept of a private reinsurance pool in which all insurers participate should be studied before the federal government assumes such role.

⁸ United States General Accounting Office, "Federal Disaster Assistance: What Should the Policy Be?" June 16, 1980, at p. iv.

2. Prefunding disaster assistance through assessments on activities or properties associated with risks: Rather than relying on insurance, which transfers money to the insurance industry who takes a certain amount for expenses, administration, etc., it may be more appropriate to assess costs directly on the activity creating the risk or increasing the costs from disasters. For example, property taxes could be assessed according to the risk of the property. Some of the revenue from these taxes could be used to implement a mitigation program. Property owners could be required to demonstrate that the property meets certain minimum mitigation standards. Gas taxes or special highway tolls to pay for retrofitting the highways and for post-disaster rebuilding or repair costs are appropriate incentives to ensure mitigation as well as a fund for post-disaster costs. In addition, surcharges on policies, if done correctly, could produce funds for a mitigation program and would be tied to the insurance that covers the risk.

3. Federal loan program that provides incentives for mitigation: Risks perceived as not imminent or likely to occur often go uninsured. People in most parts of this country do not perceive the risk of loss from earthquakes or other disasters as real for them. In such situations, it is unlikely that people will be motivated to pay in advance through insurance. Loan programs, on the other hand, provide a mechanism to pay for losses after the fact. Expanded loan programs, either through the federal government or in the commercial market, may be a more appropriate way of dealing with certain disasters or certain less disaster-prone areas where an insurance program may never catch on. Such programs should include incentives for mitigation, e.g., an interest rate associated with the level of preventive measures the applicant instituted.

The recent disasters, their scope and associated costs, have raised concerns about the government's ability to provide disaster aid to these hard-hit areas. They have also generated needed discussion and debate over how best to provide disaster assistance. But fashioning solutions that ensure mitigation and provide a source of funds for the costs that go along with mitigation and disaster relief is not an easy task. Experience with the flood program, for example, demonstrates that a federal insurance program is not an easy, quick fix. Ways to minimize costs, particularly through pre-disaster hazard mitigation programs, need serious consideration before any program that commits federal dollars to protecting the insurance industry or creates a whole new disaster assistance program is implemented.

**COMMITTEE ON PUBLIC WORKS
AND
TRANSPORTATION**

**THE SUBCOMMITTEE ON WATER
RESOURCES
AND ENVIRONMENT**

U.S. HOUSE OF REPRESENTATIVES

WRITTEN TESTIMONY OF:

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FEBRUARY 23, 1994

Good morning, Mr. Chairman and Members of the Committee. It is an honor to appear before you today, and I thank you for the opportunity to testify about natural disaster protection.

My name is John Klein. I have been involved in the Real Estate and Construction Industries for over 20 years. Some particular areas of my expertise are water resource management, capturing rainfall, and hazard mitigation through on-site water storage and distribution systems.

Recently, I was awarded a patent for technology that I developed over many years. Utilizing this technology allows for a building to be seismically safe, and cost effective with a self-contained water supply system, so that a building and the surrounding area can be protected with fire sprinklers without having to rely on the public water supply. There can be little question that losses would have been significantly reduced if this technology was available, and incorporated into structures before the fire in Oakland-Berkeley in 1991, and the recent fires in Laguna Beach and Malibu. Furthermore, with hundreds of thousands of people left without water after the Northridge earthquake, having an individual water supply would have proven invaluable.

Since the fires, I have been working with the City of Malibu on hazard mitigation techniques, and am also now involved in continuing discussions with Lawrence Livermore National Laboratories about research, development and education of hazard mitigation technologies. We are exploring how to best expedite the transfer of these technologies to areas in the United States affected by natural disasters. The primary focus of my testimony today is about water, one of our most basic needs. Specifically, I am going to discuss the importance of a personal supply of water and its relevance in natural disaster protection.

First, I would like to compliment the committee on this bill, which is very necessary, but long overdue. State and Local Governments must become more responsible for the lives and safety of their citizens and property owners. Individual Members of City Councils, County Boards of

Supervisors, Building Code Officials, etc., need to be more accountable for improving building standards and changing codes to face the reality of the dangers in many areas of this country, and this must be accomplished with a sense of urgency. The implementation of appropriate changes will ultimately result in a dramatic reduction in personal injuries, lives lost, and property damage.

There are four particular points I would suggest be included in H.R. 2873:

1. Firestorms and drought should be identified as natural disaster perils.
2. All building codes nationwide should be immediately examined, and until then, no rebuilding should take place in any area receiving Federal Disaster Assistance funds until building codes in that area are reviewed, analyzed and appropriately revised.
3. Once federal funds are being used for reconstruction, the Federal Government should monitor the process.
4. The Federal Government should fund model projects to present real world examples of available technologies.

All too often the Federal Government is called upon to pay for the repeated pattern of mistakes made by State and Local Governments as well as individuals. Hopefully, this legislation will take a giant step toward changing this pattern

Currently, the bill is silent on the natural disaster perils of firestorms and drought. On the basis of the billions of dollars in damages, and the scores of lost lives which have been caused by these perils alone in recent years, they must also be identified as natural disasters.

A process for the examination of all building codes nationwide should be implemented immediately upon enactment of the Bill. We must recognize, for example, that certain areas of

this country may be only a few miles apart, but require substantially different building codes and standards. Until completion of such a comprehensive review, a moratorium should be imposed on any rebuilding that utilizes Federal Disaster Assistance funds. This would be an unpopular but necessary move if we are to stop repeating earlier mistakes that have contributed to the tragic impact of natural disasters.

Many areas in our nation have building codes and regulations that are simply too weak for the conditions that the people living in these areas know to expect. Building standards and codes should be reviewed, analyzed and revised before reconstruction takes place. It is likely to be far less costly in the long run to have people stay in temporary housing a little longer, so that when rebuilding does begin, the buildings that are constructed will be less likely to burn down, fall down or be blown down once again.

Given that there are homes all over the world, including here in America, that are 200-300 years old or older, with 1994 technology, we certainly can do better than building structures that will last for only two or three decades. We need better, stronger buildings that will last longer and are cost effective, safe, durable, energy efficient, water conserving and affordable. Requiring building to a higher standard does not cost more; it requires shifting priorities. Pointing out the safety, efficiency and longevity features in buildings should become more important than wallpaper quality, carpet types and whirlpool bath tubs. For example, the cost of a quick response sprinkler system installed at the time a house is built, costs about the same as carpeting. The American public does not object to prioritizing safety in our major purchases; witness how automobile manufacturers now market their products with talk of airbags and anti lock brakes.

If there were mid-air collisions in the United States every month that killed more than 300 people, and injured more than 10,000 people, I believe after just a few months, the overwhelming public demand would be to shut down the airline industry until the problem is identified and solved.

Fortunately, we do not have this problem. Unfortunately, as a result of structure fires, year after year we have close to 4,000 deaths and over 120,000 injuries, and yet it is still not seen as a national problem that deserves immediate attention.

How many more people will have to die, how many more fire fighters will have to die, how many more millions and billions of dollars will we put into the same mistakes again and again? If the United States is to set an example for the world to follow, then this Bill represents a strong opportunity for a forceful change now.

Unfortunately, local governments often have difficulty in resisting the pressures of residents and business owners who are eager to rebuild after a disaster. Given the need for Federal assistance in these disaster situations, this bill represents an opportunity for providing the leverage needed for appropriate changes in how we build after natural disasters occur. Before Federal funds can be used in the rebuilding process, an advocate from the Federal level must be created to monitor the review, changes and implementation.

The Federal Government must be given the opportunity to review building codes, be empowered to insist on appropriate revisions and monitor all reconstruction or certify others to do the same.

We have a national debate on health care right now. The Federal Government should mandate safer buildings as another form of health care. We have a nation full of sick buildings that may look well, but are not. They are accidents waiting to happen. Even hospitals, which should be the ultimate refuge, are not immune. Considering all the money involved in the debate over health care, we should make part of this debate the idea that hospitals must be constructed as the pinnacle of reliability. Back up power systems are common in hospitals, back up water systems should be just as common. If we are truly committed to improving our nation's health care, then existing buildings need a physical examination also. Mr. Chairman, I suggest that the concepts of

prevention and protection which have been traditionally associated with health care, be applied to the entire construction industry.

Mr. Chairman, I request permission to submit for the record, numerous articles that tell the same story over and over. They tell of fire departments running out of water, residents that saved their homes by spraying their roof tops with water, individuals with good sense to have a supply of water and a back-up generator or pump on hand to rescue themselves, and helicopters and airplanes helping to save homes by dropping water on them. To further assist in illustrating my point, I am going to quote from an article published in the *Los Angeles Times* on November 5, 1993. During an interview, Los Angeles County Fire Department Spokesman, Captain Steven Valenzuela, said: "Fire fighting is still a real basic science, you put the wet stuff on the red stuff" I say that if you don't have the wet stuff, you can't put out the red stuff

The front page story from the *Philadelphia Inquirer* on October 30, 1993, was entitled "Fire Resistant by Design." This is a story about the lone house that survived in a Laguna Beach neighborhood, when all the other houses were destroyed by fire. The house was "built in excess of the City Safety Codes" utilizing fire-resistant materials, cement roof tiles, stucco and double pane glass. The owner "designed and built the house to survive fire," and not only did it survive magnificently, the house was completely unharmed. Further we learn that "inside, barely a trace of smoke hung over the white marble floors and white cathedral ceilings." Everyone should be thoroughly impressed by this performance of a structure. Since then, photographs such as this have appeared in various publications throughout the country, and the owner has received well-deserved praise, and a boost to his engineering business. However, this is not the entire story. The *Inquirer* article stated that "in front of the house is a fire hydrant. Unlike many in the neighborhood, it worked when fire fighters needed it to. Fire fighters told the family that, unable to douse the flames already devouring the adjacent homes, they concentrated on saving this house." This house survived a fire when its neighbors didn't because it was designed and built to

survive a fire, and because of that, no public moneys had to be expended to rebuild this house. However, once again, **it was water that saved this house.**

Before municipal supply systems became commonplace, rain barrels and cisterns were often found outside many American homes. Given our continuing experience with natural disasters, the time has come to resurrect the old wisdom and combine it with new technologies. Having a personal supply of water available is an important form of hazard mitigation that can be of tremendous benefit in many situations. Rainwater is inherently clean; the trouble usually comes when chemicals, sewage and the like seep into water sources. So, why don't we collect rainwater that falls onto the rooftops of our homes? The most likely answer is that we don't have to, but many of us should consider this. The majority in this country have become totally dependent upon centralized water storage and distribution systems that we usually call the public water supply.

All water supplies are essentially captured rainfall. Whether the water we drink is from a river, lake, reservoir, well or out of a bottle, it was all rainwater or snow at one time, the difference between tap water and what falls from the sky is simply the catchment and delivery system, and the process by which the water was purified after coming into contact with environmental surfaces.

I am not suggesting that we disconnect from the public water supply, I am suggesting that we must face the harsh reality that many systems in this country are severely deficient and their deficiencies and failures are magnified during times of intense crisis brought on during a disaster.

We currently have Federal Truth-In-Lending disclosure standards to protect consumers in borrowing transactions. In addition, many states have disclosure laws that require sellers of properties to inform buyers of existing deficiencies. Congress might also consider requiring the disclosure of deficiencies in basic services such as inadequate ingress and egress for emergency

vehicles and inadequate water service to meet minimum fire flow standards. If people are given the opportunity to make informed decisions about their safety and welfare, in buying or renting property, the potential exists for a dramatic reduction in lives lost, injuries, property loss, litigation, and direct and indirect costs to individuals and government.

The costs involved with upgrading an existing public water supply system is enormous. For example, in certain areas of Los Angeles County, the cost estimates are in the range of \$3.00 -- \$4.00 per gallon for creating new storage capacity. These are estimates based on today's costs and do not necessarily include the cost of rights of way or easements required. So, when an area may need to upgrade its capacity by 25 million gallons, this could conservatively cost 100 million dollars in today's dollars. By the time this type of project would actually be completed, years from now, costs will probably be much higher.

An alternative is to store water on-site, on an individual property basis, which can be accomplished safely in the cost estimate range of \$.75 -- \$1.25 per gallon, and the technology is here today to provide for these tremendous savings. Coupled with a back-up power supply and pumps, structures will be much safer, self-sufficient, and more reliable.

Disincentives are built into the existing system. Each time there is a major disaster that damages or destroys large amounts of property, a *hot economy* generally follows. The areas effected by the Oakland-Berkeley fire, Hurricane Andrew, the midwest floods, the Southern California fires and now the recent Northridge earthquake, just to name a few, are now going to experience tremendous surges in many parts of these local economies. Billions and billions of taxpayer dollars from all parts of the United States are paying for much of the rebuilding process. On the heels of a severe recession in the construction industry, a major disaster represents great opportunity for some, while many others suffer incredible hardship.

While I recognize it is out of the scope of this committee's jurisdiction, something that Congress might consider is incentives for safer construction in new buildings and in the retrofiting of existing buildings. These incentives could be for builders or building owners and would take the form of tax credits or tax deductions. Further incentives could be introduced for local governments to improve community safety. For example, local governments might offer reductions in tax assessments or waiving permit fees for measures taken in safer construction. These fees might be reimbursable by the Federal Government and could be justified, because the likelihood of providing disaster assistance to property owners that take self-protective steps has been substantially reduced.

Drought is a problem that many in this country are unfamiliar with. The impact of drought in areas that are not directly affected is subtle. Higher price for agricultural and farm products is only a small part of the effects of drought. The greatest impacts are falling on the environment, and many of the ecological effects may be irreversible. For example, during the last severe drought in California in the late 1980's and early 1990's, the direct costs associated with just the decreased hydroelectric potential alone, was close to 3 billion dollars. This can be misleading, however, because many of the impacts cannot be easily assessed in economic terms. We cannot quantify the costs to the environment by such things as burning additional fossil fuels, forest fires, the loss of fish, waterfowl, wild life and the losses to recreation and tourism.

By identifying drought as a natural disaster peril, areas that experience this condition will be better prepared for all the impacts. Building codes, development, and construction techniques should be appropriately modified to reduce water usage, encourage conservation, preserve the environment and utilize technology to help maintain a high quality of life.

The front page article of the weekend edition of *USA Today* on November 5-7, 1993, contained an offer of at least \$250,000 for information leading to an arrest of the arsonist that started the

Malibu fire. This will certainly motivate people to get involved in looking for who is responsible for this hideous and despicable act that resulted in the deaths of three people and countless animals, many injuries and hundreds of millions of dollars in damage. I commend those with the courage and resources to offer such a sizable reward.

The Federal Government must encourage education and innovative solutions for protection and prevention from the devastation of natural disasters. For example, we should create model projects from Federal buildings in various areas throughout the country. The Federal funding of model projects is needed to assist in the transfer of this technology to the public and present these solutions in a physical form.

One way is to build a building in an area known for many natural disaster perils; California for instance. We can select a site in a prominent area that is easily accessible, and construct a model that looks like any conventional building, yet incorporates the technology available in 1994. It is important to build on a human scale that everyone can relate to, a house for example, and make it attractive, nicely landscaped, self reliant, and include safety features, energy efficiency and water conservation. Then, invite architects, engineers, builders, developers, real estate brokers, bankers, insurers, elected officials, planners, building code officials, the general public, the media, everyone. Once they are there, let's simulate a 7.0 earthquake regularly and even set the building on fire from time to time. Yes, it will scare people, but they will be amazed in the process. No one will be harmed, and the building will come through unscathed. People must see, touch and feel to believe, because if we don't show them, they may never think that a better and safer building is possible.

Historically, money from the Federal Government has supported institutions. However, in order to expedite new technologies making their way into public usage, individuals must also receive direct financial support to educate and demonstrate feasible solutions. The investment of federal

money in solution-oriented projects will set an example of progressive leadership that State and Local Governments should follow. The old expression "an ounce of prevention is worth a pound of cure" is what hazard mitigation is all about.

Mr. Chairman, once we recognize that in this country we must deal with all types of natural disasters, we must stop building the wrong way, we must monitor how taxpayers' money is spent after disasters and we must construct real world models to transfer technologies to the public, then the Federal Government is leading by example and showing the State and Local Governments and the people of this country a new path to safer living for the future.

In closing, I wish to borrow a quotation from the great physicist, the late Dr. Richard Feynman, a Member of the Presidential Task Force formed to investigate the 1986 Space Shuttle Challenger disaster. His statement is my message. **"Reality must take precedence over public relations."** Thank you for your time and I would be pleased to answer any questions.

EXHIBITS SUBMITTED WITH TESTIMONY OF JOHN M. KLEIN

LETTER FROM CONGRESSMAN CURT WELDON DATED NOVEMBER 23, 1993

LETTER FROM COUNTY OF LOS ANGELES TO THE MAYOR OF THE CITY OF MALIBU DATED DECEMBER 8, 1993 DESCRIBING DEFICIENCIES IN THE WATER SYSTEM.

ARTICLE FROM *THE PHILADELPHIA INQUIRER* DATED OCTOBER 30, 1993 DISCUSSING HOUSE DESIGNED TO BE FIRE-RESISTANT IN LAGUNA BEACH, THAT WAS SAVED BY WATER.

ARTICLE FROM *THE LOS ANGELES TIMES* DATED NOVEMBER 5, 1993 DISCUSSING HOME OWNER THAT SAVED HIS HOUSE WITH A PERSONAL WATER SUPPLY.

ARTICLE FROM *THE MALIBU TIMES* DATED NOVEMBER 25, 1993 DISCUSSING INADEQUATE WATER SUPPLY IN MALIBU.

ARTICLE FROM *THE SAN FRANCISCO CHRONICLE* DISCUSSING TWO BROTHERS IN LAGUNA BEACH THAT SAVED HOUSES BY WETTING DOWN ROOFS WITH WATER.

ARTICLE FROM *THE SAN FRANCISCO CHRONICLE* DATED JANUARY 19, 1994 SHOWING MORE THAN 100,000 PEOPLE WITHOUT WATER AFTER THE EARTHQUAKE.

ARTICLE FROM *THE SAN FRANCISCO EXAMINER* DATED DECEMBER 26, 1993 DESCRIBING ECONOMIC GROWTH AFTER DISASTERS.

ARTICLE FROM *THE EAST BAY JOURNAL* DATED JANUARY 18, 1994 DISCUSSING LAWSUITS BROUGHT AGAINST CITY OF OAKLAND AFTER FIRE.

ARTICLE FROM *THE MARIN INDEPENDENT JOURNAL* DATED JANUARY 21, 1994 DESCRIBING INADEQUATE WATER SUPPLY IN AREAS OF MARIN COUNTY, CALIFORNIA.

ARTICLE FROM *THE ORANGE COUNTY REGISTER* DATED OCTOBER 31, 1993 DISCUSSING HOW OFFICIALS RESISTED WARNING OF LAGUNA'S FIRE CHIEF ABOUT INADEQUATE WATER SUPPLY.

ARTICLE FROM *THE SAN FRANCISCO EXAMINER* DATED OCTOBER 31, 1993 DISCUSSING HOW AN ECONOMIC BOOM FOLLOWS A DISASTER.

Congressman Curt Weldon

November 23, 1993

To Whom It May Concern:

The recent fires in California have highlighted the need for preventive action to protect one's family and property. As a former volunteer fire chief and the founder of the Congressional Fire Services Caucus, I have dedicated myself to improving fire safety across the country.

One of the most important things people can do to protect themselves from fire is to implement prevention measures. Particularly in areas that are susceptible to fire, it is imperative to heed to the saying-"An ounce of prevention is worth a pound of cure".

I recently met with Mr. John Klein to discuss his recently patented fire prevention innovation. John has combined technologies that have been in existence to create system to protect homes and small businesses from fire. This self-contained system allows a home and the property surrounding it to be sprinklered.

This system contains many advantages including not having to rely on the water system in your community. Many times when a disaster strikes the water supply can be hindered, or cut off. In addition, by sprinklering the entire property this system can prevent fire from ever reaching a house.

I believe John Klein has established an excellent fire prevention system that should be considered by homeowners. The costs that fire prevention measures add to construction have often hindered fire safety requirements. Particularly in areas that are susceptible to the threat of fire, it is important to move forward and implement measures for strong fire prevention, such as the one developed by John Klein.

I hope you will review this important innovation and appreciate your attention to this request.

Sincerely,



CURT WELDON
Member of Congress



COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS

900 SOUTH FREMONT AVENUE
ALHAMBRA, CALIFORNIA 91803-1331
Telephone: (818) 438-3100

THOMAS A. TIDEMANSON, Director

ADDRESS ALL CORRESPONDENCE TO
P.O. BOX 1460
ALHAMBRA, CALIFORNIA 91802-1460

December 8, 1993

IN REPLY PLEASE REFER TO FILE W-0

Honorable Carolyn Van Horn
Mayor, City of Malibu
23805 Stuart Ranch Road, Suite 245
Malibu, California 90265-4897

Dear Mayor Van Horn:

LOS ANGELES COUNTY WATERWORKS DISTRICT NO. 29, MALIBU
WATER SYSTEM DEFICIENCIES

As requested, enclosed is a summary of the District's water system
deficiencies and its fire fighting capabilities.

Very truly yours,

T. A. TIDEMANSON
Director of Public Works

Dean D. Efsthion

DEAN D. EFSTATHIOU
Assistant Deputy Director
Waterworks and Sewer Maintenance Division

DPH:j1
C:\WW9629

Enc.

LOS ANGELES COUNTY WATERWORKS DISTRICT NO. 29, MALIBU
MALIBU/TOPANGA FIRE

WATER SYSTEM DEFICIENCIES

1. How District was Formed - The District was formed in 1959 when the County took over about 15 small private and mutual water companies. The Malibu Water Company was annexed in 1972. These systems were designed to provide water for domestic purposes only and were not designed to meet fire flows. Through bond issues and County Improvement Districts, a backbone system was financed and constructed to provide water to the District.
2. How System is Served - Water is transported into the District through a 30-inch high pressure water main from an interconnection with MWD in Venice. The transmission main goes generally along Venice Boulevard and Pacific Coast Highway (PCH) about 15 miles into the District. It then goes along PCH the entire 20-mile length of the District. Water is pumped into the canyon areas from the transmission mains. There are four emergency interconnections, two with Las Virgenes Municipal Water District and two with Los Angeles Department of Water and Power. All four are on the east end of the District. There are no wells in the District.
3. Capability of System to Fight Fires - It is not feasible to construct a domestic system to fight major conflagrations such as the wild fires which occurred in the Malibu/Topanga Canyon area in November 1993. Systems are normally designed to fight individual structure fires. However, there are many areas in the District where the water system is inadequate to meet minimum fire flow requirements of the County Fire Department to fight structure fires.
4. Areas of Deficiencies - The system is adequate along PCH and in the Point Dume and Upper Horizon areas where we recently completed capital improvement projects under our pay-as-you-go program. Elsewhere in the District, the system is generally deficient.
5. What are the System Deficiencies - The system is particularly deficient in the amount of gravity storage reservoir capacity. A recent study estimated that 27 million gallons of storage would be required to meet minimum fire and domestic needs. With the completion of a project on the west end of the District to construct two 1-million gallon storage tanks, the District will have 14 million gallons of storage. In addition, many of the water mains supplying residential areas are undersized. Because of the condition of the water systems which were taken over when the District was formed, it is

common to find two and four inch water mains in areas where six and eight inch mains would be required in order to meet fire protection standards. It is estimated that about \$80-100 million would be required to bring the system up to meet present day fire code requirements.

6. The "Pay-As-You-Go" Capital Improvement Program - The District generates about \$2 million per year in water sales surcharge revenues, standby-by charges and property tax revenues to finance its capital improvement program. About \$25 million has been spend over the past ten years on projects to construct storage reservoirs, water mains, pumping stations and pressure regulating stations. Since so much of the District is deficient, projects are selected on the basis of benefitting the greatest number of customers.
7. Geological Problems and Environmental Conerens Impacting Facilities - Much of the Malibu area, especially the areas that suffered damage during the fire, is geologically unstable. It is difficult to locate a geologically stable tank site and in many of the areas, it is necessary to place the water mains on the surface of the ground. In addition, it is extremely difficult to construct projects in Malibu due to a number of environmental concerns.
8. Fire Damage to Facilities - It is estimated that fire damage to District facilities amounted to about \$1.9 million. Ten tanks suffered damage including two tanks that were completely destroyed. Electrical panels, telemetering lines, landscaping and the surface water mains also suffered damage.

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[From the Philadelphia Inquirer, Oct. 30, 1993]

IN DEVASTATED NEIGHBORHOOD, LONE HOUSE SURVIVED BY DESIGN

(By Dan Meyers)

LAGUNA BEACH, Calif.—Holed up at her aunt's house, safe from the fires that forced her family to flee their home, Angie Bui-Bender watched with dread as the television shot showed her devastated neighborhood.

The ruins of the houses, the hillside, everything was charred. The camera panned across the slope. More black, more black, more black. . . .

"And then I saw this one white spot," said Angie, a 17-year-old high school senior. "I started screaming."

And dancing, too, right there in her aunt's living room in nearby El Toro. For that white spot was her house—intact and gleaming freakishly among the burned-out rubble above, below, left and right.

The sight, as striking as a lone tooth in a sooty mouth, made national television and newspapers across the country.

It was better being lucky than unlucky. But for the Bui-Bender family it was also uncomfortable.

"You're so happy for yourself," Angie said yesterday as the family tackled mundane problems such as ribbons of ants drawn to the refrigerator. "But then you think of everyone else. I guess there is a sense of guilt. You ask, why our house?"

"Because it's built so good, chimed in her little sister, Meike, 12.

That—and good fortune—seemed to be the secret for the Bui-Benders, who were spared the fate of more than 700 Southern California families whose residences burned down in the fires that swept the region this week. Of those homes, 330 were destroyed in Laguna Beach.

The flames, pushed by fierce, dry winds off the deserts to the east, wiped out vast stretches of hillside and homes, yet paused occasionally to bestow a favor on a few families such as the Bui-Benders.

A self-employed civil engineer, To Bui-Bender designed and built the house to survive fire. Two years in construction, the house was completed a year and a half ago.

The red roof tiles, made of cement and extra-thick, were meant to take the heat. The fire-resistant, insulating drywall was $\frac{5}{8}$ of an inch thick all the way around, in excess of the city safety codes. The glass was doubled-paned, to keep heat out.

The house was built of stucco. Many others in the area, including those on either side of the Bui-Benders, were made of wood.

"In California, it's very dry," said Bui-Bender, who moved his family to the area, about 50 miles southeast of Los Angeles, four years ago. "With the same cost, you can build a safe house."

Luck helped too.

In front of the house is a fire hydrant. Unlike many in the neighborhood, it worked when firefighters needed it to.

Firefighters told the family that, unable to douse the flames already devouring the adjacent houses, they concentrated on saving the Bui-Bender place.

There was another factor: a bit of well-timed yard work.

On Tuesday, unaware of the high winds that would soon start up, the family decided to tidy up the back yard, which slopes down toward the town of Laguna Beach and affords a view of the Pacific Ocean.

They planted fruit trees among the water-laden ice plant, a succulent, into the ground went orange trees and lemon, persimmon, fig, avocado and plum. More important, they cleared away the brush that had dried over the summer.

Yesterday, Angie and her mother, Doris, looked out from the topmost of the two back porches, awash in ash from neighbors' houses, to see that the trees were scorched. A metal ladder, warped like a crayon left in the sun, rested along the back fence.

But, with the brush cleared away, there had been too little fuel on the ground to sustain the fire as it reached their house.

Up the slope, a shovel leaned on the side of a hold awaiting its trees, a guava, which leaned against the house on the upper porch.

"At least one survived," sighed Doris Bui-Bender, 44.

The flames came down the canyon Wednesday afternoon. The neighborhood was evacuated. The Bui-Benders left at 4 p.m. for the aunt's house, expecting to never see their house again.

"I felt like I died inside," Doris Bui-Bender said. "I was so upset, I couldn't eat or anything."

Doris, To and their son Patrick 15, tried to get back on Thursday. Police officers stopped them. "They said the neighborhood was in bad shape," Doris said.

As they drove up Park Avenue, at the curve just past the 35 m.p.h. speed limit sign, they saw the same sight their daughter, still in El Toro, witnessed at about the same time on television.

"The house is still there," To said in the car.

As they eased down Tahiti Avenue, their joy dried up. Everything else was gone. "Sometimes you're so happy but then you feel so sad," Doris said yesterday. "Look around."

All else was ruined. A police chaplain walked the streets, offering support.

Just off the Bui-Benders' driveway on Tahiti Avenue, a neighbor's sedan lay scorched to its metal bones. Sludgy soot lay inches deep in the street gutters. A five-gallon bottle of drinking water, half full, was nestled against the curb.

Immediately to the right, the neighbor's garage, like the rest of the house, was in ruins; a charred table saw marked the location of the garage. On the other side, the house similarly was gutted, with only a half-burned garden gate left standing. In back, wood still smoldered, fanned now by a cool, moist ocean breeze.

And in between, the Bui-Bender house.

Intact.

Inside, barely a trace of smoke hung over the white marble floors and white cathedral ceilings. The burglar alarm beeped periodically. To, unable to find the key to disarm the alarm, broke it.

All around, people sifted through the remains of their lives. The Bui-Bender family only had to clean up and reconcile their feelings of elation and guilt.

A neighbor, a teenage boy who lived down the street, wandered by.

"Hi David," Doris Bui-Bender said, walking toward him. "I'm so sorry about your house."

[From the Los Angeles Times, Nov. 5, 1993]

PREPAREDNESS, NOT LUCK, SAVED HOME

(By Bob Pool)

Louis Hill was sitting on the porch of his Las Flores Canyon home Thursday when a firefighter rode by and flashed a thumbs-up at him. "You're lucky," firefighter Keith Carlson shouted as his engine rumbled past.

But luck had nothing to do with why Hill was relaxing at his house when virtually all of his neighbors were homeless.

The 84-year-old mountain man had meticulously built his house on Las Flores Heights Road to survive the kind of fire that roared through the canyon three days earlier—the kind that had burned down his parents' home on the same land half a century ago.

Besides using fire-resistant plants and a non-combustible roof. Hill had built his own miniature fire station. It was made of concrete and equipped with a 100-foot fire hose, high-pressure nozzles, a gasoline powered pump and valves connected to a 12,000-gallon water tank designed to never be less than half-full.

He had designed plywood shutters—complete with handles for easy carrying and labels to tell him which shutter went on which window—for his entire two-story, four-bedroom home. He had a dozen 50-gallon plastic trash cans scattered outside the House. Each was willed with water and a burlap bag hanging on it.

Before planning his house across the canyon from a spectacular grove of oaks and about 500 feet above year-round, spring-fed Las Flores Creek, Hill read every book on fire safety he could find. He enrolled in a fire safety seminar conducted by one Southern California's top wildfire experts. In class, he took good notes.

He had good reason to.

"My parents built a little cabin up here back in 1927 when I was a 12-year-old." Hill said. "I loved that place. But it burned down in a big fire in 1943. And that really drove home the need for fire protection for me."

Las Flores Canyon could not be more susceptible to brush fires.

It sides are steep, fanning out from towering Saddle Peak down to the ocean. Santa Ana winds that whistle down the canyon each autumn, are almost guaranteed to send brush fires that start in Calabasas or Agoura through the area.

Hill's 3½ acres are among the steepest in the canyon. He has a small, flat pad for the house, which overlooks a shear drop-off. That means that fire in the canyon below is likely to shoot up the hillside like a rocket.

So Hill built his house out of stucco in 1978. He made its room from concrete tiles. Its eaves were enclosed. All of its vents were designed to be shut at a moment's notice.

He planted fire-resistant cactus and coyote brush to stabilize the slope beneath the house. Ice plant was placed in flat areas that were not paved. He removed the

site's eucalyptus shade trees and replaced them with fire-resistant fruit trees and grapevines. His wood pile was carefully positioned downwind from the two-story house.

When this week's Santa Ana winds kicked up, Hill and his wife, Lyllis, 69, began placing the shutters on the windows. Ground-level shutters covered the windows on the outside, but the upstairs shutters had been designed to fit on the inside of the glass so Hill wouldn't have to climb a ladder.

When the fire broke out Tuesday morning, Hill's longtime friend, Michael Tellesfson, 34, rushed to the canyon to see if the couple needed help. Tellesfson is a heating and air-conditioning technician who as a teen-ager help Hill build the house.

When the smoke became too dense to breathe, Tellesfson urged the couple to leave. He stayed behind and started up the Hills' pump. When the fire roared over the house, Tellesfson ran inside.

"I checked the rooms with a flashlight for sparks. The wind was rocking the house. It sounded like a jet engine," he said Thursday. "I was shaking and praying. But in about 10 minutes, the main fire had passed."

Tellesfson ran out and used Hill's fore hose on blazing trees and brush. Where the hose could not reach, he used the wet burlap bags to slap out flames. For 10 hours he ran from place to place, putting out sparks and using up most of the water from the trash cans.

As hundreds of other evacuated Malibu mountain residents were returning with trepidation Thursday to see if their homes were standing, the Hills were confident.

"I would have been very surprised if it wasn't there," Hill said. "We tried to do everything right."

Wildlands management and environmental safety expert Klaus Radtke says Hill did things perfectly.

Radtke, of Pacific Palisades, is a former Los Angeles County forester who taught the 1978 seminar Hill attended. He is also the author of a fire safety pamphlet that has been distributed over the past 10 years to thousands of mountain residents.

"With his location, if anyone should have lost their house, it was him," said Radtke—who was curious enough to hike five miles up the canyon Wednesday afternoon to see for himself whether the Hill house had survived.

Canyon neighbor Wilmer Lewis, 78, stopped by to congratulate Hill on Thursday afternoon after returning to find his own home of 22 years destroyed.

"He did a good job preparing," Lewis said. "He came out smelling like a rose."

[From the Malibu Times, Nov. 25, 1993]

LA COSTA FIRE VICTIMS DECRY WATER SYSTEM

(By George Gordon)

Why was there a lack of water?

Where were the firefighters?

For fire survivors from the La Costa area of eastern Malibu whose homes were consumed in the Nov. 2 firestorm, these questions demand immediate answers.

On Tuesday night, city and county officials attempted to resolve such fire issues at a community meeting on the Pepperdine University campus that was well attended by La Costa property owners.

"We are here tonight basically for you," Assistant City Manager Mark Lorimer told the audience at the start of the meeting. "The city is the No. 1 source for you in times of crises like this."

Later, Lorimer stated that Malibu is still looking at options for capital improvement projects after about two and a half years of cityhood.

\$80 MILLION UPGRADE

A major fire issue that incensed residents at the meeting was an inadequate water supply and power shortages that left firefighters with little protection.

Dave Howard, supervising engineer with the county's Waterworks District No. 29, which serves Malibu, outraged homeowners when he explained that two-inch and four-inch water mains throughout eastern Malibu are not suitable for fire fighting.

Howard said the district is considering a five-year plan to upgrade the entire water system, but cost estimates of between \$80 million and \$100 million have slowed progress. He said an upgrading of the La Costa system alone would run nearly \$1 million.

COUNTY KNEW

The upgrading plan, which reportedly was introduced 15 years ago to the public at a county meeting, was opposed by residents with a "massive outcry of the expense," according to Howard.

Several members of the audience spoke up, saying they never were notified of a plan to upgrade the system. Other outcries of frustration frequently emanated from the audience. A fire survivor, recalling her family's fear during the firestorms, said, "Nobody came and helped us. We were there by ourselves. We had no water. We had nothing, and my God, we could have been killed."

Disgusted that a plan to upgrade the water system would take five years, another fire survivor asked, "How many times are we going to have to rebuild our homes again?" For the most part, officials could do nothing but listen.

"LIKE VIETNAM" IN LAGUNA BEACH

(By Rob Haeseler)

Gordon Dooley remembered Vietnam as he and his brother stood on a roof in his mother's Emerald Bay neighborhood and tried to save the house from the firestorm consuming Laguna Beach.

Their mother's house was already gone.

"It was like being in Vietnam again," said Dooley, a veteran who has an auto detailing business in Laguna Beach. "Choppers flying, things exploding, like napalm. The smoke was so thick you could not see even a glimmer of the houses burning. Horrendous!"

The Dooley brothers' quick action wetting down the roofs saved some neighbors' homes. But their mother's house was among the roughly one in 10 that were lost in affluent Emerald Bay, where America's richest man, Warren Buffet, has a vacation home. Their mother, Mildred Lord, turned 70 Wednesday, on the same day she lost her home of 27 years.

Dooley had started his day Wednesday casually following the television coverage of fires in other parts of Southern California.

"I watched those people who were standing in disbelief in front of their burned-out houses, and then in a matter of hours, it happened to us," he said. He had no idea that a fire, believed to have been set by an arsonist in Laguna Canyon north of town, was bearing down on the community, traveling seven miles in only a half-hour.

After a friend alerted him with a phone call, he raced to his mother's house. He and his brother moved her to safety as a California Highway Patrol cruiser sped up the street with bullhorn blaring: "Evacuate, Evacuate, Evacuate."

"We got nothing out," Dooley said. "All the heirlooms—she has nothing left from 70 years of memories and recollections."

Laguna Beach lost more than 300 of the 580 homes that burned in Southern California's two-day firestorm from Ventura to the Mexican border. By yesterday, firefighters had contained more than half of the 10,000-acre Laguna fire. All 24,500 Laguna residents were ordered out of the coastal city Wednesday as the fire consumed canyon after canyon of homes 40 miles southeast of Los Angeles.

Those residents who disobeyed the order to leave and stayed through the night or later slipped through the fire lines found relief or grief yesterday as they returned to the narrow winding streets over the ocean.

Bouyed by adrenaline, they talked passionately about their ordeals, in that way that fire survivors have of dealing with stock. Most of all they marveled at their good fortune that no one was killed.

Yesterday morning, Dr. L. M. Gauraro and his wife, Renate, who had spent a frightful night, hastened on foot up Park Avenue, which was streaked with red fire retardant from tanker drops, to the neighborhood known as The Top of the World.

When they saw that their home had been spared, they broke into tears and hugged each other. "Oh my God," they said. "It's there."

With a garden hose and the ladder his wife had given him for Christmas, Tom Beaton saved his house during a sleepless Wednesday night when embers rained on his roof and a wall of flames danced 20 feet from his property.

"The firefighters are calling my house the miracle house," said a tired Beaton yesterday as he looked at the destruction around him in Laguna's Park Canyon. Only two other houses remain standing. "The rest of this neighborhood looks like Dresden after the bombings; it's war zone. It's all gone."

The retired high school Latin teacher was one of those who disobeyed the order to leave. He had build his rustic-looking home with his own hands from recycled barn planks and timber. "I couldn't leave without a fight," he said. His two children,

Mary, 14, and Chelsea, 10, were safe in another neighborhood, and his wife, Diane, had been barred from returning home by roadblocks.

The decision to stay almost cost Beaton his life as a wall of fire about 40 to 60 feet high started rolling toward him and his garden hose at about 3 p.m. Wednesday. "I'm thinking, 'Shit, this is it,'" said Beaton. "Then wham, This big aerial thing came and dropped some stuff, and then a miracle happened. This wall of flame went back toward the ocean. That plane probably saved my life."

The only other relief for the neighborhood was a lone tanker with a crew of firefighters from Anaheim who stayed the night to try to keep the fire from Beaton's street.

"The houses all around us were just blowing up," said Beaton. "We really are the miracle street, with our three houses standing."

[From the San Francisco Chronicle, Jan. 19, 1994]

DEATH TOLL NOW 40—2,800 HURT

(By Rick DelVecchio, Robert B. Gunnison and Clarence Johnson)

Residents of the Los Angeles basin began the painful task yesterday of cobbling their lives together as the panic caused by Monday's devastating earthquake gave way to the grim certainty that it will alter their daily routines for weeks and months to come.

The human toll last night stood at 40 people killed. Local hospitals treated more than 2,800 survivors. As many as 15,000 people remain homeless. An estimated 100,000 homes and businesses had no electricity and more than 100,000 had little or no water.

[From the East Bay Journal, Jan. 18, 1994]

TRIAL DATE SET FOR FIRE LAWSUITS

(By Sean Holstege)

Twelve jurors will begin Sept. 12 to weigh the grievances of hundreds of plaintiffs in a multi-million dollar class-action lawsuit stemming from the 1991 East Bay hills fire. Alameda County Superior Court Judge Demetrios Agretelis set the trial date on Jan. 8.

The trial, expected to last or least two months, is seen as a showcase for fire survivors who continue to argue that the preparation before and response to the devastating fire was inadequate on the part of several governmental agencies.

It consolidates lawsuits filed by eight families of people who died in the fire, five who were badly disfigured and hundreds who lost property. Plaintiffs allege these tragedies were needless and preventable and seek damages.

The suit charges the City of Oakland with responsibility for several deaths on Charing Cross Road, because the city failed to construct the narrow, winding hillside lane to acceptable standards. Several people died there, including an Oakland police officer, because the road became blocked at both ends.

It also accuses Oakland, along with the East Bay Regional Parks District, the East Bay Municipal Utilities District and the owners of the Parkwoods Apartments complex with failing to clear brush properly, creating a fire hazard.

These four entities, along with Alameda County, were charged with negligent response to the fire and some 911 emergency calls.

Judge Agretelis will preside over a status conference March 25.

One issue left unresolved by the Jan. 8 hearing was how an Oct. 1 \$300,000 out-of-court settlement from a fire case is to be distributed.

The settlement resulted from a lawsuit against Ralph and Adrienne Jesche for inadequately maintaining their property on Buckingham Boulevard, where the 1991 fire flared up. The money was to be distributed within one month of the decision, according to plaintiffs' attorneys, who said some insurance companies are staking claim to some of it.

[From the Marin Independent Journal, Jan. 21, 1994]

BAD PIPES MAY COST MARIN IN BIG FIRE

(By Brad Breithaupt)

Hundreds of Central and Southern Marin homes that rely on inadequate water pipes are at risk during a fire, and no one is rushing to the rescue.

Over the last four years, three Marin grand juries have said that many areas are served by water pipes that are either too old or too small to deliver enough water to put out a major fire.

The 1993 grand jury called for a comprehensive study and warned installation of larger pipelines is moving at a snail's pace.

The Marin Municipal Water District, responsible for delivering water in Central and Southern Marin, agrees there's a problem, but says it's not the agency's job to resolve it.

Community leaders say no one has provided leadership on the issue.

"This is the kind of classic situation that calls for leadership," says former Mill Valley Mayor Richard Spotswood, who headed his town's fire-protection task force after the 1991 Oakland Hills fire.

"They are afraid to say we need a tax," said Marin Supervisor Harold Brown, referring to MMWD officials. "It's a very hot potato."

Some areas of Marin are served by pipes ranging in width from three-quarters of an inch to 2 inches. Firefighting standards call for at least 6-inch diameter pipes. "You are sitting there without any water in your hose," said Tiburon Fire Chief Rosemary Bliss, referred to problem spots in some of Tiburon's hillside areas.

The problem forces fire departments to take time to lay longer firehose lines to get to fire hydrants that can deliver enough water.

MMWD General Manager Ron L. Johnson says rough estimates indicate it could cost as much as \$80 million to \$90 million to replace 192 miles of small-diameter pipeline and build more water tanks.

Johnson said it's MMWD's job to get water to customers' taps, not assure adequate flow to douse fires.

If there's going to be a solution, the county and cities must take the lead, he said.

It's not all that different to raising money for a new fire station or a new firetruck," Johnson said.

He said the district wants local fire agencies to indicate what improvements they need.

Spotswood of Mill Valley said the political logjam must be broken.

"Someone is going to have to step forward and be the driving force to get it done." Spotswood said. "It's going to be cheaper to do it now than to rebuild all the houses later."

Mary Ellen Irwin, a San Rafael fire commissioner who served on the 1990 grand jury, expects MMWD to come up with a plan. "Who else can provide the water if they can't?" Irwin asked. "I think the neighborhoods are the ones who have to put on the pressure."

She added: "I hope there will be a citizen uprising. It's not right that they aren't providing adequate pipes, pumps and emergency equipment. They are not prepared."

"The problem is money. The problem is how to get the money," said Darryl Anderson, president of the Marin County Fire Chiefs Association. "We'd like to move faster on it with a lot of money."

A glimmer of hope comes from Supervisor Brown, who said yesterday he's willing to spearhead efforts to fix the problem. What is needed, he said, is an action plan and a bond measure giving MMWD voters a chance to pay for improvements. A bond measure could wind up on the ballots within two years, Brown said.

"I am very willing to take the lead role in bringing it to the people," Brown said. "It's going to cost a lot."

A \$50 million bond, if floated today, could cost each MMWD household \$70 a year for 20 years.

San Rafael Mayor Al Boro also said he's going to bring the cities and MMWD together to tackle the problem.

Brown and Boro stressed that MMWD must be a major player in the program.

"It's a water issue. It's their pipe," Brown said. "It's everybody's problem."

The water district is not ducking its responsibilities, MMWD's Johnson says. The district is already spending \$6 million a year to replace older pipelines, and one of its objectives is to answer the firefighting needs. The district also supplied fire departments with three mile-long firehoses to bypass areas where the flow is poor.

Johnson tossed responsibility in the county's lap.

"We would hope through some umbrella group such as the county, that a funding mechanism, such as assessment districts, could be achieved," Johnson said. "I don't think citizens support additional water bills."

In San Rafael's Country Club area, neighbors pooled donations of \$267 to \$1,000 to come up with \$48,000 to install larger hydrants along their streets.

Some residents say they can't afford needed improvements.

Fairfax homeowner Chris Kern has been worried for more than 20 years that firefighters won't be able to get enough water to her hillside house if it's on fire.

Putting in a larger waterline is too expensive for she and her neighbors to pay for on their own. On her street atop Manor Hill, new pipes could cost five neighbors more than \$40,000.

"We really, of course, can't begin to afford this so it's basically been put on the back burner," she said.

[From the Orange County Register, Oct. 31, 1993]

OFFICIALS RESISTED WATER WARNING

(By James V. Grimaldi)

LAGUNA BEACH.—For more than two years, fire officials had warned city officials that there wasn't enough water to fight the kind of wildfire that devastated the city this week, city records show.

Laguna Beach Fire Chief Rich Dewberry repeatedly has said that a larger reservoir—like the 3 million-gallon tank the City Council has stalled for three years—would improve the water supply to fight infernos such as the one that leveled 380 homes Wednesday and Thursday.

But city officials repeatedly rejected the Fire Department's recommendations. The city manager this month called them a "wish list."

Firefighters said they were forced to battle the fire with extremely low water pressure for more than six crucial hours when three key reservoirs ran dry and pumps that could have replenished them went dead in a power outage.

Some residents said they are seeking resignations of the three council members who have been at loggerheads with the independent Laguna Beach Water District over the reservoir. The city owns the proposed location of the reservoir.

"The city has put up roadblock after roadblock to stop this project," said Darren Esslinger, a member of United Laguna, a 500-member civic watchdog group.

In a July 23, 1991, memo, Dewberry chillingly foreshadowed Wednesday's devastation, describing what would happen in a neighborhood that proved to be one of those destroyed by fire Wednesday.

"The available water supply is marginal because of potential fire flow," Dewberry said. "In cases where homes are threatened by wildland fire, it is not uncommon to render the water supply incapable of keeping up with the demand."

In a memo to the council three weeks before the fire, City Manager Ken Frank said the volume of water Dewberry recommended was unnecessary "especially since most of the wildland areas adjacent to the 1,000-foot elevation are grasslands, rather than eucalyptus forest, and every other year they are pruned by a herd of goats hired by the city."

In an additional memo this year, Dewberry warned that Santa Ana wind conditions could spread wildfires through canyons and into residential areas next to wildlands.

"In many cases where homes are threatened by wildland fire, it is not uncommon to exceed the storage and supply capability because of the extreme demand," Dewberry wrote May 26. "It is reasonable to believe that fire, at some points, would extend through the community, placing demand on the" reservoir system.

On Saturday, Dewberry reiterated his position that more water was needed because firefighters faced unusually low water pressure and were forced to let some homes burn unabated.

However, Dewberry, a lifelong Laguna Beach resident who was appointed by the city manager, has been careful not to take a political position on the controversial water tank.

"Based on the fire we had this week, our existing water supply was marginal," Dewberry said Saturday night. "Anytime you can have more storage for water, and you have the opportunity, it is appropriate to add to the supply to enhance the water flow to fight fires."

Mayor Lida Lenney said Saturday she could not find a single firefighter who had trouble with water pressure while battling the blaze.

In a letter to the district just 10 days before the fire, Frank demanded that the water board cease attempts to replace the 500,000-gallon reservoir and to find another site.

Frank said the reservoir would hinder public access to the area, raise the ridgeline 17 feet, "totally obliterate the existing topography of the site, and disrupt wildlife movement and habitat."

The water district waged an unsuccessful campaign to improve the water supply by warning that Laguna had the potential for a conflagration like the Oakland hills fire that destroyed 2,900 homes. In a February 1993 newsletter the district warned that the city is surrounded by 15,000 acres of open space vulnerable to wildfire.

"The (district) must pump water to its higher elevations, as most of our water storage is located at lower elevations," the newsletter said. "In the event of a wild-fire or an earthquake, we could lose power, preventing the ability to pump water to the higher elevations."

The city was propelled in opposing the reservoir by powerful slow-growth groups, including Laguna Greenbelt, Laguna Canyon Conservancy and Village Laguna.

[From the San Francisco Examiner, Oct. 31, 1993]

BUSINESS: HOT ECONOMY FOLLOWS FIRE'S PATH

(By Bradley Inman)

OAKLAND—As Southern California started to clean up from the devastating fire that swept through the region this past week, early reports estimated that economic losses would exceed \$100 million.

But the financial fallout is expected to be even more severe after the experts calculate the economic multiplier effect, which gauges everything from indirect job losses to the psychological effects on the local real estate market.

But if the East Bay hills fire of 1991 is an indicator, in the long run the economic story from the Southern California fires, could be more of an economic boost than a bust. Of course, this is sobered by the countless personal tragedies caused by the fires.

But measured by job creation, economic activity and homeowner net worth, over time the East Bay hills and many of its residents will be better off than they were before the fire.

"Whenever you replace wealth you create a flow of jobs and income that helps the economy," said economist Claude Gruen, of the San Francisco real estate and economics consulting firm Gruen Gruen & Associates.

Indeed, the East Bay rebuilding is the largest residential construction project currently under way in California and has already spawned an estimated 11,000 construction jobs, according to the Construction Industry Research Board in Burbank, and pumped an estimated \$1 billion into the local economy. And only 16 percent of the homes have been completely rebuilt.

CONSTRUCTION WILL CONTINUE

Building permits have been pulled for another 900 homes so the construction activity will continue through 1995 or 1996, according to Tom Doctor, director of Oakland's Community Restoration Development Center. On average, the net worth of families who lost their homes will rise anywhere from 10 to 25 percent, say insurance, accounting and real estate experts. Benefiting from generous insurance payouts, most rebuilt homes are bigger and more luxurious, and the insurance reimbursements for personal property were often liberal by insurance standards.

"The homeowners have created more value by building more modern and functional houses," said Doctor. "So when the market shakes itself out, these homes will probably bring higher prices."

Moreover, homeowners are entitled to keep their lower property tax bill from their previous houses even though the new homes are almost always of higher value. Plus, because of special federal legislation, homeowners don't have to pay income taxes or realize gains on proceeds received for unscheduled personal property reimbursement, according to accountant Robert L. Castle. Unscheduled personal property are items not specifically listed in the insurance policy. The new law says that homeowners don't have to replace these items and aren't taxed on the insurance payments for them.

Oakland resident Bill Waite's comments to Southern Californians who lost their houses, "As bad as things look now, in some ways you may find yourselves better off than you were prefire." Waite, his wife, Diane, and their son, Ryan, rebuilt on a new lot in the fire zone about a half mile from where their house burnt down.

"I don't want to minimize anyone else's suffering, but if you had the right kind of insurance and you didn't lose your mind in the process, all in all it can turn out OK," said Diane Waite.

Sixty-two percent of the homeowners in the East Bay hills had guaranteed replacement cost coverage, which is considered the best policy for homeowners in the event of a disaster. Plus, many of these policies were "reformed" to accommodate unusual conditions such as engineering hassles on hillside development. This contributed to higher reimbursements.

Policies were also amended because the rebuilding often exceeded one year, which is the standard period that policies would cover temporary living expenses, said Lafayette insurance broker Alan Mac, who represented 50 homeowners. Consequently, many homeowners have had their living expenses paid for two years.

Also providing a financial boost were obscure clauses in the insurance policies.

For example, a "loss of use" provision says that a homeowner could receive payment for temporary living expenses equivalent to what their old house rented for. But then many homeowners rented a less expensive house and pocketed the difference.

Some homeowners are even using their insurance proceeds on special credit cards that accumulate airline mileage. "I have one client who put \$170,000 on credit cards (furniture, etc.) and is traveling free round-trip first class to Europe," said Castle.

Another economic benefit to homeowners and the city of Oakland is that the burned area is expected to become a more expensive neighborhood than it was before the fire. Once the landscaping is filled out, more quality, well-designed homes will be located there. Plus, new underground utilities, upgraded water pipes and other public investments in infrastructure will have improved the entire neighborhood.

And because all of the houses are new, "there's no dry rot or termite infestation, and all of the homes are up to building code standards for fire safety, earthquake and everything else," said Brooke Levin, assistant to Oakland Mayor Elihu Harris.

Even the views have been enhanced because so many trees have been destroyed. For these reasons, real estate observers predict that it will become a more exclusive neighborhood.

While insured losses from the East Bay hills fire were estimated to be \$1.2 billion, this amount was calculated by estimating the values of the 2,777 single-family homes and 433 apartments that were lost in the fire. Much of that wealth was sitting idle as equity in homes. Very few businesses were lost in the fire.

"Sure real wealth was lost from the fire, but the insurance payout exceeds the market value so there is a net gain in the wealth that was there before," said economist Gruen.

After only one year, 3,954 claims amounting to \$1.4 billion had been filed with 49 insurance companies, according to the Department of Insurance and the Western Insurance Information Service. This amounts to more than \$300,000 per household, but because it includes awards for partial losses, the amount to homeowners who experienced total loss is much higher.

Gruen compares the rebuilding to what happened in Germany and Japan after World War II. "In the war, we wiped out the wealth by bombing the hell out of them but after the war we lent them the money to rebuild their wealth," he said. "After a while, they were better off because they had new buildings and new tools that they used to compete with us later on."

MIXED REACTION FROM RETAILERS

Retailers had a mixed reaction to the fire. "In the first year, we were down 10 percent," said Sara Wilson, who owns the popular Rockridge Market near the fire zone. "But this year we had nice, healthy growth because people are moving back and everyone else is battling down."

Barber Marty Hatton said he experienced a 15 percent drop in his business. "It's coming back pretty well, but in the meantime I had to find new customers," said Hatton, whose shop is located on College Avenue adjacent to the fire zone.

But Green predicts even retail sales eventually will return to prefire levels. When people return, they will shop along College Avenue and in other retail districts in the area.

While fewer houses were lost in Southern California, the homeowners are expected to benefit from generous insurance payouts, and the path blazed by Oakland and Berkeley homeowners is certain to help.

One reason insurance companies agreed to generous payouts was a reaction to homeowner activism. Early after the fire, homeowners organized into groups to challenge the insurance companies to live up to their commitments.

It also helped that California had a vigilant Department of Insurance, which became a strong advocate for homeowners. Moreover, state and federal lawmakers pushed through property-tax and income-tax relief.

[From the L.A. Times, Nov. 5, 1993]

EVACUEES RETURN, HOPING TO FIND HOMES INSTEAD OF ASHES

(By Carla Hall, John Hurst, and Nora Zamichow)

The cycle of fire that has carved a wicked path across some of Southern California's most resplendent terrain subsided further Thursday as weary firefighters came close to containing the smoldering Malibu blaze and scores of residents returned to find nothing of their charred homes but a spectacular ocean view.

In a scene that has been repeated with disturbing regularity, canyon dwellers spent the day sifting through ashy rubble in search of keepsakes while others marveled at the capriciousness of an inferno that spared their homes but left them without neighbors.

Throughout the rugged hillsides above the fabled beach town, in enclaves both exclusive and rustic, friends greeted one another in the streets with tears and hugs. Now that the worst seemed to be over from Tuesday's explosive firestorm, which scorched 18,000 acres, destroyed 350 homes and claimed one life, there was succor amid the debris.

"Roasted lemons!" exclaimed Robyn Morgan, 55, as she picked through the blackened garden of her leveled Carbon Canyon home. "Lemon meringue pie!"

Meanwhile, investigators searching for clues at the flash point of the Malibu fire announced they have officially ruled that the blaze is an act of arson, but do not have any suspects.

Several witnesses said they saw two men in a blue pickup truck speed away from the fire's first flames. Investigators confirmed that the two men were in the area, but said Thursday that they are considered witnesses, not suspects.

"We interviewed them. We let them go," said Sheriff's Detective Jerome Beck, one of the investigators assigned to the case. "They're not considered suspects."

In an interview with *The Times*, one of the men in the pickup truck said he and a friend were driving from the Malibu area toward the San Fernando Valley on Tuesday morning when they spotted a small brush fire on the hillside and tried to put it out before moving the truck farther down the hill. He said they then returned on foot to help firefighters. He said both he and his friend are volunteer firefighters.

"We were some of the first people on the scene," the man said. "We smelled smoke."

A day after dramatic fire battles were thwarted by wind-whipped flames, the roller-coaster Malibu blaze was 70% contained by Thursday morning and officials predicted it would be completely encircled by today.

One more home was consumed late Wednesday night in Fernwood, but the fire's eastward march was halted by water-dropping helicopters before it could climb beyond Topanga Canyon. As a precaution, strike teams remained stationed about 2½ miles away in the communities of Palisades Highlands and Castellammare.

"With the wind doing what it is doing right now, we don't anticipate a problem," Los Angeles City Assistant Fire Chief Tony Ennis said. "But since we don't control the wind, we're going to be ready."

As forecasters predicted that moist ocean breezes would continue to replace the blistering Santa Ana winds, a sense of normality slowly returned to the picturesque community, which two days before had been engulfed in a tornado of searing embers and flying ash.

Blond, ponytailed surfers plunged into the sea. The message machine at Malibu Mammias, a domestic and nanny agency, was full of requests for weekend baby-sitters. Just as Catherine Alford, 27, returned to her beachfront apartment with her treasured collection of 700 Swatch watches, a UPS deliveryman pulled up in his truck.

"Alford?" he asked. It was a large package with another load of Swatches to add to her cache.

There was a bright side even to the fire's one fatality. Elsa, the gentle Siamese cat that 41-year-old British filmmaker Duncan Gibbins gave his life trying to save, was found huddled beneath his Topanga Canyon guest house by a sheriff's deputy on the lookout for looters and trespassers.

The cat, named after the lion in the movie "Born Free," was taken to an Agoura animal shelter, where her singed paws were bandaged.

"I heard this cat underneath the house, meowing. It looked like a little kitten," Deputy Steven Robinson said. "It wouldn't come to me so I went to get some water to coax it out. Finally it came out and jumped on top of my head."

A TOSS OF THE DICE

The return to Malibu was nothing if not confusing.

Amid conflicting instructions, Los Angeles Police Department officers allowed some residents to travel up Pacific Coast Highway, but they were promptly turned around several miles later by Los Angeles County sheriff's deputies. California Highway Patrol officers said they were unsure who was to be let in and who was to be kept out.

As they were throughout the fire, when they managed to evade police blockades by hiking up and down the beach, residents continued to be resourceful. Three attorneys who live near the Pepperdine campus were so anxious to check on their homes that they tried to rent a helicopter for \$1,000, but the pilot refused.

Two of them jumped in a kayak near the J. Paul Getty Museum and paddled nearly 10 miles up the coast.

On PCH, there was some light traffic, although most of it was still dominated by fire engines and police cars. A young boy wearing a mask over his nose pedaled his bicycle. A hot-rodder driving a rare, exotic sports car took advantage of the nearly deserted road to zoom up and down for about an hour. At one point, a big red McDonald's mobile restaurant rumbled up the highway.

The Bambu restaurant at Pacific Coast Highway and Cross Creek road—a trendy place often serving the rich and famous from the nearby Malibu Colony—has been catering to a different crowd for the last couple of days.

The Bambu's patio was crowded with tired, grimy, unshaven firefighters Thursday afternoon—men who had come from as far away as Northern California and Montana to battle the Malibu fire.

The restaurant's co-owner, Jeanette Farr, said that by noon Thursday she had provided firefighters with about 1,200 free meals—among them swordfish and steak.

Farr explained she had been away when the fire broke out, and when she returned, she was amazed to find that firefighters had saved her restaurant and neighborhood home.

"We decided to say 'thank you,'" she said.

Her only problem was that supplies were running low because food trucks hadn't been getting through. A friend who runs a nearby cafe—closed because of the fire—stopped by to ask how she could help.

"Meat," Farr said.

Up in the hillsides, there was humor, guilt and tears.

When 40-year-old Georgia Goodman arrived at the twisted remains of her family's home on Paseo Hidalgo, she sat in her car for 15 minutes and cried. When she walked through what had been the front door, her knees buckled and she had to sit down.

"Where do we go first? How do we pick up and start all over?" she asked. "You just think about all those memories you created and that age old question of why. Was I a bad person? I tried to clean up my karma."

In hard-hit Las Flores Canyon, one man shouted to a woman whose house had escaped unscathed: "What did you do, stand there with a cross?" Another man walked down Calle del Barco, handing out business cards. "I'm a contractor," he said. A neighbor, clearly perturbed, called back: "I'm an attorney."

Nearby, Caroline Barry inspected what was left of her home of 26 years. Between two chimneys, she saw the white ash that she imagined was her book collection, which had stretched from floor to ceiling. Her piano was a skeleton of metal stings and a sounding board.

"Little things flash through your mind," said Barry, 64, who recently retired as an English teacher at Venice High School. "I was going to get the piano tuned for Christmas and I hadn't yet. I'm glad I saved that couple of hundred dollars."

Sitting in his garage not far away, Tony Shafer's eyes filled with tears. Shafer, a county fire captain, had spent Tuesday night defending his own home with a single hose while property all around him burned.

"I feel guilty that I am here and all my friends and neighbors' houses are not, but it's a grand and glorious feeling to stand against a fire and win," said Shafer, a 31-year veteran, who saved for 16 years to buy the land on which he built his home in 1981.

"People think Malibu is filled with movie stars and screenwriters," he added. "It's not. People come out to a neighborhood like this to get a little bit of Malibu, and this is what they can afford. These are retired teachers, firemen, lifeguards. This is real Malibu."

In many cases, neighbors found the unexpected. Those who feared that their homes were lost discovered them still standing. Those whose homes were destroyed took some delight in imagining how they would look rebuilt.

For Frank Morgan, a 72-year-old retired petroleum engineer, it looked even better than before. "We're going to have all the little touches we wanted—maybe more deck, walk-in closets," he said. "We'll have it all in a year. Come back in a year."

Building contractor Linda Patrick had spent Tuesday night with her husband at a Holiday Inn, sketching plans for a new home on a cocktail napkin after watching TV footage showing the fire station on their corner burn.

But when Patrick returned to Rambla Vista, she discovered her home was one of only two houses in the area still standing. She noticed that the note she had left for her husband when she evacuated was even pinned to the front door.

As she opened the door—which she had left unlocked when she fled—her telephone was ringing. “We certainly are the lucky ones,” said Patrick, who has lived in Malibu for 25 years.

Children’s book author Susan Rubin was not. All that was left of her home on Paseo Serra were two chimneys, still smoldering in the ash, and her mailbox. The letters inside it were unscathed.

Rubin, 54, was at a writers’ group meeting in Pasadena when the fire started and never got a chance to take anything from her home. All of her current writing, with the exception of some chapters faxed to her publisher earlier, was destroyed. She wasn’t sure about her dog, Maxie, who was nowhere to be found.

“Of all the days I wasn’t home,” Rubin said. “I’m just heartsick.”

Standing at the driveway of her home, where firefighters were still spraying water, Rubin made a list of what was still here. The note said: “The ocean is still here. The beach is still here. Some of the neighbors are still here and the jack-o-lanterns down the street.”

The scene was much the same up on Live Oak Road in the north end of Las Flores Canyon, where two neighbors saw their homes, and each other, for the first time since the flames chased them away in fear for their lives.

First to arrive was Stu Radstrom, 66, a retired math teacher, who snuck past roadblocks to reach the ground on which his 3,200-square-foot ranch-style home once stood. He had lived here, among what had been lush greenery, since 1978. Now all he had to show for that life was a blackened satellite dish and a small stone and concrete goldfish pond.

As he surveyed the damaged, his next-door neighbor Scott Sigman, a clothing company executive, drove up with his wife, attorney Jill Berliner.

They discovered their house in tact thanks to firefighters, who had chopped down some burning trees, destroyed part of a white fence that was aflame and even moved their children’s plastic Sesame Street playhouse out of harm’s way.

The couple embraced Radstrom, gave him a beer, and offered to let him and his wife, Miriam, stay in their house while they rebuild.

“Stu’s been here 20 years,” Sigman said. “We’ve been here two years. Right at this second, I feel totally guilty that our house survived and his didn’t.”

Radstrom said there was no reason to be. “It’s a toss of the dice. You never know which way the wind’s gonna blow, or what’s gonna catch fire.”

A REAL BASIC SCIENCE

In the command posts that had buzzed like war rooms in recent days, the pace was slower, the voices were quieter.

“This thing is definitely coming to a close,” said Los Angeles County Fire Inspector Lee Gregory. “I just drove the whole perimeter of the fire and there were units all over the place—mostly just sitting around.”

The only remaining battle was around Fernwood and Tuna Canyon, where helicopters were trying to douse hot spots while strike teams kept watch in front of a few threatened homes. Most of them appeared to have survived, but the canyon walls resembled a moonscape, covered with the charred remains of scrub oak and manzanita.

“It’s basically an air operation,” Los Angeles County Fire Capt. Larry Kirkham said. “It’s pretty quiet today. All we have are hot spots. We are still in the area just in case.”

With some of the commotion gone, fire officials were also able to get a better look at the charred terrain, significantly downscaling their estimate of burned land from 35,000 acres to 18,560. Capt. Steve Valenzuela, a county Fire Department spokesman, said officials had been deceived about the blaze’s size by the heavy smoke and rugged hillsides.

He added that there were no significant flames anywhere except for the eastern flank, although fire crews were also having difficulty setting up a containment line along the northern peaks because of the inaccessible terrain.

To control the fire, which would require enough buffer on all sides to assure that it could not spread, Valenzuela said fire crews would still need several days and favorable weather.

"Mother Nature has been the main reason we've been able to get a handle on it," he said. "Firefighting is still a real basic science. You put the wet stuff on the red stuff."

Although the scene was considerably calmer in Malibu, it was clear Thursday morning that edgy fire officials do not want to take any chances. When a small brush fire started burning in the Hollywood Hills near Mt. Olympus about 4 a.m., three water-dropping helicopters were dispatched along with about 40 firefighters, who had the blaze stomped out in about a hour.

Not far from there, a transient was arrested Wednesday from starting a charcoal campfire under a Hollywood Freeway overpass after neighbors complained about the smell of smoke. On Thursday, the man was sentenced to 10 days in the County Jail for setting an illegal fire.

Arson investigators looking for the cause of the Malibu blaze said the final determination that it was the work of an arsonist came only after officers eliminated every other possibility. No incendiary device has been found at the area where the fire started, near a small rock bluff on a hillside overlooking Old Topanga Canyon Road.

"There is no evidence of an accidental fire or anything to indicate that the fire was accidentally started," Sheriff's Department arson investigator Ron Ablott said. "There's only one thing that could cause that to ignite . . . and that's an open flame."

One of the occupants of the blue truck, who witnesses said were acting suspiciously at the scene, said in an interview that he and his friend were heading north along Old Topanga Road, destined for the Valley, where they were supposed to be building a fence for a friend.

As they neared the top of the ridge, the man said, they smelled smoke and stopped. At first they could not see any signs of fire, he added, though he did recall seeing a car speed by them.

With that, he said he and his friends clambered back into their truck. As they drove off, he said they saw flames along the hillside and headed up a dirt road leading to a water tank.

He said he and his friend grabbed the hose attached to the tank and tried unsuccessfully to douse the blaze. Their effort was joined, he said, by a construction worker.

As the fire spread, he said they jumped back into their pickup truck and sped down the hill to get the truck out of the fire's path, soon returning on foot to offer more help. Several witnesses remember seeing the two men speeding away in the truck, prompting at least one of those witnesses to conclude that the men might have set the fire.

As sheriff's deputies continued to seek clues in the Malibu fire, two unusual arrests attracted the interest of Southern California authorities searching for the arsonists responsible for lighting other fires throughout the region during the past ten days.

In Ventura County, sheriff's deputies and Fire Department investigators spoke with Joseph Patrick Wescott, 37, who was arrested in Westlake after authorities received word of a suspected arson in progress. They found Wescott in the branches of a tree that was on fire, and they flushed him out of the tree using fire hoses.

Wescott suffered minor injuries in the fall. He was booked into the East Valley Sheriff's Station jail on suspicion of arson. But Detective Dennis Reed, an arson investigator for the Ventura County Sheriff's Department, said investigators there did not have any evidence to link Wescott to any fire other than the one he allegedly set in the tree.

In Orange County, meanwhile, members of the area's arson task force interviewed a suspect arrested on suspicion of impersonating a firefighter and possession of stolen property. The Lake Forest Man denied setting any fires, and he has not been charged with arson. Authorities said he is not suspected in any recent Orange County wildfires.

A search of his car yielded a police scanner, fake Fire Department badges, a fire helmet and a protective coat. Because of that, investigators from several agencies say they are interested in interviewing Tran, but so far he has not been linked to any blazes.

"We definitely would like to talk to him," said Mike Doty, an arson investigator from Anaheim, the site of one of last week's fires. "It's not something you can just ignore."

In Malibu, a coalition of churches has set up a 24-hour relief station at Saint Aidan's Episcopal Church, 28,211 Pacific Coast Highway. Donations of all sizes of clothing for men, women and children, canned food, and children's toys are being accepted. The church will also serve as a distribution point for the contributions.

STATE FIRE MARSHALOFFICE OF THE CHIEF
7171 BOWLING DRIVE, SUITE 700
SACRAMENTO, CA 95823-2034(916) 262-2010
CALNET 8-469-2010

January 24, 1994

TO WHOM IT MAY CONCERN:

PROPOSED VIDEO PROJECT

My office has been asked to comment on a proposed video project dealing with public awareness in the aftermath of major disasters. Inasmuch as the State of California has recently experienced significant impact from such events, the topic has been a frequent discussion item.

One of the greatest problems to overcome in the aftermath of disasters is to keep the issue in front of the public. The proposal submitted by Mr. John Klein in my opinion would be helpful in achieving that goal, especially if it focused on how to improve the serviceability of individual structures.

I am reasonably sure that we will continue to have fires of significant magnitude in the future. I would support any program that continues to provide for public awareness.

Sincerely,

A handwritten signature in black ink that reads "Ron Coleman".

RON COLEMAN
State Fire Marshal
(916) 262-1883 FAX (916) 262-1877

John M. Klein
6 Carmel Way
San Anselmo, CA 94960

January 18, 1994

Mr. Robert Boyer
Director of Acquisitions
Federal Emergency Management Agency
500 'C' Street, S.W.
Washington, D.C. 20472

Dear Mr. Boyer;

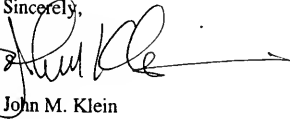
Confirming our conversation, enclosed is the unsolicited proposal for the development of a one hour educational video. The topic will be " What is Hazard Mitigation and Why it Must Concern Everyone ". The organization of personnel that have been brought together are for this purpose only, otherwise there is no other affiliation of the parties involved. I will remain as the main contact for evaluation or negotiation purposes. The key personnel involved will be:

- John M. Klein - Principal researcher of the program. Responsibilities will include supervising all technical research, content direction and government agency relationships and contacts.
- Alan E. Shulman - Direction of over-all program. Responsibilities will include all video technical aspects. The program will be produced at the facilities of Production City utilizing Production City staff.

We will also get assistance from State and Local Officials and Building Code Officials.

Attached is biographical information on the key personnel. I have also enclosed a copy of page 13 from FEMA publication FA-115/JULY 1992 Report of the Operation Urban Wildfire Task Force. Please note the statement to " Produce a television program stressing the basics of home fire safety in areas subject to urban wildfires". This program will accomplish this purpose with a high degree of quality. In a meeting last month with Director James Lee Witt, the Mayor of Malibu, Carolyn Van Horn and myself, we discussed some ideas which have been included in this proposal. However, the proposal was entirely developed after this meeting. If this submission is acceptable, we are anxious to start as soon as possible, so that the program can have an impact during the rebuilding process in Southern California.

Sincerely,



John M. Klein

John M. Klein

Over 20 years in the Real Estate and Construction industries. Experience includes brokerage, development, land planning, zoning, construction management, appraisals, feasibility studies, asset management, financial analysis and water resource management. Organized and supervised architects, contractors and construction trades in the United States and Caribbean Countries. Qualified as Expert Witness in United States District Courts, State Courts and foreign jurisdictions. Developed and patented technology for habitable structures with water catchment, storage and distribution systems. Numerous professional affiliations include the Society of Industrial and Office Realtors and the National Roster of Guest Lecturers. Since November of 1993, working with the City of Malibu as a technical advisor on hazard mitigation, on-site water storage and development of building codes.

Alan E. Shulman Ed.D.

Founded Production City in 1988, prior to its formation, he has been the Director of Education for various companies and institutions. He has been working on Educational and Public Television grants since receiving his Doctorate of Education in 1976. Client list includes the Environmental Protection Agency, the National Institute of Drug Abuse and the Department of Education of the State of California. Recently, Dr. Shulman produced a documentary on Watershed Restoration in California, in cooperation with the U.S. Department of the Interior.

Production City

Produces weekly news segments for NBC affiliates. Recently, in October of 1993, a 1/2 hour documentary was aired on PBS on the topic of Attitudes Towards The Disabled. Production City is a complete facility for both production and editing utilizing "state of the art" equipment.

The Task Force's charge was to identify strategies that would encourage the addition of fire safety measures in homes in risk areas while considering the wide range of groups who might be involved in problem-solving and the implementation of solutions.

The following section presents the major conclusions of each of the three groups. Each group considered the topic twice—once on the first day, at the end of which preliminary areas of consensus were sought in a plenary session; and again on the second day, when all participants received reports of the first-day deliberations of each group for reference on an as-needed basis. On the second day, groups refined recommendations and worked toward consensus.

The following section presents all the groups' deliberations on Day One, followed by each group's conclusions from the second day in the order in which they addressed the topic.

DAY ONE

Discussion Group A

This group approached its task by identifying six types of approaches with appropriate strategies to encourage the addition of fire safety measures in homes located in high-risk areas. These were:

- Media
- Educational
- Joint venture
- Economic
- Regulatory
- Informational

A breakdown of this group's recommendations will be presented based on these six categories.

Media-Related Strategies

- Include a strong home safety message in the 50th anniversary "Smokey Bear" campaign. Develop a theme stressing the new hazard of wildfires in populated areas, such as, "out of the forest and into the home."
- Target home safety messages to areas that have recently experienced fires.
- Produce a television program stressing the basics of home fire safety in areas subject to urban wildfires—perhaps a Public Broadcasting System (PBS) documentary, or a program similar to "This Old House" targeted to do-it-yourselfers.
- Identify a spokesperson in the National media who will capture the attention of the youth audience.

Joint Ventures

- Include family protection in church curricula.
- Include home fire safety in educational programs offered through the Agriculture Extension Service.

TOPIC AREA ONE: Encouraging the Addition of Fire Safety Measures in Homes in Risk Areas

Proposal

For development of a 1-hour educational video.

Purpose Of Video

This video's objective is to increase public awareness of the financial and emotional costs of disasters caused by natural forces and man. Furthermore, it will inform individuals and local governments about their responsibilities and steps they must take to reduce property loss and protect human safety. Special problems of the disabled and elderly will be highlighted. This unique approach to self protection can improve community safety, while significantly reducing disasters' direct and indirect costs to the Federal government. This program will be made for broadcast, local, and home use.

Background

In the last several years, major fires and other disasters have struck communities throughout the United States, and many important lessons have been learned from these disasters. However, local governments and property owners have taken minimal action to use what has been learned about proven approaches and new technologies that can dramatically reduce losses.

This program will address the loss of life and property that results from this lack of public awareness and local government inaction. It will illustrate how communities have repeated fatal mistakes and emphasize the disastrous consequences of these patterns. It will also present a unique and innovative **new approach** to hazard mitigation that emphasizes personal responsibility, similar to the concept of personal prevention and protection that has been traditionally associated with medical issues. This includes an introduction to proven hazard mitigation technologies and a discussion of the economic and political realities of disaster.

Video Title

What Is Hazard Mitigation and Why It Must Concern Everyone

Video Content

An introduction to the problem

Presents a dramatic look at the effects of natural disasters on local communities and individuals—with a focus on the devastation of wildland-urban interface fires. This includes:

- An overview of the financial costs.
- A more personal look at the emotional costs to individuals who have lost members of their families, homes, personal belongings, memories, even pets.
- A discussion of the harm to wildlife and the environment.
- An introduction to exceptional cases—people who saved themselves and their property through self-reliant actions.

Review of conditions

Examines the conditions that are often present prior to wildland-urban interface fire damage, such as:

- Residential communities built within environments that have a history of large-scale fires.
- Homes constructed of materials that catch fire quickly and easily and contribute to the spread of destruction.
- Community building codes that permit this type of construction.
- Residents who purchase unsafe homes—despite their awareness of the dangers.
- Home owners who are uninterested in making changes to their homes to increase safety.
- Residents who add to the dangers of their neighborhood by adding dense, quick-burning foliage that will fuel the rapid spread of fire.
- Fire departments, water supply, communication systems, and electrical systems that are inadequate to handle large-scale emergencies.
- Roadways that do not provide sufficient access for emergency vehicles or adequate exit routes for residents.

A revelation of patterns

Points out that the history of disaster repeats itself, because the real changes needed after wildland-urban interface fire generally are not implemented—even after serious damage has occurred. For example:

- Rebuilding takes place in the same hazardous areas—with the same type of construction and foliage.

- Local building codes remain unchanged—or are not changed to the extent really needed to prevent a recurrence of disaster.

An explanation of why these patterns continue

Introduces “denial” as a powerful factor that works against change for the better. Because individuals and local governments are unwilling to face the reality of the problem and act responsibly, their behavior can be swayed by:

- Political disincentives. Focusing citizens attention on the dangers of living in particular areas is unpopular and does not produce votes.
- Industry lobbies. For example, the timber industry has fought for generations to keep wood shingled roofs in construction.
- Economic disincentives. Each time major disasters strike, money flows into these areas, which otherwise would not.

A discussion of innovative solutions for individuals

Presents a new approach to hazard mitigation that shows individuals how to take a more active role to protect themselves from disaster and reduce their vulnerability to property loss. This includes:

- A discussion of hazard mitigation technology now available.
- Construction techniques and materials that can substantially reduce loss.
- On-site approaches to creating an individual water supply—without placing additional burden on the public water system—including indoor and outdoor fire sprinkler systems, how to capture rainfall, and incorporating these methods into both new and existing structures.
- How to establish backup electrical power and pumps to support an individual water supply.
- Stories of individuals who have already prevented financial and emotional losses by using these techniques.
- The cost benefits of incorporating new hazard mitigation techniques.
- How these measures can also be of substantial benefit in earthquake, hurricane, drought or other natural disasters.

A discussion of community-based solutions

Presents the essential role of local governments—and how they must accept more responsibility for reducing hazards to the community. This includes:

- Safety is a community issue, because each individual’s actions affect the safety of surrounding homes.
- Local building codes must be improved to provide for greater levels of safety.
- Local governments must face the unique “reality” of the dangers in their area, instead of maintaining a public relations-oriented image.

Suggestions for incentives to support solutions

Presents some ideas for how local governments can encourage and support individuals who take a more active role in self protection, such as:

- Tax reductions or credits.
- Reductions in building permit fees for safer construction.

Technique

The program's objectives will be conveyed through the use of historical stock footage and interviews with recognized government officials on the local, state, and national levels, as well as fire department representatives, insurance companies, and property owners. After presenting the terrifying realities of not having basic necessities, such as water and power during disaster, the program will explain the concepts of self protection. This instruction will include practical steps to take, and computer graphics along with animation that demonstrate how existing hazard mitigation technology can be incorporated into residential construction and personal safety habits.

The program will be produced utilizing broadcast, Betacam SP technical facilities that include advanced animation services, location news crews, and acquisition of historical footage. Materials will be produced in such a way that appropriate written materials can be recreated from scripts, as well as graphic slides for camera presentations. Materials will be designed to be relevant for at least ten years.

Anticipated Results

Every time an individual takes action to protect against injury and the loss of life and property, both the individual and the government is relieved of a financial burden. This video presents information that can lead to a dramatic savings for the public, by the following:

- A clear presentation of the issues that keep the public vulnerable to loss.
- Education on concrete actions that can bring change.
- Information will be brought to light on new hazard mitigation technology that is not otherwise readily available to the public.

Once this video presentation has an opportunity to be viewed, and if only some of the concepts presented are implemented, the potential still exists for saving lives, injuries and billions of dollars, for less than the cost of rebuilding one home destroyed in the recent Southern California fires.

Time Line

Months One and Two

Research and script development and stock footage research, including reviewing existing FEMA materials.

Months Three and Four

Shooting (12 days) in various communities throughout the United States. Animation and production.

Month Five

Off-line editing

Month Six

On-line post production and delivery of video

[From the San Francisco Chronicle, Oct. 29, 1993]

'91 FIRE VICTIMS' COSTLY LESSON

(By Janet Wells)

Two years after the nightmare of the East Bay hills fire, thousands of area residents are still ignoring serious dangers in their own backyards that could feed another devastating firestorm.

Within the East Bay fire zone, nearly 80 percent of 1,100 homes inspected in Berkeley this year were in violation of city requirements to reduce flammable brush and vegetation around hillside residences, fire officials said.

In Oakland, 25 percent of 16,000 homes inspected so far had similar violations.

"We have several thousand properties in the hills that are overgrown," said Maura Smith, Oakland's fire recovery specialist. "We were surprised that the experience of 1991 did not spark more compliance. . . . It doesn't just affect the way they live—they are also posing a threat to their neighbors."

"In the hills, already you can see people replanting trees and other vegetation close to their homes," said Tom Fox, community affairs representative with the East Bay Municipal Utility District. "They are planting fuel for the next fire."

Since the 1991 conflagration that destroyed more than 3,200 homes in the Oakland and Berkeley hills, Oakland fire officials have inspected 16,000 of the 25,000 homes in fire danger zones.

More than 4,000 of those homes have been cited for violations ranging from failing to install spark arresters on chimneys to having dense, dry brush surrounding wood decks and walls.

GET-TOUGH POLICY

Property owners who refuse to come into compliance will face the city's get-tough policy. A new Oakland ordinance allows fire officials to do whatever work is necessary to bring properties up to code, then charge the owner for the work, which could run into thousands of dollars.

Berkeley fire officials have embarked on a detailed inspection program that covers every inch of property and offers tree-by-tree advice on mitigation measures.

Of 8,300 homes in the fire danger zone, Berkeley had inspected 1,100 by the end of September.

"We have found close to 80 percent have not complied," said Ruth Grimes, Berkeley senior planner. "That doesn't mean they haven't done anything. That means they haven't done everything we want."

Public officials, while praising the efforts of many hill residents in clearing brush and planting fire-resistant plants, point to a lingering attitude of apathy and denial that is hampering continued efforts.

"AN ATTITUDINAL PROBLEM"

"One resident got burned out, then moved to Piedmont and refused to move fire-hazardous trees. It's an attitudinal problem," said state Senator Nick Petris, D-Oakland, at a recent forum on regional emergency response. "When you look around your own yard, you don't think it's a big deal, but it can make an enormous difference."

Petris and his wife lost their home of 20 years to the Oakland fire.

Residents, on the other hand, have accused local agencies of doing both too little and too much to decrease hazards on public lands.

EBMUD angered residents by cutting down eucalyptus and pine trees at Piedmont Reservoir in September.

"In the name of fire reduction they have created a greater risk for us. This place was inundated with 40- to 50-year-old Monterey pine that created a canopy of shade that cooled temperatures," said Piedmont resident John Giri.

EBMUD cut 60 out of 125 trees slated for removal, then stopped in response to residents' protests.

The University of California at Berkeley has the opposite problem. Residents have lambasted university officials for vegetation fire hazards on acres of university-owned wildlands that border residential neighborhoods.

A program of goat grazing and spotty brush and tree clearing has not mollified neighbors, who say the university's fire-mitigation program is inadequate.

"There are places all over the East Bay hills where there are potential hazards. Ours are no worse or better than those," said Nadesan Permaul, the university's emergency preparedness officer. "This is not a science where you can say, 'We've done it all and we're safe.'"

[From the San Francisco Chronicle, Oct. 28, 1993]

LAGUNA BEACH'S WILD, HILLY BEAUTY WAS FUEL FOR FIRE

(Associated Press)

What makes this exclusive artists' community such a beautiful place to live helped transform it yesterday into an ugly inferno.

Wood shingle roofs and dense vegetation provided fuel for a relentless wall of flame that consumed hundreds of homes, many worth more than \$1 million. Steady hot winds and dense development made the damage worse.

"It's out of control everywhere," said Harriett Wieder, chairwoman of the Orange County Board of Supervisors. "We've totally extended our resources, our firefighting equipment, everything. Our communications equipment is on overload. This is a major national disaster."

Kathleen Cha of the county Fire Department said the losses from the fire were so widespread that they could not be calculated immediately. She said more than a couple of thousand acres have burned.

All of Laguna Beach's 24,500 residents were ordered to leave their homes as the arson-caused fire advanced.

RESIDENTS ENRAGED

"I don't know who did this," said one resident, Anne Driesenga. "But whoever it is, I hope they catch him and give him the death penalty. I don't know if anybody has been hurt, but look at all the lives he has destroyed."

Dozens of mobile homes at El Morro Beach Mobile Home Park caught fire in a few minutes, their propane tanks exploding one after another in thundering fireballs. Firefighters could only stand watch as the ferocious flames advanced toward the nearby sea.

Throughout the afternoon, the wildfire moved not in fits and starts but in a uniform line of destruction.

The flames spiraled hundreds of feet into the air, pushed by the hot winds and fed by dry vegetation and advanced at 14 miles per hour. Winds gusted up to 75 miles per hour.

"Those people didn't even know what hit them," police Lieutenant Paul Workman said.

Even a police command post was swallowed by flames, said Captain Bill Cavanaugh of the Laguna Beach Police Department.

NARROW ESCAPE

A group of police officers surrounded by fast-moving flames managed to escape only when an air tanker dropped a load of fire retardant that Deputy Police Chief Jim Spreine said hit "the officers, the car, everything."

By the time the fire met the cool waters of the Pacific Ocean, it was too late. Residents in cars jammed full of possessions crowded the highways bumper-to-bumper.

Rather than combat the blaze on a united front, the firefighters could select only a handful of homes and try to save them.

Many fire crews spent precious minutes plucking residents off their roofs where they were watering shingles.

"It's very courageous, but it's also extremely foolish and a good way to get killed," said Captain Dan Young of the county Fire Department.

"We've been standing here watching the homes of our friends burning," said one resident, Jackie Hetchings, as more than a dozen homes were engulfed in flames around her. "Your friends are standing there with you and they're watching other people losing their homes. And we're all crying on each others' shoulders."

* * * * *

ONE OF THE WORST FIRES EVER IN SOUTHERN CALIFORNIA

The brush fires that destroyed hundreds of homes in Southern California yesterday rank among the worst fires in the state this century.

This is a list of the most destructive fires to strike California since 1906, based on information from the California Department of Forestry.

August 1992—Fire swept through Shasta County, Northern California, scorching 64,000 acres of forest and destroying 636 buildings.

October 1991—Fire in the Oakland hills destroyed more than 3,000 houses, killed 25, injured 150 and left 5,000 people homeless. The cost of the 1,600-acre fire, the deadliest in California since 1908, was about \$1.5 billion.

June 1990—Arson fire burned across 4,900 acres in Santa Barbara, killing one person and destroying 641 buildings.

1988—Fire in Nevada County destroyed 312 buildings and torched 33,700 acres.

1980—Fire in San Bernardino County killed four people, destroyed 325 buildings and scorched 23,600 acres.

1977—Fire in Santa Barbara County destroyed 234 buildings on 805 acres.

1970—Fire swept through 175,425 acres of San Diego County, killing five people and destroying 382 buildings.

1961—The Bel Air Fire in Los Angeles County destroyed 484 buildings on 6,090 acres.

1923—Six thousand people were made homeless by a 130-acre fire in Berkeley that destroyed 584 buildings.

1906—Fire burned for four days in San Francisco after a huge earthquake. The blaze and quake destroyed about 28,000 buildings, killed about 700 people and left 250,000 homeless.

[From the USA Today]

CALM FALLS AFTER FIRESTORM

(By Haya El Nasser and Sally Ann Stewart)

MALIBU, Calif.—Residents return to charred canyons today as calm weather helps firefighters control the blaze that destroyed more than 350 buildings here.

"The weather should hold through the weekend," says Lisa Boyd of the state Department of Forestry and Fire Protection. "There doesn't appear to be any return of the Santa Ann" Winds.

The winds helped spread the Malibu fire, which officials say was started by an arsonist.

At least \$250,000 is offered for information leading to an arrest.

A suspect may also face charges in the death of British movie director Duncan Gibbins, which is being called a homicide.

He was burned when he tried to save his cat, found safe Thursday.

At sundown, two bodies were spotted from a sheriff's helicopter in a burned vehicle in a mountainous area, says Sgt. Ron Spear.

The death toll now is three.

The Malibu fire has destroyed more than 18,500 acres from the Santa Monica Mountains to the ocean since Tuesday.

It's the latest in a string of firestorms that have caused an estimated \$1 billion in damage.

Residents, including celebrities were thanking firefighters for their efforts.

Among them: Actress Ali MacGraw, whose home was destroyed.

NO BREATH FOR CALIFORNIA

(By Linda Kananine)

Bright orange flames still flicker in the canyons—as southern Californians brace for yet another possible wave of environmental destruction.

Rainy season hits late this month. With it comes potential for muddy avalanches on newly denuded mountain slopes—burying homes and trees.

"It's a critical situation," says Jean Granucci of the Los Angeles County Public Works Department. "People already had damage from fires. Now they have floods and (mudslides) to look forward to."

Slopes once again had trees, bushes and grass to hold soil in place and absorb water. Now, the slopes are barren pathways for rolling rain and heavy mud.

Crews already are racing to lay straw and anchor degradable fiber onto canyon slopes to prevent washouts. Other crews will plant fast-growing grasses in hold soil.

In Altadena alone, 45 canyons were burned. If a major, 50-year rainstorm were to hit now, it could send 1.3 million cubic yards of mud and debris down slopes. That's 200,000 cubic yards loads—or 33,000 dump truck loads—more than retention pits and gulches there can hold, Granucci says.

"One of the lessons of Oakland (1991 fires and mudslides) is, if we move quickly to stabilize the banks, they can withstand even heavy rains," state Natural Resources Secretary Douglas Wheeler says.

Biologists, meanwhile, are assessing the grim environmental toll under the ashes.

Flames may have killed more than 300 of 2,000 pairs of endangered California gnatcatchers. The gray songbird lives only in southern coastal sage scrub and chaparral.

"We're devastated because we know we've lost a lot of the species," says Connie Babb of the U.S. Fish and Wildlife Service. Santa Ana winds whipped smoke and flames, quickly engulfing brush—and overwhelming some birds within.

"A lot of these fires were moving so quickly, even people who were aware they were coming were caught. No one warned the birds," Babb says.

Birds that did escape face a precarious future, she says: "What are they going to come back to? They're homeless."

As brush burned, about 40 other species were threatened.

Biologists estimate 15% of the nation's cactus wrens—another songbird proposed for endangered listing—may have died. Fires also burned stream-side willows critical to the endangered songbird Least-Bell's vireo.

In truth, the chaparral, sage scrub and canyon trees got what nature intended—even if arsonists helped deliver it.

"It is not a disaster. All of these areas evolved with fire," says the Sierra Club's Elden Hughes of Whittier, Calif.

Restoration should take five to seven years. "We don't expect irreparable damage."

[From the Outlook, Nov. 10, 1993]

BE READY FOR NEXT TIME

(By Tom Jennings)

Malibu will burn again and residents had better prepare for it.

That was the message delivered to more than 200 people—many of whom lost their homes during last week's fires—at a special City Council meeting Tuesday night.

"As sure as you and I are sitting in this room there will be a next time," said Don Wallace, a representative of county Supervisor Ed Edelman.

More than a dozen speakers, from police and fire representatives to residents who battled flames with garden hoses, talked about the inferno that blackened 18,500 acres, destroying 350 structures and killed three people.

Wallace, a 27-year veteran of the Los Angeles City Fire Department who lives in the Santa Monica Mountains, said the lifestyles of Malibu residents must change if they are to survive another wildfire.

DANGER CITED

"If you insisted on planting pine trees, eucalyptus and junipers right up against your house, perhaps it's time for government to take a new look at regulating ornamental landscaping because you create a danger not only to yourselves, but your neighbors," he said.

Wallace highlighted a series of deficiencies in Malibu that he said will lead to fire disaster again:

Some communities have 10-foot wide paved streets. Codes require new streets to be at least 20 feet wide. Smaller roads make it difficult for fire trucks to get in.

Only 20 percent of Malibu's water lines are the required six inches in diameter. During the fire, firefighters often were forced to abandon areas because of low or no water pressure.

In the best of times, the fledgling city has only a 3-day water supply. Metropolitan Water District standards require communities to have a 7-day supply.

More controlled burns are needed to ensure that heavy brush does not build up on hillsides near homes.

Homes should be constructed with fire-resistant material, fire-resistant plants should be used in home landscaping and roof sprinklers should be installed.

A huge sign thanking those who helped residents through the blaze hung on one wall of the council chambers at the Hughes Research facility, which narrowly escaped the flames. Police and fire officials received praise for their work during the fire, but several residents complained that not much was done to save their homes.

"I never saw a helicopter or an airplane drop anything," said Dan Cislo, president of the La Costa homeowners association, who lost his home.

"I don't think this is a time for blame. This is a time for rebuilding, but I'd like to know what happened."

Cecilia Oliver, who lost her Las Flores Mesa home, said safety officials never warned her neighborhood it was in danger.

"We had no idea the fire was coming over the hill," she said. "No one told us to evacuate."

Joan Knapp, whose home on Las Flores Mesa was one of only a handful spared by the fire, said she never saw one emergency vehicle.

"We were abandoned," she said, her voice cracking.

"It was the most horrifying experience I've ever had. I had my neighbors, old ladies, jumping in my pool to escape."

Knapp attacked Malibu Mayor Carolyn Van Horn and other members of the council who insisted that the homes destroyed in no-growth Milibu be replaced exactly as they were, with no changes in the "footprint" of the homes.

"Forget the footprint," Knapp shouted. "If you allow my neighbors to build their homes the same as they were, you're committing suicide."

Architect Schuyler Brown said the city's restrictive building codes will make it impossible for people who want to rebuild to do so any time soon.

"I started a 160-square-foot addition to a home in December last year," he said.

"It still hasn't gotten permitted. Your process is not working. I urge you to use the codes in place just prior to cityhood."

While many residents talked about their burned-out homes, Frances Schwartz, an eight-year resident, offered another scenario of losing her home because of the fire.

"The owner of my guest house called and said I had to move out so he could move in some friends who were burned out by the fire," she said.

In other news:

Navy Seabees are expected to have a one-lane bridge opened today on Las Flores Canyon Road. The bridge was damaged during the fire.

The rains expected for this weekend should be light, forecasters say.

Malibu city officials said a light rain will help the seeds left behind on the blackened hillsides take root.

Officials said a series of soft rains would ease the threat of mudslides during the wet winter months.



Federal Emergency Management Agency

Washington, D.C. 20472

November 19, 1993

Mr. John M. Klein
6 Carmel Way
San Anselmo, CA 94960

Re: U.S. Patent No.
5,239,794

Dear Mr. Klein:

I enjoyed meeting with you on November 5th (at the direction of my General Counsel John P. Carey, Esq.) and again on November 19, 1993. As we discussed over several hours during those meetings the Federal Emergency Management Agency is assigned by Executive Order 12148, the responsibility to develop policies which provide that all civil defense and civil emergency functions, resources, and systems of Executive agencies are among other things integrated effectively with organizations, resources, and programs of State and local governments, volunteer organizations, and the PRIVATE SECTOR, and developed, tested and utilized to prepare for, mitigate, respond to and recover from the effects on the population of all forms of emergencies. Section 2-201 of E.O. 12148.

FEMA is interested in promoting all forms of mitigation, based at least in part on the need to reduce property loss and protect human safety, but also to reduce the direct and indirect costs to the federal government of disaster outlays. While FEMA has not been actively involved up to this point with technology transfer issues, and because we are precluded from law from promotion of specific private interests or endorsement of specific products we are interested in the widest possible dissemination of new mitigation technology that may benefit the public. The fact that you have received a specific patent means that you are no longer in the design/concept phase solely and we will try to keep you abreast of developments that may assist your efforts to widen the knowledge base about your patent even though without specific endorsement or advertising. The Natural Hazards Center, at the University of Colorado acts as a clearing house on mitigation and accepts ideas and articles from the public. That organization receives partial funding from FEMA and may be a useful contact.

Please keep us apprised of developments and your efforts to make Emergency Managers aware of your ideas.

Sincerely,

William R. Cumming
William R. Cumming
Office of General Counsel

[From the Los Angeles Times, Nov. 2, 1993]

SCARS FROM FIRESTORM KEEP OAKLAND ON CONSTANT VIGIL

(By Richard C. Paddock)

OAKLAND—When contractor James Servais saw smoke billowing in the Oakland hills last week, he knew just what to do: he raced to his truck, grabbed the fire hose and hooked it up to a nearby hydrant.

Construction workers rebuilding houses destroyed in the huge Oakland fire two years ago dropped their tools, picked up the hose and attacked the wind-drive flames that shot 30 feet in the air. By the time the Fire Department arrived 11 minutes later, the volunteer firefighters had the blaze under control.

"I don't want to be a victim anymore," said Servais, who lost two homes in the 1991 fire and now keeps a fire hose in his truck. "The bottom line is, no matter what kind of Fire Department you have, there are never enough people so we have to get citizens back involved"

The new activism of volunteers is one sign of the changes that took place in the Oakland and Berkeley hills since California's worst fire killed 25 people and destroyed 2,810 homes.

Oakland, which got poor marks for its handling of the fire, has taken such steps as setting up its own weather stations in the hills and buying an infrared scanner so its helicopter can hunt for hidden embers. The city also required flameproof building materials for new construction and modified its fire hydrants so firefighters from other cities can hook up.

With a new tax assessment approved by voters, the city also moved aggressively to clear vegetation in the hills—even bringing in goats to eat brush in inaccessible areas.

"I think the city is much better prepared than it was two years ago," said Oakland Mayor Elihu Harris. "We learned a lot. After the storm, people always get a little complacent. But in this case I think we have maintained our vigilance."

Offering its experience this past week, the city sent officials to Southern California to help fire victims there, in particular by offering guidance on the establishment of one-stop centers to aid victims in rebuilding.

At Oakland's emergency centers, burned-out residents could meet with representatives of the Red Cross and the Federal Emergency Management Agency, replace a driver's license, stop a newspaper subscription, transfer phone service, find information about lost animals, get mental health counseling and obtain information about insurance reimbursement or home rentals.

Two years later, the centers have evolved into a place where victims can process permits for rebuilding their homes and arrange to hook up their utilities without delays faced by other builders.

When the fire broke out in the Oakland Hills on Oct. 20, 1991, the Oakland Fire Department was unaware of the high fire danger that day and was poorly prepared to deal with a major crisis.

"We were criticized for not being responsive to a red flag alert," said Fire Department spokesman Don Parker. "But we were not in the loop. We didn't even know that the California Department of Forestry had issued a red flag alert. Now we pay more attention to the weather."

Oakland's new municipal weather stations provide immediate readings on temperature, winds, humidity and the moisture content of brush. When the readings indicate a high hazard, the Fire Department begins patrolling danger areas and responds with more engines to any reports of fire.

The 1991 conflagration began from a brush fire that firefighters thought they had extinguished the previous day. Now, firefighters are ordered to stay with a blaze when conditions are hazardous and to turn over the soil to make sure the fire is out.

During the huge fire, the region's water supply system was so overloaded that some firefighters ran out of water. Now, the city is buying four trucks with miles of hose that can pump water from San Francisco Bay or a distant water main.

Similarly, the city has purchased a new communications center to replace the radio system that was so overwhelmed that dispatchers could not send fire engines to the proper locations.

Firefighters from other jurisdictions who came to Oakland's aid in 1991 found that the city had a different size hydrant hookup than nearly every city in the state. Oakland is converting all its hydrants to match the equipment of other cities.

Another critique in the wake of the 1991 fire—that help and residents trying to evacuate were hampered by narrow, winding roads—proved more difficult to solve.

Although some streets have been widened, most were not. Instead, the city has imposed strict limits on street parking in the hills.

In the aftermath of the Oakland blaze, the state Legislature approved a law requiring fire-resistant roofs in high-fire areas, effective in 1995. Oakland approved even tougher restrictions that took effect immediately, requiring new roofs to meet the strictest standards for fire resistance.

In addition, siding on homes must be able to tolerate high heat for an hour without igniting and attics must be vented so that heat does not collect and cause houses to explode.

"In the Berkeley and Oakland hills there have been five major fires in the last 100 years and each time they would rebuild just like before," said Assemblyman Tom Bates (D-Oakland), who represents the burned area and sponsored the state measure. "Maybe this time the message got through."

One reason the 1991 fire was so disastrous was the vast amount of dry vegetation in the hills. This year, out of 16,000 properties inspected, about 4,000 were cited for overgrown brush or for not having spark arresters on their chimneys. Property owners who do not correct the problem will find the work done by the city and the cost taken onto their property tax bills.

In areas where it is difficult for crews to work, the city has contracted with a goat herder whose goats can clear about an acre of brush a day, even eating the poison oak. "They eat anything and everything," said former Oakland City Councilwoman Marge Gibson Haskell, who lost two homes in the fire.

In another step to help prevent another disaster, fire departments have agreed that engines will disregard city limits when a fire is reported in the hills. When the alarm sounded for the Oakland fire last Wednesday, 11 engines from four jurisdictions converged on the neighborhood.

Recognizing the limits on its emergency services, however, Oakland also has begun training hundreds of volunteers in how to deal with disasters such as fires and earthquakes.

"They can't always wait for the Fire Department," Mayor Harris said. "We're starting a volunteer fire reserve so there will be more people available to help in a disaster."

**The East Bay Hills Fire
Oakland-Berkeley, California
(October 19-22, 1991)**

Investigated by: J. Gordon Routley

This is Report 060 of the Major Fires Investigation Project conducted by TriData Corporation under contract EMW-90-C-3338 to the United States Fire Administration, Federal Emergency Management Agency.



Federal Emergency Management Agency



**United States Fire Administration
National Fire Data Center**

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United States Patent No. 5,239,794
Habitable Structure With Water Catchment Storage and Distribution

In its basic form this technology is a building constructed in a fashion that collects rainwater which falls onto the roof area and stores the accumulated water in an area built as part of the structure itself. Further provisions have been made to allow for the collection of rainwater that falls on surrounding driveways, etc., then directing this water into the water storage area, if desired.

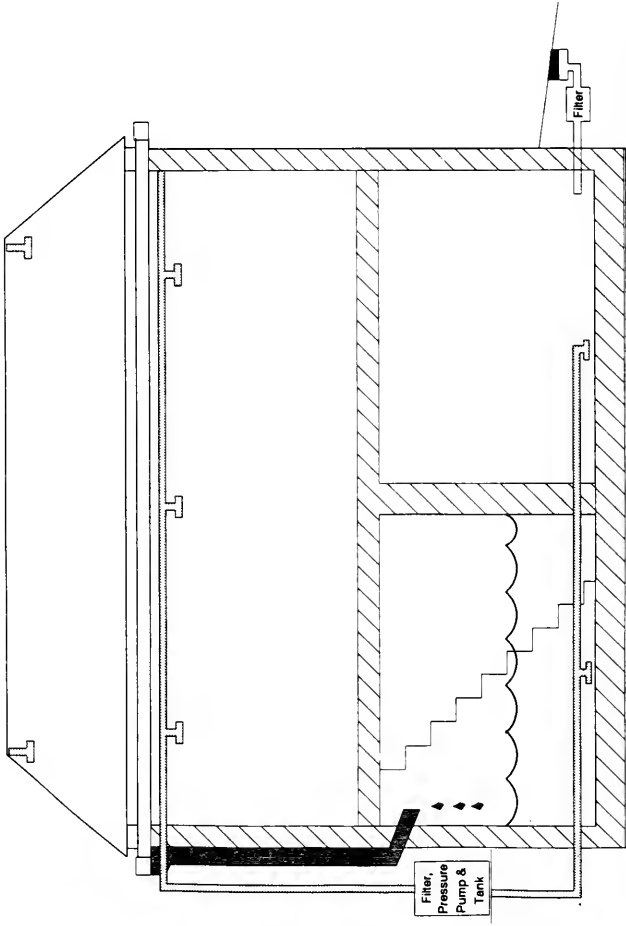
In addition, other measures have been made to distribute this water both inside and outside the structure for any uses necessary. An important feature of this technology is incorporating a fire protection system (sprinklers) connected to the self contained water source coupled with a backup power supply. The sprinkler system would operate on the interior and exterior of the building.

Other features/benefits would include:

- The preferred construction is of masonry materials reinforced with steel. This provides strength, durability, fire resistance, hurricane and earthquake protection.
- Water Conservation - Using stored rainwater reduces the demand on the public water supply.
- Energy Conservation - Stored water can be used in conjunction with an energy efficient, closed-loop heat pump system.
- Reduction in erosion and mudslides - By catching rainwater, less water runs down hills and slopes.

This is a unique combination of existing technologies that is truly utilizing a balanced design concept. Individually, these technologies have been in existence for many years, and are now cost effectively tied together. Just about any architectural design can incorporate this concept.

HABITABLE STRUCTURE WITH WATER CATCHMENT STORAGE & DISTRIBUTION



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U.S. Patent No. 5,239,794
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US005239794A

United States Patent [19]
Klein

[11] **Patent Number:** 5,239,794
[45] **Date of Patent:** Aug. 31, 1993

[54] **HABITABLE STRUCTURE WITH WATER CATCHMENT, STORAGE AND DISTRIBUTION**

[76] **Inventor:** John M. Klein, P.O. Box 751, Southeastern, Pa. 19399

[21] **Appl. No.:** 875,875

[22] **Filed:** Apr. 29, 1992

[51] **Int. Cl.:** E02D 15/04

[52] **U.S. Cl.:** 52/169.6; 210/167; 52/20; 52/21; 52/19; 52/16

[58] **Field of Search:** 52/19, 20, 21, 169.6, 52/16; 210/167

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Primary Examiner—David A. Scherbel

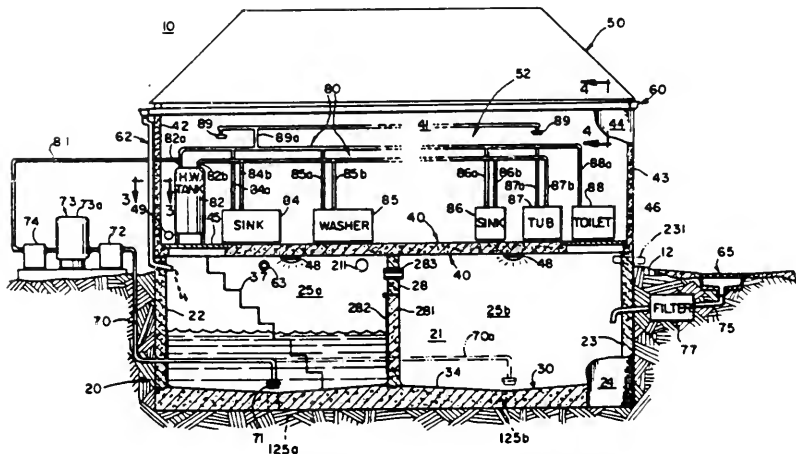
Assistant Examiner—Wynn E. Wood

Attorney, Agent, or Firm—Panitch Schwarze Jacobs & Nadel

[57] **ABSTRACT**

A habitable structure has a ground-supported, water-impervious floor and upright foundation walls which together define an open top water enclosure. Flooring is supported on the foundation walls essentially covering the open top. Roofing is supported above the flooring so as to define a habitable space between the roofing and the flooring above the enclosure. A catchment system collects rainwater from the roofing and other sources and conducts it into the enclosure where it is stored for future use. The enclosure formed by the foundation walls and floor is modified to permit use as either a water storage tank or habitable area itself.

19 Claims, 2 Drawing Sheets



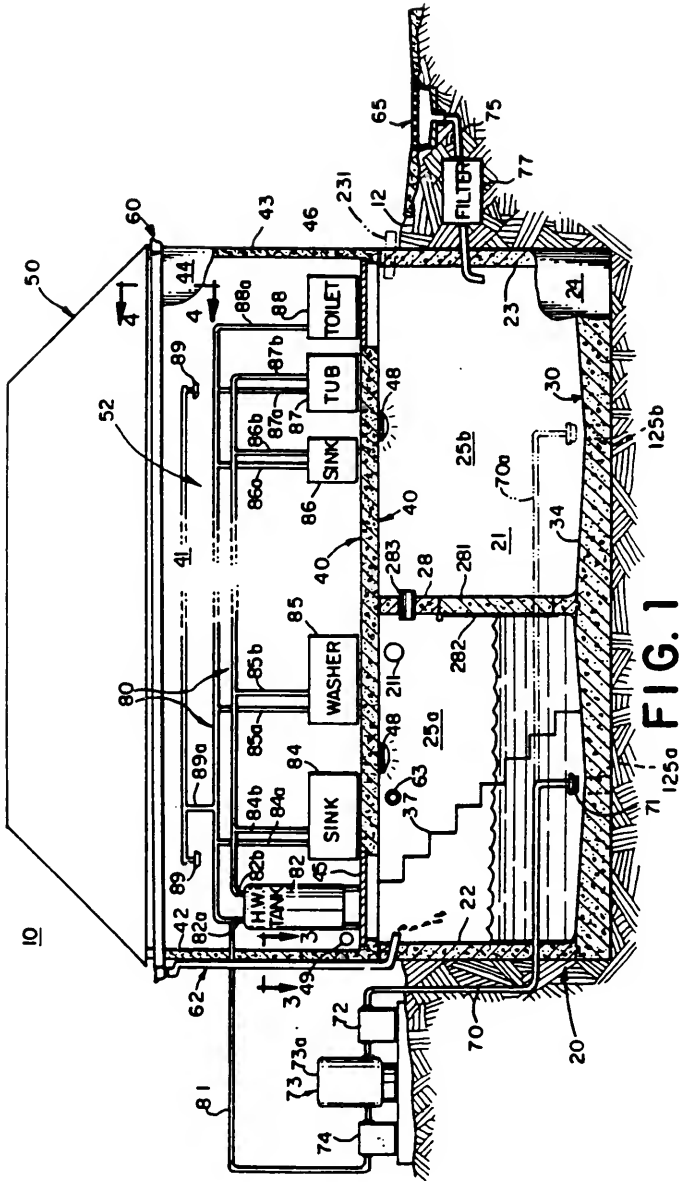


FIG. 1

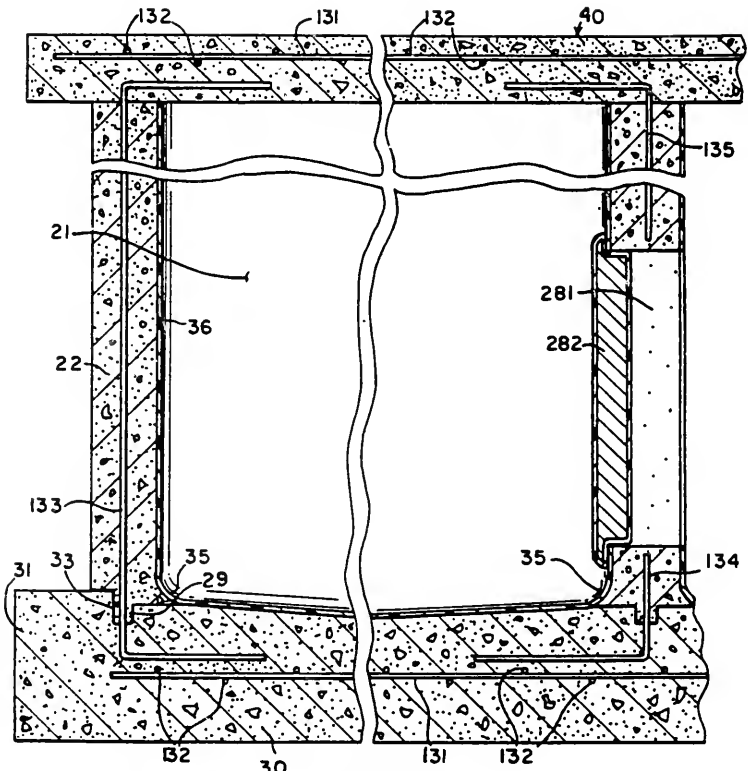


FIG. 2

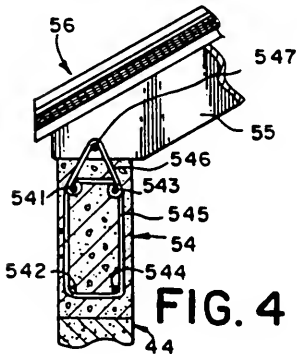


FIG. 4

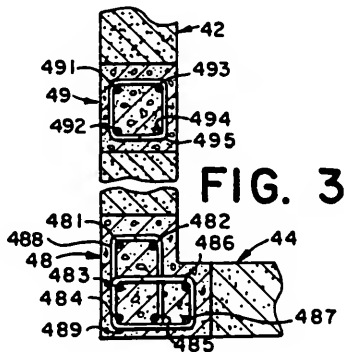


FIG. 3

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HABITABLE STRUCTURE WITH WATER CATCHMENT, STORAGE AND DISTRIBUTION

FIELD OF THE INVENTION

The invention relates to habitable structures and, more particularly, with respect to water catchment, storage and distribution systems used with habitable structures.

BACKGROUND OF THE INVENTION

In many areas of this country, the development of real estate has been hindered or blocked due to the unavailability of on-site water.

For example, in certain prime residential areas around San Francisco, county officials will not issue housing construction permits because of the lack of piped-in water and the absence of accessible ground water. The same problems hinder development in many arid areas such as the southwestern United States, the Virgin Islands and elsewhere.

Similar problems exist in other locations. For example, in certain areas of the Hawaiian Islands and other locations, rainwater is plentiful, or at least adequate to support habitation, but piped-in water and ground water are unavailable due to expense, geology, contamination, etc.

Others have previously suggested the provision of tanks to collect rainwater, where available, for use in a habitable structure. However, exposed tanks like those disclosed in U.S. Pat. Nos. 1,760,613 and 4,726,151 are generally unsightly and can cover a relatively large portion of a tract. Moreover, the property in question may not be sufficiently large in area to contain both the habitable structure and the tank or to contain both and still comply with building or zoning codes. U.S. Pat. Nos. 4,228,006 and 4,934,404 disclose burying water storage tanks under or near a habitable structure. However, excavation may not be possible in some locations due to geology and may be a significant additional construction expense, even if possible.

The inability to provide adequate water in these cases has either prevented or limited the development of the property in question and has significantly depressed the market values of such properties. In some instances, properties which would be extremely valuable if they could be developed for habitable uses have been rendered almost worthless.

SUMMARY OF THE INVENTION

In its most basic form, the present invention is a ground-supported habitable structure comprising a foundation formed by one or more essential water-impervious vertical walls defining an essentially closed perimeter; a ground contacting, essentially water-impervious floor within the perimeter and defining with the foundation an open top water enclosure sitting on or at least partially in the ground. The structure further comprises flooring positioned on the foundation at least substantially covering the open top of the enclosure. The foundation supports an outer perimeter of the flooring and at least part of any load supported by the flooring. The structure further comprises roofing exposed to the elements and supported six feet or more over the flooring to provide a habitable space between the roofing and the flooring. The roofing and any load supported by the roofing is transmitted to the ground through the foundation. The structure further com-

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prises a catchment supported to receive rainwater running from the roofing and at least one water-carrying conduit extending from the catchment to the enclosure interior so as to deposit rainwater running from the roof into the enclosure beneath the flooring.

BRIEF DESCRIPTION OF THE DRAWINGS

The foregoing Summary as well as the following Detailed Description of Preferred Embodiments are better understood when read in conjunction with the appended drawings. For the purpose of illustrating the invention, there is shown in the drawings embodiments which are presently preferred. It should be understood, however, that the invention is not limited to the specific methods and instrumentalities disclosed. In the drawing:

FIG. 1 is a diagrammatic broken-away elevational view of an exemplary, preferred embodiment, ground-supported, habitable structure of the present invention;

FIG. 2 is a more detailed, elevational, cross-sectional view of the building of FIG. 1 showing details of a preferred, reinforced concrete construction of the foundation and flooring;

FIG. 3 is a plan cross-sectional view along the lines 3-3 of FIG. 1; and

FIG. 4 is a vertical cross-sectional view along the lines 4-4 of FIG. 1.

DESCRIPTION OF PREFERRED EMBODIMENTS

Certain terminology is used in the following description for convenience only with reference to the drawing and is not limiting. In addition, like numerals are used in the drawing to indicate like elements throughout.

There is shown in FIG. 1 a diagrammatic representation of a ground-supported habitable structure of the present invention indicated generally at 10. The structure 10 includes the ground contacting foundation, indicated generally at 20, a ground contacting, essentially water-impervious floor indicated generally at 30, flooring indicated generally at 40, which is positioned on the foundation 20 and roofing indicated generally at 50, which is exposed to the elements and supported six feet or more over the flooring 40 to provide a habitable space 52 between the roofing 50 and flooring 40. The depicted foundation 20 is formed by four, at least essentially water-impervious vertical walls 21-24 which are mutually perpendicularly positioned to define an essentially closed, rectangular perimeter. Foundation wall 21 is seen in the background of FIG. 1 extending perpendicularly between walls 22 and 23, which are seen in cross section. A fourth wall, which has been almost entirely broken away in FIG. 1, extends perpendicularly between walls 22 and 23, parallel to wall 21, and is spaced out of the plane of FIG. 1 from a wall 21 to define with the indicated walls 21, 22, 23, the essentially closed perimeter. The floor 30 contacts and is supported directly by the ground 12. Preferably, floor 30 in turn supports foundation walls 21-24. The floor 30 and foundation 20 together define an open-topped, water enclosure contacting and supported by the ground 12, the open top being at least essentially covered by the flooring 40. In the depicted embodiment, an at least generally water-impervious, vertical load-bearing partition wall 28 is further preferably provided extending between foundation walls 21 and 24. It defines with the floor 30 and foundation walls 21-24, two separate, ad-

joining open top water enclosures, which are indicated at 25a and 25b.

The roofing 50 is supported above the flooring 40 on four upper load-bearing walls 41, 42, 43 and 44. The roofing 50 and any load supported by the roofing is transmitted to the ground 12 at least through those upper walls 41-44 and the foundation walls 21-24. A catchment indicated generally at 60 is supported by one or more of the upper walls 41-44 and/or the roofing 50, or in other conventional ways, entirely around the roofing, so as to receive all rainwater running from the roofing 50. At least one water carrying conduit 62 is provided extending from the catchment 60 to the interior of the enclosure formed by foundation 20 and floor 30, in particular the enclosure 25a, so as to deposit rainwater running from the roofing into the enclosure beneath the flooring 40.

Preferably, the floor 30, foundation 20 and flooring 40 are all provided by poured reinforced concrete to surround the enclosure(s) 25a, 25b with strong, non-corroding or rotting materials. It is preferred in each instance that a keyway like keyway 33 be provided in an upper surface 34 of the floor 30 so as to receive a key 29 formed at the bottom of each separately poured foundation wall defining part of the enclosure. The key and key way prevent movement of water beneath the walls 21-24 and, in the case of partition wall 28, prevent movement of that wall across the floor 30 under hydraulic load.

Where concrete or other masonry is used to provide the ground contacting foundation 20 and floor 30, at least the inner facing surfaces of the foundation walls 21-24 and 28 and floor 30 are preferably finished with nontoxic materials which will render those surfaces and the wall essentially water impervious. For example, a stucco/mortar bonding agent such as Thorobond TM might be applied directly to the concrete surfaces, a coating 36 mortar, stucco or other concrete mortar mix applied to the surfaces and one or preferably two coats of a sealer 37 such as Thoroseal TM applied over the bonding agent and coating. Alternatively, some plastic coating material(s) or systems which may be applied directly to concrete may be found suitable for this purpose.

Preferably, all inner surfaces of the foundation walls 21-24 and 28 and the upper surface 34 of the floor 30 facing the interior of each enclosure 25a, 25b are configured to prevent stagnation and encourage drainage away from the vertical walls. For example, the aforesaid mortar or stucco material may be applied at the corners formed between each of the vertical foundation walls 21-24 and 28 and the upper surface 34 of the floor 30 can be built up and shaped to provide curved surfaces like surface 38 in FIG. 2. Similarly, intersections between adjoining, transverse vertical foundation walls, like the intersections between walls 22 and 21 and walls 28 and 21, are preferably provided in the same or a similar manner with vertically extending curved surfaces connecting the adjoining inner planar sides of those walls, like surface 39 in FIG. 3, eliminating any corners between those adjoining inner planar sides of any enclosure 25a, 25b.

The habitable structures of the present invention are designed and intended to remedy both potential short term and long-term water shortage and/or storage problems. Because the preferred structure 10 is sufficiently strong and durable to last literally hundreds of years, the structure 10 is further preferably modified

during initial construction to render either or both enclosures 25a, 25b usable as additional habitable space when the water is not being stored. For that purpose, one and preferably two access ways 45 and 46 may be provided through the flooring 40 to permit access through the flooring 40 to either enclosure(s) 25(a and/or b). Preferably too, one or more stairways 37, for example, poured or precast concrete, plastic or coated metal stairway(s), are installed leading from each access way to the floor 30.

Preferably too, provisions are further made for inspecting and cleaning each enclosure from its access. First, lighting is preferably provided within each enclosure. In the depicted embodiment, separate fixtures 48 are included over each enclosure 25a and 25b. Also, suitable means such as a water suction coupling, indicated diagrammatically at 49, is positioned proximal the access way 45 to permit the coupling of a swimming pool sweep or other comparable water suction device to clean sediment from the upper surface 34 of the floor 30 through the access way 45. A similar coupling can be provided adjoining the second access way 46, if desired.

Since it may be desired at some future time to use the entire enclosure 25 as additional habitable space and permit passage through partition wall 28, a door opening 281 may be provided which preferably may be sealably closed by means of a removable cover 282. If desired, similar openings might be provided through any of the perimeter walls 21-24 as future window or door openings. Also preferably provided through partition wall 28 are one or more overflow tubes 283. Each tube 283 will permit the water levels in the adjoining enclosures 25a, 25b to balance in the event that one reservoir should fill when the other does not. Each tube 283 may be closed, for example, by means of a cover on either end of the tube or an adjustable valve (neither depicted) in the tube, if enclosure 25b is to remain dry. Where only one enclosure 25a is being used to store water, preferably overflow piping 211 is also provided through one of the foundation walls 21, 22, 24 defining that enclosure 25a. Preferably, the overflow piping 211 has a collective cross-sectional area at least as great as the cross-sectional area of the inlet conduit 62 to drain water from near the top of the enclosure 25a at least as quickly as the enclosure of 25a can be filled. The piping 211 is preferably covered at its outer end with a fine screen that permits water to flow out of the enclosure 25a but prevents vermin and other like potential contaminating elements from passing back into the enclosure 25a.

In addition to collecting and directing water from the roofing of the habitable structure 10 into its foundation, where necessary or desirable, water from the roofs of ancillary and outbuildings can also be collected and conducted to the enclosure 25a. For example, an inlet like inlet 63, indicated diagrammatically, can be provided with appropriate valves and fittings to receive a hose to add water to the enclosure 25a from another separate source, such as a tank truck. Alternatively or in addition, water can be pumped through piping 211. In addition, if desired, sources of clean runoff water from the ground may also be collected by suitable means. For example, a drain 65 in a paved area collects water which is carried by suitable underground conduit(s) 75 to the enclosure 25b where it may be stored separately from the intended potable water supply enclosure 25a for secondary uses, such as outside washing, irrigation, fire protection, etc. An appropriate filter 77 can be provided

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to initially clean the water to the degree desired for its intended storage and use.

Water may be removed from each enclosure by suitable, conventional means. In the indicated preferred embodiment, a removal pipe 70 is extended into the enclosure 25a with its open end location proximal the enclosure floor 30 to draw off water from near the bottom of the enclosure. A screen 71 may be installed at the inlet of the pipe to prevent the pickup of large, solid debris. The outlet end of pipe 70 is coupled to a suction-type water pump 72. The outlet of the suction pump is preferably coupled to the inlet of a pressure pump 73. The outlet of pressure pump 73 is preferably coupled to a filtration device 74. The outlet of filtration device 74 is coupled to the inlet end of a potable water conduit distribution system within the structure 10, which is indicated generally at 80. The conduit system 80 includes a pressurized cold water feed line 81 from the outlet of the filtration device 74 having a number of sub-branches 82a, 84a, 85a, 86a, 87a, 88a and 89a, which carry the cold water to various fixtures within the enclosure including hot water tank 82, kitchen sink 84, clothes washer 85, and bathroom sink 86, tub 87, a toilet 88 and fire sprinklers 89, respectively. A separate hot water line 83 from the tank 82 also is provided with branches 84b, 85b, 86b and 87b routed to the respective indicated fixtures. Pressure pump 73 is of the type which includes an inverted, sealed tank having an inlet and outlet at the bottom end and retains a pocket of air or other gas(es) which is compressed by the water being fed under pressure into the tank 73a from pump 72. The compressed air or other gas(es) in tank 73a forces water from the bottom of the tank 73a through the filtration device 74 and the conduit system 80. An ozone generator, chlorinator or other conventional water disinfecting device may be coupled with the tank 73a, filter 74 or to another portion of the water distribution system for further safety, if desired.

In addition to the basic features of the system which have been shown and described, a number of ancillary features may be useful. For example, appropriate coupling, as is indicated at 81a, with a valve and female threaded spigot can be provided for outdoor use and for feeding externally pressurized water into the system, for example, from an auxiliary pump (not depicted). For example, valving which might be provided along conduits 62, 75 or conduit system 80, to vary or stop water flow therethrough, have been omitted from the figures. It might be quite desirable to include a bypass valve in conduit 62 to divert water from the conduit 62 onto the ground when the enclosure 25a has reached a desired maximum level or when the foundation is no longer used for water storage. Similarly, a shutoff or bypass valve along conduit 75 would be useful to prevent undesired water from entering enclosure 25b. In addition, it may be desirable to include a self-closing, timed shutoff valve on each of the feed lines 84a-88a and 84b-87b flowing more than a predetermined period of time through the conduit in the event of a faucet left open or a valve within a washer or toilet malfunction. Other conduit systems can be provided within the structure 10. For example, an internal water sprinkler system 89 can be provided, if desired, as a branch of conduit 81 or, alternatively, from the drain water enclosure 25b, preferably with its own pump. It may be desirable to have an auxiliary power supply to power pump 72 or any other electrically powered appliance or motor in the event of a power outage during an emergency. Pump 72

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can be used as the vacuum source 49 by the provision of suitable piping and valving. A separate branch 70a of the removal pipe 70 can be provided extending into enclosure 25b, with suitable diverting and/or shutoff valving to permit water to be drawn from such an enclosure if it is a source of potable water or in the event that the potable water in enclosure 25a is fully depleted. Scalable drains 125a, 125b (in phantom) can be provided through the floor 30 at the lowest point of each enclosure or through an exposed wall, if the wall is exposed above the ground at its base, to drain each enclosure by gravity. The layout of pipes and conduits is entirely diagrammatic. One of ordinary skill in the art will appreciate that piping such as 70, 70a would be better installed by being dropped from proximal the flooring 40 and/or passed within the foundation walls, rather than being passed horizontally through the foundation wall(s) at the bottom of the enclosure.

In addition, it may be desirable to provide electrical outlets suitable and conduits in the enclosure area during construction for use when the enclosure is not dedicated to water storage. This can be done by the use of waterproof conduit, which may be sealed to permit the future addition of switch and plug boxes or which may include switch and/or plug boxes sealed for immersion prior to use. Of course, such circuits would be rendered inactive at the electrical distribution box for the enclosure 10. Also, prewired conduit boxes, switches and plugs can be provided supported from the flooring 40. The conduit can be threaded or otherwise provided with a pivotal joint which would permit a length of the conduit and a box with a plug or switch at the end to be pivoted downwardly from between the load-bearing members of the flooring 40 to a desired location in any enclosure 25a.

FIGS. 2 through 4 depict details of the preferred reinforced concrete construction of structure 10. FIG. 2 is a side elevation through walls 22, 28 near the intersection of each of those walls with wall 21. FIG. 3 is taken through the junctions of walls 42/44. FIG. 4 is taken along the top of wall 44.

Referring to FIG. 2, foundation floor 30 is preferably formed with an oversized footer portion 31, which extends around the lower perimeter of the enclosure 25 centered under each of the foundation walls 21-24 and under partition wall 28. Preferably, a variety of steel reinforcement bars strengthen each slab or wall element and interconnect the various load-bearing elements of the structure. For example, substantially horizontal reinforcement bars 131 are alternated at right angles with horizontal reinforcement bars 132 spanning the floor portion 30 of the enclosure. Bars 133, bent at right angles, are provided at regular intervals extending from the floor 30 upwardly into the foundation walls 22-25 and 28. Vertical bars 133 are provided at regular intervals along each of the walls 22-25. Preferably, their upper ends are turned horizontally into the slab forming the flooring 40 over the foundation 20. Horizontal bars 131, 132 cross in the flooring slab 40 as well. Shorter right-angle bent reinforcement bars 134 and 135 connect the upper and lower portions of the partition wall 28 with the foundation floor 30 and flooring slab 40, respectively. Portions of the partition wall 28, located immediately to either side of the passageway 281, preferably are reinforced by columns like column 49 in FIG. 4, which will be subsequently described. The remainder of partition wall 28 is reinforced in the manner of wall 22 in FIG. 2.

Referring to FIG. 3, the upper walls 41-44 preferably include continuous L-shaped columns 48 at each of the four corners of structure 10 where the walls 41-44 intersect one another. In addition intermediate columns 49 are preferably provided adjoining each window or door opening through each of the walls 41-44, on either side of the opening, and, preferably, at regular intervals along long, unbroken expanses of such walls 41-44. Each corner column 48 preferably is formed by at least seven generally rectangularly arrayed, continuous, vertical reinforcement bars 481-487, which are preferably extended continuously from the foundation floor slab 30 through the foundation walls 21-24, the upper flooring slab 40, and the upper load-bearing walls 41-45 and into ring beam 54, tying the columns 48, 49 into the roofing 50. The reinforcement bars preferably are tied together in sets of five bars 481-485 and 483-487 by rectangularly bent reinforcement bars 488 and 489, respectively, at regular vertical intervals, for example, six inches. Each intermediate column 49 is preferably formed by four reinforcement bars 491-494, which are also preferably extended continuously from foundation floor slab 30 into the roofing 50, and which are also preferably wrapped at regular height intervals, for example six inches, with reinforcement tie bars 495 bent into a square shape around the vertical bars 491-494. One of ordinary skill will understand that "continuous" reinforcement bars can be provided by tying together individual bars in a conventional fashion. If desired, concrete lintels can be provided between adjoining intermediate columns 49 or between a corner column 48 and an intermediate column 49 above each door opening and above and below each window opening. Preferably, each lintel would be provided with reinforcement bars extended horizontally into the adjoining vertical columns and tied into the reinforcement bars of those columns.

Referring to FIG. 4, in addition to the foregoing reinforcement of the foundation, flooring and upper walls, a reinforced concrete ring beam 54 is preferably provided around the top of the upper load-bearing walls 41-44, locking those walls 41-44 together and to the framework supporting the roofing 50. Beam 54 preferably includes at least four, rectangularly arranged, horizontally running reinforcement bars 541-544, which are ringed at regular horizontal intervals by generally rectangularly bent reinforcement bars 545. Additional reinforcement bars 546 are bent in an acute angle and are provided at regular intervals between adjoining joists 55 of the roofing 50 with extreme ends wrapped around the upper reinforcement bars 541, 543. Each bar 546 protrudes upwardly from the continuous, integral portion of the ring beam 54 into a space provided between the adjoining joists 55. The joists 55 support the outer roofing, which is indicated generally at 56. The bent reinforcement bar 546 is, in turn, tied to yet another long, continuous, horizontal reinforcement bar 547, which is passed between the sides of bar 546 forming its apex and through each of the joists 55. Preferably, concrete is installed between the adjoining joists 55, either as part of the pour of the ring beam 54 or in a subsequent pour. Ends of the reinforcement rods 481-487 and 491-494 of columns 48 and 49 are also extended into the ring beam 54 and may be turned transversely to the vertical direction in the ring beam 54 to further lock the bars 481-487 and 491-494 into the ring beam 54. If desired, the joists 55 can be formed from steel beams to further strengthen the roofing 50 and to avoid the ne-

cessity of replacing the joists in the extremely unlikely chance they would be damaged. If desired, the ring beam 54 can be extended down near or to the tops of the wall openings such as doors or windows to replace lintels. Preferably, upper walls 41-44 are formed of concrete formed onto a wire frame and the exposed portion of the roofing is provided by ceramic tiles to eliminate all combustibles in the load-bearing components of the structure 10 and to provide strong, integral concrete walls. The preferred construction of structure 10, assuming it is placed on stable ground, will protect the structure from serious damage in a significant variety of potential natural calamities, including earthquake, brush fire, flood and insect attack, and further minimizes the need for structural maintenance.

While preferred embodiments have been described and several modifications thereto suggested, those of ordinary skill in this art may recognize that further changes could be made and features added to the above-described embodiments of the invention, without departing from the broad, basic inventive concepts thereof. It should be understood, therefore, that the invention is not limited to the particular embodiments disclosed but covers any modifications which are within the scope and spirit of the invention as defined by the appended claims.

I claim:

1. A ground-supported habitable structure comprising:

a foundation formed by one or more essentially water-impervious vertical walls defining an essentially closed perimeter;

an essentially water-impervious floor within the perimeter supported on the ground, the floor and foundation defining an open top water enclosure sitting on or at least partially in the ground;

flooring positioned on the foundation at least substantially covering the open top of the enclosure, the foundation supporting the flooring and any load supported by the flooring;

roofing exposed to the elements and supported six feet or more over the flooring to provide a habitable space between the roofing and the flooring, the roofing and any load supported by the roofing being transmitted to the ground through the foundation;

a catchment supported to receive rainwater running from the roofing; and

at least one water-carrying conduit extending from the catchment to the enclosure interior so as to deposit rainwater running from the roofing into the enclosure beneath the flooring.

2. The habitable structure of claim 1 wherein said floor extends under at least one vertical wall of the enclosure perimeter, wherein a keyway is provided in the floor beneath the one wall and wherein one wall includes a key extending from the wall bottom and received in the floor keyway.

3. The habitable structure of claim 1 wherein the foundation further comprises an at least generally water-impervious, vertical load-bearing partition wall extending between opposing sides of the foundation perimeter so as to define two separate, adjoining water enclosures within the foundation.

4. The habitable structure of claim 3 further comprising a door opening through the partition wall and a removable cover at least essentially sealingly closing the door opening.

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5. The habitable structure of claim 1 wherein an adjoining pair of nonparallel foundation walls form adjoining inner planar sides of the enclosure, and further comprising a curved surface connecting the adjoining inner planar sides and eliminating a corner between the adjoining inner planar sides of the enclosure.

6. The habitable structure of claim 1 further comprising waterproof sealing means within the enclosure curving between the vertical walls and floor at joints between the vertical walls and floor for sealing and avoiding corners at the joints.

7. The habitable structure of claim 1 further comprising an access way through the flooring to permit access to the enclosure through the flooring.

8. The habitable structure of claim 7 further comprising a stairway extending from the access way into the enclosure to the floor.

9. The habitable structure of claim 7 further comprising a water suction coupling positioned proximal the access way.

10. The habitable structure of claim 9 further comprising at least a second access way through the flooring on a side of the enclosure opposite the initial access way.

11. The habitable structure of claim 7 further comprising lighting located in or below the flooring for illuminating the enclosure.

12. The habitable structure of claim 1 further comprising means for removing water from a location within the enclosure proximal the enclosure floor.

13. The habitable structure of claim 12 wherein the enclosure floor is pitched downwardly so as to direct

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water at least generally towards the water removal location.

14. The habitable structure of claim 12 further comprising a conduit system within the structure below the roofing, the conduit system being coupled with the means for removing water to distribute the removed water to selected areas within the enclosure in the habitable space between the roofing and the flooring.

15. The habitable structure of claim 14 wherein the means for removing comprises a conduit extending from the removal location within the enclosure to a location outside the enclosure, and further comprising a suction pump coupled with the conduit outside the enclosure and a pressure pump having a pressure tank coupled with the suction pump to permit partial filling the tank with water from the enclosure and to pressurize gas trapped within the tank.

16. The habitable structure of claim 15 further comprising a filter coupled with the conduit system and with removal conduit so as to receive and filter water removed from the enclosure.

17. The habitable structure of claim 1 further comprising:

a rainwater catchment on the ground proximal the structure; and

means for conducting rainwater from the ground catchment to the interior of the enclosure.

18. The habitable structure of claim 17 wherein the means for conducting further comprising a filter between the ground catchment and the enclosure.

19. The habitable structure of claim 1 wherein the foundation walls defining the perimeter are continuous pour reinforced concrete.

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TESTIMONY

Stan M. McKinney

Director

South Carolina Division of Emergency Preparedness

SUBCOMMITTEE ON WATER RESOURCES AND ENVIRONMENT

HOUSE COMMITTEE ON PUBLIC WORKS AND TRANSPORTATION

FEBRUARY 23, 1994

Thank you, Mr. Chairman, for the opportunity to testify before this subcommittee on the need for natural disaster preparedness legislation.

I am here as a representative of the National Emergency Management Association, an organization of the State Directors of emergency management. On behalf of NEMA, I would like to commend this subcommittee and its members and staff for recognizing the need for a new approach to hazard management—one that links the availability of insurance with a commitment to reducing risk from natural disasters.

A convincing argument can be made that our nation is more vulnerable than ever to the all too familiar consequences of natural disasters. Images of earthquake victims from California, hurricane victims from Florida, and flood victims from the mid-west are imprinted on our national consciousness; virtually everyone in this chamber today knows someone whose life has been touched by disaster.

Scope of the Problem—and the Challenge

Statistics confirm the trend of escalating costs associated with disaster response and recovery. A multi-billion dollar disaster is no longer an aberration, but rather the norm. The toll of the Great Los Angeles Quake of 1994 has not been finalized yet, but all indications are that billions of dollars in supplemental appropriations already passed will not be enough. This follows a pattern set by Hurricane Andrew which caused an estimated \$18 billion in insured losses. The social costs and indirect economic losses from such a catastrophic event are more difficult to measure, but are considerable.

The trend of escalating losses will continue, unless there is a dramatic form of intervention in our current practice of responding to the consequences of disaster, as opposed to anticipating the consequences of disasters—predictable consequences.

Communities that are experiencing the most rapid economic growth—particularly along the coastal areas of our nation—are also among the most vulnerable to disasters. As we speak, building permits are being issued for disaster prone areas; design and construction practices that do not incorporate hazard protection features further exacerbate the problem.

Finally, our population itself is more vulnerable to disasters than ever before. Our society is mobile, aging, and increasingly diverse in ethnic composition. The "special needs" groups--the elderly, the poor, the homeless, the handicapped--have enough difficulty coping on a day-to-day basis. Disasters place an additional burden on these groups--and local government services.

In essence, the problem of escalating vulnerability to disasters is multi-faceted. It has cultural overtones; we have a frontier heritage that reinforces one's right to develop--within reason--where and how one chooses. It has political overtones; local government is often reluctant to impose land use and building restrictions in the absence of public support and clear evidence of the benefits of such restrictions. It has social and economic overtones; our nation is quick to help those in need. Disaster relief is always forthcoming. There is little incentive to undertake measures to minimize the consequences of natural disasters.

In this broad context, the challenge is to develop a national mitigation strategy that outlines a community based, incentive driven program that will systematically reduce the vulnerability of our nation to hurricanes, earthquakes, fires, floods, and other natural and technological hazards. To be successful, this strategy must address at least five interrelated, well documented barriers to adoption and implementation of mitigation:

1. Lack of incentives to pursue hazard mitigation. Hazard mitigation lacks a broad-based political constituency. Local officials are faced with immediate, pressing problems and priorities. Mitigation is a long-term proposition; the benefits of pursuing mitigation are not well understood nor appreciated. Also, the only significant funding for mitigation projects normally follows immediately after disasters and is often lost in the throes of response and recovery.
2. Lack of technical capacity to implement mitigation. Mitigation can be a complex undertaking, involving multiple disciplines and multi-jurisdictional coordination. Many communities simply lack the technical and organization capacity to implement meaningful mitigation measures.
3. Diffusion of responsibility for mitigation. Responsibility for mitigation is shared among a broad range of groups--government, lenders, developers, professional associations and the public. This diffusion has served as an impediment to the development of a cohesive program and strategy to foster mitigation.
4. Voluntary nature of building codes and other mitigation measures. With few exceptions, mitigation is a local responsibility, and adoption of mitigation measures is largely voluntary.
5. Disincentives to adopt mitigation measures. Time and again, State and local governments are provided with federal disaster assistance following a declared disaster. Seldom is a community penalized for failure to adopt pre-disaster mitigation programs; it is simply not politically acceptable.

Natural Disaster Protection Act: A Comprehensive Approach to the Problem

The Natural Disaster Protection Act of 1993 (H.R. 2873), introduced on August 4, 1993 represents a comprehensive approach to overcoming the barriers to which I have alluded, and can be a major vehicle for implementing the Administration's proposed national

mitigation strategy.

H.R. 2873 which has the conceptual support of NEMA--and a broad and diverse coalition--links the availability of primary hazard insurance with improved hazard mitigation and emergency response. It also provides for an industry-financed reinsurance program. Following is an overview of how the Act can substantively address many of the recurring problems associated with reducing losses from disasters throughout the nation.

Improved Hazard Mitigation and Emergency Response Capabilities

Tools and techniques to reduce the impact of disasters--e.g., building code adoption and enforcement, siting, design and construction practices that incorporate mitigation features, etc.--have proven to be effective when consistently applied. What has been lacking is consistent, programmatic financial incentives and sustained political will.

The Natural Disaster Protection Act addresses these fundamental issues with a "carrot and stick" approach.

The "carrot" is a self-sustaining fund, which would be financed by a 5% to 10% set-aside of funds collected under the primary insurance and reinsurance programs of the bill, that would be used for mitigation and the improvement of emergency response capabilities. The trust fund, by some estimates could total hundreds of millions of dollars.

The "stick" is a State compliance provision that outlines criteria for participation in the program, including the requirement that States adopt and enforce applicable building codes as set forth in a five-year State Mitigation Plan.

On balance, the Act provides a structured, but flexible framework for States to develop and carry out their own programs to effectively reduce the vulnerability of their communities to natural hazards. On the surface, the bill incorporates four key variables that are essential to achieving meaningful, measurable progress in risk reduction: 1) Sufficient funding to generate and sustain State administered mitigation programs; 2) Program standards (e.g., adopting of a State mitigation strategy, with clear goals, objectives, and standards for compliance); 3) Incentives (e.g., availability of funds to improve mitigation and emergency response capabilities); and 4) Disincentives (e.g., States or their subdivisions that do not participate in the mitigation program may not be eligible for certain categories of federal disaster assistance).

The bill will also facilitate the development and implementation of a national mitigation strategy. As called for in the H.R. 2873, each State is required to establish mitigation priorities under a five-year plan; administer State mitigation grant programs; and monitor progress under the program. The bill, in effect, should serve as a catalyst, to bring together the key State agencies and institutions that have a role in mitigation, preparedness, and response. In the process, the program should bring focus, cohesion, direction, and a coordinated approach to risk reduction activities.

Improving State and Local Emergency Response Capabilities

The Natural Disaster Protection Act also provides an unprecedented opportunity to improve the "State and Local emergency management infrastructure" (personnel, computer

communications, warning, and other components of an emergency management system) in a balanced, State administered program that addresses all hazards.

Previous disasters have underscored the need for an effective and timely emergency response capability. While the consequences of disasters are largely predictable, there are still significant gaps in what we know about disasters, and our abilities to respond and recover in a timely manner. With a newly energized and reorganized FEMA in the leadership role many states are "retooling" their emergency management systems. The Act can accelerate this effort. The product should be a State administered mitigation and emergency management system that 1) anticipates the consequences of disasters; 2) sets forth a five year program for reducing the effects of hazards; 3) establishes and sustains a response capability for worst case scenarios; and 4) establishes and sustains a pre-disaster program that addresses recovery problems and issues.

Mitigation is the long-term answer to reducing our collective vulnerability to natural disasters. Experience shows that in the short-term, a strong emergency management program can expedite the recovery process through pre-disaster coordination.

Expanded Primary Insurance

The availability--and purchase--of affordable primary insurance on a widespread scale is the key to the short and long-term viability of a federally backed insurance and mitigation program for our nation.

Affordable hazard insurance--with premiums based on actual risk--is an essential component of a national mitigation strategy. However, the availability of insurance must be accompanied by: 1) State and community compliance with building codes and other mitigation measures; and 2) responsible action on the part of individual homeowners to protect their property from natural hazards.

Reinsurance Program

The National Emergency Management Association supports in principle the provision of the bill that calls for the creation of an industry-financed national catastrophic disaster reinsurance program. This fund would provide a source of insurance which insurers could purchase to better manage the risk from infrequent, but extremely costly disasters. As proposed, the re-insurance would only be available after the private insurer or state insurance program had paid substantial multi-billion dollar losses.

One of the bi-products of the federal reinsurance program is that it will discourage insurers from withdrawing from disaster-prone regions, as is occurring in Florida and other high risk, coastal states. While state insurance pools, such as the one in Hawaii, are innovative initiatives, the fact remains that the marketplace capacity is not adequate to effectively cope with a catastrophic disaster that causes upwards of \$30 to \$50 billion in losses.

Finally, the Act will have a significant long-term impact on reducing federal (and thus taxpayer) outlays for disaster assistance and recovery. Our current reliance on federal disaster aid will be supplemented by prepaid insurance funds which will cover many of the

repairs and rebuilding that currently are funded through federal dollars.

Furthermore, the mitigation component of the bill should, in the long-term, result in a significant reduction in property damages and economic losses from a disaster. One of the clear lessons from recent disasters: building codes and other mitigation measures can pay dividends in the aftermath of a disaster in reduced property damages and economic losses.

Summary

The trend of escalating costs of disasters is unmistakable. The causes are equally apparent; development continues at an unabated pace in disaster-prone areas of our nation. A bold innovative approach is needed to address a problem that is so complex and multi-faceted.

The Natural Disaster Protection Act embodies an equitable, balanced, comprehensive approach to reducing the vulnerability of our communities to a broad range of natural disasters. In the final analysis, progress in the next several years in reducing the toll of disasters will be a function of how successful we are at integrating the principles and practice of hazard mitigation into the mainstream of community decision-making.

The National Emergency Management Association supports in principle the Natural Disaster Protection Act of 1993, and applauds the leadership of this subcommittee in its proactive efforts to make our nation safer from natural disasters.

Thank you, Mr. Chairman. I would be pleased to answer any questions the Committee may have.



ASSOCIATION OF STATE FLOODPLAIN MANAGERS, INC.

TESTIMONY

of the

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before the

U.S. HOUSE OF REPRESENTATIVES

SUBCOMMITTEE ON WATER RESOURCES AND ENVIRONMENT

February 23, 1994

H.R. 2873

NATURAL DISASTER PROTECTION ACT OF 1993

The Association of State Floodplain Managers, Inc. is the only national organization of professionals responsible for managing flood-prone areas of the Nation. We represent agencies and individuals who implement state and local floodplain management programs which are guided by minimum standards established under the National Flood Insurance Program (NFIP). Members are also active in flood hazard mitigation and other state and local programs to reduce and prevent flood damage. Including its 12 state and regional chapters, the Association represents over 1,800 professionals, consisting of state and local planning, engineering and emergency management staff, elected officials, consultants, academics and scientists.

During current Congressional consideration of amendments to the National Flood Insurance Program, the Association's over-riding objective has been to reduce the private and public economic impacts of flooding. Efforts to accomplish this goal will go far towards ending the human suffering that flood disasters leave in their wake. Consistent with these objectives, we look forward to being an active partner in the refinement and implementation of multi-hazard mitigation initiatives.

HEEDING THE WAKE-UP CALLS

California's latest earthquake and last year's Midwest floods are only two of our recent disaster wake-up calls. Over the past few years, Hurricane Hugo and the Loma Prieta earthquake are remembered as the initial messengers, followed by several other events. The dollars in damage keep adding up. Billions of dollars in taxpayer funds keep being paid out.

These major natural disasters clearly are driving increased public awareness and consideration of federal, state, local, and private responses. However, a number of realities must be kept in mind because they raise significant questions. Putting more money into a disaster area will not reduce future risks unless a comprehensive mitigation framework is in place. New legislation can encourage that framework, but legislation is only a starting place.

With the current high level of awareness of disasters and their impacts on communities, individuals, businesses, and local economies, Congress has the opportunity to bring about significant changes. However, those changes will not immediately benefit the victims of recent disasters. It is crucial that new programs and changes in existing programs be carefully considered and not rushed in order to be carried on the tide of sentiment for recent victims.

THE MULTI-HAZARD AND REINSURANCE PROPOSAL IN HR 2873

Disaster experience in just the past few years makes it clear that a great deal can be done to reduce the effects of natural disasters. The Association believes it is appropriate that Congress evaluate multi-hazard mitigation initiatives to determine effectiveness and the potential impact on federal disaster expenditures. However, we are concerned that such a far-reaching program be carefully crafted. It must not be rushed through the legislative process without involving many professionals and before certain questions can be asked . . . and answered.

An important part of the evaluation should be a careful study of the success and effectiveness of the federal-state-local partnership embodied in the National Flood Insurance Program. This is the only existing hazard management program that incorporates the concepts of hazard identification, management of at-risk development, and insurance. The NFIP has been working for 25 years, yet known improvements have been hard to accomplish in recent years. A new multi-hazard program must be designed carefully from the start so that another 25 years does not have to pass before we put in place what we already know is effective. Some background on floodplain management and the NFIP is offered in later sections of this testimony.

A large portion of federal, state, and local disaster related costs are those needed to repair and reconstruct public infrastructure and to remove debris. While perhaps noteworthy in its efforts to improve construction and building codes and to protect the financial health of the insurance industry, it must be noted that HR 2873 does nothing explicit to address the impact disasters have on public expenditures.

CONCERNS AND QUESTIONS RAISED BY THE MULTI-HAZARD PROPOSAL

The Association has identified a number of questions and issues that should be addressed during Congressional consideration of the multi-hazard and reinsurance proposal:

LESSONS FROM FLOODPLAIN MANAGEMENT

1. An all-hazards approach to emergency planning and mitigation must involve multiple disciplines, all levels of government, and the private sector to be most successful. However, the proposals contained in HR 2873 appear to have had limited input from some important hazard management and mitigation professionals.
2. The Association is particularly concerned with how the NFIP would be incorporated. We have been advised by insurance industry representatives that the study required in Title VIII will reveal the answers. However, as currently specified, the right questions are not even asked, and so the study will not produce critical answers. The effectiveness of the link between flood hazard management by the community and the federal benefits of flood insurance and disaster assistance is not acknowledged in the language.
3. Representatives of state and local floodplain management programs must be specifically included in the study regarding the NFIP and called for in Title VIII. Because the NFIP is implemented in all states and over 18,300 communities, its future must be crafted with input from this substantial experience.
4. HR 2873 sets forth a role for states in adopting building codes, developing mitigation plans, and implementation of certain mitigation activities. The successful partnership embodied in the NFIP should be closely evaluated in further defining the state role in a multi-hazard program. States clearly should have a role in offering direct technical assistance and oversight of community performance.

WHAT ABOUT LENDERS?

5. January's tragic earthquake demonstrates the need for a federal role in an earthquake program. The news reports suggested that only 1 in 5 buildings was covered by earthquake insurance that is currently available from private companies. This insurance is regarded as expensive considering the limited benefits received. This is a painfully familiar situation to floodplain managers. In fact, fewer than 1 in 5 flood-prone families is covered by federal flood insurance. Why should the earthquake statistic be expected to improve if there is federally-backed insurance but no link with lenders?
6. The NFIP links flood insurance and federally regulated and insured lenders. HR 2873 does not contain provisions requiring lenders to require insurance, leaving unanswered the questions of how broadly the new coverage would be accepted by consumers. This also raises the question of risk for the federal government if lenders choose to forego insurance in their mortgage business.

7. Provisions in Sec. 801 have been characterized as improvements to compliance by federally regulated and insured lenders with the statutory requirement to require flood insurance on flood-prone properties. However, what is proposed is a simple notification to FEMA if a person refuses to obtain flood insurance. It is important to realize that a lender is not in compliance with federal requirements if it makes or extends a mortgage in the absence of flood insurance. Therefore, the notification requirement in Sec. 801 would sanction noncompliance by lenders. Of importance is the fact that FEMA has no enforcement authority over lenders or homeowners who fail to comply.

MAKING MITIGATION REALLY WORK

8. We agree that simply waiting to pick up the pieces after a disaster is not the way to accomplish long-term mitigation. In fact, working in the pre-disaster context is exactly what we have been doing, in conjunction with flood-prone communities, for the past 25 years as part of the National Flood Insurance Program. A careful evaluation of floodplain management can reveal a number of lessons that should be heeded in development of a multi-hazard program.
9. Mitigation is not currently funded in an on-going manner in most states and communities. Therefore, the possibility of having a consistent source of funds distributed to the states is appealing. However, in order to actually achieve disaster reduction, to achieve cost savings and to bring about the long-term objectives, these funds must be spent carefully. HR 2873 provides little guidance, which does not guarantee its success. Done right, only a minimal amount of these funds should be used for staff and operations, and this support should be phased out over a specified period of time. In the long-term multi-hazard partnership, states should develop permanent state-funded programs. Most mitigation funds should be used on the ground to actually reduce or eliminate damage.
10. The Self-Sustaining Mitigation Fund established in Sec. 705 is to be used to support hazard mitigation activities described in Secs. 702 and 703. Careful reading of those sections indicates no direct authority to use the funds on the ground to actually retrofit existing buildings to make them safer. Sec. 702 directs states to adopt certain building and safety codes. Sec. 703 authorizes development of mitigation plans and specifies the contents of those plans. Those tasks will not require large sums of money each year. A new section authorizing physical mitigation project is necessary.
11. A new section is required to give states direction to determine the most feasible and cost effective damage reduction activities to undertake. But the legislation must not be overly confining. Earthquake-prone states may wish to infuse funding to retrofit all public schools and libraries to assure that bookshelves do not overturn. One state may wish to establish a matching grant program to encourage moving flood victims to high ground and dedicating the floodplain to recreational open space. Another state may wish to use mitigation funds to retrofit low income housing in oceanfront communities with hurricane clips. Secs. 702 or 703 do not appear to allow these activities.
12. In Sec. 705(b) states are required to transfer a percentage of mitigation funds to local governments. This provision has the appearance of providing operating funds. The Association believes that on-going operations should become state and local responsibilities. We are also concerned that states be allowed to develop priorities for funding so that it can be targeted towards the known high risk areas rather than spread thinly and ineffectively across all communities.

BUILDING CODES AND MITIGATION

13. Improvements in building codes will lead to safer construction, but at what additional cost? Additional requirements that raise the cost of housing are well-worth it if a direct link can be made with safety and exposure to damaging hazards. Otherwise, it is difficult to justify changes in building codes in the face of the opposition that can be mounted by the building and realty industries. Clear hazard identification provisions are necessary.
14. National building code groups are independent organizations with no direct federal involvement. This has caused problems in the past when one group altered its floodplain construction standards to be less than those required by the NFIP. A bill that requires adoption of building codes yet fails to provide for establishment of federal minimum standards will create a large gap in the process and virtually guarantees inconsistencies with no resolution process.
15. The best way to achieve long-term mitigation is to do it right the first time. Build wisely, choose sites correctly, acknowledge risks. Adopting better buildings code is only one component of "doing it right". To properly apply those codes, towns and counties need to know where to apply them since many hazards do not uniformly affect all buildings in a community. Additional costs to meet code, for example for floodplain construction, should not be forced on non-floodprone buildings.

FISCAL BALANCING

16. A large percentage of dollars poured into disaster areas by the federal government pays for repair and reconstruction of public infrastructure. HR 2873 contains little that will change this. Is the federal financial liability represented by the proposal commensurate with the benefits?
17. The bill is vague regarding control of the reinsurance fund. Because the fund would be very large, carefully designed federal oversight and financial management is important.
18. The insurance industry currently is state-regulated. What is the appropriate level of federal financial security when there is no direct federal oversight?

RISK AND HAZARD IDENTIFICATION

19. HR 2873 implies that all structures in a community share the same risks. It appears to propose using a community-wide rate for computation of insurance premiums. There does not appear to be a mechanism to charge differentially for structures not subject to all risks. For example, some coastal counties are very large and the hurricane wind risk is not the same throughout. Does a community-wide approach undercut the structure-by-structure approach used by the NFIP for new buildings?
20. Some hazards may be expected to affect every building in a community, in which case it is reasonable to require every building to meet hazard specific building code. However, many hazards affect specific areas that can be reasonably identified. For example, some soils are more susceptible to liquefaction during earthquake. But it would be a rare community that has the same - or even similar - soils throughout every neighborhood. So is it appropriate to require every building to meet the same construction standard?

21. HR 2873 appears to treat the issue of hazard identification with some naivete, and simply directs FEMA to identify states that are subject to certain natural disaster perils. This leaves a number of issues up in the air. For example what level of risk will qualify? will risk areas be mapped? how will building officials determine which specific building codes will be applied and where?

BACKGROUND ON HAZARD MANAGEMENT AND THE NFIP

The National Flood Insurance Program is the federal government's first effort to link insurance and hazard management to reduce overall costs, including federal disaster expenditures. The NFIP is largely considered to be successful. Despite low participation in the purchase of insurance, flood damage is avoided and minimized due to better building requirements.

The NFIP is based on simple *quid pro quo* principles. The federal government identifies hazard-prone areas, offers flood insurance for structures located in those areas, and provides financial assistance after flood disasters. In return, local jurisdictions agree to adopt and enforce floodplain management and building code standards that are consistent with or greater than minimum performance standards established by the NFIP. The reason for this balance is important: because flood hazard areas can be reasonably defined, it is reasonable to expect local land management and use decisions to incorporate such information in order to protect public and private property and human safety.

In the 25 years of the NFIP, hundreds of thousands of land management and construction decisions have taken into account flood hazards. This means that hundreds of thousands of buildings are either situated outside of flood-prone areas, or are constructed to minimize future damage. The Federal Insurance Administration has clear and convincing evidence of the effectiveness of the building standards and the dollars saved each year.

THE FUTURE OF THE NFIP AND FLOODPLAIN MANAGEMENT - MITIGATION

Mitigation is part of the Nation's total emergency management strategy. Mitigation is a systems approach to the identification of present risk exposure, and the avoidance and minimization of future hazards. To date, the NFIP has worked to accomplish identification (through floodplain mapping) and avoidance (through local land management efforts). The component that has received less attention is minimization, or addressing older flood-prone buildings that pre-date the adoption of floodplain standards.

The scale of recent disasters must not overwhelm the promise of small scale mitigation measures that may be easily implemented, technically feasible, and cost effective. The Association has long maintained that new and expanded mitigation initiatives are needed to solve many of the Nation's recurrent and severe flood problems.

STATES AND FLOODPLAIN MANAGEMENT - A VALUABLE MODEL

All states have designated State Coordinating Offices to provide technical assistance to local jurisdictions as they fulfill their responsibilities to the NFIP. Nearly half of the states have their own floodplain management laws and programs that complement or exceed NFIP minimum standards. States often provide engineering assistance with identification and mapping of floodplains, consideration of flood mitigation projects, and evaluation of post-flood situations. Many states work one-on-one with local permit reviewers when complicated permit applications are received. Either through their own programs or as part of FEMA/FIA's Community Assistance Program, most states perform evaluation and oversight visits to assure that local jurisdictions are fulfilling their responsibilities to the NFIP.

In the post-disaster situation, the federal-state agreement includes a commitment to the Federal Emergency Management Agency that the state will prepare a hazard mitigation plan. This plan includes an important evaluation of policies and programs that may contribute to hazard vulnerability. It also can serve as a guidance document for implementation of mitigation projects, whether undertaken by the state or affected local jurisdictions.

LOCAL JURISDICTIONS AND FLOODPLAIN MANAGEMENT

The *quid pro quo* of the NFIP places a significant responsibility at the local level. Land use decisions are made by counties, towns and cities. The NFIP simply requires that those decisions be based on performance standards designed to avoid and minimize future flood damage. Local jurisdictions often find it advantageous to zone flood hazard areas for open space or recreational, greenway, and park land development. Many use floodplains to help promote protection of wetlands and enhancement of aquatic and terrestrial habitats fringing waterways.

A multi-hazard approach to all aspects of mitigation must recognize that land use is the prerogative of local governments. The value of local jurisdictions in the multi-hazard partnership must not be undervalued. States cannot make land use decisions, and most do not participate directly in the building permit process. These responsibilities are appropriately handled at the local level with state assistance, oversight, and monitoring.

HAZARD MAPS ARE IMPORTANT MANAGEMENT TOOLS

Land management-based components of hazard mitigation are predicated on the ability to reasonably delineate hazard areas on maps and the wise use of those hazard-prone lands. By definition, a wise use approach must recognize and account for the hazards. To do anything else ignores government's fundamental role in protecting public safety and welfare. The core of hazard management at the local level is establishment of building code standards. This complementary systems approach to recognizing and dealing with property damage and public safety risks has been accepted for over 25 years as part of the NFIP.

CONCLUSION

Successful hazard mitigation and damage reduction in the United States requires consistent and coordinated efforts from all levels of government, as well as the private sector. The Association of State Floodplain Managers, Inc. believes that the federal government has accomplished a great deal by pursuing these partnerships under the National Flood Insurance Program, but the job is far from complete. This successful model must be more carefully evaluated as Congress moves towards more federal involvement in other hazards and financial protection of the insurance industry.

The Association of State Floodplain Managers, Inc. finds the concepts in HR 2873 interesting and promising, but their far-reaching implications must be evaluated more fully. We offer technical expertise and years of field experience to that effort. In particular, we must be included in a detailed evaluation of the appropriate way in which to incorporate the NFIP into a broader federal hazard insurance and mitigation proposal. Questions regarding financial implications and the appropriateness of a federal safety net for the private insurance industry remain unanswered. However, if the federal Treasury is expected to be the safety net for insurance companies, there must be some direct federal involvement to assure that it is a sound investment.

February 2, 1994



TESTIMONY

**Jack Weber
Executive Director
Natural Disaster Coalition**

**WATER RESOURCES AND ENVIRONMENT SUBCOMMITTEE
PUBLIC WORKS AND TRANSPORTATION COMMITTEE
U.S HOUSE OF REPRESENTATIVES**

February 23, 1994

I. INTRODUCTION

Thank you, Mr. Chairman, for inviting our coalition to testify at this morning's important and timely hearing. The rescheduling of this hearing, which had originally been planned before the Los Angeles earthquake, only reaffirms the compelling need to address these issues.

I am Jack Weber, the Executive Director of the Natural Disaster Coalition, the largest, most diverse coalition of interests seeking legislation to better prepare our country for the inevitable risk of natural disasters. We wish to commend Chairman Applegate for holding this hearing and Chairman Mineta and Congressman Boehlert for their prescient leadership in sponsoring last year the most significant natural disaster protection legislation introduced in fifteen years. We hope today's hearing will build a positive record allowing this Subcommittee to quickly report an improved, amended version of H.R. 2873 so that it can be passed during the 103rd Congress.

Natural disasters, and the devastation they unleash, are becoming an increasingly apparent threat to our country. Recent disasters — Hurricane Andrew,

the Loma Prieta "World Series" earthquake, last summer's great floods, and now the Los Angeles earthquake — have inflicted injury and substantial property loss on hundreds of thousands of Americans. The lesson from all these natural disasters is that a disaster response policy based primarily on after-the-fact emergency aid is shortsighted.

Instead of waiting for disasters to strike, our policy should be premised on anticipating natural disasters before they occur. We should focus our efforts on prevention and preparedness by adopting and enforcing hazard mitigation (e.g., building codes) and employing more aggressive emergency planning — measures that have proven effective in saving lives and reducing losses. We also need to tie relief to responsibility so those at risk bear their fair share of the preparedness and recovery costs. The Natural Disaster Coalition also believes the private sector must play an important role in the nation's disaster preparedness strategy by providing affordable insurance, serving as a source of funds for hazard mitigation measures, and helping to reduce the growing reliance on federal disaster aid which has cost every taxpayer nearly \$300 over the past six years alone. All these areas of concerns are interrelated; they must be addressed together. Failure to solve any single element of the overall preparedness strategy undermines success for the other elements.

The tragic suffering still unfolding in the San Fernando Valley further underscores the need for a comprehensive national policy to better prepare us for the inevitable occurrences of catastrophic natural disasters. As devastating as Hurricane Andrew, the Midwest floods, and the Los Angeles earthquake have been, scientists tell

us a far more catastrophic event will strike our country. The Natural Disaster Protection Act would reduce the loss of life and property caused by disasters, improve homeowner insurance protection, speed our recovery, and reduce our dependence on cumbersome, taxpayer-funded disaster relief. The time has come for Congress to act proactively by passing legislation based on Chairman Mineta's bill.

II. THE PROBLEM

The recent spate of hurricanes, earthquakes, floods, and wildfires spotlight a larger natural disaster crisis faced by our entire country. Let me begin by summarizing the gravity of this problem.

A. Catastrophic Natural Disasters are Inevitable

Catastrophic natural disasters are as inevitable as death and taxes. Hurricanes, in particular, are recognized as nature's most destructive phenomena. More hurricanes of at least the magnitude of Andrew, Iniki, and Hugo will strike our vulnerable coastlines in the near future. Indeed, many atmospheric scientists, including Dr. William Gray of Colorado State University, and Dr. Robert Sheets of the National Hurricane Center, forecast that the Atlantic and Gulf coasts are entering a period of more frequent and intense hurricanes.

Seismologists also agree that a catastrophic earthquake — one as high as 200 times more powerful than last month's Los Angeles quake — will almost certainly strike somewhere in the U.S. within the next thirty years. By the year 2020, the U.S. Geological Survey forecasts a 67 percent chance for a catastrophic quake in the San

Francisco Bay Area and 60 percent chance for Southern California. Dr. Arch Johnston, a Memphis State University seismologist, has testified before Congress that the odds of a destructive earthquake striking central or eastern portions of the United States is at least 40 percent and as high as 97 percent within the same 30-year period.

Flooding is another natural peril which regularly inflicts substantial damages, as underscored by the Great Floods of 1993 in the upper Mississippi and Missouri River Valleys. Other natural disasters include volcanic eruptions; tsunamis; tornadoes and cyclones; forest, range, and urban wildfires, such as those spread by the Santa Ana winds of Southern California; land and mud slides; and sink holes.

All these natural disasters share a common trait: they will inevitably occur and cannot be prevented.

B. Nearly Every Part of the Country is Vulnerable to Natural Disasters

Those living along the Florida coast or on top of fault lines in California are well aware of their vulnerability to natural disasters. But it's not well understood that nearly every other region of our country is susceptible to one or more major natural disaster peril. Indeed, our vulnerability to natural disasters is a nationwide problem that must involve a nationwide solution.

At least eighteen Gulf and East coast states are hurricane-prone. From Texas to Maine, the Census Bureau estimates that 76 million Americans live in coastal counties where hurricanes are most destructive. Although we think of California and the other West coast states for earthquakes, the U.S. Geological Survey concludes

that 39 states are prone damaging earthquakes and related seismic disasters such as volcanic eruptions and tsunamis.

Most of the Midwestern states are susceptible to earthquakes, tornadoes, and floods. Seven states in particular — Missouri, Tennessee, Kentucky, Illinois, Indiana, Arkansas, and Mississippi — are situated near the New Madrid fault which sustained the largest earthquakes in recorded U.S. history during the winter of 1811-1812. Several Midwestern states, including Kansas, Nebraska, Oklahoma, and Iowa, lie along "tornado alley" and most of the remaining Midwestern states are vulnerable to flooding.

The Rocky Mountain states of Utah, Idaho, Wyoming, and Montana are prone to damaging earthquakes. And Hawaii and the Island territories (e.g., Puerto Rico, the Virgin Islands, and Guam) are vulnerable not just to hurricanes, but also earthquakes, volcanic eruptions, and tsunamis. All told, just about every state and U.S. territory is susceptible to the real threat of natural disasters.

C. These Natural Disasters will Inflict Substantial Losses

Beyond the tragic human destruction, the economic losses from catastrophic natural disasters will be devastating. The United States, prior to 1989, had never experienced more than \$1 billion in insured losses from a single natural disaster. Since then, we have had six events — including the Los Angeles earthquake — that have exceeded or will likely exceed \$1 billion; in 1992 alone, the toll was \$23 billion.

As residents of Florida and Hawaii can testify, hurricanes can exact a staggering economic cost. Andrew resulted in the largest economic loss from a single natural disaster in U.S. history. Although Iniki resulted in smaller total losses, the hurricane

significantly damaged nearly every structure on Kauai and wiped out the tourism industry. Despite this incredible destruction, south Florida and Hawaii were lucky. Two different studies conclude that if Andrew had veered just 20 miles further up the coast into the Miami/Fort Lauderdale urban center, losses would have exceeded \$75 billion in southeast Florida alone. Another study estimates that if Iniki had tracked just half-a-degree south and directly hit Oahu, the damage to Honolulu would have been \$30 to \$35 billion.

Other coastal regions could also suffer similar devastation from hurricanes. Hurricane loss-estimate scenarios prepared by Applied Insurance Research forecast insured losses as high as \$43 billion for the Galveston-Houston area, \$26 billion for southern Louisiana, and more than \$52 billion for New Jersey, New York, and New England.

These economic loss estimates will only grow as more people move towards the coastline and property values increase. Already over half of all Americans live near a coast, as defined by the National Oceanic and Atmospheric Administration, and the coastal population is growing faster than regions less prone to risk. Insured property values for the first tier of coastal counties along the Gulf and Atlantic coasts is almost \$2 trillion and has increased more than twice the inflation rate.

Earthquakes also have the potential for inflicting substantial economic losses. According to various studies, the loss projections for a catastrophic earthquake in the Memphis area is \$70 billion; it's \$84 billion for San Francisco, \$58 billion for Los Angeles, and over \$33 billion for Seattle. Even the recent jolt in Southern California —

again not even close to being the long-awaited "big one" — will have lasting economic impacts because of business interruption and the crippled infrastructure, including the downed highways. Eastern state earthquakes, although generally not as great in magnitude as West coast quakes, can cause more damage because of weaker building codes and different soil and rock conditions which allow the shock waves to travel further.

Major natural disasters also impose an enormous cost in terms of emergency relief. As the Los Angeles earthquake again exemplifies, the President will request and the Congress will undoubtedly pass emergency appropriations to provide needed aid to areas stricken by natural disasters. The committee report accompanying the 1991 supplemental appropriations bill stated that "it has long been accepted that our Federal government owes it to the people of the Nation and to itself to meet dire emergencies which arise because of natural disasters." All taxpayers, including those far removed from the disaster area, pay for this relief.

Over the past six years, the taxpayers' bill for this disaster relief just in the form of special supplemental appropriations bills is almost \$34 billion — nearly \$300 for each individual taxpayer. The appropriations supplemental passed last summer to aid victims of the Midwest floods totaled \$5.7 billion. The total federal aid package, including subsidized loans, for Hurricanes Andrew and Iniki was over \$8 billion, and the relief funds appropriated for the 1989 "World Series" earthquake topped \$3 billion. And just two weeks ago, Congress passed an \$8.6 billion emergency appropriations aid package for the victims of the Los Angeles earthquake. This same appropriations

supplemental also included an additional \$1 billion in disaster aid from last summer's Mid-West floods and the 1989 earthquake.

Much of this disaster aid is for individual assistance and low-interest rebuilding loans — precisely the kind of loss which private insurance ordinarily covers. Many of the Californians who didn't have earthquake insurance will rely on direct family grants from the Federal Emergency Management Agency (FEMA) for their temporary living expenses and low-interest loans to rebuild their damaged homes and small businesses. In fact, 41 percent of FEMA's disaster relief obligations from 1977 through 1990 were for individual assistance primarily in the form of individual and family grants and temporary housing. Considerable portions of this aid would not be required if individuals had adequate private insurance to cover disaster losses. The emergency supplemental appropriations passed by Congress just two weeks ago generally confirm these conclusions. Our analysis of this supplemental bill shows that about 40 percent of the monies appropriated by Congress were for assistance programs that would have been partly or wholly unnecessary if H.R. 2873 had been enacted before the Los Angeles earthquake.

These disaster assistance appropriations beg obvious questions: what have we learned and what are we doing to reduce the taxpayer-supported relief required following the next disaster? The sad answers are we have learned a lot, but done very little to prevent repeating the same pattern of simply passing disaster aid supplemental appropriation bills.

D. Specific Focus on the Insurance Markets

We will become increasingly reliant on taxpayer-supported disaster assistance unless we find a better way for insurers to manage catastrophic risks. A mechanism is needed to allow the private market to cure the current unacceptable situation which precludes consumers from getting affordable coverage.

Few homeowners purchase insurance for certain catastrophic disaster risks, such as earthquakes, because the rates are simply too high. In risk-prone states like California, only one in four homeowners have earthquake coverage, even though insurers are affirmatively required to offer it; in the San Fernando Valley, perhaps 30-40 percent of the damaged homes were insured. Nationwide, only about ten percent purchase the coverage even though most states are prone to earthquakes. Dr. Robert Litan, a former senior fellow with the Brookings Institute and now a senior anti-trust official at the Justice Department, concluded in a 1991 study that the private insurance market fundamentally fails to provide affordable coverage for those perils which occur infrequently but have catastrophic consequences. There is also poor coverage for more common risks such as flooding. In fact, less than one in five homeowners living in recognized flood plains actually purchase flood insurance coverage.

Of equal concern is the growing lack of insurance in disaster-prone areas. Florida and Hawaii offer case studies of this problem. Tom Gallagher, Florida's insurance commissioner, estimates that the insurance claims paid from Hurricane Andrew total more than the combined homeowners premiums paid in the state over

the past 23 years. According to the latest estimates, it would take 500 years of premiums in Hawaii to offset the losses if a category four or five hurricane were to hit Honolulu.

Andrew and Iniki losses caused several Florida and Hawaii-based insurance companies to fail and forced others to stop writing new coverage and renewing homeowners' policies. For example, upwards of one million Florida homeowners, covering about one-fifth of the state's insured homes, have been at risk of losing their insurance coverage. Recently, Florida and Hawaii have enacted catastrophic funds to address these problems that even their proponents acknowledge are only temporary solutions until a federal guarantee fund for mega-disasters is created. California also adopted a state earthquake insurance fund following the 1989 Loma Prieta quake, but the California program was quickly repealed because it didn't have the resources needed to capitalize its fund.

The insurance availability crisis is not limited just to consumers in Florida and Hawaii. Property owners from Cape Cod to New Orleans report that coverage is harder to find and increasingly more expensive.

A major cause of the insurance availability crisis is the reduction in the availability of reinsurance. Due to the series of natural disasters worldwide, reinsurance availability has declined dramatically over the last three years. Many companies can currently reinsure only a small percentage of their catastrophic risks. Without this coverage, many companies have elected to reduce their exposures to more manageable levels so they can honor potential future claims.

III. **THE SOLUTION**

The Natural Disaster Coalition believes the solution to our country's vulnerability to catastrophic disasters is a comprehensive preparedness plan based on three elements: (1) improved hazard mitigation and emergency response; (2) expanded insurance coverage for homeowners; and (3) an industry-financed catastrophic guarantee fund or federal reinsurance program.

A. Improved Hazard Mitigation and Emergency Response Capabilities

The cornerstone of any preparedness strategy is mitigating future losses. Although natural disasters cannot be prevented, we can certainly implement strong measures now to reduce the damages they cause.

The most important hazard mitigation measure is the adoption and rigorous enforcement of building codes. Our coalition strongly supports the adoption and enforcement of model building and consensus fire safety codes by all disaster-prone states and localities. Flood-prone local communities should also adopt and enforce the flood minimum performance standards under the National Flood Insurance Act.

Every major study conducted has found that the existence and enforcement of building codes can substantially reduce losses from future natural disasters. A 1985 study, for instance, compared Hurricane Alicia, which struck the Texas Gulf coast in 1983, with Hurricane Diana, which slammed the North Carolina coastline with equal force winds a year later. In West Beach, Texas, which did not have a building code in place for much of its development and failed to enforce its code once one was adopted, 70 percent of the town's 3,000 homes were either damaged beyond repair or

required major structural repair. Yet in North Carolina where a statewide model building code was rigorously enforced, just three percent of a comparable number of homes sustained major damages. Experts further conclude that the losses from Hurricane Andrew could have been reduced by as much as 30-40 percent had existing building codes in south Dade County — the toughest in the Nation — been properly enforced.

The earthquake experience in Southern California also confirms the life-saving benefits of enforcing building codes and employing seismically resistant construction techniques. The buildings that generally failed throughout the Northridge area were older structures not built to modern seismic codes. Moreover, all of the highways crisscrossing the Los Angeles Basin that had been seismically reinforced largely withstood the earthquake.

In addition to building codes, another lesson from the Southern California quake is that disaster-prone states should prepare and carry-out hazard mitigation and emergency response plans to speed relief to stricken areas and enhance long-term recovery. A 1993 national study by Professors Timothy Beatley and Philip Berke concluded that local planning is an effective tool in reducing earthquake losses and complementing other seismic mitigation measures. Unfortunately, few states and local communities have comprehensive preparedness plans in place like California and Los Angeles do.

Disaster-prone states should be encouraged to adopt and enforce building codes and develop disaster plans within a prescribed period, and we should provide

them sorely needed funds to do it. Experience has taught us that the emergency response and loss-reduction measures will only be successful if they are carried out at the state and local level. Accordingly, our coalition proposes actively involving the states and local communities, and most importantly, proposes providing them necessary funds to ensure compliance.

States that comply with these loss-reduction measures would receive an equitable share of monies drawn from a self-sustaining trust fund to help them pay for hazard mitigation efforts. These mitigation funds could total hundreds of millions of dollars — substantially more than the states currently have to spend on such prevention. Tax dollars would not flow into the mitigation trust fund. Instead, the mitigation fund would consist of a percentage of multi-hazard insurance premiums collected from property owners and the insurance industry. Natural disaster-prone states would be allocated annually a portion of this fund which they could use to improve emergency management, hire building inspectors, strengthen vulnerable structures, or pursue any other loss-reduction measure they deem appropriate. As James Lee Witt (then the Arkansas Director of Emergency Services) testified before Congress in 1992, this proposed mitigation fund would “fill a critical void” by allowing states to undertake building improvements they could never afford to finance.

As a further incentive to encourage compliance, property owners in states that enforced building codes and prepared disaster plans should also pay lower disaster insurance premiums and deductibles. Finally, consistent with our philosophy of linking

relief with responsibility, we believe local communities which fail to comply should lose their eligibility for public disaster assistance funds.

B. Expanded Homeowners' Insurance Coverage

The second element of our preparedness strategy is expanded and more affordable insurance protection for property owners. Private insurers should include supplemental natural disaster coverage for earthquake and related seismic perils in all their standard policies for homeowners living in earthquake-prone states. The premiums should be risk-based so that homeowners living in low-risk areas would not be subsidizing those living in higher-risk regions. Homeowners could also choose deductible levels and types of coverage.

This additional insurance coverage will be much more affordable for everyone. A nationwide insurance program spreads the risk, significantly reducing the premiums. Computer models developed by professional actuaries conclude that such a federal primary insurance program should reduce earthquake insurance premiums by an average of 70 percent across the country. In California, for example, the average rates paid by homeowners for earthquake coverage could drop by 67 percent. The average nationwide cost for earthquake insurance would drop to only \$16 per year.

Our coalition also believes that participation in the existing federal flood insurance program should be improved. We need to do a better job of enforcing the insurance purchase requirement and informing all policyholders of their obligation to have the flood coverage if they live in flood plains.

C. Industry-Financed Catastrophic Guarantee Fund

The final element of our plan is the creation of a mega-disaster claim guarantee fund — a federal catastrophic reinsurance program — to insure the availability of insurance both before and after a major disaster. Anyone who has seriously studied the insurance availability crisis, including twenty insurance commissioners from such states as California, Florida, Louisiana, and New York, agree that a federal reinsurance trust fund for mega-disasters is the best long-term solution to a crippling catastrophe.

Such a program would allow insurers to purchase, with their own funds, excess federal reinsurance to help pay for losses arising from catastrophic disasters, such as hurricanes, earthquakes, volcanic eruptions, and tsunamis. State-sanctioned insurance programs, like the newly-created Joint Underwriting Association in Florida and the hurricane pool in Hawaii, could also purchase reinsurance protection under this plan.

Reinsurance would only be available after the private insurer or state insurance program sustained substantial losses first. For example, we believe insurers should only be allowed to qualify for federal reinsurance after the entire industry has lost 15% of its surplus — approximately \$27 billion using today's estimates — or at least 20% of an individual company's surplus has already been paid out in claims. Reinsurance premiums would be set by the government and would be paid into a federal account much as they are in Japan which faces similar exposure to acts of nature — particularly catastrophic earthquakes. This fund should quickly build up a large surplus as the annual premiums collected from insurers are projected to exceed \$1

billion. But if the mega-disaster guarantee fund were insufficient to pay all claims, federal borrowing would be authorized, conditioned upon repayment with interest from future premiums.

We believe this plan, if anything, exposes the taxpayer to less risks. Without a reinsurance mechanism and a plan which allows insurers to pre-fund future needs for a mega-catastrophe, taxpayers will see an ever-rising level of disaster relief as the government rushes in to protect homeowners whose companies are incapable of paying claims.

IV. **THE LEGISLATION**

The three elements of a comprehensive natural disaster preparedness plan I just outlined have been included in Chairman Mineta's legislation pending before this Subcommittee. While not perfect, we strongly support this important legislation, which has about 100 House cosponsors, and urge the Subcommittee, and Congress as a whole, to consider it expeditiously.

H.R. 2873 is supported by a broad-based coalition, the largest, most diverse group of interests ever to back comprehensive natural disaster preparedness legislation. For instance, Governors Chiles, Cuomo, and Wilson have joined together to endorse the bill. Supporters also include emergency management interests, such as the National Emergency Management Association, the National Coordinating Council of Emergency Managers, the National Fire Protection Association, the National Association of State Fire Marshals, and the National Guard Association. Consumer

groups have embraced the legislation, including the National Consumers League, the United Homeowners Association, and the National Council of Senior Citizens. Organized labor, specifically the International Association of Fire Fighters (AFL-CIO), have also endorsed the legislation. Finally, the bill is supported by national trade organizations representing realtors and financial institutions, as well as insurance agents and companies.

The preparedness strategies of H.R. 2873 will also save taxpayers substantial money by reducing our current reliance on disaster relief. The hazard mitigation and emergency response measures instituted by the bill will avert many of the losses that federal disaster aid would otherwise pay. The bill's pre-paid insurance programs, furthermore, will pay more of the repair and rebuilding costs for which individual and family assistance grants and low-interest loans are currently used. The result is a more equitable policy since the insurance programs, in which property owners and insurance companies pay risk-based premiums, replace taxpayer-supported disaster aid.

This bill, moreover, will not increase the federal deficit. An August 1993 analysis by the accounting firm of Coopers and Lybrand determined that H.R. 2873 will not cause a budget score. In fact, Coopers and Lybrand conclude that the bill would actually reduce the federal budget deficit by between \$1.1 billion and \$7.7 billion during its first five years of operation. This analysis uses conventional federal estimating principles and makes reasonable assumptions regarding the operation of the trust funds. Other positive deficit-reduction benefits of the proposal include the

generation of additional corporate tax revenues and fewer casualty loss tax deductions taken by individuals.

This legislation, accordingly, is a fiscally responsible approach. Beyond the savings documented by Coopers and Lybrand, the bill will likely reduce the deficit further over time by reducing the implicit contingent liability to pay federal disaster relief. That is the conclusion of Dr. Elliot Mittler in a 1992 study in which he systematically compares this legislative concept with the principles of fiscal responsibility established by past federal disaster relief and insurance programs. Two studies conducted by the General Accounting Office have also determined that insurance is a far more equitable and efficient approach than disaster relief in compensating losses.

Finally, let me explain how the Natural Disaster Protection Act would have lessened the impact of last month's earthquake in Los Angeles. First, California would have done more to prevent losses. The legislation would have provided California and other disaster-prone states millions of dollars of hazard mitigation assistance, funded by insurance companies and other private sources. The money available would have been three times more than California currently spends annually on measures to improve construction and strengthen existing infrastructure, such as highways.

Second, more property owners would have had earthquake insurance. The legislation by making earthquake coverage a part of the standard homeowners' policy should result in nearly all homeowners in earthquake-prone areas having the coverage. The earthquake insurance would also be much more affordable because a

nationwide program spreads the risks of natural disasters throughout the country allowing insurance companies to charge significantly smaller premiums and deductibles. Insurance is also a quicker and more complete form of relief than the lengthy, tedious government claims process that many uninsured Californians have faced. Thousands of citizens would not have been living in parks and waiting in lines at FEMA claims centers if they had been insured and received their claims check from their insurance company. The claims experience from Andrew, in which nearly every homeowner had hurricane coverage, illustrates the advantage of private insurance over disaster aid.

Third and most importantly, the taxpayers' burden to pay disaster relief would have been lessened. Private insurance companies would have been responsible for much of the direct federal aid that the citizens of California are now receiving. The legislation's hazard mitigation measures would have also helped prevent much of the damage in California, further reducing the amount of taxpayer-supported aid that will be needed. As I explained before, we estimate that as much as 40 percent of the earthquake disaster supplemental appropriations just passed by Congress could have been reduced if this legislation had been in place.

H.R. 2873 as currently drafted is not a perfect bill. Several of the bill's provisions should be clarified and a few drafting errors corrected. Our coalition of emergency managers, insurers, and consumers will be suggesting several amendments to clarify and improve the legislation as it's readied for markup. A recent series of detailed and helpful meetings with the Subcommittee and full-Committee staff

have also raised other issues that merit more careful study. But H.R. 2873 as introduced by Chairman Mineta is conceptually an excellent starting point for this Subcommittee's consideration.

V. CONCLUSION

Thank you again, Mr. Chairman, for this opportunity to testify.

Our coalition strongly supports the Natural Disaster Protection Act, H.R. 2873, and urges this Subcommittee to act on this bill early in this session of Congress. This legislation not only offers the only long-term solution to the insurance availability crisis, it can save lives and will reduce losses from future disasters as well as speed recovery to stricken communities like those in the San Fernando Valley. The bill also reduces our nation's dependence on taxpayer-supported disaster aid, provides quicker and more complete private insurance payments to victims, and directly ties relief with responsibility. Above all, H.R. 2873 is a forward-looking disaster preparedness approach that heeds the lesson of recent catastrophes, including last month's Los Angeles earthquake, by anticipating natural disasters, not simply waiting for them to strike.

I would be pleased to answer any questions the Subcommittee may have.



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Testimony of
Frances E. Winslow, Ph.D.
Director, Office of Emergency Services
on behalf of the
City of San José
before the
United States House of Representatives
Subcommittee on Water Resources and the Environment
February 2, 1994
re: Disaster Assistance Legislation
H.R. 2873

I am Dr. Frances E. Winslow, Director of the Office of Emergency Services for the City of San José. I am pleased to testify before you on behalf of the City of San José in support of H.R. 2873, sponsored by Congressman Norm Mineta.

Last week the Los Angeles area experienced a severe earthquake. Freeways that had been on the list to be reinforced collapsed because funds were not available for seismic retrofitting in earlier state budgets. Tilt-up buildings failed, loss of life being prevented only by the time of day of the earthquake. This disruptive disaster underlines the need for earthquake insurance in the United States. H.R. 2873 provides an insurance program to assist disaster victims to recover. More important, it also encourages pre-disaster mitigation efforts that will lessen the impact of future earthquakes in all parts of the United States on the citizens, and on the economy. H.R. 2873 offers a comprehensive program to improve overall emergency mitigation and recovery capabilities throughout disaster-prone areas of the United States.

Historically, Americans have relied on the private insurance industry for coverage for natural hazards. Unfortunately, this system is no longer adequate. Several recent large natural disasters have bankrupted some smaller insurance companies and have created significant losses for others. The international reinsurance market is no longer willing or able to absorb the need for coverage to guarantee American policies. Since insurance represents the investment of a variety of pension funds, and the source of investment funds for capital projects, a run on the insurance industry could have far reaching economic impacts outside of the area effected by the natural disaster. Furthermore, private disaster insurance has become unavailable in several states and territories following recent natural disasters. Economic uncertainties associated with disaster insurance have made it unattractive for private insurance providers to promote the sales of such insurance. In some cases the sale of homeowners insurance has been terminated. For example, in the Virgin Islands, adequate insurance is not available at any price, resulting in the inability to buy or sell property.

Mitigation measures are currently available that lessen damage resulting from natural disasters. Funding for local and state activities in hazard mitigation is very low in relation to the cost of an effective program. Current tax revenues and economic difficulties suggest that funds to increase these mitigation programs will not be available as part of a balanced federal budget for many years.

ANALYSIS:

While HR 2873 benefits the citizens of the United States by offering comprehensive earthquake insurance, and funding local hazard mitigation efforts, some additional provisions would strengthen the overall disaster assistance program.

We would recommend the following amendments to the legislation:

- a. The seismic zone system to be used in applying the legislation should be specifically designated. At the present time the United States is divided into four seismic zones. The USGS has been developing more sophisticated mapping systems that would create up to 250 zones. While the four zones may not be adequately descriptive of the differentiations in seismic zonation, 250 zones could create an evaluation and enforcement nightmare for local building officials. The legislation should specify which system will be used as the basis for its activities, including insurance rating.
- b. The breadth of coverage for fire following earthquake should be addressed, and noted as either already covered under residential homeowners fire insurance policies, or as covered under the proposed earthquake insurance. Fire related to volcanoes is specified as covered. Fire following earthquake has been recognized as a significant post-earthquake impact. In the past some insurance companies have questioned whether fires caused by earthquake actions would be covered under homeowners policies without an earthquake rider. Consumers would want reassurance that the new program would be all inclusive of disaster damage, regardless of its nature.
- c. Membership of the Section 706 advisory committee should be defined as having all members from disaster-prone states. This committee will be advising on critical matters related to the administration of the mitigation program, and should have a strong role and enumerated powers. Those persons with experience in disaster-prone states are better able to evaluate suggested programs based on actual experiences. Furthermore, it is critical that this committee be recognized as a highly professional advisory committee with significant influence in program evaluation and administration, not a political body used to reward political colleagues.

To increase its breadth the advisory committee should be enlarged from 20 to 25 people to include more members with skills in the areas of medical care, metropolitan city issues, public disaster education and voluntary agencies

activities. These issues are crucial to good national disaster planning, and are unrepresented in the present proposal.

d. The proposed mitigation fund is one of the most innovative portions of the legislation, and deserves a more complete development within the bill. It is critical that Congress establish the priorities for the use of the funds that will serve a two-fold purpose:

1. Reward states that have already achieved some progress in mitigation through allocating mitigation money based on the percentage of all money collected that came from that state, without regard to current level of mitigation achieved.
2. Insure that mitigation funds are used exclusively for the specified programs developed within the legislation, not for general administration or mitigation activities unrelated to physical safety of persons in properties. Since this money is being collected from property and casualty insurance, it should be spent in ways that will lessen the potential property and casualty losses, emphasizing first life safety, and second essential services delivery.

Guidelines for distribution of the available funds in each state should be based on the size of the population and the level of risk, starting with seismic zone 4, and with the 200 largest cities in the United States. In addition, isolated areas of seismic zone 4 should receive priority if they lack redundant systems for provision of essential services.

Matching funds should not be a requirement of the distribution of the mitigation funds, since the neediest communities are those least likely to be able to fund a financial match. However, the principal of "sweat equity" should be employed, requiring the local governments to assemble and oversee the activities within their jurisdictions.

Distribution of the funds to the states should be in exact proportion to the money paid into the fund by the citizens of that state. Distribution of the funds within the state should be based on a numerical formula that assigns values to population size, hazards, vulnerability and risk, and should be administered by a committee representing local, county, special district and state government emergency management experts, with no entity dominating the selection process.

Mitigation should be defined as including a low interest residential loan program for selected prioritized mitigation measures, such as water heater strapping, foundation bolting, sheer wall and cripple wall reinforcement, chimney reinforcement, and URM retrofitting. Strategies for funding could include a "block grant" approach, with communities receiving funding based on level of participation in the insurance program and size of the population at risk.

Many of these mitigation measures are relatively low cost in relation to the value of the properties. Furthermore, these mitigation measures make it more likely that families will be able to remain in their own homes, or get back into their own homes quickly. The result is a savings to the disaster recovery program in assistance grants and sheltering costs, as well as a significant decrease in community dislocation and economic impacts.

- e. Some insurance companies invest a portion of their assets in real estate. While property and casualty companies usually do not have a large real estate portfolio, insurance companies should be required to complete structural and non-structural hazard mitigation up-grades to all of the real estate that they own in seismic zones 3 and 4 as a condition of participation in the reinsurance program. Otherwise, the loss level requiring federal funding could be accelerated by the loss of company-owned real estate assets alone. For example, a catastrophic earthquake in metropolitan Los Angeles or metropolitan San Francisco could result in the destruction of billions of dollars in property, including buildings owned by insurance companies. Insurance companies should be required to divest themselves of buildings susceptible to severe earthquake damage if they cannot be retrofitted to acceptable levels of seismic safety.
- f. As a condition of participation in the reinsurance program, insurance companies should be required to offer long term low interest loans to current commercial property clients for specific seismic retrofit activities, such as those suggested for residential properties, as a loss-reduction strategy. In addition, tilt-up buildings should have the corners reinforced to prevent damage or collapse during severe shaking. Non-ductile concrete frame buildings should be reinforced. These steps would lessen the ultimate damage to the property, and to persons inside or adjacent to the properties during earthquake. Since these would be loans, there would be no cost to the insurance company for improving the seismic safety of the structures, thereby significantly reducing their loss exposures.

- g. Insurance policies eligible for reinsurance should not be limited to private companies. State worker's compensation funds and public entities with self-insurance, such as liability, property damage and medical coverage, should also be eligible to participate in the reinsurance pool on the same basis as the private, for-profit companies.
- h. Research grants for new technologies should be included in the mitigation program. Base isolators have significantly increased the safety of buildings. Additional research in applied sciences could be expected to generate more technological innovations that would lead to safer buildings, and more comprehensive retrofitting.
- i. Research grants for medical and social science studies should be included in the mitigation programs. A better understanding of the epidemiology of disasters, and the interaction between humans and the built environment during disasters, could lead to advances in personal and communal safety that would lead to significant loss reductions.
- j. Hospital seismic safety should be a priority in all communities. Even hospitals built to withstand anticipated shaking may not have been designed to be able to continue to deliver services after an earthquake or volcanic eruption. The mitigation fund should include a program for replacement or retrofit of public (government-owned) hospitals, community (non-profit) hospitals, and charity hospitals. A low interest loan program might be a feature that could spread this program to the for-profit hospitals that deliver services in communities where a significant portion of the patients receive care through publicly-funded programs such as Medicare and state medical programs.

The ultimate goal of HR 2873 is to save lives and lessen property damage and economic dislocation from natural disasters. Each of the suggested steps would enhance the fulfillment of the goal at no additional cost to the program through some programmatic changes, and the specification of those activities eligible for funding under the mitigation grant program.

CONCLUSION:

HR 2873 is a comprehensive bill addressing a critical need. The suggested alterations to the bill would strengthen its benefit to citizens by saving lives, lessening property damage, lessening economic dislocation, and lessening the impact of disasters on the financial markets of the United States.

The City of San José has worked closely with the California Seismic Safety Commission, of which I am a commissioner, and they also support the bill and the suggested amendments.



Independent Insurance Agents
of
America
Incorporated

TESTIMONY OF:

MR. COURTNEY WOOD
PRESIDENT
INDEPENDENT INSURANCE AGENTS OF AMERICA
SUBMITTED TO
HOUSE PUBLIC WORKS AND TRANSPORTATION COMMITTEE
SUBCOMMITTEE ON WATER RESOURCES
AND ENVIRONMENT

FEBRUARY 23, 1994

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Mr. Chairman and members of the Subcommittee, my name is Courtney Wood. I am President of the Independent Insurance Agents of America (IIAA) and owner of The Universal Insurance Agency in Edmond, Oklahoma. On behalf of the 300,000 member agents and their employees that comprise the Independent Insurance Agents of America, let me express my appreciation for this opportunity to present this association's support for the important legislation before the subcommittee today.

I also want to commend the Chairman of the full Public Works Committee, Congressman Norm Mineta, for having the courage and foresight to introduce the Natural Disaster Protection Act (NDPA), and to you Chairman Applegate for holding this hearing.

As you are aware Mr. Chairman, IIAA supports the Natural Disaster Protection Act (NDPA, H.R. 2873). Indeed, we are enthusiastic members of the broad based Natural Disaster Coalition.

The basis for IIAA's support is quite simple. This legislation calls on the federal government to do a better job managing its risks with respect to natural disasters. This owning-up by the federal government to think - not just react and spend - to natural disasters will help the public manage their own risks.

This bill's design for an industry-funded yet government-run reinsurance fund, a new primary earthquake program for basic homeowners policies, and strong new mitigation program is a proactive, forward-looking solution.

Through testimony today and previous briefings, I realize most members are studying the mechanics of this bill. IIAA believes the insurance concepts in the bill to be fundamentally sound.

Today, my goals are twofold. First, I hope to underscore why this bill is an idea whose time has come, and second, is to tell you that this legislation is not the panacea for all consumer and marketplace problems.

While our support for the NDPA is unqualified, this bill alone is not enough to solve the dilemma of market dislocation sweeping across the disaster-prone regions of this country, particularly our nation's coastlines and earthquake prone areas.

This bill does not contain all the answers to the disaster of insurance availability and affordability. IIAA believes this bill, can do more for markets and create a better atmosphere in which other small state market disaster plans can grow and flourish.

I want to be clear. This bill must pass because, frankly, this country cannot afford business as usual in the disaster bailout business. However, in shaping this reform, it is IIAA's view that the Congress has two responsibilities as it reforms disaster policy; 1) Ensure financial order and establish a solid disaster policy, and 2) ensure some level of insurance availability in disaster-prone regions of the country. The NDPA accomplishes the first responsibility but will need the help of state-sponsored solutions to meet the second.

THE RESPONSIBILITY OF NATURAL DISASTER REFORM

Responsibility One; Ensure Financial Order and a Solid Disaster Policy

First, Congress has a responsibility to every taxpayer to better manage catastrophes and risks through an above board, on budget, insurance program for natural disasters. This legislation is a giant step in that direction. There is an old phrase, "out of disaster comes opportunity." If we are true to ourselves, we must admit that this phrase is true for this legislation.

We must be sobered, however, over how the memory of past disasters has faded from the collective memory of the public and its representatives. We must all remember how past cries to reform the way this government deals with the reoccurring and inevitable exposure and costs of natural disasters gives way - time and again - to the irresponsible collective ignoring of the problem.

This ad hoc reaction to disasters produces one constant result; skyrocketing cost to the taxpayers of this country and priceless losses in human lives and property.

Chairman Mineta and the nearly 100 co-sponsors of the NDPA in the House of Representatives, the 17 U.S. Senators and 18 state insurance commissioners did not need the latest natural disaster in Los Angeles to take proactive steps towards easing the pain of the victims of disasters and protecting the taxpayers who pay the bills following these events.

These policymakers have come to grips with the true significance and danger these reoccurring natural disasters represent to the property owners across the country and the safety and soundness of the insurance industry. Most importantly, they understand the drain on the pocket books of every taxpayer and the economy of the United States.

The challenge now is to look beyond the band-aid approach of appropriating disaster funds following a natural disaster. IIAA believes that the NDPA is a step towards allowing the American public to manage its own risks. It is important to note that the premiums paid by the taxpayers to "manage" the risk of natural disasters over the last 10 years is \$22 billion dollars. In fact, this

federal disaster assistance has cost each U.S. taxpayer more than \$300,000 over the last six years.

Unfortunately, this money was not collected in advance and stored away as insurance for a rainy day. It is not even based upon risk and paid out to the victims. This money was borrowed - off budget - in the form of "supplemental spending bills."

This deficit spending needs to be eliminated, as members of this committee understand all too well. This legislation will save tax dollars by using insurance premiums to pay for these events and spread the risks according to an individual's actual exposure.

This bill provides solutions and hope. It is a beginning. It is proactive - not reactive - to the challenges of managing the perils of natural disasters.

PROPERTY LOSS MITIGATION

For starters, this bill will establish new standards in property loss mitigation. As public officials, you know that strong building codes and adequately funded and enforced emergency planning reduces property damage and saves lives.

The mitigation portion of this bill is a legacy that we need to leave for generations to come. Not just to save money but to save futures. This legacy of better construction and building code enforcement and retrofitting of public structures can be accomplished with less tax dollars by using insurance premium dollars in their place.

The mitigation provisions will provide financial incentives to states to adopt - at the local level - adequate building codes, emergency plans and loss prevention to cope with the disasters most likely to take place in that area. Once in place, these improved mitigation standards will have targeted dollars behind them for enforcement.

As we learned from Hurricane's Hugo and Andrew and the Los Angeles earthquake, a nationwide failure to adopt or enforce proper mitigation codes has added billions to the bottom line of these and other recent natural disasters.

The NDPA will offer peace of mind that we are doing all we can to reduce the impact of these events and provide tremendous protection for the American public, and yes, the solvency of the insurance industry.

As members of the Public Works Committee, the bottom line is that the bill will provide the public and the insurance industry a mechanism to begin to

manage its own risk, and relieve the federal government of the major portion of personal property damage. While the bill does not attempt to address infrastructure damage, if the bill becomes law more state and federal dollars could be allocated toward more public infrastructure repairs.

The bill also addresses the two fundamental problems regarding natural disasters, the lack of homeowners carrying earthquake coverage and the cost of reinsurance in disaster prone insurance markets.

PRIMARY EARTHQUAKE PROGRAM

The bill would add earthquake coverage to every homeowner's policy as long as their insurer participates in the federally structured program. As an incentive for individual insurers to participate, the federal reinsurance program in the legislation would be available only for those companies participating in the primary earthquake program.

The Federal Emergency Management Agency (FEMA) would establish the premium rates based upon risk. Disaster-prone residents would pay somewhat higher premium than others not at risk. But their costs and deductible would be much lower than what is currently available because the risk would be spread nationwide. It is estimated that premiums would be 67 percent lower than current rates.

We all know the sad fact that only 25 percent of the people in Los Angeles were covered for earthquake. With no insurance in place, the federal government has become the insurer of last resort. This bill will relieve the taxpayers of this burden and return equity to the process as property owners premiums will reflect the risks of where they live.

FEDERAL REINSURANCE PROGRAM

The bill would also establish a federal reinsurance fund - funded by the insurance industry - which insurers could tap into after suffering natural disaster losses. The federal reinsurance fund would only be available after the losses suffered from natural disasters rose over 15 percent of industry surplus in one calendar year (approximately \$27 billion dollars in damage over a 12 month period) or 20 percent of an individual company surplus. This surplus trigger for individual company loss should also be based over a 12 month period.

Insurance companies would still have to insure themselves privately from losses beneath this threshold. The idea behind the threshold was to provide more affordable - but not subsidized- reinsurance at the high end, yet still preserve the private reinsurance market.

In coastal markets, the amount of reinsurance available has virtually evaporated. Only time will tell if the private market emerge to provide the necessary coverage in these areas.

Should a gap develop between private and federal reinsurance, state catastrophic pooling programs may be the answer. The bill permits individual state pools to buy protection to insure their own state catastrophe plans. IIAA believes this eligibility for state residual market programs is one of the most important concept in the legislation. This provision represents the soil from which the seeds of more targeted state solutions can grow and perhaps bridge the gap between private and federal reinsurance.

This bill will accomplish many important things outright. It will protect the fabric of the American economy should a catastrophic event strike a major city. The mitigation elements will spark incentive and momentum to build structures to withstand more punishment and demand less repair. The primary earthquake program will end the inexcusable situation of a lack of earthquake coverage by providing this coverage to nearly all homeowners. The reinsurance program will bring order and affordable reinsurance to insurers against further financial weakening and perhaps insolvency in the event of a series of major catastrophes.

However, like all legislation the bill is not perfect. The current bill is not a total solution for the lack of insurance availability, especially in hurricane and coastal markets. This is why Congress needs to review and address this issue.

Responsibility Two; Ensuring Insurance Availability and Affordability in Disaster-Prone Regions

The Congress has a responsibility to do everything it can to make disaster insurance more available and affordable. Disaster-prone regions of the country are being held hostage to the erosion of affordable insurance. This problem is acute along our nation's coastline.

The entire economies of these areas are in danger as insurers have withdrawn from these markets. These insurers are fleeing from the high cost of private reinsurance and even higher exposures. Just last week, a major carrier in Florida announced it will be slashing exposure even further.

As we have witnessed, private reinsurers will simply not extend this coverage to insurers at all unless and until they are assured of a company's maximum exposure. Without the reinsurance provisions in the bill, insurers will not be able to cover their exposure to catastrophic losses, which means many homeowners will go uncovered.

We all remember too well the consequences of this abandonment as insurance companies came to grips with exponential increases in the costs of obtaining reinsurance and the realization that storms such as Andrew in Florida were not as rare as once thought.

While this bill will ease the crunch and cost of reinsurance and make high levels of reinsurance affordable again to protect companies from insolvency, it may not be enough to entice many of the companies that have left these markets to return.

Without coverages to sell, property owners go unprotected, and new ventures - housing and business starts - go by the wayside. This is what troubles each one of your constituents the most.

It is on these market issues that IIAA wishes to work with this committee to improve the concepts in this bill as they relate to returning insurance to homeowners and businesses in disaster-prone regions. Insurance markets are the lifeblood not only of independent agents but of entire economies.

The question that must be asked is 'will this current bill improve markets?' While a definitive answer is hard to find, IIAA has been told by many underwriters that the legislation alone may not be enough to spark a wide scale return to these disaster prone markets.

What's the problem? Most concerns center around the amount of losses an individual company must suffer to access the federal reinsurance. In short, many of those companies surveyed by IIAA responded that they viewed this legislation to be a preventive measure to safeguard the solvency of the insurance industry against a major "hit." Most stated that the reinsurance cost to privately reinsure up to the federal reinsurance level was too high or risk to surplus was too much to reenter these markets.

This means that if this bill passes as is and it could provide only a limited market for homeowners in coastal areas - at least in the early years before property loss mitigation improvements have a chance to take hold.

This is certainly IIAA's goal and hope for this reform movement. To be honest, without companies in the market, agents have nothing to sell, homeowners and businesses have nothing to buy.

The bottom line is simply that this bill is essential, but it is not a comprehensive answer to market dislocation in disaster prone regions.

It is here that IIAA will focus its efforts to find the right mix of federal and state cooperation to address the insurance availability issue.

In short, state catastrophic market instruments may be able to offer market dislocation relief through targeted state and regional triggers. For these coastal regions, this bill provides a protection, but no guarantees that insurance coverage will return to coastal constituents. Alone it would be impossible for this bill to solve all the unique market problems and underwriting decisions that have sparked a mass exodus from coastal markets.

Better defining the role of state insurance pools may be the way we improve and use this bill to meet the shared responsibility to provide insurance to these consumers and thus reduce the costs to the federal government in the wake of disasters.

FEDERAL AND STATE PARTNERSHIP

We believe that the most important thing that this legislation can do is establish a positive environment for both individual state and multi-state compacts to coordinate with the federal reinsurance program.

The legislation should call for the establishment of state pooling programs and interstate compacts to pool together and provide a second layer of reinsurance to a particular region. This layer of reinsurance could operate beneath the federal layer of reinsurance and above reinsurance privately available in the states participating in the compact. These "mini-sized" state compacts could be structured to respond to the market forces unique to that particular region.

The state compacts would seek to provide regional pooling power to spread risk and add a second-tier layer of reinsurance to make historically disaster-prone markets more attractive. Once companies move back into these areas, competition will increase and homeowners should enjoy a new buying power and more product selection. These state compacts would be eligible to purchase federal reinsurance to back up their exposure above a certain attachment level.

State insurance commissioners should also be more sensitive to market conditions and allow underwriters needed flexibility in risky regions. More companies would come back if they can adjust, within reason, their writing according to their risk and exposure.

While we feel this concept of interstate compacts is a solid one, the compacts and state programs do give rise to a series of difficult questions of implementation and coordination with the federal program.

What incentives - or even pressure - can Congress use or bring to bear on those states with market problems to adopt state pooling programs?

Does it make sense to withhold mitigation funds or other potential benefits of this bill to states as pressure to force states to address their market problems?

Should state pools and/or interstate compacts have additional flexibility on the trigger level for federal reinsurance? Should FEMA have discretion to adjust the state pool trigger, within reason, to compensate for market conditions?

These are difficult questions.

We would like to explore the details behind these ideas with the subcommittee. IIAA would also be interested in further exploration of the market responsiveness of the current legislation regarding to individual company access to the federal reinsurance program.

CONCLUSION

We all share the responsibility for reforming the current situation of "supplemental disaster payments." This bill should be enacted to protect taxpayers, homeowners, businesses, financial markets, and the solvency of insurers.

IIAA will do all it can to move this debate on federal disaster policy reform forward. I look forward to working with you and the entire House Public Works Committee on this issue and would be happy to answer any questions that you or the Subcommittee may have.

Thank You.

ADDITIONS TO THE RECORD



STATEMENT
OF
JORDAN CLARK

PRESIDENT
UNITED HOMEOWNERS ASSOCIATION

SUBMITTED TO:

U.S. HOUSE OF REPRESENTATIVES

COMMITTEE on PUBLIC WORKS and TRANSPORTATION
WATER RESOURCES and ENVIRONMENT SUBCOMMITTEE

FEBRUARY 23, 1994

Mr. Chairman and members of the Committee, the Natural Disaster Protection Act of 1993 (NDPA) is a long awaited and necessary step forward in addressing the loss of life and property and the social and economic consequences brought about by natural disasters.

In establishing the hearing record toward passage of the Act, the Committee will undoubtedly seek testimony from: local, state and federal government representatives; emergency managers; the building industry; academia; environmental organizations; insurers; public utilities; the mortgage banking community; consumer groups and all others who have an interest in mandated federal programs dealing with natural disasters.

The United Homeowners Association (UHA) wants to make sure that you also hear from those most effected by the legislation and the ones who will end up paying for it, namely homeowners.

In economic and personal terms, homeowners are the primary victims of natural disasters. Homeowners also purchase more insurance than any other group and supply 90% of the tax base for relief and reconstruction before and after disasters strike. In short, the 65 million homeowners across the country have the most to gain or lose when Congress is debating natural disaster legislation.

After years of encouraging Congress to address the extraordinary social and economic liability this country faces when disasters strike, the UHA feels strongly that the quick passage of the NDPA is necessary for the protection of homeowners as disaster victims and as tax payers.

As potential victims, the legislation will finally provide affordable insurance coverage for tens of millions of homeowners who are not insured. Under the NDPA, homes in the 35 plus states with earthquake zones will be covered. Currently, over 95% of the homes in those states do not have earthquake insurance. Even in California, fewer than 25% are insured against earthquakes, a fact which has been brutally demonstrated by the recent Northridge quake. Keep in mind that although the Northridge quake damaged over 50,000 housing units and destroyed over 5,000 homes, it is not considered a major quake by earthquake standards. Nor is it the "great" quake that has been predicted to hit sooner than later.

In real terms, if the predicted "great quake" strikes a heavily populated urban area before the passage and implementation of NDPA, the number of damaged or destroyed homes that will neither be repaired nor rebuilt could easily exceed 50,000. Without insurance, those who have mortgages on their destroyed homes will be forced to default. Not only will their greatest investment be lost, but the local tax base and the jobs of those who rely on homeowners to buy their goods and services will also be destroyed.

Unfortunately, the economic after shocks of major disasters are not contained locally. They will be felt across the country. The destruction of tens of thousands of uninsured homes will have a drastic effect on the mortgage banking industry and in particular the secondary mortgage market. The value of mortgage backed securities could plummet quickly and mortgage interest rates across the country could sky rocket. Since the federal government has a vested interest in the secondary mortgage market through Fannie Mae and Freddie Mac, Congress has an additional reason to protect the tax payer from a bail out of the market by passing the NDPA.

The passage of NDPA will also save the average homeowner hundreds of dollars in added taxes. In appropriating over twenty billion dollars in emergency aid for natural disasters over the last two years, Congress has literally added that much more to our tax bill. Had the NDPA been in place, that amount would have been substantially reduced.

It should also be pointed out that those homeowners in the disaster area whose homes are not destroyed or who have insurance will find out quickly that the value of their homes has rapidly declined. Many, especially retirees and the elderly, will have lost their life's savings (home equity) in a matter of minutes. The estimated 1% a month decline in home values in sections effected by the Northridge quake is a real example of that result.

The UHA is also pleased to see that the legislation addresses the insurance problems faced by homeowners who live in the areas already visited by natural disasters, such as hurricanes Andrew, Iniki and the Northridge quake. Fortunately for homeowners and the tax payers across the country, the great majority of homes in the path of Andrew and Iniki were insured. If they were not, the rebuilding and the \$20 billion that the insurance industry paid to victims would have been the responsibility of the federal, state and local governments.

Unfortunately, as a result of the record setting losses suffered by the insurance companies, a number of smaller companies went out of business and those who weathered the storm are faced with a reinsurance problem. For the citizens of Florida and other states the reinsurance dilemma has resulted in policies not being renewed, limitation of coverage and higher premiums for lesser coverage.

The reinsurance section of NDPA is an equitable solution to the insurance problems facing homeowners in disaster prone areas today. Without the reinsurance provisions of the bill, sound business decisions will force insurers to continue limiting their exposure in disaster prone areas, increase their premiums or get out of the business. The result, homeowners will not be adequately covered or covered at all.

The NDPA also addresses an area that has been almost entirely neglected by the Federal government, -mitigation. Unless Congress and the Administration through legislation and regulation establish safer building codes and insist that those codes are enforced, property loss will continue to sky rocket and the loss of life will climb as disasters hit. The fact that we are the only industrialized nation without a national building code is brought home after every disaster.

Surely, the construction of our homes deserves the same attention to safety that we have mandated for our cars, highways, trains, planes and work place.

No doubt , there will be those who oppose the NDPA because it helps the insurance industry out of a major reinsurance problem, or they philosophically oppose government intervention in the private sector. My offer to them is a tour of Homestead Florida, a ride down the Mississippi and a visit to Southern California.

As the only national homeowners association, the UHA supports the legislation because it provides a solution to the insurance problem facing millions of homeowners who will be picking up the tab as consumers and tax payers.

Our homes are this nation's greatest economic and social investment. We hope that Congress and the President recognize that fact and quickly pass the Natural Disaster Protection Act.

The United Homeowners Association appreciates the opportunity to comment on this important legislation and will continue to support its passage and monitor its progress.

STATEMENT OF LIEUTENANT GOVERNOR DEREK M. HODGE
BEFORE THE HOUSE PUBLIC WORKS AND TRANSPORTATION
COMMITTEE SUBCOMMITTEE ON WATER RESOURCES AND
ENVIRONMENT

May 26, 1993

Mr. Chairman, members of the Subcommittee on Water Resources and Environment, I want to thank you for allowing me to submit this statement on the windstorm insurance crisis.

Just five years ago Hurricane Hugo caused more than \$4 billion in losses and was the main reason the insurance industry suffered record catastrophe losses of \$7.64 billion for the year. As a result, it was called the "storm of the century."

Unfortunately, Hugo didn't keep its title of "storm of the century" for long. The damage caused by Hurricane Andrew dwarfed Hugo and caused the industry \$23 billion in catastrophe losses - triple 1989's one year record and greater than the sum of losses for the previous six years combined.

The insurance industry cannot afford to speculate whether these storms point to a change in world weather patterns or are just a random phenomenon. Too many of its members will not be able to withstand additional disasters if they continue to do business as they have in the past and the industry is cognizant of this.

Let me give you an example of these changes. The homeowners' policy which we have grown to know, and love because of its price and lack of shared risk, was essentially a fire policy with coverage for extended perils, i.e. windstorm and earthquake.

However, notwithstanding the extended perils, it was underwritten as if it were only a fire policy. There was little, if any, attention paid to analyzing the probable maximum loss (PML) from windstorm, particularly. This changed dramatically after Hugo, Andrew and Iniki.

Many regulators, myself included, are receiving requests from companies for approval of changes in this traditional homeowners' policy. That policy, as I noted, includes coverages for windstorm peril, but it also covers contents, loss of use, and general liability. Today, insurers are seeking to exclude contents and loss of use. This is because an analysis of the losses following Andrew and Hugo suggests that losses to contents amounted to nearly 50% of all losses. In the Virgin Islands following Hugo, some insurers received claims from their insureds seeking payment for loss of use. The insurers were surprised to learn that their insureds were in New York and elsewhere living in a hotel. In addition, they now want to offer actual cash value rather than replacement cost. To further complicate an already troubled industry, many companies have stopped writing windstorm and earthquake coverage. The April 9, 1993 edition of the Journal of Commerce has a story which reports that State Farm will no longer sell a guaranteed replacement policy, known widely as an HO-5 policy, in Florida. Meanwhile, State Farm insureds with existing HO-5 policies are being notified that their replacement coverage will not exceed 120% of the predetermined amount of their policy. Insureds living in other states will have no solace as State Farm

reportedly will do the same in all states in which it writes business.

The same is true with respect to reinsurance. Historically, insurance companies have purchased Property Catastrophe Excess of Loss Reinsurance to protect themselves from the effects of large loss occurrences. Each insurer determines a "retention" level with which it is comfortable. That retention level is adequate for covering frequent, small losses, such as those caused by fires. Above that retention level they buy an intermediate layer of reinsurance to cover large, infrequent losses. Before 1990, it was assumed that losses in this layer would occur once every 15 to 20 years. Finally, above this layer of reinsurance, they buy catastrophe reinsurance to protect against rare, but disastrous, events that might occur once every 50 years.

Until 1989 the worldwide reinsurance market was able to provide up to \$300 million in catastrophe coverage. Critical to the creation of this "capacity" was the ability of reinsurers to buy reinsurance for themselves from other reinsurance companies, called retrocessionaires. As it turned out, many of the retrocessionaires were buying protection from each other. When the catastrophe losses of 1989 hit, many of these companies failed, collapsing the burden of catastrophe losses back onto the initial reinsurers and primary insurers. When you think about it, many companies were actually insuring their own risk -- the same risk they thought they had gotten rid of!

This led to a reduction in catastrophe capacity for 1990 and

subsequent years. Capacity dropped to \$150 million, and perhaps more importantly, restrictions on the scope of coverage were imposed. New exclusions were added, the territory of coverage was reduced, and insurers were forced to increase their retentions. The unbelievably bad results of 1992 will force even more change in the way reinsurance is sold. Both insurers and reinsurers were hit hard. For some insurers, this has meant searching for more reinsurance to avoid being hit hard again. Simultaneously, there has been a reduction in reinsurance capacity. The remaining reinsurers are insisting on still higher retentions and increasing the price of their coverage. The problem has been compounded by various rating and regulatory pressures, ranging from concerns that insurers not engage in price gouging and that they improve their underwriting. The reduction in reinsurance capacity has led me to reluctantly approve rate increases of 3% of value on homes. Homeowners in the Virgin Islands also face high deductibles of \$2,000 or more in order to obtain coverage.

Even the strongest reinsurers have been affected by the events of the past few years. For example, losses from Hurricanes Andrew and Iniki have led to disappointing results for industry giant General Re.

Given this background, and facing a capacity crisis in the Virgin Islands, as Insurance Commissioner, I contracted with the firm of Rollins Hudig Hall, formerly Frank B. Hall, to do a study of our environment and provide me with recommendations. They concluded that, given current market conditions, there is

insufficient catastrophe reinsurance capacity to meet the needs of all of those seeking to avail themselves of it and available alternatives were considered.

The simplest of these alternatives is to permit the ratios for property coverages to "float"; in other words, to permit the underwriter to file and use whatever rate the underwriter believes is necessary to support its exposure to loss. In a positive sense, the use of this approach should generate additional capacity rapidly; however, it will be at a considerable cost to the buyer since rates will rise significantly. Such increases will be too costly for the people of the Virgin Islands. Additionally, there is no guarantee that underwriters will be able to secure sufficient property catastrophe coverage to sufficiently address the capacity crisis at any price.

Another option available to the Government is to create a pool which is the equivalent to a JUA, fair plan or a "Beach Plan." Many of the Southeastern states have established legislatively mandated insurance pools which provide personal lines and commercial property coverage. The creation of such a pool would be viable but for the fact that a pool requires underwriters behind it, i.e., somewhere to pool the exposure to loss. This requires insurers with capacity, and sufficient capacity to support such a pool does not exist in the Virgin Islands at this time.

Due to the large number of catastrophes affecting the United States, there has been considerable activity in support of Federal legislative reform. I have been a proponent of such a remedy, and

have attended meetings with Federal and State legislators, lobbyists, insurance commissioners, and industry representatives to further this cause and represent the Territory's interests.

I must congratulate Delegate Ron de Lugo for introducing H.R. 764 which directs FEMA to study this issue and offer recommendations to relieve the crisis. Congressman Clay shaw of Florida has also introduced his own bill. The Bill before this Committee is another reform movement that was initiated by the Natural Disaster Coalition. Federal legislation is certainly a partial answer to the United states Virgin Islands situation, but a Federal remedy is a massive undertaking. It would require a concerted and cooperative effort on the part of the legislators from the east, west and gulf coasts, as well as Hawaii, Puerto Rico, the Virgin Islands and Guam and it would require active support of the underwriting community to be successful. Its principal drawbacks are the time required to effect it, and gaining support from necessary representatives. Another concern I have is the exclusion of windstorm coverage from the primary insurance program. This peril, however, is included in the reinsurance program and state insurance programs would be eligible to participate.

While I had long recognized and had been involved in various activities addressing the insurance crisis, I realized that the time had come to develop a non-traditional approach that directly addressed the heart of the problem.

The results from our study generated the following

conclusions:

Knowledgeable and responsible underwriters are not willing either to enter the Territory or expand capacity at current rates. If the rates are raised, responsible underwriters will be unable to offer sufficient capacity due to lack of catastrophe reinsurance.

There is a limited group of underwriters who are willing to write property in a facility that represents higher quality risks, but that does not ease the problem facing the majority of Virgin Islanders.

The most responsible and informed action we can take is to organize a facility which will alleviate the areas causing the underwriting community discomfort

Consequently, through my initiative, the Governor proposed and the Legislature created a facility to provide Government sponsored capacity on an immediate basis. Reinsurance for the facility has been designed and is currently in place. The facility will address both windstorm and earthquake perils. There will be no coverage offered for contents, loss of use or general liability. There will be a coinsurance requirement, although not as high as the 85% required in Japan for earthquake coverage. In addition, coverage will be limited to not more than \$200,000 of value, and this could well be less, and replacement costs will be based on actual cash value at the time of loss.

While this plan will address some of our immediate needs, federal legislative reform must be enacted. I therefore join

Delegate de Lugo in his appeal for help in solving this most pressing problem.

Again, thank you Mr. Chairman for allowing me to submit this statement.

OFFICE OF
THE COMMISSIONER

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GOVERNMENT OF
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February 18, 1994

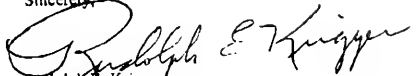
The Honorable Ron de Lugo
Chairman, Subcommittee on Insular
and International Affairs
Congress of the United States
House of Representatives
2427 Rayburn House Office Building
Washington, DC 20515-5501

Dear Congressman de Lugo:

This letter transmits additional comments on H.R. 2873.

If you have any questions please contact me.

Sincerely,


Rudolph E. Krigger
Commissioner

REK/tj

Attachment

DISCUSSION OF AMENDMENTS TO THE ROBERT T. STAFFORD
DISASTER RELIEF AND EMERGENCY ASSISTANCE ACT

Below a number of points are discussed regarding H.R. 2873 amendments to the Robert T. Stafford Disaster Relief and Emergency Assistance Act.

1. Sec. 703(b)(4) - Page 18: Requires states to identify:

"which hazard mitigation measures, such as building codes, non-structural mitigation, and retrofitting, for each of the natural disaster perils that are most cost effective and most likely to prevent personal injury and reduce property losses."

This paragraph contains many potential conflicts: 1) a measure which is most cost effective may not be the most effective in preventing loss or injury; 2) the measures that are effective for one natural disaster such as earthquake may conflict with the most effective measures for another peril such as windstorm. Instead of requiring a list of measures meeting the specified criteria, a more appropriate requirement may be for the state to recommend the best measures given that state's particular exposure (s), the cost of such measures and their ability to prevent or mitigate loss.

2. The Director of FEMA has 18 months after enactment of the Natural Disaster Protection Act of 1993 to issue final regulations describing the criteria to be used in determining whether a State is a compliance state. (See Sec. 704(b)(5) - page 21). Yet the State must submit the mitigation plan to FEMA within 2 years of being designated a disaster prone state (See Sec. 703(c) - page 19). The Act does not specify how long after enactment of the Act a state will be designated a disaster prone state, but it is possible that if so designated soon after passage of the Act that it may have to develop the mitigation plan without being given clear guidance as to the criteria which will be used to determine the state's compliance. To reduce the extra effort which may be expended by states in writing and then having to revise their mitigation plans, we recommend that FEMA provide states up to 2 years after the final regulations have been issued to submit their mitigation plans.
3. Under Sec. 705(b)(1)(A) - page 23 the Director will allocate hazard mitigation funds to states in accord with the premiums collected in the State under the Primary Insurance Program. This allocation methodology disadvantages those states in which:

- * there is a small population base;
- * the citizenry cannot afford the premiums; or
- * insurers have exited the state due to the disaster exposure or any other reason.

It seems that the states most in need of hazard mitigation are those states which cannot afford the consequences of a disaster which does occur, i.e., because the resources for recovery are not available from insurance or any other reason. The net effect of this allocation formula is that richer states receive the greatest allocation and the poorer states the least. This is not appropriate if the government desires to cause states to become more proactive in preventing loss.

4. To speed the response time of states located in disaster prone areas, we request some form of clearinghouse through which information about hazard mitigation methods could be obtained.
5. Title VII, Subtitle A, Sec. 801(a)- page 29: the Primary Insurance Program is established to provide insurance from "earthquakes and volcanic eruption". Why is the program limited to these perils rather than also including windstorm and hurricane? These latter perils are not adequately covered by the private insurance market and could more appropriately be covered under a federal program.
6. Title VII, Subtitle A, Sec. 801(d) mentions a feasibility study of the benefits of including flood as a covered peril under the national multi-hazard insurance program. It may also be advisable to include all disaster related perils under the same policy so as to reduce administration and reinsurance costs and confusion to homeowners and brokers as to which policies should be purchased.
7. Title VII, Subtitle A, Sec. 801(e) sets forth objectives in improving participation in the Federal Flood Insurance Program. Although most insurers exclude flood coverage, it may be advisable for FEMA to encourage private insurers to cover the flood risk by recognizing private flood insurance as an alternative to FEMA. In this way FEMA would not bear the entire exposure from flood losses.

8. Sec. 803(b) - page 33 states that, under the Primary Insurance Program, earthquake will be covered, but that "fire proximately caused by an earthquake" will not be covered. Given that many insurers exclude any loss, direct or indirect, arising out of an earthquake, homeowners will find themselves uninsured for resulting fire losses. Because the courts are so willing to find coverage for resulting losses, why not simply cover this fire loss and charge an appropriate rate for it?
9. Sec. 803(d) requires that insurers which elect to participate in the Primary Insurance Program must either offer FEMA's multi-hazard coverage or offer similar coverage in accord with FEMA's rates. Alternatively, if, under Sec. 803(e) an insurer does not elect to participate, then it must notify its policyholders of the "absence of insurance and reinsurance protection for multi-hazard coverage under this title". This sounds like FEMA is attempting to drive private insurers out of the market. If private insurers are still encouraged to offer coverage under their own terms and conditions, FEMA should make this point more explicit.
10. Sec. 804(d) - page 37 provides that to the "maximum extent practicable, the rates . . . shall result in a minimum of cross subsidization by reasonably reflecting the risk of damaging earthquakes . . . in total and for each subclassification of policyholders." This provision again shifts the costs of risk to the areas which are the most risk prone. Unfortunately, the most risk prone areas need, through insurance, to realize the risk distribution benefits of a national program. As a Federal program, this insurance should achieve a balance between the Federal government's concern for all of its states and individual state's natural desire to only bear their own loss. This weighing in favor of the individual state is not in the best interests of all of the states.
11. Sec. 807 - page 43 provides that the Director may offer mitigation incentives (including "lower premiums or deductibles) to states which meet seismic building standards or mitigation standards. It is not clear what the referent is to "lower", i.e., than what? Does this mean there will be cross subsidization between states or that a credit of some amount may be offered?

12. Subtitle B. Sec. 811(a)(1) provides that excess and reinsurance coverage will be made available for hurricane, earthquake, volcanic eruption or tsunami. Why not also extend coverage for windstorm as they can cause significant damage?
13. Sec. 811(a)(2) provides that such excess coverage is only available to insurers that are participating insurers or reinsure participating insurers, workers compensation funds or state residual insurance pooling programs. Why not provide coverage to insurers which are not participating on the primary layer? It seems that the government would be better off if it could encourage the private market to make this coverage more readily available on a primary level and FEMA focus more intently on the excess/reinsurance losses, i.e., those which are truly catastrophic. In this way FEMA would be taking the place of the reinsurance markets which have reduced the capacity available to private insurers for disaster related perils. Moreover, why is coverage available to workers compensation funds and state pooling programs? It is unclear how these vehicles are more deserving of coverage than others.

STATEMENT FOR THE RECORD OF
DR. ROBERT C. SHEETS, DIRECTOR
NATIONAL HURRICANE CENTER
NATIONAL WEATHER SERVICE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE

BEFORE THE

SUBCOMMITTEE ON WATER RESOURCES AND ENVIRONMENT
COMMITTEE ON PUBLIC WORKS AND TRANSPORTATION
U.S. HOUSE OF REPRESENTATIVES

FEBRUARY 23, 1994

Mr. Chairman and Members of the Subcommittee:

My name is Dr. Robert C. Sheets. I am Director of the National Hurricane Center of the National Oceanic and Atmospheric Administration (NOAA), U.S. Department of Commerce.

Tropical cyclones are recognized as nature's most destructive phenomena due to their frequency of occurrence and size. In 1900, a hurricane struck Galveston, Texas, resulting in more than 6,000 deaths (Figure 1). This remains the deadliest natural disaster in the history of the United States. By comparison, the great San Francisco earthquake resulted in a little over 600 deaths. Nearly 2,000 deaths were experienced in the offshore islands near Charleston, South Carolina, from a hurricane in 1893.

Nearly the same number of deaths resulted from the 1928 hurricane that emptied Lake Okeechobee onto the surrounding communities of Florida. In 1926, a hurricane caused major damage in southeast Florida with estimates of loss of life ranging from near 250 to 500. In 1935, a hurricane striking the Florida Keys killed more than 400 people. A hurricane in 1947 produced wind gusts to 155 mph just south of Palm Beach County in Florida and in 1969, Camille struck the Mississippi coast with winds estimated to be near 175 mph and gusts near 200 mph. This hurricane produced a storm surge (dome of water accompanying the storm as it moved ashore) of 25 feet above normal tides with waves on top of that. More recently, in 1989 Hurricane Hugo moved ashore in a low population density area in South Carolina and produced more than \$7 billion in property losses. In 1991, Hurricane Bob moved up the east coast and resulted in property damage of about \$1.5 billion dollars. During the past two hurricane seasons, we experienced Hurricane Andrew (August 1992) and last August Hurricane Emily which sorely tested our forecast and warning systems.

The recent earthquake in California has resulted in widely varying estimates of damage. However, with Hurricane Andrew, total direct property destruction losses are estimated to be about \$25 billion or more. John Cosgrove, a State Representative from the area in Florida most devastated by Hurricane Andrew, recently stated that actual insurance payouts and recovery funds from Federal, state and local governments now exceed \$31 billion (\$2 billion of that in Louisiana). Also, Mr. Bill Bailey, director of the Insurance Information Center established after Andrew, has estimated that long-term losses may exceed \$40 billion when one considers such factors as loss of business, etc.

The direct property damage losses from this one hurricane alone exceed the sum of the three previous most costly hurricanes (Figure 2) or the two most costly hurricanes and the Loma Prieta earthquake even after adjustments for inflation! Insured losses now exceed \$16.5 billion which is more than four times the previous record payout which occurred with Hurricane Hugo. Up until Hurricane Andrew, State Farm Insurance had the record for a payout by a single insurance company with nearly \$500 million for Hurricane Hugo. It has been reported that State Farm has paid out more than \$3.6 billion for losses that occurred in Hurricane Andrew, more than seven times the previous record. At a recent meeting, Mr. Cosgrove reported that 11 insurance companies have become insolvent as a result of losses from Hurricane Andrew and that some 40 companies are either pulling out of or greatly curtailing insuring property in Florida. Mr. Gallagher, the State of Florida Insurance Commissioner, has repeatedly stated that there are major problems ahead in the insurance situation for all coastal areas subject to hurricanes which can have considerable impacts upon the economy. In addition, an insurance representative from the Caribbean reported that re-insurance costs have doubled and tripled in the past two to three years resulting in major economic problems for many small countries in the region.

Considering the record shattering losses from Hurricane Andrew, we were extremely lucky that it wasn't much worse. It is difficult for me to convince my neighbors of that fact, those of us who live in the core region in South Dade County where Hurricane Andrew struck. However, had Hurricane Andrew been displaced only 20 miles north of its westward track over South Florida, two different studies show that losses would have exceeded \$60 billion in southeast Florida alone. A continuation of that same track across Florida would have resulted in major losses in the Ft. Myers area and would have resulted in our nightmare storm into New Orleans, putting that city under 18 to 20 feet of water. Casualties in the southeast Florida area would have been large due to the more than 30 percent of the people who did not evacuate the condominium complexes on Miami Beach, Hallandale, and Hollywood. Casualties in New Orleans could be

very large with people drowning because, as far as I am aware, there are no operational plans of "last resort refuge" in place anywhere in the United States except in the Florida Keys. Additionally, Andrew's inland impact could have been much more severe. It is easy to imagine a slower-moving and much wetter decaying tropical system tracking up the Appalachian Mountains, resulting in widespread devastation due to inland flooding and mudslides similar to what accompanied Hurricane Agnes in 1972 and Hurricane Camille in 1969. Such flooding could add dozens of fatalities and billions of dollars in damages to the loss list, let alone add incredible stress to the emergency response and recovery efforts of local and state governments, and the Federal government.

Those are certainly frightening numbers, both economically and those related to the potential loss of life. What should also frighten you, and is one of my major concerns in my responsibility for providing adequate warnings, is that the meteorological conditions that would create the difference in these two courses of movement are essentially undetectable with our present observing systems. Certainly, our ability to forecast these differences 24 hours or more in advance with a high degree of confidence is very limited. Computer models have advanced markedly, with great achievements and advancements at the temperate (middle) latitudes, but with much less success at the tropical and subtropical latitudes. One major limitation is the availability of quantitative data. That is, the models today are far better than the data we are putting into them. The quantitative data availability in the tropical and subtropical regions in many ways is worse today than it was one to two decades ago.

As Professor William Gray reported at the recent National Hurricane Conference, support for hurricane research is far less today, in a relative sense, than it was in the 1960s and 1970s. Even in a preparedness and mitigation sense, we seem to have a large imbalance in resources being directed toward solving our problems associated with hurricanes. At the April 1993 National Hurricane Conference, it was reported that the Federal Emergency Management Agency (FEMA) spends nearly \$50 on earthquake related programs for every one dollar it spends on hurricane programs, excluding relief efforts. In my opinion, this does not mean that the earthquake problem is any less important than it has been as evidenced by the recent catastrophe in California, but clearly the hurricane problem has not received the attention that it needs.

In my opinion, the reason that we have arrived at this situation is that in some ways we have been a victim of our own success and have been in a fortunate period of a very limited number of major hurricane strikes on our coasts during the past few decades. That is, we have been quite successful in our forecasts, warning

and response systems with the recent major hurricane strikes of Gilbert, Hugo, Bob, and Andrew and the recent brush of the East coast by Hurricane Emily. Loss of life has been relatively small and people probably believe that we are better at forecasting and responding to these events than we are. I wish that this situation would continue into the future, but it seems unlikely that will be the case. Figure 3 shows the loss of life and property by decade for hurricanes striking the United States since 1900.

Before Hugo and Andrew, strong hurricanes striking the U.S. coastline had been infrequent events during the two to three previous decades (Figure 4). However, recent research indicates that we are likely to return to a frequency of hurricanes similar to those experienced in the 1940s, 1950s and 1960s at some time in the near future. If those frequencies of hurricanes return, we will see multi-billion dollar losses of property almost every year and potential large loss of life because of the rapid coastal development which has occurred during the last 25 years.

Federal development programs of the past and present are sometimes counterproductive to the goal of reducing the number of people and the property at risk from hurricanes. The coastal county population from Texas to Maine now exceeds 44 million people. A large part of that population and associated property at high risk to the elements of the hurricane resides on barrier islands. The rapid development of these islands has frequently been contributed to by Federal funds provided for the infrastructure of a community such as highways, bridges and water and sewage systems. Also, insurance seems to play a part in this development, either in the form of Federal Flood Insurance or forced "risk pool" wind insurance from the private sector because insurance is the key that unlocks the necessary financing for development. Of course, as I indicated earlier, I believe this situation is about to change drastically within the private sector insurance area.

The most rapid growth of the permanent coastal county population for the Gulf and East coasts has been in the "sunbelt," i.e., Texas through North Carolina with extreme growth rates in Florida. Although some of the mid-Atlantic and New England states have shown lower growth rates for permanent residents than for the "sunbelt," their vacation and weekend population and property at risk growth rates have been tremendous. A prime example of that situation is Ocean City, Maryland, where the permanent population of Worcester County (contains Ocean City) was a little over 35,000 in 1990, but an estimated 350,000 people were there on Memorial Day weekend of 1991 with a total of some 3,791,339 visitors from that weekend through Labor Day weekend in 1991 (source - Ocean City, Maryland Chamber of Commerce). A similar phenomenon occurs at many other locations such as Padre Island, Texas; Gulf Shores, Alabama; Panama City, Florida; the

outer banks of North Carolina and northward through New England. When these weekend, seasonal, and holiday populations are considered, the number of people at risk on barrier islands is much more than the permanent population statistics would indicate, increasing by 10 to 100-fold or more in some areas. We just recently had this situation with "Warnings" for Hurricane Emily.

A large portion of these same barrier islands with high population densities (either permanent or seasonal) is subject to inundation from the rapidly rising waters known as the storm surge associated with hurricanes. Historically, it has been these waters that have resulted in the large loss of life associated with hurricanes along with extreme property damage. Over the past several years, the warning system has provided adequate time for the great majority of the people on barrier islands and along the immediate coast to move inland when hurricanes have threatened. However, it is becoming more difficult each year to evacuate people from these areas due to roadway systems that have not kept pace with the rapid population growth. That is, in most coastal regions, it now takes much longer to evacuate a threatened area than it did a decade ago. This means that longer and longer lead times are being required for safe evacuation from threatened areas. Unfortunately, these required longer range forecasts suffer from increased uncertainties (Sheets, 1990).

Also, as I mentioned earlier, to my knowledge, only the Florida Keys has an actual working plan for "last resort refuge" for residents who may be trapped by rising waters. I am told that the city of New Orleans continues to look at the problem and may now have some draft plan in place. The net effect of not having such a plan is that when people are trapped on barrier islands, or in the city of New Orleans when the levee system is about to be topped, thousands of people may simply be on their own to seek some sort of refuge. The result will be countless loss of life as it was in Galveston in 1900. Fortunately, the Florida Keys have blazed a trail that hopefully others will follow. They now have a plan of "last resort refuge" in place with phased evacuations. That plan was exercised during Hurricane Andrew and worked quite smoothly. Many other areas need to emulate this plan.

One factor that had remarkably little widespread public or political awareness prior to Hurricane Andrew was the potential economic losses due to direct destruction from a major hurricane. Had hurricane related losses continued to spiral upward in tandem with the coastal population growth during the past two decades as they had during the previous three decades (Figure 3), average annual losses would now exceed \$3 billion and continue to be escalating at a rapid rate. Such losses likely would have spurred mitigation actions similar to actions resulting from the

repetitive losses in southeast Florida in the late 1940s and early 1950s. Hopefully, the losses from Hurricane Andrew will now spur such action.

A study in 1988 by the All-Industry Research Advisory Council (AIRAC) showed trends in insured coastal property that are astonishing. The shocking numbers from this AIRAC study reveal that "... (1988) insured property exposures for the first tier of coastal counties (Gulf and Atlantic coasts of the United States) came to \$1.86 TRILLION, an increase of 64 percent over the 1980 total..." Even with adjustments for inflation (approximately 29 percent), this is a phenomenal figure, and does not include flood insurance! A close examination of these numbers shows that they reflect more than just the permanent population trends, but also are a measure of major developments for tourism and summer or vacation homes. One such example is Worcester County Maryland (includes Ocean City), where the insured property increased by 67 percent (near 40 percent after an adjustment for inflation) from 1980 to 1988 while the permanent population increased by only a little over 11 percent from 1980 to 1990.

One question which was often asked, is "What would be the loss of life and property if a hurricane like the 1926 hurricane was to strike the Miami area this year?" or similar inquiries for other storms and other areas. Hurricane Andrew has now answered some of those questions. It is impossible to estimate the loss of life due to the short-term actions that may or may not be taken at the time of the storm. However, property damage estimates can be made and as reported at the 1993 National Hurricane Conference by Ms. Karen Clark, the numbers are extremely large for any major metropolitan area such as the Galveston-Houston area (\$80 billion), New Orleans (\$52 billion), Southeast Florida (\$106 billion), Virginia-Maryland (\$68 billion) and New England (\$104 billion) all not counting flood insurance.

With these figures, it is not difficult to envision a national economic catastrophe for the future. If frequencies of major hurricane strikes on the continental United States returned to those of the 1940s through 1960s, multi-billion dollar losses would be experienced nearly every year. A study by AIRAC (1986) indicated that two successive \$7 billion dollar catastrophes (similar to Hugo), "would do severe damage to the property-casualty insurance industry in the U.S. and abroad" which of course would have major economic implications for the economy as a whole. Of course Hurricane Andrew has already shown what one hurricane can do and indeed, it has severely damaged the property-casualty insurance industry.

The present populations and property at risk to hurricanes in the United States clearly present the potential for large loss of life and property for numerous possible hurricane scenarios. We have been fortunate during the past two decades when major

hurricane strikes were infrequent. However, we need action now to prepare for a return to more frequent major hurricane events in order to minimize life and property losses. That is, we need to introduce new loss reduction and preparedness strategies and expand old mitigation projects, such as the NFIP or other assistance programs available through Federal, state and local governments.

There are three primary types of direct losses from hurricanes. These are:

1. Loss of life.
2. Direct property destruction and associated loss of commerce.
3. Costs of "over warning" for preparations and loss of commerce.

The protection of life is the highest priority goal of the hurricane forecast and warning process and as such, is the primary factor that determines the degree of "over-warning." As much as 30 hours or more is now required to evacuate people from such vulnerable areas as Galveston Island, the Florida Keys, New Orleans, and Ocean City, Maryland. Such decisions for protection of life now must be based upon 36-hour or longer range forecasts. The uncertainty in those forecasts, as discussed earlier, is such that relatively large "over-warning" is required in order to minimize the potential for large loss of life. Fortunately, environmental satellite imagery has added to the public's awareness of the existence of hurricanes, in most cases, long before they threaten any major U.S. population centers. The credibility of the warnings is enhanced by the ability to show satellite imagery to the general public. However, even with the use of satellite imagery, coastal radars, etc., there could be an unforeseen meteorological development (rapid change in course (Elena, 1985), rapid change in intensity) which would not permit adequate warning time. Also, there could be some hinderance to the evacuation process (accidents, barge taking out a bridge, slow start of evacuation) which could also result in incomplete evacuations with literally thousands of people trapped on barrier islands and roadway systems as the life threatening elements (rising waters, increasing winds) of the hurricane approach. Clearly, efforts must be made to address these problems.

Some mitigation activities that could be directed toward alleviating these problems are:

1. REDUCE REQUIRED EVACUATION TIMES. This can be accomplished through improved community development and planning including improved roadway systems, limiting growth, minimizing the numbers of people who must be evacuated through use of better building practices including "set backs," building codes and enforcement, providing safe in-place sheltering for manufactured and mobile home communities, and local shelters for people who might otherwise attempt to leave the area. That is,

optimize the response process by moving people 2 to 10 miles rather than 200 miles or more. There needs to be a standard design code for buildings that are to be used for shelters or "last resort" refuges which is adequate for resisting the winds that are reasonably possible for that community. These standards could be used in the selection process for use of existing buildings for refuges or shelters and aid in determining what retrofits might be needed. Also, they would aid in designing new buildings that might be used as shelters in the future.

2. PROVIDE LAST RESORT REFUGE. This would not be publicized so that people would not delay their actions knowing a "last resort" shelter existed, but would provide a means of minimizing potential loss of life when complete evacuations cannot be accomplished for whatever reason. It is always best to get people away from the problem to where services can be provided. That is especially true where hurricanes are prolonged events. However, for the mid-Atlantic states, New York and New England, where the hurricane is a short lived event (Hurricane Bob was a two-hour event in Massachusetts), it may be prudent to provide in place safe refuge rather than go through a lengthy evacuation process with several potential "false alarms." Exceptions would be for regions such as Fire Island, New York where massive destruction from the storm surge might be expected and access cut off for days rather than a few hours.

3. IMPROVE FORECAST ACCURACIES. Forecast accuracies are improving, but, unfortunately, not nearly fast enough to offset the loss of accuracy for longer-range forecasts required for increased evacuation times resulting from increasing populations at risk. Computer models to predict hurricane paths have improved significantly during the past decade, but further research is needed to develop more accurate models for track, intensity, rainfall and storm surge predictions for these longer range forecasts (24 to 72 hours).

Along with improving models, we need to improve the quality and quantity of data going into them. Research studies have shown that given correct quantitative data in the hurricane and its near environment through the depth of the troposphere, substantial improvements in forecasts of track and intensity are possible. Unfortunately, during this same period when computer models have been improving, our conventional observation systems in the tropical and subtropical regions have deteriorated markedly. (For example, the U.S. Data Buoy System is gradually disappearing as the buoys get older and cannot be maintained; the Caribbean Islands Upper-Air Program was cut back from two per day to one per day; and the old NASA "down range" upper-air systems are no longer in place.)

In addition to the need for restoration of the conventional data, these improved models need much more sophisticated data in the hurricane and its near environment. Technology exists to provide these data and NOAA is upgrading its operations as fast as the budget and implementation process will allow as part of a long-range modernization program. For example, I was pleased to see appropriation for funds for a mid-size jet aircraft which will be able to provide considerable data in the near environment of the hurricane for use in our numerical models. We are working to have that aircraft and a basic instrumentation set available for quasi-operational use as soon as possible. We anticipate significant improvements in our forecasts over the next few years as we apply this new technology.

The second item of potential loss mentioned above is the direct destruction of property. Hurricane Andrew again has shown this impact, but as I mentioned earlier, it could have been so much worse with a nearly undetectable change in the meteorological conditions. Clearly, the Nation as a whole pays for such losses in various ways such as through insurance premiums, tax subsidized disaster relief funds, charitable contributions, and higher prices for goods due to loss of productivity and natural resources. For instance, more lumber was lost in Hurricane Hugo than in the Mt. St. Helen's eruption and Yellowstone National Park fires combined. Other agricultural losses are frequently large. Also, there is usually a considerable amount of under-insured property that results in business failures, individuals not being able to meet their financial obligations, etc., erosion of tax bases for a community that has been devastated and the compounding effects of such losses. Reports have indicated that more than 80,000 jobs were lost in South Dade County alone due to Hurricane Andrew. Also, as mentioned earlier, there is an enormous amount of insured property at risk, where major losses could cause the failure of some insurance companies as happened in Hurricane Andrew. Some mitigation activities that could be directed toward alleviating the direct destruction of property problem are:

1. RESTRICT DEVELOPMENT AND REDEVELOPMENT IN HIGH RISK AREAS. Several programs have been aimed at accomplishing this goal. The Coastal Zone Management Act (CZMA), for example, directs states to manage development to minimize risks from coastal natural disasters and other hazards while protecting the natural features that mitigate those risks, such as beach/dune systems. The CZMA recognizes that some coastal areas simply are not suitable for development either because of the threat of disaster or because they are environmentally sensitive, or both. Similarly, the Coastal Barrier Resources Act has been successful in deterring development on undeveloped coastal barrier islands through elimination of federal flood insurance and federal financial assistance for public infrastructure. However, experience has

shown that whenever massive losses occur in developed coastal areas -- such as in South Carolina after Hurricane Hugo -- policies which limit redevelopment come under enormous public and political pressure, which often force rules and laws to be waived or modified. Unfortunately, this well-intentioned fixation on immediate restoration of damaged areas with consideration of future recurring losses only perpetuates the costly cycle of "wreck and repair."

2. ESTABLISH AND ENFORCE HURRICANE RESISTANT BUILDING CODES.

There are at least two or three proven codes for resisting damage due to wind and water at minimal increases in cost over conventional construction. People thought that the South East Florida code was adequate. However, some small changes in the code and interpretation of the code had crept in which weakened the code and resulted in massive losses and some loss of life. Even with these deficiencies, that code and building practices in Dade County were far superior to most other hurricane prone areas. It often is a problem of education rather than the small increase in cost required to have a good code in place. For example, massive losses occur even in exclusive developments such as Debordieu Beach, South Carolina, where the small cost of the application of hurricane resistant codes was not a factor. The developer of that community and others in the South Carolina area expressed surprise at the destruction from Hurricane Hugo and a lack of knowledge of existing hurricane resistant construction codes. Most people vowed to build back using such codes, but were confused about which code they should use.

Generally, after each major loss, the affected community looks for some improvement in building practices. This frequently consists of developing some new code or selected applications of parts of codes used in other areas. It seems that an adequate experience level exists today, at least from a technical standpoint, where an effective, relatively low cost, uniform code, could be adopted and applied for each type of structure along the coasts. One such code has been produced by the Southern Building Code Congress International (1990). However, the process of uniform adaptation in the past has apparently been hampered by jurisdictional considerations.

Unfortunately, such codes and enforcement practices are rare in most coastal areas. Some areas have improved building practices (codes, enforcement, setbacks) in recent years, but with the exception of southeast Florida, almost all other coastal areas remain under government enforced insurance "risk pool" situations for wind damage insurance. Now after Hurricane Andrew, southeast Florida is under a similar situation. Policy holders outside of the "risk pool" areas are probably subsidizing the policy costs for those in the pool situation.

The potential success of the mitigation efforts mentioned above is dependent upon an informed public. Most educational programs to date have rightfully been directed at protection of life. Certainly, those programs need to continue at enhanced levels due to the increased population at risk and the potential for more frequent, strong hurricanes for the next few decades as compared to the past two to three decades as mentioned earlier. However, it is past time to educate the public concerning the catastrophic financial impacts caused by the high winds, storm surge, flooding and erosion associated with hurricanes and how much of that can be prevented with informed actions. It is far better to act decisively now, in advance of the next hurricane or next series of hurricanes, to improve preparedness and reduce financial hardship, than to be in a reactive mode afterwards as was the case for the savings and loan failures.

Such education, of course, will aid in the protection of life as well as possibly lead to mitigation efforts to avert financial disaster as described earlier. Literature needs to be developed for widespread distribution that points out that considerable protection from wind damage can be obtained with minimal increases in construction costs. Simple illustrations of construction elements such as connections have proven quite effective in demonstrating to the lay person that such protection is reasonable and "affordable." The term "affordable housing" has been used by some builders' associations as a reason for opposing implementation of hurricane-resistant construction practices. This literature should demonstrate that such arguments are based upon flawed reasoning. Showing what a hurricane resistant house looks like will hopefully influence buyers which will then influence the construction industry. As we learned from Hurricane Andrew, a lot has to do with the "style" of the home and the types of connections between foundations, walls and roofs, as well as whether or not there were covers for windows and doors.

The final item I mentioned earlier for types of direct losses are costs of "over-warning." Those costs can be substantial, averaging many tens of millions of dollars for each warning event. The reasons for such required overwarnings are people and property at risk and limitations in our forecasting skills. In testimony before the House Committee on Science, Space and Technology Subcommittee on Space on September 14, 1993, I elaborated on the forecast and warning problem. I will not repeat that testimony here, but would refer you to those documents for details on this factor. However, several of the recommendations enumerated earlier would also contribute to reducing losses from "over-warning."

SUMMARY

There are now more than 44 million people living in

hurricane-prone coastal counties from Texas to Maine with continued rapid growth rates, particularly in the "sunbelt." The infrastructure of these rapidly growing coastal communities, particularly roadway systems for access to the mainland from many of the barrier island communities, has not kept pace with the population growth. The result is that longer and longer warning lead times are required in order to safely evacuate these areas in the event of a hurricane threat. Forecast skills are such that it is unlikely that warnings for all hurricane situations will be sufficient for safe evacuation from the area. This means that residents could be trapped on barrier islands and associated roadway systems while winds and waters are rising around them. Furthermore, only one or two communities have plans in place for "last resort refuge" to deal with this situation, or one created by a failure in the evacuation system due to other reasons such as accidents.

In addition to the threat to life, considerable property is at risk. The value of insured property at risk in the same coastal counties mentioned above (not counting flood insurance) is now approaching \$2 trillion. A return to continental United States hurricane landfall frequencies of the 1940s through 1960s would mean frequent multi-billion dollar losses having national impacts on the economy. At the present time, the "home rule" approach to building codes and construction practices makes it extremely difficult to have effective mitigation programs in any wide spread way. I strongly urge that if some type of insurance program is adopted, that conditions of acceptance by local communities and states not only include reasonable provisions for constraints on development and redevelopment in high risk areas, but also include requirements for strong building codes and enforcement! It is imperative that we build in requirements for improved construction practices with respect to whatever hazard we are dealing with. This will not only result in reduced economic losses, but should result in protection of lives as well and make our job for forecasts and warnings for hurricanes a little easier.

I thank you for the opportunity to speak before you here today.

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DEADLIEST UNITED STATES HURRICANES

(1900 THROUGH 1992)

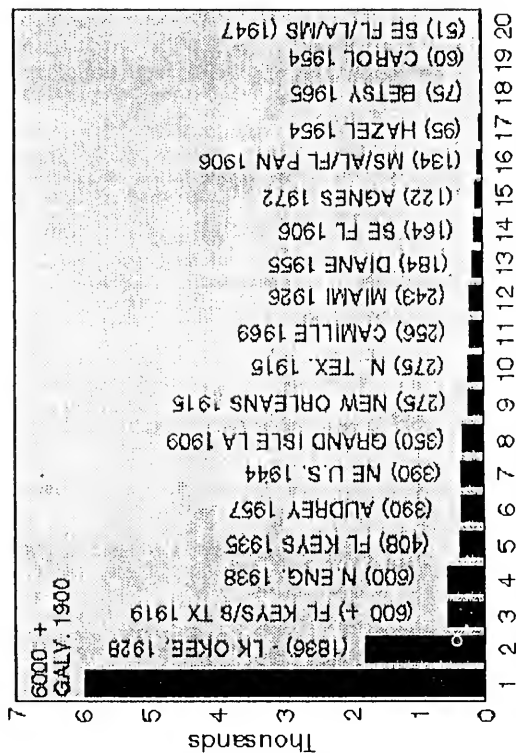


Figure 1. The most deadly United States hurricanes from 1900 through 1992. These numbers are for deaths resulting from the direct forces of the hurricane only.

COSTLIEST UNITED STATES HURRICANES

(ADJUSTED TO 1990 DOLLARS)

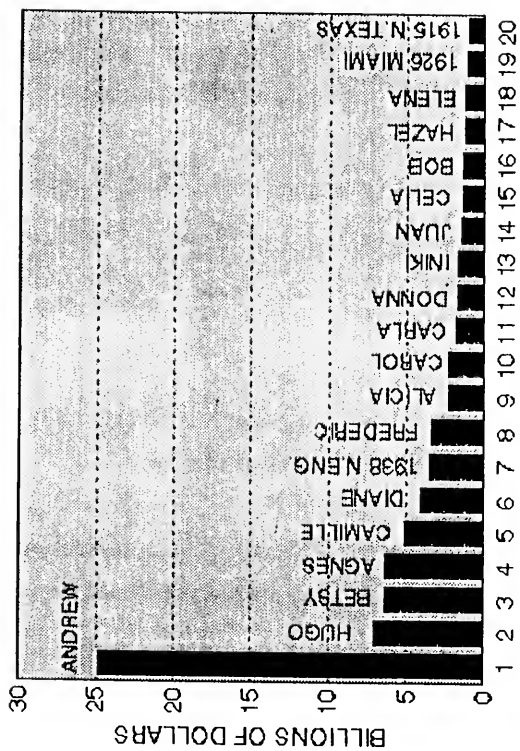


Figure 2. The most costly United States hurricanes from 1900 through 1993 in terms of direct property damage. These numbers do not include loss of business.

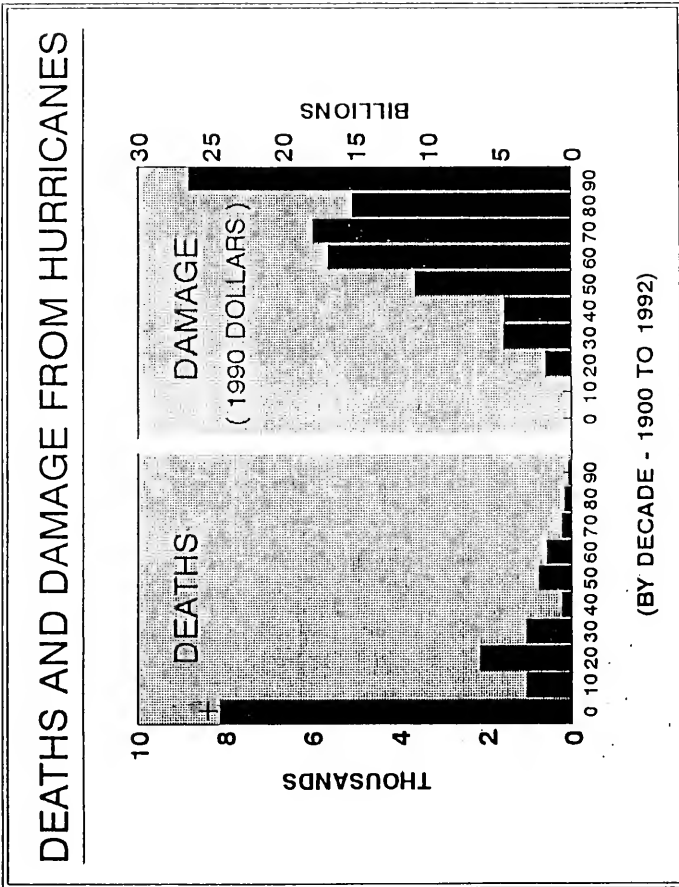
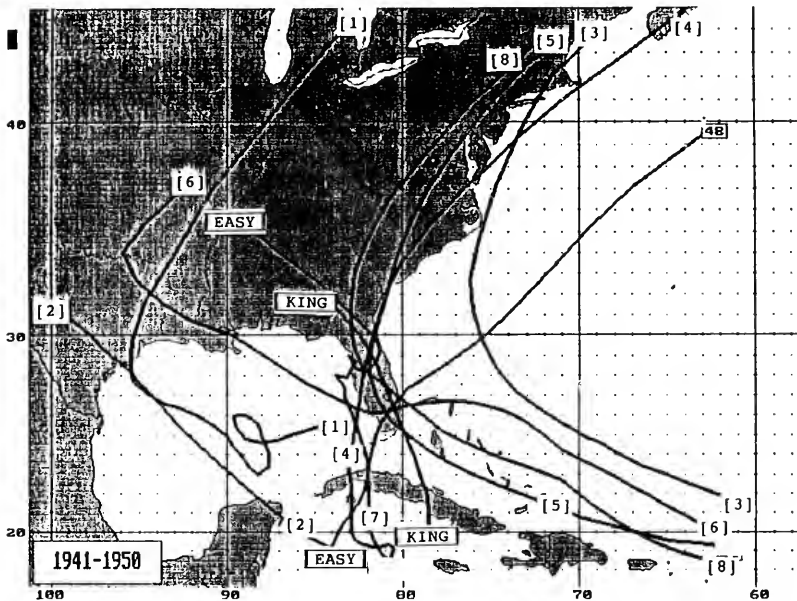


Fig. 3 - Loss of life and property in the continental United States due to hurricanes from 1900 to 1992.

Fig. 4 (a). Major hurricanes striking continental United States, 1941 through 1950.



STORM NO. OR NAME	YEAR	DATES	CAT. @	MSLP# (MB)	PRIMARY IMPACT AREA	\$ DAMAGE* (THOUSANDS)	U.S. DEATHS
[1]	1941	9/16-25	3	958	UPPER TX	A	LT 25
[2]	1942	8/21-31	3	950	MID TX	A	LT 25
[3]	1944	9/9-16	3	947	NC TO NE U.S.	925,054	390
[4]	1944	10/12-23	3	962	SW FL	582,785	LT 25
[5]	1945	9/11-20	3	951	SE FL	539,087	LT 25
[6]	1947	9/4-21	4	940	SE FL; MS, LA	703,859	51
[7]	1948	9/18-25	3	963	SW FL; KEYS	A	LT 25
[8]	1949	8/23-31	3	954	SE FL	A	LT 25
EASY	1950	9/1-9	3	958	NW FL PEN.	A	LT 25
KING	1950	10/13-19	3	955	SE FL	A	LT 25

TOTAL HURRICANE RELATED DEATHS FOR THE DECADE = 184
 TOTAL NUMBER OF MAJOR HURRICANES FOR THE DECADE = 10

@ - Storm category based on Saffir/Simpson scale.

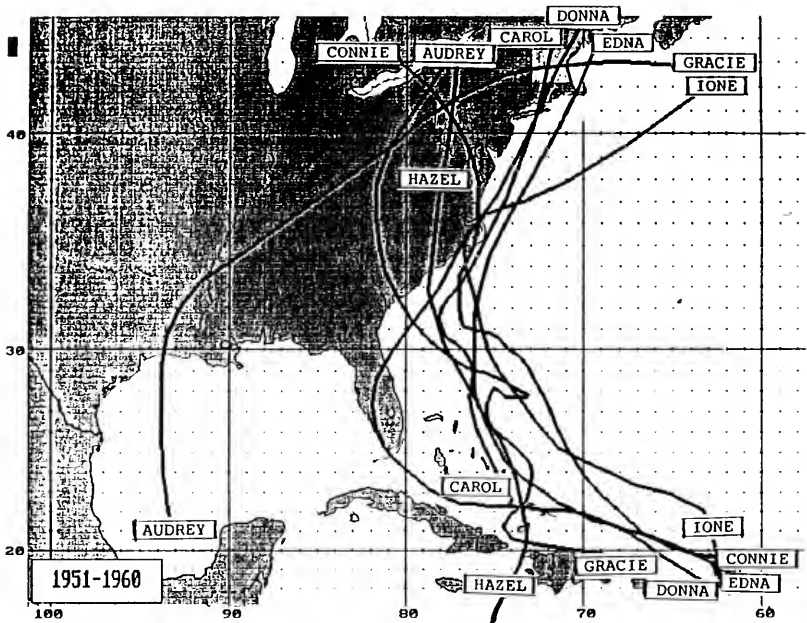
- Minimum sea level pressure at landfall.

* - U.S. damage adjusted to 1990 dollars using U.S. Department of Commerce composite construction index.

A - Less than \$400 million.

LT - Less Than

Fig. 4 (b). Major hurricanes striking continental United States, 1951 through 1960.



STORM NO. OR NAME	YEAR	DATES	CAT. #	MSLP# (MB)	PRIMARY IMPACT AREA	\$ DAMAGE* (THOUSANDS)	U.S. DEATHS
CAROL	1954	8/25-31	3	960	NC; NE U.S.	\$2,370,215	60
EDNA	1954	9/2-14	3	954	MA; ME	A	LT 25
HAZEL	1954	10/5-13	4	938	SC; NC;	\$1,444,752	95
CONNIE	1955	8/3-14	3	962	NC	A	25
IONE	1955	9/10-23	3	960	NC	A	LT 25
AUDREY	1957	6/25-28	4	945	SW LA	\$ 696,091	390
GRACIE	1959	9/20-10/2	3	950	SC	A	LT 25
DONNA	1960	8/29-9/13	4	930	SW FL; NE U.S.	\$1,823,605	50

TOTAL HURRICANE RELATED DEATHS FOR THE DECADE = 926

TOTAL NUMBER OF MAJOR HURRICANES FOR THE DECADE = 8

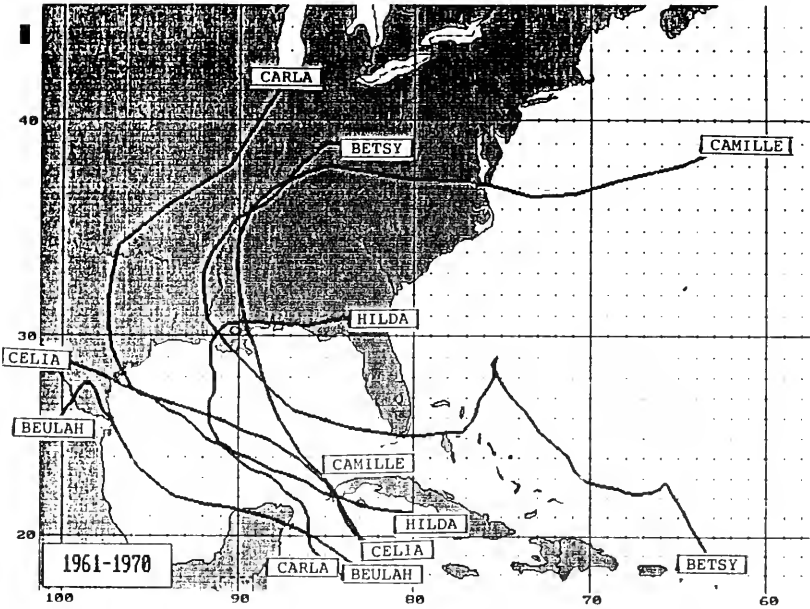
- Storm category based on Saffir/Simpson scale.

- Minimum sea level pressure at landfall.

* - U.S. damage adjusted to 1990 dollars using U.S. Department of Commerce composite construction index.

A - Less than \$400 million.

Fig. 4 (c). Major hurricanes striking continental United States, 1961 through 1970.



STORM NO. OR NAME	YEAR	DATES	CAT. #	MSLP# (MB)	PRIMARY IMPACT AREA	\$ DAMAGE* (THOUSANDS)	U.S. DEATHS
CARLA	1961	9/3-15	4	931	MID-UPPER TX	\$1,926,731	46
HILDA	1964	9/28-10/5	3	950	MID LA	A	38
BETSY	1965	8/26-9/12	3	948	SE FL; SE LA	\$6,461,303	75
BEULAH	1967	9/5-22	3	950	LOWER TX	\$ 844,304	LT 25
CAMILLE	1969	8/14-22	5	909	MS;LA;VA	\$5,242,379	256
CELIA	1970	7/30-8/5	3	945	LOWER TX	\$1,559,418	LT 25

TOTAL HURRICANE RELATED DEATHS FOR THE DECADE = 531
 TOTAL NUMBER OF MAJOR HURRICANES FOR THE DECADE = 6

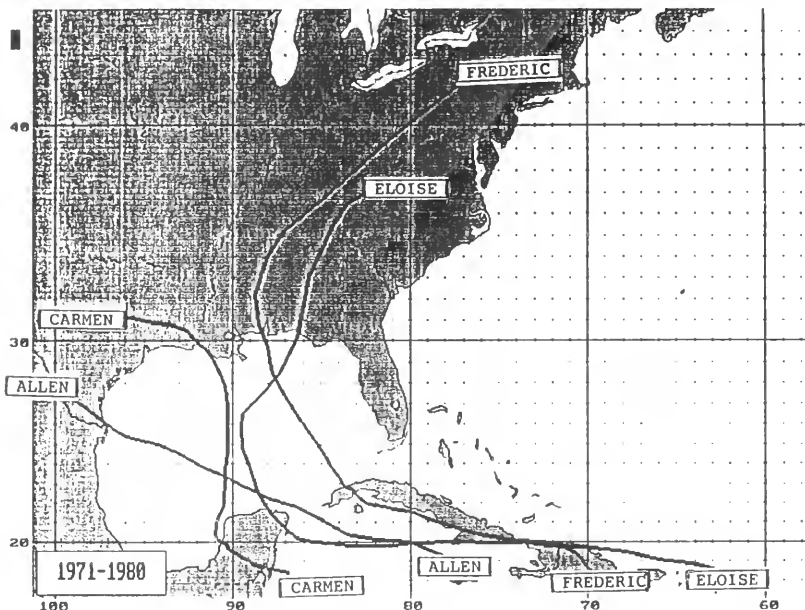
- Storm category based on Saffir/Simpson scale.

- Minimum sea level pressure at landfall.

* - U.S. damage adjusted to 1990 dollars using U.S. Department of Commerce composite construction index.

A - Less than \$400 million.

Fig. 4 (d). Major hurricanes striking continental United States, 1971 through 1980.



STORM NO. OR NAME	YEAR	DATES	CAT. #	MSLP# (MB)	PRIMARY IMPACT AREA	\$ DAMAGE* (THOUSANDS)	U.S. DEATHS
CARMEN	1974	8/29-9/10	3	952	SW & C LA	A	LT 25
ELOISE	1975	9/13-24	3	955	NW FL	\$1,081,854	LT 25
FREDERIC	1979	8/29-9/14	3	946	AL; NW FL	\$3,502,942	LT 25
ALLEN	1980	7/31-8/11	3	945	LOWER TX	\$ 410,908	LT 25

TOTAL HURRICANE RELATED DEATHS FOR THE DECADE = 225
 TOTAL NUMBER OF MAJOR HURRICANES FOR THE DECADE = 4

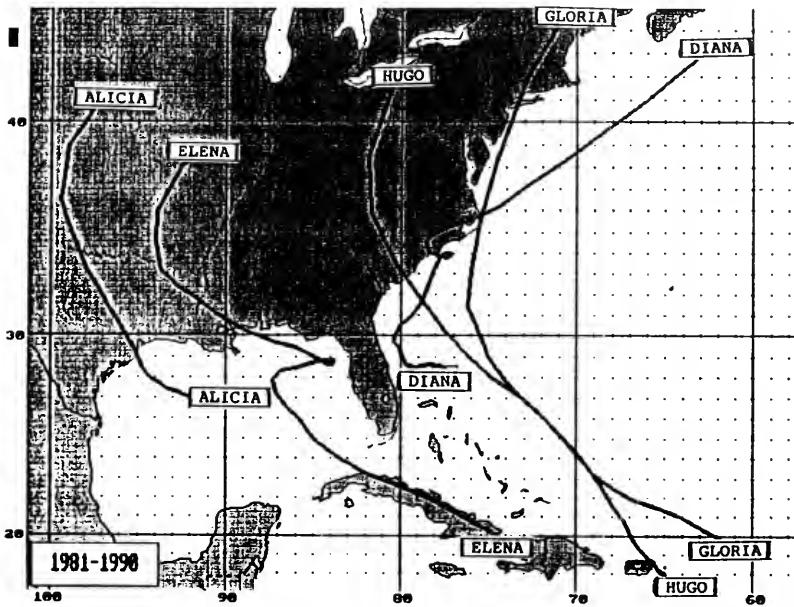
- Storm category based on Saffir/Simpson scale.

- Minimum sea level pressure at landfall.

* - U.S. damage adjusted to 1990 dollars using U.S. Department of Commerce composite construction index.

A - Less than \$400 million.

Fig. 4 (e). Major hurricanes striking continental United States, 1981 through 1990.

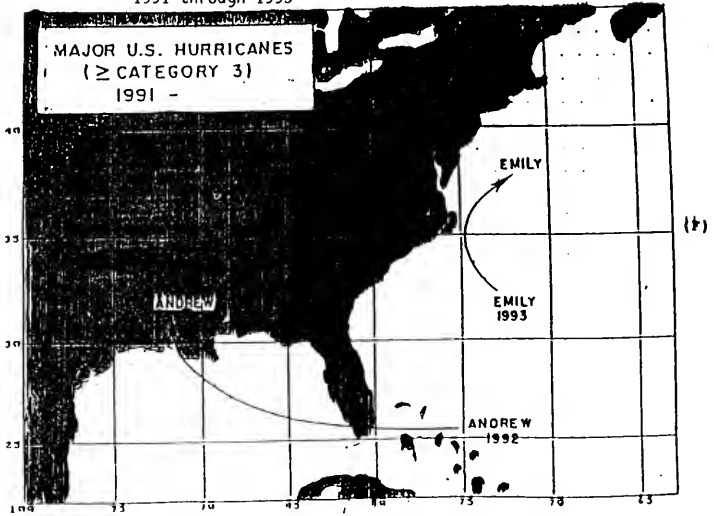


STORM NO. OR NAME	YEAR	DATES	CAT. #	MSLP# (MB)	PRIMARY IMPACT AREA	\$ DAMAGE* (THOUSANDS)	U.S. DEATHS
ALICIA	1983	8/15-21	3	962	UPPER TX	\$2,391,854	LT 25
DIANA	1984	9/8-16	3	949	OUTER B. NC	A	LT 25
ELENA	1985	8/27-9/4	3	959	MS;AL;NW FL	\$1,392,693	LT 25
GLORIA	1985	9/16-10/1	3	942	E AND NE U.S.	\$1,027,390	LT 25
HUGO	1989	9/10-22	4	934	SC	\$7,155,120	LT 25

TOTAL HURRICANE RELATED DEATHS FOR THE DECADE = 127
 TOTAL NUMBER OF MAJOR HURRICANES FOR THE DECADE = 4

- # - Storm category based on Saffir/Simpson scale.
 # - Minimum sea level pressure at landfall.
 * - U.S. damage adjusted to 1990 dollars using U.S. Department of Commerce composite construction index.
 A - Less than \$400 million.

Fig. 4 (f). Major hurricanes striking continental United States.
1991 through 1993



Storm Name	Year	Dates	Cat. @	MSLP # (MB)	Primary Impact Area	\$ Damage * (Thousands)	U.S. Deaths
Andrew	1992	8/16-28	4	922	SE FL; LA	\$25,000,000	26
Emily	1993	8/22-9/6	3	961	NC	A	LT 25

TOTAL HURRICANE RELATED DEATHS FOR THE DECADE THROUGH 1993 = 29
TOTAL NUMBER OF MAJOR HURRICANES FOR THE DECADE THROUGH 1993 = 2

@ - Storm category based on Saffir/Simpson scale.

- Minimum sea level pressure at landfall.

* - U.S. damage adjusted to 1990 dollars using U.S. Department of Commerce composite construction index.

A - Less than \$400 million.



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