Indiana Department of Natural Resources
Division of Water

Construction in a Floodway Assessment

As mandated by the regulations of the Flood Control Act, IC 14-28-1 and the Floodplain Management rules, 312 IAC 10, a construction project in a floodway requires a permit application review that includes a hydrologic and hydraulic evaluation to determine the effect a project may have on the base flood elevation and an environmental review to determine the impact a construction project may have on fish, wildlife, and botanical resources.

Hydrologic and Hydraulic Evaluation

The Division of Water assesses the change to the effective cross sectional flow area resulting from proposed construction projects in order to minimize cumulative effects on the base flood elevation. Construction projects located in a floodway can result in varying degrees of loss to the effective cross sectional flow area. The Division of Water developed non-modeling hydraulic assessment worksheets to assess specific construction projects that result in negligible loss of the effective cross sectional flow area. If negligible loss cannot be demonstrated through a non-modeling assessment approach or if a cumulative loss of the effective cross sectional flow area exists from other construction projects, computer modeling will be required to be submitted to evaluate the effects the proposed project will have on the base flood elevation. For more information on computer modeling, refer to General Guidelines for the Hydrologic-Hydraulic Assessment of Floodplains in Indiana at www.in.gov/dnr/water/3483.htm .

Non-Modeling Hydraulic Assessment Worksheets

Specific to each non-modeling assessment approach, examples of typical project types are provided on each worksheet to assist you in selecting the appropriate worksheet for your specific project. For more information about what project types are used in each non-modeling assessment approach, refer to the Construction in a Floodway Assessment User Guide.

1) No Change in Effective Cross Sectional Flow Area Non-Modeling Worksheet (State Form 55238)
2) Change in Effective Cross Sectional Flow Area Non-Modeling Worksheet (State Form 55236)
    a) Companion Worksheet A (State Form 55237)
3) Ineffective Area of the Contraction or Expansion Reach of a Stream Crossing Non-Modeling Worksheet (State Form 55235)
4) Bridge Replacement in Kind Non-Modeling Worksheet (State Form 55233) *and* associated Companion worksheets
    a) Bridge Replacement-in-Kind Companion Worksheet B (State Form 55234), or
    b) INDOT Bridge Replacement in Kind Assessment Worksheet (INDOT bridge work only)
5) Bridge Resurfacing Checklist

Fish, Wildlife, and Botanical Impact Assessment

In the permit application review process, the Divisions of Fish and Wildlife, Nature Preserves, and Outdoor Recreation assess the cumulative impacts that construction projects in the floodway may have on fish, wildlife, and botanical resources. Each Non-Modeling Hydraulic Assessment Worksheet includes the minimum plan requirements and computations necessary to assess impacts on flora and fauna and the potential for required mitigation.

These worksheets serve to communicate the framework used to evaluate a project's cumulative impacts to the effective cross sectional flow area and fish, wildlife, and botanical resources in the floodway. These worksheets are meant to relay the information needed to evaluate the vast majority of projects but cannot describe the information needed for all scenarios and all potential projects. The purpose of the worksheet is to balance the need for transparency of the evaluation methods and information needed for a particular project; the preparer's discernment is still needed when preparing an application and supporting documents for review to meet the statutory requirements.

For more information, Non-Modeling Hydraulic Assessment Worksheets, Companion Worksheets, Construction in a Floodway Assessment User Guide, Worksheet Examples, General Guidelines for the Hydrologic-Hydraulic Assessment of Floodplains in Indiana, Mitigation Guidelines, the permit Application Manual and training videos are available on our webpage at www.in.gov/dnr/water.

Reset Form

NO CHANGE IN EFFECTIVE CROSS SECTIONAL FLOW AREA NON-MODELING WORKSHEET

State Form 55238 (4-13)

For Division of Water use: Application # FW- _____

An assessment using the No Change in Effective Cross Sectional Flow Area Non-Modeling Worksheet is appropriate to use to assess non-bridge projects that will result in no discernable loss of the effective cross sectional flow area. Project examples include bank stabilization, restoration projects, excavation, or fill of 6" or less when comparing pre-construction to post-construction conditions such as a trail, parking lot, access drive, or sidewalk.

The minimum documentation and computations specified below in this document must be submitted to the Division of Water along with a completed, signed, and dated application form (State Form 42946) and the appropriate application fee.

Unless the instructions in this document direct you otherwise, all plan details, questions and computations in this worksheet must be addressed to adequately evaluate a project under a non-modeling assessment approach.

Minimum Plan Details and Computation Requirements:

1) **Plan Details and Supporting Documentation**

For each of the minimum plan details described in the following chart, complete Column 1 and Column 2. The required plan view items can be combined into one or more plan drawings if the information is clearly defined.

Column 1 Indicate with √ if item is included in application submittal	Column 2 Indicate page or sheet # for each required item	Column 3 Minimum Plans Required	Column 4 For Division of Water use only
☐		A map that clearly identifies the location of the proposed project site in relationship to the waterway and surrounding roadways	☐ Accepted ☐ Item Not Clear
☐		An aerial plan view that illustrates disturbed area of the project site	☐ Accepted ☐ Item Not Clear
☐		A plan view that illustrates the proposed project's construction components. Indicate permanent and temporary components throughout the project site	☐ Accepted ☐ Item Not Clear
☐		A cross section view(s) showing an overlay comparison of the pre-construction and post-construction conditions of the effective cross sectional flow area at the most restrictive segment(s) of the encroachment. Typical cross sections should be extended perpendicularly to the limits of the project. Cross sections should be stationed left to right, looking downstream, and oriented perpendicular to flow. Additional cross sections if requested in question # 4 in this worksheet. *Note: Assumed elevations can be used for the cross section(s)*	☐ Accepted ☐ Item Not Clear

Plan Details and Supporting Documentation continued

☐		A plan view that clearly marks the location(s) and label of the cross section(s)	☐ Accepted ☐ Item Not Clear
☐		Photos that illustrate the natural and manmade surroundings, e.g.: 1) from the project site, a downstream view of the channel 2) from the project site, an upstream view of the channel 3) from a downstream streambank, a view of the project site 4) from an upstream streambank, a view of the project site Label orientation of each photo	☐ Accepted ☐ Item Not Clear
☐		Plans require horizontal and vertical scale, north arrow, labels, stations, and date	☐ Accepted ☐ Item Not Clear

Computation Requirements

2) Is all proposed construction work above top of bank?

○ Yes. No further computations are needed to assess the loss to the cross sectional flow area. Skip questions #3 and #4. Proceed to question #5 and #6.

○ No. Proceed to question #3.

3) Compute and record the post-construction and pre-construction cross sectional areas **at the most restrictive segment(s) of the project** by completing Columns 1 and 2 in this chart. Use a separate sheet to record multiple restrictive cross sections of the project.

Cross sectional area at the most restricted segment of the project	Column 1 Area (square feet)	Column 2 Indicate the Cross Section letter and plan sheet #
Pre-construction condition	_____ sq ft	
Post-construction condition	_____ sq ft	
If the post-construction area is equal to or greater than the pre-construction area, skip question #4 and proceed to questions #5 and #6.		

Computation Requirements continued

4) When the post-construction cross sectional area condition is smaller than the pre-construction cross section area condition, the restriction to the cross sectional area at the site could result in an increase to the upstream or downstream base flood elevation. To determine whether the proposed project will not have an adverse effect on the upstream or downstream base flood elevation, provide:

- An upstream and downstream typical cross section, and
- Compute and record the upstream and downstream cross sectional areas in this chart. Use a separate sheet to record additional upstream and downstream cross sectional areas if there is more than one restrictive segment of the project.

Cross Section	Column 1 Area (square feet)	Column 2 Indicate the Cross Section letter and plan sheet #
Upstream of project	_____ sq ft	
Downstream of project	_____ sq ft	

If the post-construction cross sectional area at the most restrictive segment(s) of the project as computed in question #3 is smaller than the upstream and downstream cross sectional areas computed in question #4, the potential for a change to the base flood elevation could result; therefore, the No Change in Effective Cross Sectional Flow Area Non-Modeling Worksheet cannot be used to evaluate the project.

We suggest that you review the Change in Effective Cross Sectional Flow Area Non-Modeling Worksheet, State Form 55236, and Companion Worksheet A, State Form 55237, to determine if another non-modeling assessment approach can be utilized for this project to demonstrate that computer modeling is not required.

5) **Additional Justification/ Comments, if needed: (Use a separate sheet if needed)**

6) **Fish, Wildlife, and Botanical Impact Assessment**

If a delineated floodway exists at the project site, compute the disturbance values in the following charts. For sources of delineated floodways, refer to the Indiana Floodplain Information Portal at www.INFIP.dnr.in.gov or FEMA Map Service Center at https://msc.fema.gov/.

If a floodway delineation is not available at the project site, skip Question #6.

If the proposed construction exceeds the disturbance thresholds outlined in the Floodway Habitat Mitigation, a mitigation plan is likely to be required. During the permit application review process, a Division of Fish and Wildlife biologist will contact you if a mitigation plan is required. For information concerning mitigation requirements, refer to the Natural Resources Commission Bulletin # 17, http://www.in.gov/legislative/iac/20120801-IR-312120434NRA.xml.pdf.

Total number acres in floodway disturbed by project construction = _____ acres

Riparian habitat disturbance computation:

Type of Riparian Habitat	Number acres in floodway disturbed by project construction
A) Non wetland tree removal in rural area	
B) Non wetland tree removal in urban area	
C) Early successional habitat	
Total A, B, & C	

In-stream disturbance computation:

Total number of linear feet of in-stream disturbed by project construction = _____ linear feet

Wetlands disturbance computation:

Type of Riparian Habitat	Number acres in floodway disturbed by project construction
A) Palustrine Forested wetlands	
B) Palustrine Scrub-shrub wetlands	
C) Palustrine Emergent wetlands	
Total A, B, & C	

Be aware that after reviewing the submitted plans and computations in the worksheet, the IDNR staff may request additional documentation if sufficient evidence has not been provided that clearly demonstrates the effect that the project may have on the base flood elevation or impacts to fish, wildlife, and botanical resources in the floodway.

Name of Preparer _____ Date *(month, day, year)* _____