



## Upper Joachim Creek Public Survey on Potential Flood Risk Reduction

This survey is intended to help the interagency planning committee to receive public feedback on specific flood risk reduction techniques, and develop a cost effective approach for identifying and prioritizing mitigation activities. The survey will also provide public feedback that will help local officials in making decisions about future floodplain management considerations.

We are requesting your address location to understand if you live, manage or own a home or business in an Upper Joachim flood hazard area. Understanding the structure type and proximity of your address to other survey respondents helps the committee to develop individual or collective solutions that can lead to flood risk reduction strategies regionally and in your community.

1. Please provide your address.
2. Are you concerned about past or potential future flooding at this address location?

\*If you answered yes to this question, please answer questions 3, 4, and 5.

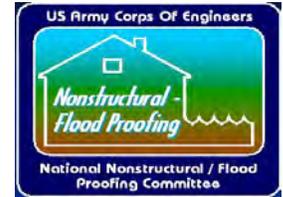
3. What type of structure is located at the address location provided above?
4. What type of building foundation does this structure have?
5. What was the estimated flood depth on the structure during the worst case flood?
6. Please select the tool (or tools) that you are most interested in to reduce flood risk in the planning area.
  - Relocation of the Building
  - Fill Basement with Main Floor Addition
  - Elevating the Building
  - Dry Flood Proofing
  - Wet Flood Proofing
  - Flood Warning
  - Berm Around Building
  - Floodwall Around Building
  - Buyout of Property
  - Other (Such as Floodplain Regulation or Flood Insurance please indicate in comment section below)

7. Do you have any other ideas (besides those listed question 6) to reduce flood risk in the planning area?
8. Would you support stricter regulatory standards in the floodplain to achieve a higher level of safety and flood risk reduction?
9. If you answered yes to question 8, please select the regulatory standard or standards that you may support.
- Prohibit new development in all or parts of the floodplain (i.e. areas exceeding certain flood depths and/or velocities).
  - Zoning the floodplain for low-density uses (i.e. minimum lot sizes of one acre or larger)
  - Adopting a standard that new construction allows less than a one-foot rise in the floodway.
  - Freeboard Requirements; (new buildings to be elevated higher than the base (100-year) flood level to provide a margin of safety against extraordinary or unknown risks).
  - Compensatory storage to offset loss of flood storage capacity.
  - Protection of critical facilities (such as hospitals, nursing homes, senior housing, emergency services, public and private utility facilities designed to greater level of protection).
  - Off channel setbacks (such as a specified distance from top of a river or creek channel bank).
  - Watershed-specific stormwater management regulations (such as post-project runoff is no worse than pre-project runoff).
10. Would you support preservation of natural areas in the floodplain?
11. If you answered yes to question 10, identify all of those natural area services or values that mean most to you?
- Contain unique or scenic natural resources
  - Accessible to Neighborhoods
  - Connected to Tourist Areas or Other Parks
  - Connectivity to Existing and Planned Trail Systems
12. Do you have any other comments or questions you would like the floodplain management plan to answer?

Please send all completed surveys by **Wednesday, 28 March 2018** to the address below:

ATTN: Matt Jones  
U.S. Army Corps of Engineers St. Louis District  
1222 Spruce St.  
St. Louis, MO 63103  
[Matthew.A.Jones@usace.army.mil](mailto:Matthew.A.Jones@usace.army.mil)

## Appendix A



### Nonstructural Flood Risk Management Measures

Nonstructural flood risk management measures are proven methods and techniques for reducing flood risk and flood damages incurred within floodplains. Thousands of structures across the nation are subject to reduced risk and damages or no risk and no damage due to implementation of nonstructural measures. Besides being very effective for both short and long term flood risk and flood damage reduction, nonstructural measures can be very cost effective when compared to structural measures. A particular advantage of nonstructural measures when compared to structural measures is the ability of nonstructural measures to be sustainable over the long term with minimal costs for operation, maintenance, repair, rehabilitation, and replacement.

The following nonstructural measures represent techniques commonly utilized in reducing flood risk and the damages associated with flooding. These measures vary from removing an entire structure from the floodplain to insuring a structure which is permanently located within the floodplain. The costs associated with implementing a measure are often determined to be variable, where reduction of flood damages is proportional to the cost of the measure (i.e. removal of a structure from the floodplain will eliminate all future damages associated with flooding).

#### Nonstructural Measures

##### **Elevation**

This nonstructural technique lifts an existing structure to an elevation which is at least equal to or greater than the 1% annual chance flood elevation. In many elevation scenarios, the cost of elevating a structure an extra foot or two is less expensive than the first foot, due to the cost incurred for mobilizing equipment. Elevation can be performed using fill material, on extended foundation walls, on piers, post, piles and columns. Elevation is also a very successful technique for slab on grade structures.

##### **Fill Basement with Main Floor Addition**

This nonstructural technique consists of filling in the existing basement without elevating the remainder of the structure. This could occur if the structure's first floor was located above the base flood elevation or above the design elevation, whichever is higher. With this measure, placing an addition on to the side of the structure could compensate for the lost basement space to the owner. If the addition could not be done because of limited space within the lot or because the owner did not want it, compensation for the lost basement space would be in order to the owner. This measure would only be applicable where the design flood depth is relatively small and the first floor elevation is already located above the design depth.

##### **Relocation**

This nonstructural technique requires physically moving the at-risk structure and buying the land upon which the structure is located. It makes most sense when structures can be relocated from a high flood hazard area to an area that is located completely out of the floodplain.

## **Appendix A**

### **Acquisition**

This nonstructural technique consists of buying the structure and the land. The structure is either demolished or is sold to others and relocated to a site external to the floodplain.. Development sites, if needed, can be part of a proposed project in order to provide locations where displaced people can build new homes within an established community.

### **Wet Floodproofing**

This nonstructural technique is applicable as either a stand-alone measure or as a measure combined with other measures such as elevation. As a stand-alone measure, all construction materials and finishing materials need to be water resistant and all utilities must be elevated above the design flood elevation. Wet floodproofing is quite applicable to commercial and industrial structures when combined with a flood warning and flood preparedness plan. This measure is generally not applicable to large flood depths and high velocity flows.

### **Dry Floodproofing**

This nonstructural technique consists of waterproofing the structure. This can be done to residential homes as well as commercial and industrial structures. This measure achieves flood risk reduction but it is not recognized by the NFIP for any flood insurance premium rate reduction if applied to a residential structure. Based laboratory tests, a “conventional” built structure can generally only be dry flood proofed up to 3-feet in elevation. A structural analysis of the wall strength would be required if it was desired to achieve higher protection. A sump pump and perhaps French drain system should be installed as part of the measure. Closure panels are used at openings. This concept does not work with basements nor does it work with crawl spaces. For buildings with basements and/or crawlspaces, the only way that dry floodproofing could be considered to work is for the first floor to be made impermeable to the passage of floodwater.

### **Berms and Floodwalls**

This nonstructural technique is applicable on a small-scale basis. As nonstructural measures, berms and floodwalls should be constructed to no higher than 6 feet above grade and should not be considered for certification through the NFIP, meaning that flood insurance and floodplain management requirements of the NFIP are still applicable in areas were these berms or floodwalls are constructed. These nonstructural measures are intended to reduce the frequency of flooding but not eliminate floodplain management and flood insurance requirements. These measures can be placed around a single structure or a small group of structures. Since the application of these measures is considered nonstructural in nature, they should not raise the water surface elevation of the 100-year flood.

### **Flood Warning System**

This nonstructural technique relies upon stream gage, rain gages, and hydrologic computer modeling to determine the impacts of flooding for areas of potential flood risk. A flood warning system, when properly installed and calibrated, is able to identify the amount of time available for residents to implement emergency measures to protect valuables or to evacuate the area during serious flood events.

### **Flood Emergency Preparedness Plans**

Local governments, through collaboration with USACE, FEMA and other interested federal partners, are encouraged to develop and maintain a Flood Emergency Preparedness Plan (FEPP) that identifies flood hazards, risks and vulnerabilities, identifies and prioritizes mitigation actions, and encourages the development of local mitigation. The FEPP should incorporate the community’s response to flooding, location of evacuation centers, primary evacuation routes, and post flood recovery processes.

## **Appendix A**

### **Land Use Regulations**

Land use regulations within a designated floodplain are effective tools in reducing flood risk and flood damage. The basic principles of these tools are based nationally in the National Flood Insurance Program (NFIP) which requires minimum standards of floodplain regulation for those communities that participate in the NFIP. For example, land use regulations may identify where development can and cannot occur, or to what elevation structures should locate their lowest habitable floor to.

### **Communication of Nonstructural Flood Risk Reduction**

Through the development and use of educational tools such as presentations, workshops, hand-outs, and pamphlets, nonstructural flood risk reduction measures may be communicated to government entities and floodplain occupants in an effort to reduce future flood risks and damages.