

Floodplain Prioritization Tool (Kentucky) CHEAT SHEET



TOOL BASICS

FLOODPLAIN DATA

The floodplain data behind the tool uses the 10-meter resolution Fathom-U.S. 2.0 flood model. Learn more at:

<https://www.fathom.global/fathom-us>

It is available at 3 flood frequencies:

- 1-in-5-year
- 1-in-100-year
- 1-in-500 year

This means the “1-in-5-year floodplain” delineates the area where a flood has a 20% chance (1 in 5 years) of happening in any given year – and so on.

All floodplain extents that fall within areas in the Protected Areas Database of the U.S. (PAD-US) are excluded from the tool.

TWO KEY PARAMETERS

Select Flood Frequency

Only floodplains of the selected frequency will be considered for prioritization.

View Floodplains By Watershed

Changes the size of the analysis units on the map. Average sizes: HUC8 = 2,434 km²; HUC12 = 81 km²; Catchment = 2.4 km²

SUPPLEMENTARY LAYERS

Toggle these layers on and off for added context:

- Soil drainage classes – View areas where the soil is somewhat poorly, poorly, or very poorly drained
- 5-, 100-, and 500-year floodplain – View the underlying Fathom floodplain data, minus protected areas (sourced from PAD-US)
- FEMA flood hazard zones
- Protected areas – From Protected Areas Database of the U.S. (PAD-US)
- National Land Cover Database (2019)
- Physiographic regions of Kentucky
- % of floodplain in hydric soil

DATA LAYERS

Available Floodplain Area

AVAILABLE FLOODPLAIN AREA

The area of floodplain that is:

- Not currently in protected status
- Of the specified flood frequency

Nutrients

NUTRIENT LOADING TO GULF OF MEXICO (TOTAL)

- Kg/yr of nitrogen and phosphorus exported from the watershed that reaches the Gulf of Mexico
- Normalized to 0-100 scale
- One metric for nitrogen and one metric for phosphorus

NUTRIENT LOADING TO GULF OF MEXICO (FROM FERTILIZER & MANURE)

- Subset of total N and P generated from fertilizer and manure in watershed

NUTRIENT LOADING TO GULF OF MEXICO (FROM WASTEWATER & URBAN RUNOFF)

- Subset of total N and P generated from wastewater and urban runoff

Soils / Land Use

AGRICULTURAL PRODUCTIVITY POTENTIAL OF SOILS

- An index characterizing soils' inherent capacity to produce non-irrigated commodity crops
- Lower value suggests less productive soil, and therefore more viable opportunity to take floodplain land out of ag use

PERCENT OF FLOODPLAIN IN POORLY DRAINED SOILS

- Soil drainage class data is taken from the Soil Survey Geographic (SSURGO) database
- % of floodplain in “somewhat poorly drained,” “poorly drained,” and “very poorly drained” soils

NRCS WATERSHED VULNERABILITY INDEX

- Index to quantify watershed vulnerability to pollutant transport from croplands by surface runoff and leaching
- Based on: SSURGO land capability class (soil suitability for field crops), land cover from 2020 Cropland Data Layer, and distance from stream

SOIL ERODIBILITY INDEX (K FACTOR)

- Index characterizing relative susceptibility of soil in the floodplain to erosion
- Based on: texture, organic matter, soil structure, saturated hydraulic conductivity
- Ranges from 0.02 (least erodible) to 0.64 (most erodible)

KY GREEN INFRASTRUCTURE PRIORITY ANALYSIS

- Index signifying suitability for green infrastructure development (1 = most suitable; 0 = least suitable) – averaged within the floodplain
- Based on: soil type, slope, land cover, depth to water table, impervious surface, whether location is in 100-year floodplain
- Developed by U.S. Army Corps of Engineers / Kentucky Silver Jackets

PERCENT OF WATERSHED IN AG OR PASTURE

- Percent of watershed in cultivated crops or hay / pasture, according to National Land Cover Dataset (2019)

PERCENT OF WATERSHED IN KARST

- Percent of watershed with bedrock that has major or moderate potential for karst development, according to KY Geological Survey

Habitat

FLOODPLAINS NEAR PROTECTED LANDS

- Acres of unprotected floodplain within 0.25 miles of protected lands in Protected Areas Database of the U.S. (PAD-US)

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NATURE CONSERVANCY Ecoregional Assessment Units

- All features identified in ecoregional assessments across The Nature Conservancy as places of biodiversity significance and priority areas for conservation action

Terrestrial Resilience

- Estimates the climate resilience of an area of land based on: a). Its landscape diversity (microclimates) and b). Local connectedness (lack of fragmentation)
- Scores are standard deviations above the average score across the ecoregion and geophysical setting

Number of Wetland Species of Conservation Interest

- Total number of wetland species that are locally rare, globally rare, state- or federally listed, or tracked due to other conservation concerns
- Counts are HUC12 level. For HUC8s, the counts from the nested HUC12s are totaled. For catchments, counts shown are those of the HUC12 the catchment is within.
- From Office of Kentucky Nature Preserves

State Wildlife Action Plan Species

- Total number of species of greatest conservation need identified in Kentucky State Wildlife Action Plan (SWAP).
- Counts are HUC12-level.

Population Exposure

Population Exposure

- People currently living in **unprotected** floodplain of the selected flood frequency.
- Population determined using land-cover-weighted allocation of population

Flood Damages

Projected Future Flood Damages to Structures (2050) (\$)

- Estimate of property damage in the floodplain of the selected flood frequency.
- Based on flood depth, building types, and 2050 projections of building location.
- Detailed methodology may be found in: Oliver E.J. Wing *et al.* 2018. *Environ. Res. Lett.* 13: 034023

Social Vulnerability

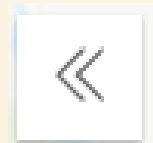
Index of Social Vulnerability to Environmental Hazards

- Index characterizing social vulnerability to environmental hazards, drawing on 22 demographic variables
- At the national scale, values below -1 are considered low social vulnerability, -1 to +1 are medium, and above +1 are high.

Other User Interface Elements



Clicking on this button in the top right of the map pane will toggle the basemap between topographic, aerial imagery, and streets.



Clicking on this button in the bottom left of the map pane will toggle the map legend.



Use these buttons to view relevant info and links about each data layer.

Clicking on any watershed on the map will bring up a popup window with the data for that watershed.

Upper Brush Creek

Watershed area (acres): **11,749**
Acres of 5-year floodplain: **18**
Nitrogen load at outflow (kg/yr): **38,898**
Phosphorus load at outflow (kg/yr): **4,599**
Nitrogen load to Gulf of Mexico (kg/yr): **30,082**
Phosphorus load to Gulf of Mexico (kg/yr): **3,408**
Nitrogen load from farm fertilizer & manure (%): **44.3**
Phosphorus load from farm fertilizer & manure (%): **68.8**
Current population in 5-year floodplain: **1**
Projected 2050 damage value (\$) in 5-year floodplain: **\$11,918**
Social vulnerability index: **1.555**
Acres of cultivated cropland: **290**
Acres of hay / pasture: **2,591**

Save and Share

Filter Floodplain Units

Download Selected Data

Save and Share

Reset Filters

- The "Download Selected Data" button allows you to download your results as a shapefile
- The "Save and Share" button creates a permalink to the map with your specific filters applied. You can save this link to access the map in the future, or share via email or social media.

Additional Information

Floodplain Tool URL

<https://maps.freshwaternet.org/kentucky-floodplain>

For More Information

For more information about the FP Tool, contact TNC's Eugene Yacobson (eyacobson@tnc.org) and / or Kris Johnson (kjohnson@tnc.org).