

# Interagency Levee Task Force



**RAISING THE STANDARD**

May/June/July 2009

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## Moline meeting moves Task Force closer to permanent regional flood risk management solution

Members of the Interagency Levee Task Force held their May 5 meeting in Moline, Ill., where lively discussions between state and federal agency members focused on the possibility of a permanent regional flood risk management task force.

Col. George Shepard, Deputy Commander of the Mississippi Valley Division, opened the meeting with positive remarks about the good work accomplished by the task force, including improved communication, new partnerships and better collaboration between the federal, state and local agencies.

He also said that the creation of a permanent multi-agency flood risk management team was moving closer to reality, with August 2009 as the goal for standing up the team. He added that a permanent agency could execute a comprehensive, long-term education campaign touting the benefits of non-structural alternatives.

In addition to his senior leadership update, meeting facilitator and ILTF Program Manager Bruce Munholand led a spirited discussion about the divergent and shared responsibilities related to regional and local flood risk reduction working groups. ILTF members also discussed the need to outline an intergovernmental vision that integrates all current flood risk management programs and/or studies and authorities with state and local floodplain management efforts for future levee task forces.

One special topic included a presentation by St. Paul District's Emergency Management Chief Shelly Shafer about the successful flood fight along the Red River in North Dakota, including the fact that 12 million sandbags issued by the Corps helped prevent more than \$2 billion in flood damages.

A second special topic presentation by Chris Dunn, Director Hydrologic Engineering Center, Davis, Calif., gave an update about the current status of flood warning systems, and the morning session of the meeting concluded with Bob Petersen's American Recovery and Reinvestment Act update that outlined how and when the stimulus funding was scheduled to be executed within the Mississippi Valley Division.

Special topics covered during the afternoon session of the meeting included presentations by Hank DeHaan and Jerry Skalak, who provided updates and the current operational activities of the levee working groups located at the joint field offices in the impacted states of Illinois and Iowa.

Additional afternoon presentations included the efforts of the Rebuild Iowa group by Ken Tow, an update by Scott Morlock regarding U. S. Geological Survey inundation maps, and a presentation by Dennis Tewksbury from FEMA Region 7 regarding the new rules covering FEMA's Rehabilitation Assistance for Levees.

The meeting concluded with a commitment by meeting attendees to engage senior leaders from the respective agencies to gain support for the ILTF initiatives. Principal among the due outs was a commitment by attendees to gather senior leader signatures for the new charter outlining the roles and responsibilities of a permanent Regional Interagency Flood Risk Management Team that will replace the ILTF in July 2009.

More information about the task force is available at [www.iwr.usace.army.mil/ILTF/](http://www.iwr.usace.army.mil/ILTF/). Additional information about FEMA is available at [www.fema.gov](http://www.fema.gov) and the Corps of Engineers is available at [www.usace.army.mil](http://www.usace.army.mil).

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FEMA



# Non-Structural Alternatives—Your Questions Answered

## What is a non-structural alternative?

A non-structural alternative generally modifies the characteristics of structures and buildings that are located in floodplains and the characteristics or behavior of people who live in or have property in floodplains. It does not modify the characteristics of the natural flood. Any buildings and structures built in the floodplain are built in full cognizance of the flood and its characteristics.

In contrast, a structural alternative modifies the characteristics of the natural flood. A structural alternative may induce new structures and buildings to be built in the floodplain as if a floodplain did not exist.

The definition of flood risk is the product of the frequency of flooding [how often a flood source occupies its floodplain] and the consequences of flooding [how many buildings, etc subject to flood damage are located in a floodplain]. A non-structural alternative reduces flood risk by reducing/managing the existing and future consequences of flooding; not by reducing the frequency of flooding. A structural alternative reduces flood risk by reducing the frequency of flooding; not the existing and future consequences of flooding.

Within this definition, a structural alternative can actually increase flood risk by supporting future development within the floodplain, thus increasing consequences.

## What kinds of non-structural alternatives are there?

Common non-structural alternatives that are applicable to buildings and land are:

- Relocation of buildings to locations outside of any floodplain
- Buyout of buildings
- Purchase of floodplain land by fee title with deed restrictions for open

space use only with typical uses being ecosystem restoration and open space based recreation

- Purchase of permanent easements on floodplain land with restriction for open space use only, such as ecosystem restoration, open space based recreation, or agricultural use
- Elevation of buildings
- Dry flood proofing of buildings
- Wet flood proofing of buildings
- Construction of small levees, berms and/or floodwalls around a building or a small group of buildings
- Flood warning/preparedness systems and planning
- Floodplain regulation

## What kinds of structural alternatives are there?

Normal structural alternatives are dams, levees, channels and diversions.

## What is the definition of a riverine floodplain?

An area that can be flooded by a 100-year flood is often mistakenly thought of as the “floodplain” A floodplain is the entire area that can be flooded by a riverine flood source such as a river, stream, or creek. .

## How does a non-structural alternative differ from a levee?

A non-structural alternative typically does not modify the characteristics of the natural flood while a levee does. For example, a structural alternative levee, if it does not fail or overtop, does not allow the flood to occupy a large portion of the floodplain. A non-structural alternative does not restrict the flood from occupying the floodplain with the exception, for specific non-structural alternatives, of that area directly occupied by the building or structure.

## What are the benefits of a non-structural alternative?

The benefits are many:

- Reduced flood damages
- With some non-structural alternatives, flood damage is eliminated
- Reduced flood risk
- Reduced risk to life and safety
- Low operation, maintenance, repair, replacement, rehabilitation (OMRRR) costs
- Full compliance with Executive Order 11988, Floodplain Management.
- Full compliance with the no adverse impacts to floodplains initiative
- No adverse impacts to existing environmental features of floodplains
- No increase in either upstream or downstream flood stages
- No loss of natural floodplain storage
- Opportunities for ecosystem restoration and open space recreation if floodplains are bought out or permanent open space easements purchased.
- No induced floodplain development as if a floodplain did not exist
- No catastrophic flood damages if the non-structural alternative fails
- Long term sustainability
- From a holistic floodplain management perspective, floodplain regulation and flood insurance requirements remain.

## What are the limitations of non-structural alternatives?

The limitations are minimal if holistic, long-term flood risk reduction is the objective. A non-structural alternative exists *with the flood* instead of a structural alternative that exists *against the flood*. One potential limitation is the inability to declare a particular area of a floodplain as no longer subject to floodplain regulation and flood insurance. Such areas may be declared “flood free” in a *de facto* sense in order to encourage development. Another limitation stems from instances in which relocation and buyout would reduce property tax valuation of the land upon which the structures existed.

# Non-Structural Alternatives—Your Questions Answered (con't)

## **When is a non-structural alternative the best choice?**

A non-structural alternative is the best choice if true, long term flood risk reduction or flood risk elimination is desired and with minimal requirements for future Operation, Maintenance, Repair, Replacement and Rehabilitation (OMRRR) by government entities.

## **Who makes the choice between structural and non-structural alternatives?**

The choice is usually made by government entities and property owners. Government entities provide a major portion of funding for implementation. In this instance, property owners whose property is either being purchased, or whose buildings are being elevated or flood proofed, are involved.

## **Where are non-structural alternatives working?**

Non-structural alternatives are used around the world to reduce flood damage and flood risk. Within the United States, non-structural alternatives are working in riverine and coastal floodplains, in communities large and small, and in rural areas.

## **How can a non-structural alternative such as elevating a building be considered non-structural since construction does take place?**

The term “non-structural” refers to the impact of the alternative on the flood, not to the type of alternative itself and whether or not construction techniques are used to accomplish the alternative. The term “structural” in “structural alternative” refers to an alternative that changes a floodplain or river by constructing walls, barriers,

and channels to affect change. A non-structural alternative does not require any “structure” to block or alter flood flows in order to be effective.

## **What are the differences between wet and dry flood proofing?**

Wet flood proofing allows flood water to freely enter and exit a building or structure. The building or structure is constructed of materials that resist flood damage. Anything that can be damaged within the building is either located permanently above the design flood elevation, temporally elevated above the flood, or removed from the building prior to the flood. Dry flood proofing is making a building water proof so water cannot enter the building.

## **What are the advantages and disadvantages of wet flood proofing and dry flood proofing?**

Non-structural alternatives are more specific and prescriptive in their application than structural alternatives. Wet flood proofing and dry flood proofing offer specific advantages and disadvantages, based on characteristics of the flood, the location of the building and the building itself. For example, dry flood proofing is generally used where flood depths on a building are three feet deep or less, where wet flood proofing can be used with greater depths. Dry flood proofing requires human intervention to keep the building dry, such as placing closures at building openings, where wet flood proofing does not. Dry flood proofing keeps a building dry whereas wet flood proofing allows water to enter the building. Both wet and dry flood proofing should not be used where hydrodynamic force could affect the stability of the building. Both wet and dry flood proofing can be relatively low in cost. Dry flood proofing requires an ample flood warning system. Wet flood proofing does not unless it requires evacuation or elevation

of building contents. Dry flood proofing requires a sump pump to evacuate any seepage whereas wet flood proofing does not.

## **Does the Corps buy out floodplain property? What about FEMA or other federal governmental agencies?**

The Corps can relocate buildings from floodplains and the Corps can buy out buildings from floodplains. The Corps can also purchase floodplain lands. FEMA and other federal agencies such as the Natural Resources Conservation Service can also make similar floodplain related purchases.

## **Does a levee district have to cease to exist if it decides to support a non-structural alternative?**

The answer is no. A levee district would want to stay in existence (1) in order to see implementation of the NSA completed; (2) to perform any operation and maintenance of the NSA unless that is turned over to the private landowners; and (3) to oversee any part of the project that may retain a portion of the original levee just as it did prior to implementation of the NSA.

## **Does a NSA affect a levee system's eligibility for participation in future PL 84-99 Program benefits?**

Current regulations state “on a case by case basis, certain structural flood control works [or elements thereof] repaired or setback as part of the implementation of a NSA having a non Federal sponsor may be considered for future flood related assistance”.

## **Who decides what should or should not be built in floodplains?**

The decision is made by the local government entity that has land use juris-

diction in the floodplain. If a local government entity does not exist for some reason, then the responsibility defers to the State. Within the guidelines and requirements in regard to floodplain development of the governing entity, property owners can make decisions about what is built.

### **Why doesn't the federal government mandate strict building codes relative to placement of structures in floodplains?**

The federal government does not have specific land use authority concerning private property. However, the federal government has authority to establish minimum standards for floodplain regulation as part of the National Flood Insurance Program (NFIP). State and local governments must adopt those minimum standards if they want flood insurance from the NFIP available within their jurisdictions. All states and most communities have adopted these minimum standards. State and local governments have authority to implement more rigorous and stricter standards and building codes.

### **What happens to the tax base in communities or areas where non-structural alternatives have been implemented?**

The tax base can decrease when NSAs options of relocation and buyout are used. Yet, it is possible not to lose tax revenue. As an example, if a community decides to relocate buildings from a floodplain to a flood free site, a community can sponsor a "relocation site" where the buildings can be relocated to maintain the community tax base and retain neighborhood cohesion. With a buyout, a new development site outside of any floodplain can be supported by the community in which people whose floodplain property has been purchased can rebuild. Active communities can also support property owners by helping them find existing property outside the floodplain but within the confines of the community, thereby maintaining tax base. These "flood free" locations will

have a tax base that is higher than frequently flooded areas. In addition, visionary communities transform the floodplain evacuated areas to ecosystem restoration or open space based recreation that can greatly enhance the vitality and vibrancy of a community, often attracting new property owners to the area.

### **What is the role of NSA in the overall PL 84-99 Program?**

The basic role of NSAs is to offer an alternative to the historic role of PL 84-99 in repeatedly repairing a flood control system such as a structural levee. A NSA can break the cycle of flood, failed or overtopped levee, flood damage, loss of life, flood response, flood recovery, flood rebuild then repeat the cycle over with each flood that fails or overtops the levee or other flood control system. With this cycle, the OMRRR is very high and will continue forever. A NSA provides short term benefits by reducing flood damage, along with loss of life and human suffering. It also provides long term sustainability with minimal or no OMRRR.

### **What are the short term and long term environmental impacts of non-structural alternatives?**

The short term and long term impacts are positive. For example, by not modifying the flood, the natural and beneficial functions of a flood as it interacts with its floodplain are maintained. Rivers and streams are able to function in a natural, sustainable sense that can require no human OMRRR. Natural storage of flood water can occur which has significant benefits to water quality enhancement. Floodplain flora and fauna can benefit greatly. Natural fisheries can thrive in streams. If the NSAs of relocation and buyout are used to convert a developed floodplain into an undeveloped floodplain with ecosystem restoration as the new use, the environmental aspects of the stream and its floodplain are greatly enhanced.

### **What is the impact of a NSA on the continued use of floodplain lands for agricultural purposes?**

The essence of a NSA is to reduce and/or eliminate flood damage and flood risk while enabling the flood to occasionally occupy and use the flood plain. It is planning for the area *to flood* rather than planning for it *not to flood*. This has a direct impact on agricultural use of flood plains when such uses have historically relied on a levee for protection. With total reliance on a levee to provide protection, agricultural area property owners have historically planned for the area not to flood. With this practice, the smaller floods usually are contained by the levee with no disruption to agricultural use. However, with larger floods that threaten the levee in terms of failure and/or overtopping, agricultural interests often expend funds and risk life to temporarily raise the levee during a flood fight. Sometimes this does not prevent flooding of the agricultural areas resulting in catastrophic damages to the agricultural land and related buildings as the flood was not planned for. Because the flood flows are concentrated at levee breaches rather than spread over an entire flood plain, damages to the agricultural land can be extensive in terms of localized farmland erosion and sediment deposition. In contrast with a NSA, agricultural areas are planned to flood. In order to minimize damage and risk to the agricultural property owner, agricultural structures within the floodplain are purchased and demolished, relocated to a flood free site, or flood proofed in place all within the concept of "planning for the area to flood". In order to protect the agricultural land property owner, easements can be purchased from the property owner for the "right" to periodically flood the property. Crop insurance can be purchased to cover the annual investment of planting the agricultural land. Instead of fighting the flood by trying to temporarily raise levees with sandbags, dirt, etc., and risk human life in the effort to execute the plan of not allowing the area to flood, property owners execute the plan of letting the area flood by evacuating the area, let the flood pass, collect any crop insurance due, and look to the next planting season.

# Interagency Levee Task Force Meeting, Moline, Illinois — May 5, 2009

Photos by Ron Fournier, Rock Island District, U.S. Army Corps of Engineers



# Calendar of Events

## July 2009

| Sun | Mon | Tue                       | Wed | Thu | Fri | Sat |
|-----|-----|---------------------------|-----|-----|-----|-----|
|     |     |                           | 1   | 2   | 3   | 4   |
| 5   | 6   | 7<br>Ill. ILWG<br>IA ILWG | 8   | 9   | 10  | 11  |
| 12  | 13  | 14<br>ILTF Mtg            | 15  | 16  | 17  | 18  |
| 19  | 20  | 21<br>Ill. ILWG           | 22  | 23  | 24  | 25  |
| 26  | 27  | 28                        | 29  | 30  | 31  |     |
|     |     |                           |     |     |     |     |

### July Events and Points of Contacts

**July 14th, 8:00 a.m., Hilton St. Louis Airport, Focus of the ILTF will be the transitioning on a regional level from the ILTF to the new Regional Flood Risk Management Team. Call-in 877-695-9125, Passcode: 4456051#. Point of Contact Michael Kessler, 314-331-8576.**

**July 21, at 1 p.m.—Illinois Interagency Levee Work Group meeting via conference call. Call-in number: 888-959-1793, Passcode: 541342# Point of Contact: Hank DeHaan, 309-912-4532 Focus of the Ill. ILWG will include transition plan from ILWG to new Flood Risk Management Team.**

#### Upcoming USACE Regional Flood Risk Management Program Implementation Guidance Workshops

**Participants: Division and District representatives**

#### *Dates & Locations:*

**10 - 11 August, Norfolk, VA area**

**13 - 14 August, San Francisco, CA area**

**24 - 25 August, St. Louis, MO area**

**NAD/SAD**

**SPD/NWD/POD**

**MVD/LRD/SWD**