Kentucky Division of Water Permitting Floodplain Overview and Considerations

Presentation to:
2014 KAMM Conference
Lake Barkley State Resort Park

by Solitha Dharman

Department for Environmental Protection
Energy & Environment Cabinet

To Protect and Enhance Kentucky's Environment
Flooding is an act of God....
Flood damages are an act of man...
HELP, HELP
FEMA! DOW

???
Flood Damage Prevention is the responsibility of the local Community.
Creating stronger and safer communities

- Reduces loss of life and property
- Lessens financial impacts
- Enables individuals and localities to prepare for future events
• Located in Chapter 44 of Code of Federal Regulations (44 CFR)

  • Part 59 – General Provisions
  • Part 60 – Criteria for Land Management and Use
  • Primary Section of Concern for Floodplain Regulations: 44 CFR 60.3(a-e)
Floodplain Management Section

Administrative Staff
• Specialists/Technical
  – Kate Carigan
  – Kathy Allen

Permit Reviewers
• Engineers
  – Todd Powers (Supervisor)
  – Jim Oerther
  – Ross Bishop
  – Kourosh Namin
  – Soheyl Bigdeli
  – Solitha Dharman

• NFIP
  – Todd Powers & Abby Rains

– Permitting Workload
  – 2011 939 projects
  – 2012 850 projects
  – 2013 848 projects

  13% average exemption
  11% average Denied, Terminated, Withdrawn, No Approval Req.

  Typically 200 projects per reviewer per year (slightly less now with new additional personnel)

  NFIP Workload – CAP SSSE – Community Support Services Element
  – 40 Community visits annually
    – CAV, CAC
  – training classes for local floodplain administrators as required by FEMA
KRS 151.125: Requiring secretary of the cabinet to establish requirements for flood control and water resources

KRS 151.230: Authorize cabinet establishes minimum standards for floodplain management

151.250 Plans for dams, levees, etc. to be approved and permit issued by cabinet -- Jurisdiction of Department for Natural Resources

401 KAR 4:060- Stream Construction Criteria
401 KAR 4:60

- Sec#1- Definitions
- Sec#2- Applicability
- Sec#3- General Provisions
- Sec#4- Uses of Regulatory Floodway
- Sec#5- Floodway Boundary Determination
- Sec#6- Placement of Flood-damageable Property
- Sec#7- Types of Construction Materials Allowed
- Sec#8- Variances and Exceptions
- Sec#9- Incorporation by Reference
Types of Approvals

• Permit Conditions with a Approval Letter

• Permit Exemption Letter
When Application is Required

- All mapped flood zone areas except 500 year zones.
- Any construction along or across a stream.
- Any residential or commercial structure in an area subject to inundation.
- Any water impounding structure.
Types of Construction Applications

KYDOW Review

- Construction in Floodplain
- Construction in Floodway
  (Projects involve with Floodway Encroachment)
Types of Constructions …..

• Stream Crossing-subfluvial (Directional Boring or Open Cut methods)

• Stream Banks Restoration

• Streams Realignment, Relocation

• Culvert/Bridge New construction, Replacement
The Application Review Process

Phase 1  Review the application package for Administrative completeness

Phase 2  Review the application package for Technical compliance with technical requirements (Regulations)

Phase 3  Approve or deny the application
          - by Permit Reviewers and make their recommendation to section supervisor for final decision.

Phase 4  Generation of permits/Approval letters - mail and/or Email
          to Applicant, Local Floodplain Coordinator, Consultant
**Review Time Clock in TEMPO Database**

(20 Working Days when application is complete)

<table>
<thead>
<tr>
<th>Activity</th>
<th>Activity Priority</th>
<th>Days Used</th>
<th>Days Remaining</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>APE20140001</td>
<td>Medium</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>401217 Conduct Agency Review-OOW Water Quality Branch</td>
<td>Medium</td>
<td>02/15/2014</td>
<td>02/10/2014</td>
<td>Completed</td>
</tr>
<tr>
<td>401217 Administrative Review Completed</td>
<td>Medium</td>
<td>02/15/2014</td>
<td>02/13/2014</td>
<td>Completed</td>
</tr>
<tr>
<td>401210 Technical Reviewer Assigned</td>
<td>Medium</td>
<td>02/15/2014</td>
<td>02/12/2014</td>
<td>Completed</td>
</tr>
<tr>
<td>401219 Complete Technical Review</td>
<td>Medium</td>
<td>02/15/2014</td>
<td>02/17/2014</td>
<td>Completed</td>
</tr>
<tr>
<td>401220 Approve Draft Decision-Supervisor</td>
<td>Medium</td>
<td>02/15/2014</td>
<td>02/17/2014</td>
<td>Predecessor</td>
</tr>
<tr>
<td>401222 Approve Final Decision-Business Manager</td>
<td>Medium</td>
<td>02/15/2014</td>
<td>02/17/2014</td>
<td>Predecessor</td>
</tr>
<tr>
<td>401223 Issue Approved Decision</td>
<td>Medium</td>
<td>02/15/2014</td>
<td>02/17/2014</td>
<td>Predecessor</td>
</tr>
<tr>
<td>401221 Issue Administrative NOD #1</td>
<td>Medium</td>
<td>02/15/2014</td>
<td>02/17/2014</td>
<td>Predecessor</td>
</tr>
<tr>
<td>401232 Submit Information/Administrative NOD #2</td>
<td>Medium</td>
<td>02/15/2014</td>
<td>02/17/2014</td>
<td>Predecessor</td>
</tr>
<tr>
<td>401231 Submit Information/Technical NOD #1</td>
<td>Medium</td>
<td>02/15/2014</td>
<td>02/17/2014</td>
<td>Predecessor</td>
</tr>
<tr>
<td>401230 Submit Information/Floodproof Certification Form</td>
<td>Medium</td>
<td>02/15/2014</td>
<td>02/17/2014</td>
<td>Predecessor</td>
</tr>
<tr>
<td>401227 Submit Final Construction Report</td>
<td>Medium</td>
<td>02/15/2014</td>
<td>02/17/2014</td>
<td>Predecessor</td>
</tr>
<tr>
<td>401226 Issue Elevation/Floodproof Certification Form</td>
<td>Medium</td>
<td>02/15/2014</td>
<td>02/17/2014</td>
<td>Predecessor</td>
</tr>
</tbody>
</table>
KRS 151.100 – How is stream defined?

Common Misconceptions

- “It’s not a Blue Line Stream”
- “It’s not a Perennial Stream”

- "stream" or "watercourse" means any river, creek or channel, having well defined banks in which water flows for substantial periods of the year to drain a given area, or any lake or other body of water in the Commonwealth
Two Paths for Application Review

• Mapped Areas
  – Use DFIRMs
  – Use FIRM

• Unmapped Areas
  – What is the nature of the construction.
  – Is this a threat to life or property.
  – What is the watershed area.
Permit Exemptions 4:050

- Less than 1mi$^2$ exemption
  
  Does not always apply.
  Does not apply to water impounding structures.

Subfluvial Crossings

Streambed must be returned to original elevation.
Pipe must be anchored or be sufficiently weighted to resist flotation.
Example of Permit Exemption:
- Minor Stream Bank Stabilization-
Less than 1mi² exemption does not apply to:

- Any activity that may endanger life
- Activity that may damage residential or commercial structures.
- Water impounding structures.

DOW can choose not to exempt any project.
Floodplain Construction Application

COMMONWEALTH OF KENTUCKY
ENERGY AND ENVIRONMENT CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
DIVISION OF WATER

APPLICATION FOR PERMIT TO CONSTRUCT ACROSS OR ALONG A STREAM AND/OR WATER QUALITY CERTIFICATION

Chapter 185 of the Kentucky Revised Statutes requires approval from the Division of Water prior to any construction or other activity that alters a stream that could in any way obstruct flood flow or adversely impact water quality. If the water is to be used in a source of supply by municipalities, change of use, or pipeline, a U.S. Water Quality Certification (WQC) from the Division of Water will be required. The completed form will be forwarded to Water Quality Branch for WQC processing. Material may not be used until all necessary approvals are received from the DOW. For questions concerning the WQC process, contact the WQC Section at 606-624-3410.

The applicant must address public notice:

(a) Public notice has been given for this proposal by the following means:
   - Public notice in newspaper having general circulation in area (provide newspaper name and date)
   - Adjacent property owners (affidavit of ...)

(b) I request waiver of public notice because
   - Contact Division of Water for reasons:

10. Is any portion of the requested project now complete? Yes No [If yes, identify the completed portion on the drawing you submit and indicate the date activity was completed. Date ________]
11. Estimated begin construction date ________
12. Estimated end construction date ________
13. Has a permit been received from the U.S. Army Corps of Engineers? Yes No [If yes, attach copy of permit.]
14. The applicant must address public notice:

15. I have contacted the following city or county officials concerning this project:
   [Provide name and title of person(s) contacted and copy of any approval(s) may have been signed.]

16. List of attachments:
   [List plan, profile, or other drawings and data submitted. Attach a copy of each drawing.]

17. I, ________ (owner/individual), certify that the owner owns or has easement rights on all property on which this project will be located or on which related construction will occur. [Include the area that would be impacted during the design phase.]

18. Remarks:

[スペースを占める部分]

Signature: ____________________________
Date: ____________________________

Signature of Local Floodplain Coordinator:
[スペースを占める部分]

Submit application and attachments to:
Floodplain Management Section
Division of Water
606 Water Park Drive
Frankfort, KY 40601

DOW 1115 Revised 10-2000
23
Local Floodplain Coordinator’s and owner’s Signatures are Required

- We MUST have both the owner and Floodplain Coordinator signatures,
  without either of these

- a Notice of Deficiency will be issued and
  the application does not get reviewed
Provide details of the project location relative to the stream.
Stream Bank Stabilization

- Need Site Details
- Section view
- Plan View

Used to protect eroding stream banks

Cross vane during storm flow and one month later
This is one of the most common reasons for a Notice of Deficiency (NOD) to be issued and delay the processing of the application.
Sec #3 General Provisions

(4) Public Notification
Public Notice Information

• The Newspaper Notice shall run for a period of three (3) consecutive days or printing

• If published weekly or bi-weekly
  - two (2) consecutive printing allowed when requested in writing

• If impact is localized
  - Submit affidavit from all parties

• Under certain situations, if flood impacts are negligible
  - Division may waive this requirement
Public Notice Information

- The Newspaper Notice shall run for a period of three (3) consecutive days or printing

- If published weekly or bi-weekly
  - two (2) consecutive printing allowed when requested in writing

- If impact is localized
  - Submit affidavit from all parties

- Under certain situations, if flood impacts are negligible
  - Division may waive this requirement
Example of Public Notice

--- Public Notice ---

Notice is hereby given that (NAME AND ADDRESS), has filed an application with the Energy and Environment Cabinet to (BRIEF DESCRIPTION OF CONSTRUCTION). The property is located (ADDRESS, LOCATION DESCRIPTION, INCLUDE MILES FROM NEAREST TOWN OR MAJOR ROAD INTERSECTION AND NAME OF STREAM). Any comments or objections concerning this application shall be directed to: Kentucky Division of Water, Surface Water Permit Branch, Flood Plain Management Section 200 Fair Oaks Lane, Frankfort, Kentucky 40601. Phone: (502) 564-3410.
Submit Actual copy of the Notice or Affidavit of Publication

AFIP
PUBLIC NOTICE PO# 42759M

Affidavit of Publication

STATE OF KENTUCKY
COUNTY OF DAVIESS

Carlos Renfrow, being duly sworn, says:

That she is Accounting Clerk of the Messenger-Inquirer, a daily newspaper of general circulation, printed and published in Owensboro, Daviess County, KY; that the publication, a copy of which is attached hereto, was published in the said newspaper on the following dates:


That said newspaper was regularly issued and circulated on those dates.

SIGNED:

Carlos Renfrow

Accounting Clerk

Subscribed to and sworn to me this 2nd day of February 2014.

Melanie Miller, Daviess County, KY

My commission expires: September 28, 2015

00064400 00047850

Cindy Herbst
Associated Engineers, Inc. - 113
2740 North Main St
Madisonville, KY 42431
If impact is localized
Submit affidavit from all parties
REQUEST FOR ADMINISTRATIVE HEARING REQUEST

• If applicant think DOW did not follow regulations during the permitting process, Hearing can be requested

• Someone filing a complaint can request an Administrative Hearing
Base Flood—Several Definitions

- Base flood is the 100 year flood event. (1% chance of being equaled or exceeded base flow in a year)
- Is not a flood that occurs every 100 years!
- Has a 26% chance of occurring during a 30 yr period

<table>
<thead>
<tr>
<th>Length of Period (Years)</th>
<th>Recurrence Interval (Years)</th>
<th>10</th>
<th>25</th>
<th>50</th>
<th>100</th>
<th>500</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10%</td>
<td>4%</td>
<td>2%</td>
<td>1%</td>
<td>0.2%</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>65%</td>
<td>34%</td>
<td>18%</td>
<td>10%</td>
<td>2%</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>88%</td>
<td>56%</td>
<td>33%</td>
<td>18%</td>
<td>2%</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>93%</td>
<td>64%</td>
<td>40%</td>
<td>22%</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>96%</td>
<td>71%</td>
<td>45%</td>
<td>26%</td>
<td>6%</td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>99+%</td>
<td>87%</td>
<td>64%</td>
<td>39%</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>99.99+%</td>
<td>98%</td>
<td>87%</td>
<td>63%</td>
<td>18%</td>
<td></td>
</tr>
</tbody>
</table>

The table values represent the probabilities, expressed in percentages, of one or more occurrences of a flood of given magnitude or larger within a specified number of years. Probability (P) may be calculated for any given Length of Period (x) and Recurrence Interval (RI) using the following equation: \( P = \left[1 - \left(1 - \frac{1}{RI}\right)^x\right] \times 100\% \), where RI and x are in years.
What You Need to Know!

• FIRM’s, DFIRM’s, and FHBM’s were not intended to be comprehensive or exclusive tool for floodplain management.
  – Can be used as a tool in mapped areas.
  – Cannot be used to determine all flood prone areas.

• Every stream has a floodplain and floodway.
  – May or may not be shown on a map.

• Users include: citizens, insurance agents, real estate brokers, local, state and federal officials, lending institutions
Typical Zones

• Zone AE - Zones that have a detailed flood study. Floodway boundaries are usually available. BFE is available.

• Zone A - Approximate floodplain area. No BFE or Floodway boundary established.

• Zone X - Areas of 500 year or shallow (<1 foot) 100 year flooding.

• Zone X – Areas outside of 0.2% annual chance floodplain.
Flood Insurance Rate Map (FIRM)
Shaded Zone X - Moderate hazard flood zone

Zone AE (floodway) – High hazard flood zone

Zone AE – High hazard flood zone

Zone A – High hazard flood zone

Unshaded Zone X – Low hazard flood zone

FIRM Maps WWW.FEMA.GOV
Floodplain and Floodway Identification
HEC-RAS

Overbank stations and Main Channel
HECRAS Encroachment Method #4

Which is called “The equal Loss of Conveyance Method”.

Where it removes equal amount of conveyance from both overbank areas.

If equal conveyance cannot be achieved, HEC-RAS will stop at the bank station and would not go into the channel.
All encroachments (Except as provided in subsection#2),

- including fill,
- new construction
- substantial improvements
- and other development

**is prohibited**

unless certified that encroachment shall have “no impact” or not result in increase in flood levels during base flood discharge by a licensed engineer.
Floodway Boundary Determination

More Stringent Requirements May Apply - Section #5 (3)

- In areas where one or more houses or commercial or industrial buildings located,

  if one (1) foot increase creates in increase of flood damages,

  cabinet may impose more stringent limitations
In Performing Floodway Calculations

- The applicant provide cross sections – NGVD 1929 or NAVD 1988
- Vertical error tolerance of no more than 0.5 foot
- Cross Sections to be taken at these points indicates significant break in slope hydraulic characteristics near adjacent structures to be impacted
- Cross Sections shall be in tabular, electronic format
- Cabinet may request photographs and other information in determination of roughness values
• KYDOW use HECRAS Hydraulic Analysis

• Needs Cross Sections
Cross sections need to be identified on the site plan.

1. Sections are numbered from downstream to upstream.
2. Distances are measured from the left bank, perpendicular to the stream, starting with 0.0'.
3. Ground elevations are measured at every break in the slope.
4. Elevation and distance data should be submitted in tabular form to facilitate entry into the HEC-RAS computer model.
Sample Format for Cross-Section Data

<table>
<thead>
<tr>
<th>Stream Station</th>
<th>Offset Distance</th>
<th>Existing Elevation</th>
<th>Proposed Elevation</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>STA:0+00</td>
<td>0.00</td>
<td>1010</td>
<td>1012</td>
<td></td>
</tr>
<tr>
<td></td>
<td>13.82</td>
<td>1011</td>
<td>1012</td>
<td>Left Bank</td>
</tr>
<tr>
<td></td>
<td>27.72</td>
<td>1010</td>
<td>1010</td>
<td></td>
</tr>
<tr>
<td></td>
<td>35.81</td>
<td>1004</td>
<td>1004</td>
<td>Center Line</td>
</tr>
<tr>
<td></td>
<td>40.63</td>
<td>1003</td>
<td>1003</td>
<td></td>
</tr>
<tr>
<td></td>
<td>46.98</td>
<td>1004</td>
<td>1004</td>
<td></td>
</tr>
<tr>
<td></td>
<td>51.90</td>
<td>1007</td>
<td>1007</td>
<td>Right Bank</td>
</tr>
<tr>
<td></td>
<td>60.89</td>
<td>1009</td>
<td>1009</td>
<td></td>
</tr>
<tr>
<td></td>
<td>222.00</td>
<td>1012</td>
<td>1012</td>
<td></td>
</tr>
<tr>
<td></td>
<td>231.18</td>
<td>1015</td>
<td>1015</td>
<td></td>
</tr>
</tbody>
</table>

1. Data input columns are in GRAY
2. Add additional rows as necessary
4. Offset Distance increases from Left to right (looking downstream)
5. Cross-Section lines can cross a stream line only once and cannot cross other X-section lines.
6. Distances are measured from the left, perpendicular to the stream, starting with 0.0’
   Ground elevations are measured at every break in the slope
7. Extend each cross section far enough to include all probable Floodplain
• Ineffective Flow Areas

In order to avoid underestimating the BFE, areas with low or zero flows need to be identified as ineffective stations in the model.

• Peak flow values need be accordance with the methods in section # 5.

• If FIS available, flow data need to be obtained from FIS study.
Ineffective Flow Station Upstream of a Bridge

Permanent Ineffective Flow Area
• DOW’s first preference is using FIS flow data

• Unregulated streams such as releases from dams-

• Estimating the magnitude of peak flow using USGS regression equation
Flood Insurance Study

- FIS provides technical data about the flood study
- Appraises a community's flood problems
- Estimates flood flow frequency
- Establishes flood elevation profiles and floodplain boundaries
- Provides data to delineate floodways in some communities
<table>
<thead>
<tr>
<th>CROSS SECTION</th>
<th>DISTANCE</th>
<th>WIDTH</th>
<th>SECTION AREA</th>
<th>MEAN VELOCITY</th>
<th>REGULATORY</th>
<th>THROUGH FLOODWAY</th>
<th>WITHOUT FLOODWAY</th>
<th>INCREASE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Panther Creek</td>
<td>803</td>
<td>2205</td>
<td>3583</td>
<td>4.9</td>
<td>366.0</td>
<td>369.8</td>
<td>368.8</td>
<td>1.0</td>
</tr>
<tr>
<td>A</td>
<td>14040</td>
<td></td>
<td></td>
<td>1.8</td>
<td>365.0</td>
<td>369.9</td>
<td>370.5</td>
<td>0.7</td>
</tr>
<tr>
<td>B</td>
<td>17371</td>
<td></td>
<td></td>
<td>5.7</td>
<td>364.6</td>
<td>372.6</td>
<td>373.0</td>
<td>0.4</td>
</tr>
<tr>
<td>C</td>
<td>30117</td>
<td>260</td>
<td>3511</td>
<td>4.2</td>
<td>364.0</td>
<td>374.9</td>
<td>375.1</td>
<td>0.2</td>
</tr>
<tr>
<td>D</td>
<td>37382</td>
<td>370</td>
<td>13,067</td>
<td>2.4</td>
<td>386.0</td>
<td>387.7</td>
<td>387.5</td>
<td>0.9</td>
</tr>
<tr>
<td>E</td>
<td>52425</td>
<td>370</td>
<td>2.123</td>
<td>1.1</td>
<td>364.5</td>
<td>382.2</td>
<td>383.2</td>
<td>0.5</td>
</tr>
<tr>
<td>F</td>
<td>57531</td>
<td>435</td>
<td>12.12</td>
<td>6.3</td>
<td>387.2</td>
<td>387.7</td>
<td>387.7</td>
<td>0.5</td>
</tr>
<tr>
<td>G</td>
<td>67119</td>
<td>500</td>
<td>2,415</td>
<td>3.2</td>
<td>387.2</td>
<td>390.0</td>
<td>390.0</td>
<td>0.6</td>
</tr>
<tr>
<td>H</td>
<td>70330</td>
<td>500</td>
<td>2,123</td>
<td>3.2</td>
<td>387.2</td>
<td>390.0</td>
<td>390.0</td>
<td>0.6</td>
</tr>
<tr>
<td>I</td>
<td>75319</td>
<td>500</td>
<td>2,123</td>
<td>3.2</td>
<td>387.2</td>
<td>390.0</td>
<td>390.0</td>
<td>0.6</td>
</tr>
<tr>
<td>J</td>
<td>86211</td>
<td>500</td>
<td>2,123</td>
<td>3.2</td>
<td>387.2</td>
<td>390.0</td>
<td>390.0</td>
<td>0.6</td>
</tr>
<tr>
<td>K</td>
<td>91380</td>
<td>500</td>
<td>2,123</td>
<td>3.2</td>
<td>387.2</td>
<td>390.0</td>
<td>390.0</td>
<td>0.6</td>
</tr>
<tr>
<td>L</td>
<td>98820</td>
<td>500</td>
<td>2,123</td>
<td>3.2</td>
<td>387.2</td>
<td>390.0</td>
<td>390.0</td>
<td>0.6</td>
</tr>
<tr>
<td>M</td>
<td>103683</td>
<td>500</td>
<td>2,123</td>
<td>3.2</td>
<td>387.2</td>
<td>390.0</td>
<td>390.0</td>
<td>0.6</td>
</tr>
<tr>
<td>N</td>
<td>106725</td>
<td>500</td>
<td>2,123</td>
<td>3.2</td>
<td>387.2</td>
<td>390.0</td>
<td>390.0</td>
<td>0.6</td>
</tr>
<tr>
<td>O</td>
<td>110463</td>
<td>500</td>
<td>2,123</td>
<td>3.2</td>
<td>387.2</td>
<td>390.0</td>
<td>390.0</td>
<td>0.6</td>
</tr>
<tr>
<td>P</td>
<td>115405</td>
<td>500</td>
<td>2,123</td>
<td>3.2</td>
<td>387.2</td>
<td>390.0</td>
<td>390.0</td>
<td>0.6</td>
</tr>
<tr>
<td>Q</td>
<td>116861</td>
<td>500</td>
<td>2,123</td>
<td>3.2</td>
<td>387.2</td>
<td>390.0</td>
<td>390.0</td>
<td>0.6</td>
</tr>
<tr>
<td>R</td>
<td>121667</td>
<td>500</td>
<td>2,123</td>
<td>3.2</td>
<td>387.2</td>
<td>390.0</td>
<td>390.0</td>
<td>0.6</td>
</tr>
<tr>
<td>S</td>
<td>124769</td>
<td>500</td>
<td>2,123</td>
<td>3.2</td>
<td>387.2</td>
<td>390.0</td>
<td>390.0</td>
<td>0.6</td>
</tr>
</tbody>
</table>

1. Stream distance in feet above confluence with Green River
2. Elevation computed without consideration of backwater effects from the Ohio River
All new Constructions/ substantial improvements

Elevate lowest floor (including basement) to Base Food Elevation.

No Dry Floodproofing is permitted in Residential structures below Base Flood Elevation.
Requirements for Full Enclosures-Residential

All new Constructions / substantial improvements of existing structures or elevated structures that include full enclosure area formed by foundation exterior walls

- design with application of wet flood proof below the base flood

- Provide minimum of 2 openings = total net area not less than 1 square inch for every square foot of enclosed area.

- Bottom of the openings no higher than interior grade
Openings may be equipped with screens, louvers, valves, or other “automatic” coverings.
Elevate lowest floor (including basement) to Base Flood Elevation.

or

design with application of dry flood proof below the base flood to prevent passage of water and resist hydrostatic and hydrodynamic loads and effects of buoyancy.
Substantial Improvement

Any Substantial improvement that increases the current market value of a structure by 50%, considered as new construction.

- Market value of a structure is
- (a) Appraised fair market value
- (b) If damaged has occurred, fair market value of the structure before damage
Substantial Damage...

Damage of any origin sustained by a structure whereby the cost of restoring the structure to its before damaged condition would equal or exceed 50% of the market value of the structure before the damage occurred.
New installation of a manufactured home should be raised to BFE

If placed in an existing manufacture home park or subdivision the homes shall be elevated no less than three (3) feet above grade and properly anchored.
Manufactured home with Substantial Damage

• If placed in an existing manufactured home park or subdivision shall be elevated to the base flood elevation and properly anchored.

• The expansion of an existing manufactured home park or subdivision constitutes new construction

and

• placement in the newly developed area shall conform to both base flood elevation and anchoring requirements.
Exceptions

• Exceptions to Placement of flood-damageable Property in Floodplain
  may be allowed for reconstruction, rehabilitation or restoration of historic structures

• Exceptions may be allowed for the requirement of hydraulic or hydrologic study for the placement of City or County Bridge
  - if capable of passing base flood flow
  - if no significant changes in elevation and grades of existing and approaches and roadway
STREAM CROSSINGS

Hydraulic Analysis required all structures across streams except

Clear Span Bridge Construction

If the deck abutments are recessed within the stream banks with no approach fill and if the cords depth, Including curbs are no greater than 18 inches
Low Water Crossings

• Exceptions allowed for the requirement of hydraulic study for Low Water Crossings if the structure is constructed according to cabinets template.
Floodplain Construction Violations

- No Floodplain permit issued
  If significant amount of construction has been completed.

- Handled by Dam Safety Section of KY DOW
Potential General Permits

• DOW is considering to issue general permits for certain types of activities.

• Simple construction project requires no change in Base Flood Elevation.

• Example: Nonsubstantial improvements to residential or non-residential structures.
Any Questions?