

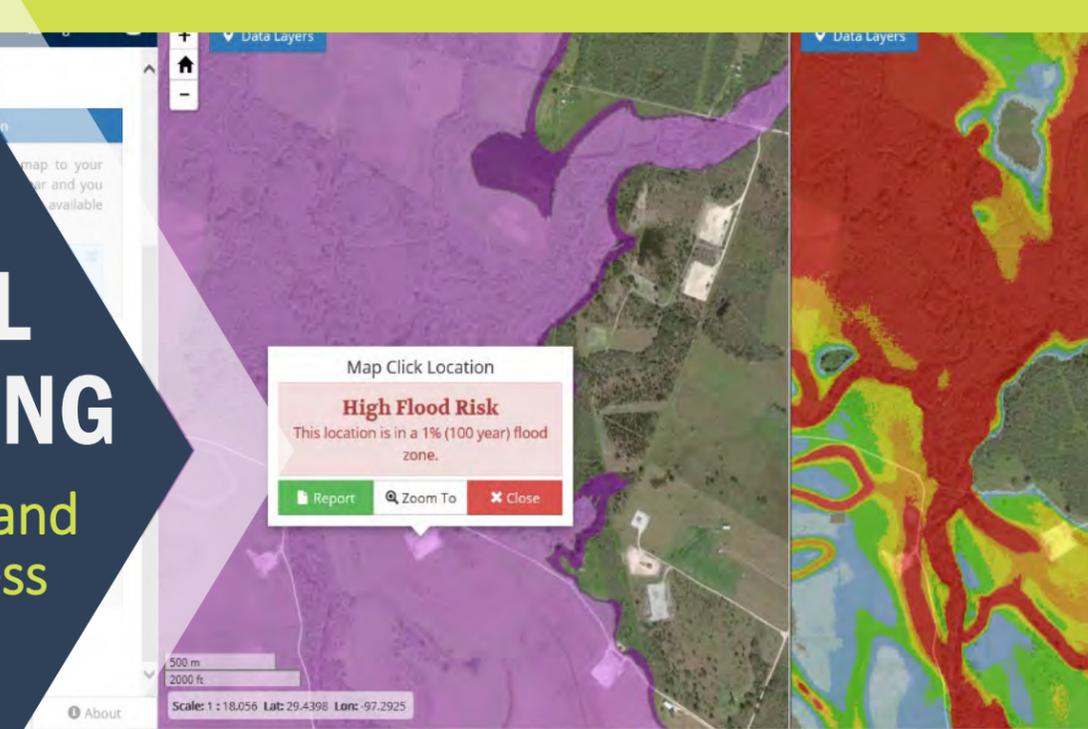
Now that you have identified your flood risk, what should you do next?

First, review the flood depth information for the two events and determine the flood risk in the vicinity of your property. Meet with your local building and floodplain officials to collect more information and make your plan.

- Local building and permitting varies by community; discuss your individual property building requirements.
- Elevating your living structure above the estimated BFE is a good way to reduce your risk of flooding during the 1% annual chance storm event. Any property or structure can be impacted by flooding.
- You can elevate your HVAC and other utilities above the BFE to reduce your financial risk when a flood occurs.
- Elevating your home above the minimum standard may provide a few additional benefits, including a reduction in flood insurance premiums and reduce the likelihood of being affected by floodwaters or debris near your structure.
- Contact your insurance agent to determine the best flood insurance policy to insure your risk. Information made available from the Estimated BFE Viewer needs to be accepted by local community officials to be used for insurance rating purposes.
- Consider relocating your structure to minimize the hazards your home or business may encounter.
- Flood risk changes over time. Reduce future risk by building to a higher standard and using construction practices that have been shown to reduce flood risk for business and home owners.

BASE LEVEL ENGINEERING

Flood data to expand local risk awareness



THE ESTIMATED BASE FLOOD ELEVATION VIEWER

Base Level Engineering data assists community development decisions.



New development may reference the estimated Base Flood Elevation to assure new homes are built with the lowest floor above identified flood elevation. The viewer works in collaboration with any existing flood hazard information depicted on FIRMs.



Land developers may also download the available engineering models from the estBFE Viewer and review the effects their development will have should they move dirt or place stream crossings, like bridges and culverts. The BLE models can act as pre-project models and can be refined to add structures, culverts and field survey information.



FEMA and its state partners identify and prioritize FIRM update projects. If a community would like to include some of the Base Level Engineering results onto a FIRM, FEMA would like to discuss these opportunities. Base Level Engineering models are prepared to allow them to act as technical back up for BLE stream mileage that is moved onto a FIRM.



Base Level Engineering data is a great source for communities to assess their flood extent and vulnerability during local and state hazard mitigation plan updates. The datasets can be downloaded for local use. The models can be used to prepare engineering analyses or benefit cost assessments.

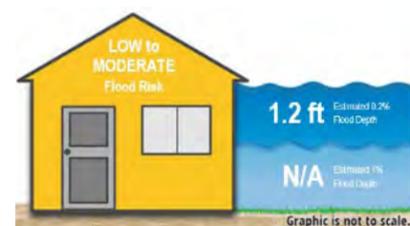
The Site Specific Report

The report produced by the estBFE Viewer includes three informational areas to provide the estimated flood hazard information intended to support individual and community decision making.

The results are determined by the tool based on the user identified location. Results are provided in both a side-by-side view and table format. **Flood depth** describes how deep flood water may be during the 1% and 0.2% annual chance storm events. The **1% annual chance storm event** indicates the probability of a storm's occurrence. A 1% chance can be better described as the probability of a single marble landing in one of 100 slots of a roulette wheel, a 0.2% chance is a one in 500 chance. The wheel is spun once each year,



Side-by-side viewports show floodplain extents on the left and 1% flood depth on the right. Estimated flood depths and water surface elevations are tabularized below for ease of use.



this indicates the selected location is within areas that may be subject to a 0.2% storm event, with low to moderate risk. It is important to understand that floods larger than the 1.0 or 0.2% events have the possibility of occurring in your area. A flood depth of 2 to 3 feet puts adults and children at risk of being swept away by storm water.

The second page of the report provides users some information on how to use the information and the report for insurance, local development coordination and submittal of LOMAs.

The web address of the report can be shared or bookmarked. The report is connected to an point (latitude, longitude)

What is Base Level Engineering?



An investment approach allowing creation of flood hazard data. This approach expands the availability of information to communities currently unmapped and unmodernized.



Engineering analysis across land areas, using high-tech modeling software and high resolution ground data to produce credible engineering analysis for thousands of miles of stream at a time.



Data informing FEMA's continuing assessment of the flood information shown on the nation's FIRMs.



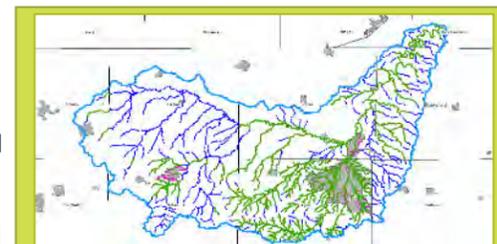
Expedient data delivery, providing useable flood information to communities far ahead of regulatory map updates.



Skeleton engineering models that can be further refined by engineering and development industry professionals working with both FEMA and local communities.

The current inventory of **Flood Insurance Rate Maps (FIRMs)** provides regulatory flood hazard information for approximately 1.3 million of the nation's 4.0+ million miles of stream. More than half of the nation's streams do not have readily available flood hazard information for individuals or communities to accurately assess and understand the potential for flooding in their area.

Base Level Engineering watershed assessments are being performed across the nation in an effort to increase the availability of flood hazard information. Once assessments are completed, thousands of engineering models are compiled into an expanded collection of spatial data allowing this information to be easily shared with the public.



Upper Clear Fork Brazos Watershed, Texas
Base Level Engineering will prepare 2,170 miles of study.
Blue and pink streams are not currently included on FIRMs

The **Estimated Base Flood Elevation Viewer** (available at <https://webapps.usgs.gov/infrm/estBFE>) an interactive web portal that transforms thousands of models and data results into a few datasets that provide users with a variety of useable and meaningful information. Users can review estimated flood extents for three different event scenarios, and can review possible flood depths in the vicinity of their homes using this tool.



Structures and land areas within the estimated flood 1% annual chance extent are identified to have HIGH flood risk. **Site specific reports provide individual results based on the user identified location.** The estimated flood elevations and flood depths are provided in easy-to-understand graphics identifying an estimate of the flood depth for the user.

Point – Click and Download

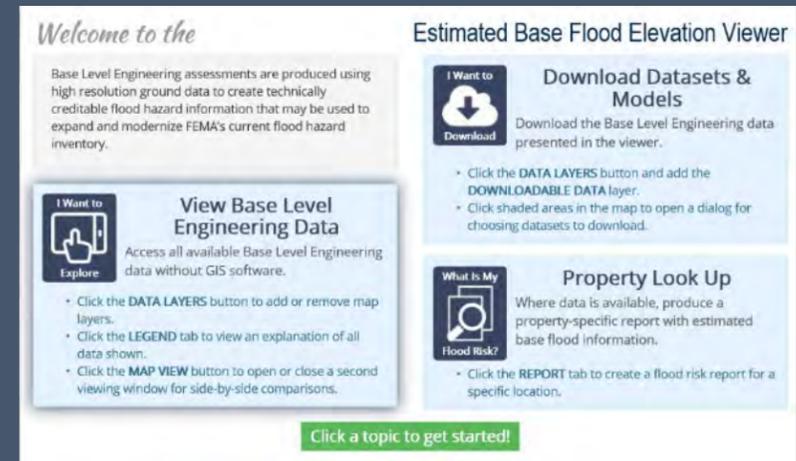
The **Estimated Base Flood Elevation Viewer** provides users immediate access to the geospatial datasets and underlying engineering models through our point-click and download feature. The areas of assessment shown on the viewer are available for download and local use.

Connect to Detailed Flood Information

The viewer also identifies where detailed study areas are shown on community Flood Insurance Rate Maps (FIRMs). When users click in an area where detailed information is available, the upgrades to the viewer allow the “click location” to be transferred over to the National Flood Hazard Layer (NFHL) to enhance the user experience and provide the most detailed flood information to the user. Users can then easily print a FIRMette for the area of interest.

<https://webapps.usgs.gov/infrm/estBFE>

Quick Launch Screen



Users can choose between three different ways to interact with the data on the Estimated Base Flood Elevation Viewer.

Just click and you will be provided a layout to suit your data needs.

Using the Viewer

Launch the Estimated Base Flood Elevation Viewer by typing <https://webapps.usgs.gov/infrm/estBFE> in the internet browser window. Users will encounter a disclaimer screen; click “OK” to clear this message.

Next, the **Quick Launch Screen** will allow the user to choose how they would like to interact with the Base Level Engineering results. Users can choose between three options:

- View Base Level Engineering Data
- Download Datasets & Models, or the
- Property Look Up tools within the Viewer

For more information on each of these selections, review the detailed information within the factsheet.

View Base Level Engineering Data

Users who choose View Base Level Engineering Data will be greeted with one view port with the floodplain extents loaded in the viewing area.



On the left users will see the legend tab is promoted. The legend provides users with information on the datasets loaded within the view port.

Other features to enhance your experience:

- Zoom in to see the floodplain extents with the **+ and – buttons** at the top left of the screen
- Choose a side by side view with two viewing windows. To load a second viewing area, click on **Map View**, at the top right of the screen.
- Load additional datasets by clicking on **Data Layers** on the upper left hand side of the viewing area. The legend will expand as new layers are added.
- Select from one of six available underlying maps using the **Base Map** menu.



For general questions about navigating the estBFE Viewer, please contact the FEMA Map Information eXchange (FMIX):
 Telephone: 877-FEMA-MAP (1-877-336-2627)
 Email: EMA-FMIX@fema.dhs.gov

Download Datasets & Models

Users who choose Download Datasets and Models will be greeted with one viewing window showing the study areas that have data packaged for download.



It is easy to download any dataset, just hover the mouse over the watershed area of interest and click.

Data Set	File Name	Size	Description	Download
HECRAS models	11130303_Models.zip	253.19 MB	Description	Download
1% event depths, raster	11130303_Depth01.zip	348.45 MB	Description	Download
0.2% event depths, raster	11130303_Depth02.zip	396.50 MB	Description	Download
1% event elevations, raster	11130303_Elev01.zip	226.19 MB	Description	Download
0.2% event elevations, raster	11130303_Elev02.zip	250.93 MB	Description	Download
Vector spatial data, file geodatabase	11130303_VectorData.zip	131.21 MB	Description	Download
Reports and documents	11130303_Documents.zip	30.12 MB	Description	Download

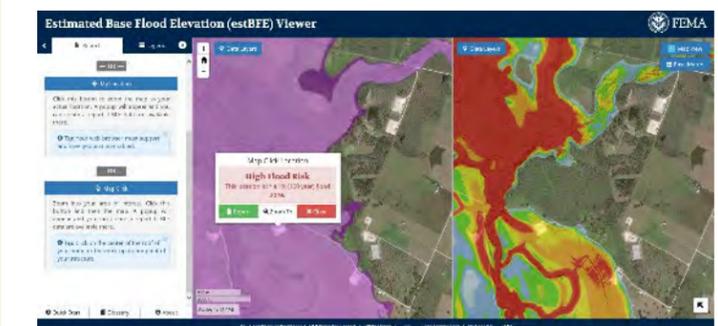
A table will pop up with a variety of options for download. Users can download the HEC-RAS models, water surface elevation grids, flood depth grids or the Vector file which houses floodplain extents, model cross-sections and streamlines. Users are given an option to download the table which will generate an Excel file with all hyperlinks.

Property Look Up

Users who choose Property Look Up will be greeted with a side-by-side double viewport, showing floodplains (1% and 0.2%) on the left and flood depths on the right.



Use the search function or zoom into an area of interest. Once the structure of interest is located, click on the center of the structure. If the location selected falls within the estimated flood extents (depicted in purple), a report can be run for that location.



The report will open in a new window. The web address of the report page is tied to a latitude and longitude, allowing it to be shared via email. The recipient will see the same report. Reports are available in the high and low to moderate flood risk areas, within the floodplains shown.

The Viewer assists LOMA Submittals

If a property owner believes that a structure is above or outside of the base flood extent in an effective Zone A, a LOMA request may be submitted and the flood risk report from the Estimated BFE Viewer should be included.

To complete an application, use the online web-based tool or download the paper forms (<https://www.fema.gov/letter-map-changes>).

A LOMA may result in removal of the SFHA designation and the Federal requirement for flood insurance. However, maintaining a flood policy may still be required by the lender. Flood insurance coverage to repair damage caused by flooding is available for areas outside the SFHA.



The Estimated Base Flood Elevation Viewer was a collaborative effort brought to life by the Data and Spatial Studies team of the USGS' Texas Water Science Center. The Region's collaboration in the Interagency Flood Risk Management (InFRM) team has allowed this vision to become a reality. The InFRM team strives to collaborate nationally, to empower locally. Learn more at www.inFRM.us.

