28 No Adverse Impact Floodplain Management: An Innovative Approach Promoted By The Association Of State Flood Plain Managers

BACKGROUND

Flood losses in the United States continue to escalate. From the early 1900's they have increased six fold, approaching a cost $6 billion annually. This increase in the level of damage to public and private property, amounts spent on disaster relief, disruption in lives and businesses, and loss of habitat and other water-related resources has occurred in spite of nearly a century of flood control, the implementation of floodplain management standards and the mapping of hundreds of thousands of miles of floodplains. The general trend is for flood losses to increase every decade and it is fairly obvious that the policies of governments at all levels, combined with existing market forces, are leading to more intense uses of flood prone lands throughout . In 2000, the Association of State Flood Plain Managers (ASFPM) recommended a *"No Adverse Impact"* approach for local government, state, and federal floodplain management. Future land and water use, which will flood new areas, increase flood heights, increase erosion, or otherwise increase flood and erosion damages to public and private property will not be permitted

OBJECTIVES

The NAI *(No Adverse Impact)* approach is not intended as a rigid rule of conduct. Rather it may be applied as a general guide for a landowner and communities in watersheds and floodplain areas, which may adversely impact other properties or communities. It is a shift from substituting local and individual accountability with federal government programs. At its broadest level, NAI is about local government taking steps to reduce the drain on national resources, as well as local and state resources. NAI empowers the local community and its citizens to build stakeholders at the local level. The statement of the goal is simple, *"where the action of one property owner does not adversely impact the rights of other property owners, as measured by increased flood peaks, flood stage, flood velocity, and erosion and sedimentation"*. Furthermore:

- Reduce impact onto other properties by promoting local involvement in developing and implementing a comprehensive strategy for floodplain management;
- Reduce economic drain on local and national resources which can be reallocated to other beneficial mitigation, planning, and other domestic programs,
- Promote individual and local accountability ;
- Understand potential impacts of not embracing a new direction.
- Involves entities at local level to become proactive in promoting a new mindset and build a sense of unity and pride within the locality.

While the NAI approach will result in reduced damages for the 1% chance flood event, its true strength is that it virtually ensures that future development actions which impact the floodplain must be part of a locally adopted plan. This removes the mentality that floodplain management is something imposed by a federal agency. Giving locals the flexibility to adopt comprehensive local management plans, which would be recognized by federal agencies such as the Federal Emergency Management Agency and others as the acceptable management approach in that community, will provide the community with control and support for continued innovative approaches.

ACTIVITIES

The activities include:

- Promote NAI to become the new "default" standard for the vast majority of National Flood Insurance Program communities within the United States
- Encourage localities to develop comprehensive strategies that can incorporate various community needs through a range of programs and approaches.
- For communities that embrace NAI, provide incentives for state and federal funding of mitigation and other long-term strategies.
- Foster local responsibility and capability for managing floods and floodplain resources
- Produce publication materials and conduct presentations and outreach sessions to promote NAI on a national level at various key regional and local conferences.

ACHIEVEMENTS

Since 2000, ASFPM has embarked on numerous steps for successes with promoting NAI. Through continued outreach, many communities are now aware of NAI's existence and are eager to participate. Furthermore, through the support of ASFPM the *NAI Toolkit* was produced and made available via multiple avenues to local government officials, elected representatives and citizens in communities of all sizes, especially those which are flood-prone. The NAI Toolkit is a book-type publication featuring 10 varying community-based case studies ASFPM has continued to spin off additional products from this publication to facilitate ways communities can be successful in helping themselves.

LESSONS

NAI is a managing principle that is easy to communicate and from a policy perspective tough to challenge However, working with communities to embrace this new approach highlighted the need to ensure that this approach is compatible with federal, state and local laws. ASFPM has worked to produce a document titled *"Government Liability and No Adverse Impact Floodplain Management"* which is based upon review of the legal literature as well as federal and state case law concerning floodplain regulations. This approach will ease the local communities perceptions of the NAI approach not being legally compatible with existing floodplain regulations.

FUTURE

Some key steps include.

- ASFPM and other professional organizations, state, and federal agencies, should form partnerships to compile NAI impact success stories that can be distributed as examples to promote such success and encourage participation
- State agencies (with federal support as necessary) should begin to assist local governments in the development of NAI strategies
- FEMA should consider expanding its Cooperative Technical Partner program to include an element of reviewing and adopting locally developed NAI strategies.
- Education and outreach must continue to be a significant component of the federal, state, local, and nongovernmental organization message.
- Developing cost-sharing guidelines for federal grant programs to provide more favorable cost shares for communities and states that adopt a NAI approach.

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For more information or full copies of the ASFPM documents on flood policy, including a published article on No Adverse Impact, the NAI Toolkit and other publications contact asfpm@floods.org or download from www.floods.org

29 Case Study On The Central US Partnership (CUSP)

BACKGROUND

A defining moment for building a culture of disaster resilience in the Central United States happened when the Central US Partnership (CUSP) was formed on May 27, 1999 as a result of a meeting held in St. Louis, Missouri in conjunction with the "Mid America Highway Seismic Conference CUSP is a public-private partnership comprised of 13 public-private organizations that individually and collectively are committed to making disaster resilience a public value in the Central United States where the annual probability of a damaging earthquake is low, but the probability of a catastrophe is high when an earthquake of M6 to M8 happens at the wrong time and in the worst location The Central United States faces an unacceptable level of risk Experts believe that catastrophic earthquakes—earthquakes that will cause unacceptable levels of damage to buildings and infrastructure, economic loss, mortality, morbidity, and adversely affect production facilities, economic markets, and distribution systems--are inevitable in the Central United States. The only unknown is when it will happen. The first of two likely locations is the New Madrid seismic zone where magnitude 6 0-6 5 earthquakes occurred near Memphis in 1843 and near St. Louis in 1895, and three magnitude 8 earthquakes followed by hundreds of magnitude 5, 6, and 7 aftershocks occurred in the winter of 1811-1812. The second location is the Wabash Valley area northeast of the New Madrid seismic zone where magnitude 6-6.5 earthquakes are considered to be likely. When either of these inevitable earthquakes recur, the region faces an unacceptable level of economic loss from damage, business interruption, loss of tax base, loss of jobs, displaced persons, mortality, and morbidity. Because public policies in each state have lagged behind research, the region is unprepared. Most businesses are unprepared Most insurers are unprepared to indemnify losses expected to reach $ 200 billion. The existing inventory, valued in the trillions of dollars, is fragile--comprised mainly of un-reinforced masonry residential, commercial, and essential buildings and old infrastructure that are vulnerable because individual elements were not designed and constructed in accordance with modern building codes and lifeline standards.

CUSP is led by the Central United States Earthquake Consortium (CUSEC), which is headquartered in Memphis, TN CUSP was initially comprised other public-private organizations that will collaborate in implementing loss reduction strategies in advance of a catastrophic earthquake They are, the Association of Contingency Planners (ACP), American Society of Civil Engineers (ASCE), Disaster Recovery Business Alliance (DRBA), the Institute for Business & Home Safety (IBHS), the Mid America Earthquake Center, the CUSEC State Geologists, the emergency transportation element of the Department of Transportation (DOT), the Federal Highway Administration (FHWA), the United States Geological Survey (USGS), Mid Continent Mapping Center (MCMC), Extreme Information Infrastructure (XII), and Institute of Gas Technology (IGT).

Ongoing administrative leadership was provided by Jim Wilkinson, CUSEC, the CUSEC Board of Directors, and the Central US State Geologists. Each partner in CUSP has provided leadership in collaborative activities.

OBJECTIVES

The partnership will promote the implementation of forty-four loss reduction strategies designed to facilitate:

- living with earthquakes,
- building to withstand earthquakes, and
- learning from earthquakes, using information and from earthquakes anywhere in the world.

When implemented over the next ten years, these strategies will create a nucleus of communities, businesses, insurers, citizens, and government agencies that are prepared in seven states: Tennessee, Missouri, Kentucky, Missouri, Illinois, Indiana, Arkansas, and Mississippi. The objectives encompass a broad range of formal and informal educational initiatives, which will be used as building blocks for creating a culture of resilience in communities through the Central US

ACTIVITIES

The activities have focused on public awareness and capacity building for professionals and policy makers of the public and private sectors in the Central United States. The focus in the community has been on protecting homes, schools, businesses, and community infrastructure

ACHIEVEMENTS

Public awareness and technical and political capacity have been significantly increased as a result of ongoing activities However, the full potential of CUSP has not yet been realized.

LESSONS

Progress is slow and the level and intensity of public-private collaboration waxes and wanes, because the threat seems so far away in time and investments in anticipatory loss reduction measures are difficult to sell. The challenge is sustaining the activity for a decade or longer.

FUTURE

The Decade on Education for Sustainable Development (2005-2014, and beyond) provides an new opportunity to invigorate CUSP in order to realize the full potential of continuing collaboration in the central United States Curricula for building technical and political capacity for disaster resilience need to be improved as the regions awaits the inevitable catastrophe. Public awareness will be an urgent priority after the catastrophe occurs. The experiences to date provide a model for extension to other natural hazards such as floods, severe windstorms, and landslides. Such an extension coupled with international collaboration can help other countries facing a similar "low probability of occurrence-high probability of catastrophic consequences" to move towards effective disaster reduction and enhanced human security.

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30 Education And Training Aspects Of The Contingency Plan For Western Venezuela Oilfields

BACKGROUND

Hydrocarbon production has caused as much as 6.3 m of ground subsidence in the eastern coast (Costa Oriental) of Lake Maracaibo (COLM) in western Venezuela This area contains some of the oldest and most prolific oil fields in the world As the original terrain consisted mostly of swamps and lagoons barely above lake level, both earthen coastal and inner dikes as well as an elaborate drainage system had to be built in each of the three oilfields of Lagunillas,Tia Juana and Bachaquero This system, known as the Costal Oriental Protection System protects the lives of more than 60,000 inhabitants, the industrial facilities required to produce and/or handle more than 700,000 barrels of oil per day

The COLM oilfields are located in an area of moderate seismicity but the coastal dikes were designed and built with no consideration for seismic forces · Seismic geology and seismicity studies carried out indicated the probability of dike failure due to the liquefaction in the foundation soils, which led to the implementation of engineering mitigation measures to considerably reduce the probability of a dike failure and the consequent flooding of the areas below Lake level.

In spite of the considerable increase of safety provided by the mitigation measures and, in given the importance that the these oilfields have s for the country, the government, at the request of Petróleos de Venezuela, decided in 1986 the preparation of a contingency plan. and issued the corresponding presidential decree. A working group of oil company personnel and representatives of the municipal state and central governments was established. to prepare the initial ("conceptual") version of the contingency plan. It was completed in January 1991, but has been continually updated and improved.

OBJECTIVES

The objective of the training activities of the PLAN COLM is to adequately prepare both personnel responsible for the plan and the individuals who will be instrumental in its eventual implementation. To that effect a series of activities were carried out in close cooperation with CEPET. that training center of the Venezuelan oil and Venezuelan and foreign consultants. The training activities developed and implemented in PLAN COLM were predicated under the concept of " training the trainers" and, to that effect a series of presentations, seminars and workshops were initially implemented, followed by a program of both desks and field exercises

The philosophy behind the Costa Oriental of Lake Maracaibo Contingency Plan (PLAN COLM) has been that contingency plans are not and end in themselves but that they are one of the instruments for disaster risk reduction In addition concept of "planning" (dynamic) instead of "plan" (static) have always have been the guidelines for those directing and those involved in the preparation of PLAN COLM.

ACTIVITIES

The program had two parts: one educational and the other training part.

As a part of the educational part, a program was prepared for the primary schools (grades 1 to 9) located in the risk area of the Costa Oriental. The cooperation of local, state national educational authorities were requested and enthusiastically given to the extent that state governmental officers were assigned to work in the program in close cooperation with the personnel of the oil companies.

Changes in the educational programs **to include disaster risk reduction concepts** in the regular curricula as agreed with the education authorities. Following the concept of train the trainers the "First Workshop on the Costa Oriental Protection System and PLAN COLM" was given in four overlapping series between July 1991 and September 1992 to cover a total of 713 teachers and administrative personnel from 39 schools with a total student population in excess of 19.000 students.

The workshop series were given by our technical personnel and educational officers and covered the following subjects

- Reservoir compaction and ground subsidence.
- Natural, technological and man made risks
- Seismic geology an seismicity
- Earthquake geotechnical engineering with

emphasis on the soil liquefaction phenomenon
■The coastal Protection System and the Contingency Plan (PLAN COLM)
■Preparation of school curricula and miscellaneous administrative tasks.
■Preparation of extracurricular activities for the students.
As the part of the training part, more than 300 presentations covering the Coastal Protection System and the PLAN COLM have been given to oil industry personnel at all levels; to municipal, state an federal officials, oil industry and municipal firemen; police departments, Armed Forces personnel at the various levels, professional organizations; local and state NGO's and media (radio, TV and print) representatives.
The following activities, among others were carried out between 1991 and 1993:
■Teaching methodology workshop to those involved in making presentations and directing seminars and workshops
■Disaster prevention workshops for oil industry top and middle managers.
■Disaster medicine 10-hour workshops for medical staff (oil industry and municipal, state and federal)
■Workshops for the media (local radio, TV and print as well as correspondents of national media)
In addition the following desktop and field exercised were carried out, among others
■Evacuation of a 60 bed hospital,
■Evacuation of two grammar schools
■Evacuation of an outpatient clinic.
■An exercise aimed at testing the response of a specific medical facility to a fictitious explosion and fire of a heavy oil heating facility.
■Evacuation of the inhabitants of Lagunillas (ca. 15.000 persons) due to a dike failure
Each of these exercises was properly evaluated by the observers and participants and conclusions and recommendations for improvement for future exercises.

ACHIEVEMENTS

The evaluation and follow up consisted of visits of the PLAN COLM staff to schools to discuss with the teachers the students1 reactions to the activities recommended in the workshop and their corresponding evaluation. Some of the extracurricular activities carried our by the students were
■Preparation of scale models depicting the coastal protection system
■Research projects on the history of the oilfields and the of the coastal dikes
■Disaster risk reduction-related projects on PC's within an ongoing program on computer training then being implemented in the oil company run schools
■Guided visits to the coastal dikes with the corresponding explanations by our staff.
■Classroom and school evacuation exercises

LESSONS

■The cooperation of the educational authorities was deemed essential for the success of the workshop program and follow up activities.
■Results to date have exceeded our greatest expectations The follow up showed that the student's parents and relatives took active part in the assigned extracurricular projects
■It has been shown that one of the most efficient way to reach the public is through the children and, for that purpose, adequate educational programs should be implemented.

FUTURE

Ensure that refresher workshops are scheduled at appropriate intervals.
■Extend this type of workshops to cover both kindergarten and high school students
■Ascertain that proper follow up activities are implemented

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