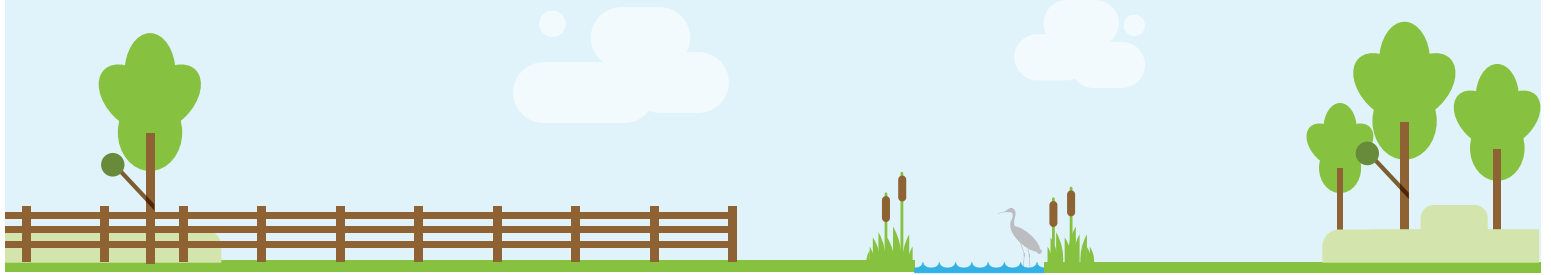







# Informing Future Land Use and Planning

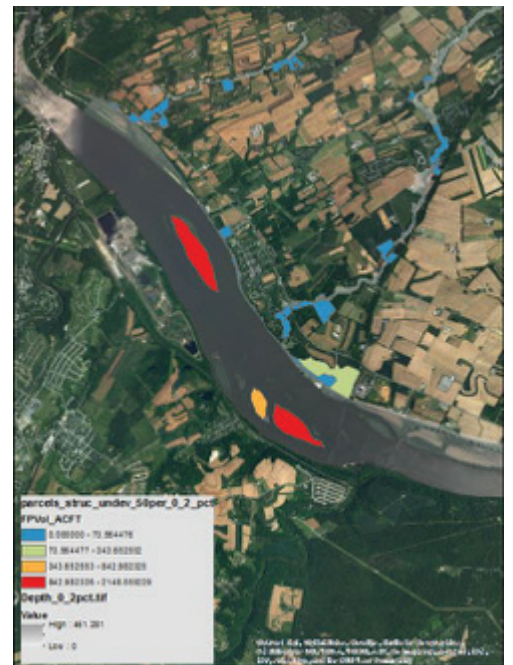


The objective of this analysis is to identify parcels that have the greatest probability of being developed further and that are in an area of potential flooding for a higher-risk flooding event. Actions taken to mitigate flooding in these areas may have exponential flood risk reduction effects on the entire community. This analysis will identify parcels that are primarily undeveloped land cover with at least one structure on them that are in the 0.2%-annual-chance flood event depth grid and calculate the volume of water within the parcel during this type of event.

The outcomes of this analysis will help communities identify areas to potentially reclassify land use as open space; identify parcels to revise zoning for structures based on the risk to open parcels; and identify parcels with exceptional capacity for natural and beneficial floodplain uses, such as natural flood and erosion control, for land preservation programs. By defining flood risk more broadly at the land use and parcel level, we can work towards capturing our current risk and help to mitigate risk to future structures.

## INSTRUCTIONS

-  **Identify GIS data**, including building footprints of structures, parcels, and land use/land cover from the community and the 0.2%-annual-chance grid from the FEMA Depth and Analysis Grids.
-  **Select only the parcels within your parcel layer that have buildings** in them by using the “Select by Location” option of the “Selection” tool. Create a new layer with these selected parcels.
-  Use the “Query Builder” tool to **query the Land Use/Land Cover layer for types of land cover** that indicate open space, which can include, but is not limited to, forest, wetland, herbaceous, and mixed cover.
-  Use the “Tabulate Intersection” function to **calculate the amount of undeveloped area within parcels with structures**. Use the new parcels layer as your Input Zone Feature, select FID as the Zone Field, under Input Class Features choose the Land Use/Land Cover layer, name a new table in the Output Table location, and select square feet under Output Units. This will create a table that shows the percentage of underdeveloped land (per our query) within the parcels.
-  **Join the new table to the new parcel layer** you created, based on the FID field.  
**Note:** To make the land use/land cover easily visible, change the symbology to just show the outline.



**Note:** This map now illustrates the distribution of parcels that have at least one structure on them, have greater than or equal to 50% of undeveloped land use/land cover, and are within the 0.2%-annual-chance depth grid area.

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Use the “Select by Attributes” option of the “Selection” tool to **identify only those parcels that have a majority (>=50%) of undeveloped land use/land cover**. Save this selection as a “Majority Parcels Undeveloped Land Use/Land Cover” layer.

7



Use the ArcMap “Zonal Statistics as Table” tool to **determine the depth values** of the 0.2%-annual-chance flood in the parcels in the “Majority Parcels Undeveloped Land Use/Land Cover” layer.

8



**Join the resulting “0.2% depth values within parcels with structures” table with the “Majority of Parcels Undeveloped Land Use/Land Cover”** layer, based on the FID field. Export this layer to your geodatabase.

9



Add two fields to the layer’s attribute table you just exported and use the “Field Calculator” tool to **calculate the volume of the water** from a 0.2%-annual-chance flooding event in each of the parcels using the following calculations:

**For Cubic Feet:** Select the Sum field and multiply it by 100 to get the amount of water by cubic feet.

**For Acre Feet:** Select the Volume by Cubic Feet field and divide it by 43,560 to get the amount of volume by acre feet.

10



**Symbolize the layer** based on the calculated volume of flood water.

**Note:** This map now illustrates the distribution of parcels that have at least one structure on them, have greater than or equal to 50% of undeveloped land use/land cover, and are within the 0.2%-annual-chance depth grid area.

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Examine the results of this analysis to help **visualize the areas with the greatest amount of potential flood volume**. This analysis identifies ways to use the land to reduce flooding risk for current and future structures.