SSCAFCA BLE Meeting Protocol

- Please put your name, community, email address and your interest in this meeting in the chat box.
- Please mute your line
- Type questions in the chat box
- Thank you for attending
Agenda

- Introductions
- CTP & Risk MAP
- Base Level Engineering & eBFE Viewer
- SSCAFCA Areas of Interest
- Resources
What’s a Cooperating Technical Partner (CTP)?

- The CTP Program was created in 1999 to help FEMA stretch limited mapping dollars and increase local involvement from sophisticated partners in the creation of FIRMs and DFIRMs.

- The CTP Program is an innovative approach to creating partnerships between FEMA and participating NFIP communities, regional agencies, state agencies, tribes and universities that have the interest and capability to become more active participants in the FEMA flood hazard mapping and Risk MAP programs.

- Earth Data Analysis Center, University of New Mexico, became New Mexico Cooperating Technical Partner in 2014
CTP Partnerships

- New Mexico Department of Homeland Security and Emergency Management
  - Loretta Hatch, New Mexico State Floodplain Coordinator
    - Loretta.Hatch@state.nm.us
    - (505) 476-0612
- Local Flood Control Authorities – SSCAFCA
- Local Communities
What is Risk MAP?

- Mapping – Identification of areas of natural hazard risk
- Assessment – Review and analysis of hazard areas
- Planning – Mitigation activities to reduce risk
Base Level Engineering is a programmatic evolutionary step which provides:

- Credible engineering analysis and modeling for local communities and developers.
- Estimation of flood extents, water surface elevations and flood depths.
- May be adopted as Best Available Information (BAI) by communities & inform development decisions.
Approach

- FEMA has devised both a 1D and 2D modeling approach
- High Resolution Ground Data required
- Manual revisions to input cross-sections or grids during modeling
- Cross-sections added near structures
- Human Investigation of results prior to FIRM mapping

Deliverables

- Hydraulic Engineering Models (10%, 4%, 2%, 1%, 1%, 1%, 1%+, 1%-, and 0.2%)
- Estimated Flood Extents (10%, 1% and 0.2%)
- Estimated Water Surface Grids (1% and 0.2%)
- Estimated Flood Depth Grids (1% and 0.2%)
- Optional Layers also possible (Hazus Run, Point file for update potential, freeboard grids)
Creating Base Level Engineering Data

Terrain Data Collection
Is ground elevation information readily available, or must it be collected?

Hydrology
How much water are we talking about?
When will it get here?

Hydraulics
How does it react in the stream?

Floodplain Mapping
What areas are impacted?
<table>
<thead>
<tr>
<th>Current Mapping Challenges</th>
<th>Base Level Engineering Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>■ FIRM updates take 3-5 years to update through regulatory process</td>
<td>■ BLE data can be produced and delivered to communities within 9-12 months</td>
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<tr>
<td>■ FIRMs include a subset of streams within a watershed based on current and historic updates</td>
<td>■ BLE assessments performed at a watershed scale producing stream network of data</td>
</tr>
<tr>
<td>■ FIRMs depict 1% and 0.2% annual chance events</td>
<td>■ Flexibility in how results are exhibited</td>
</tr>
<tr>
<td>■ Insurance and In versus Out discussions</td>
<td>■ Discussions related to flood risks and development decisions</td>
</tr>
<tr>
<td>■ Detailed study areas require significant resources to prepare a model communities can review</td>
<td>■ Community may test drive and refine data prior to moving to a map update</td>
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</tbody>
</table>
Practical Uses for BLE Data
Practical Uses for BLE Data
Practical Uses for BLE Data
How can I use Base Level Engineering Data?
Estimated Base Flood Elevation Viewer

**Purpose:**
- Provide engineering data in a format that allows immediate use by public.
- Federal, State and local officials to estimate a Base Flood Elevation consistently.

[www.InFRM.us/estBFE](http://www.InFRM.us/estBFE)
Welcome to the Estimated Base Flood Elevation Viewer

Base Level Engineering assessments are produced using high resolution ground data to create technically creditable flood hazard information that may be used to expand and modernize FEMA's the current flood hazard inventory.

The Estimated Base Flood Elevation Viewer allows users to:

View Base Level Engineering Data
Access all Base Level Engineering available without GIS software.
Click LEGEND tab to view an explanation of all data shown in the viewer.
Click MAP VIEW button to open or close a second viewing window, for side by side comparison.
Click DATA LAYERS to add or remove layers from the map.

Download Dataset & Models
Our Data Download feature makes all of our Base Level Engineering data available to you for download.
Click DATA LAYERS and add the DOWNLOADABLE DATA layer. Once loaded, users can choose which datasets to save.

Property Look Up
Where data is available, users can produce a property specific report with estimated Base Flood Elevation and Flood depth information.
Click TOOLS tab to create a property specific flood risk report with details in your vicinity.
Estimated Base Flood Elevation (estBFE) Viewer

Flood Depth (1%)

- ≤ 1 foot
- > 1 to 2 feet
- > 2 to 3 feet
- > 3 to 4 feet
- > 4 to 5 feet
- > 5 feet

Comments: Depicts estimated water depths above land surface during a 1% annual chance storm event (a storm that has a 1/100 chance of occurring in any calendar year).

Base Map: Dark

Comments: This base map provides a dark, neutral background with minimal colors, labels, and features to minimize distractions and enhance the data from sources.
Estimated Base Flood Elevation Viewer

1% and 0.2%
Estimated Flood Extent

1%
Estimated Flood Depth
Estimated Base Flood Elevation Viewer

- Floodplains on the Left
- Depth Grid on the Right

The web address of the report can be used to share or bookmark a specific location.
Estimated Base Flood Elevation Viewer

If detailed information is available on the current effective FIRM, the viewer will alert you and offer you the option to open the National Flood Hazard Layer (NFHL).
Region 6 eBFE Viewer

There are four possible outcomes dependent upon where the Drop Pin is placed: Detailed Study Available, High Risk, Low to Moderate Risk and Low Risk. More information is available in Table below.

Flood Risk Report Details: (does not include info for 1%):
- Estimated Flood Elevation
- Estimated Flood Depth
- Longitude/Latitude
- Model Location

Flood Risk Report does not include Flood Elevations at this time. Land and structures outside of any indicated flood extent may experience flooding during an event that exceeds the 0.2% annual chance.

Note: At this time, flood elevations are only available in the High Flood Risk flood extent area.
Download the Data

www.InFRM.us/estBFE
### Download the Data

**Arroyo de Las Calabacillas-Rio Grande**

<table>
<thead>
<tr>
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<th>Size</th>
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FEMA has prepared a number of tools to assist local communities in utilizing the Base Level Engineering data locally. For more information about the downloadable files available and the contents of the Vector Geodatabase, click [here](https://www.fema.gov/media-library/assets/documents/160060). Additional tools and resources are available as well.
Hyperlinks for each of the dataset available are included in the excel file. Excel file can be sent ahead of any meeting you are going to have in the watershed areas.
2.2 HEC-HMS STUDY DATA DEVELOPMENT

2.2.1 Rainfall Determination

Each provided HEC-HMS rainfall-runoff model included the 1% annual chance rainfall event. Precipitation depth data for the 10%, 5%, 2%, and 0.2% annual chance events and partial duration based 24-hour point precipitation frequency was obtained from NOAA Atlas 14. 1% plain and annual precipitation depths were established as one standard deviation above and below the 1% 24-hour rainfall, respectively.
Products Support Local Decision Making

**Educate your Community and Make a Plan**
- Public awareness campaigns
- Map and publicize potential inundation areas
- Training for local staff
- Community Emergency Response Teams
- Community preparedness exercises
- Evacuation signage

**Conduct Mitigation Projects Downstream**
- Acquisition
- Elevation
- Detention and/or drainage projects

**Encourage Smart Land Use and Development Decisions**
- Determine and enforce acceptable land uses in downstream areas
- Increase permeability and infiltration
- Maintain open space downstream
- Encourage stream and wetland restoration

**Enact Management Best Practices**
- Develop a dam failure study and emergency action plan
- Manage stormwater regionally
- Implement an inspection, maintenance, and enforcement program to ensure structural integrity

**Strengthen Local Codes**
- Local inspection and enforcement
- Enact higher floodplain management standards
- Require green infrastructure

**Public awareness campaigns**
- Map and publicize potential inundation areas
- Training for local staff
- Community Emergency Response Teams
- Community preparedness exercises
- Evacuation signage
What can I do with BLE?

BLE and Your Community Resolution Structure

Your community is structured in a way that dictates **HOW** and **WHEN** you can use Base Level Engineering information.

- **For Example:**
  - Storm County bylaws dictate that new flood hazard information can only be adopted when FEMA publishes it on a new FIRM.
  - The Town of Seiche has an ordinance that requires public presentation of new data at a Town Council meeting and a vote on it’s official usage.
  - Hazard County requires an update to it’s zoning overlay districts (which comes with it’s own public review and community approval process) before any new flood hazard information can be used.
Base Level Engineering as Best Available Information

- Communities are required to reasonably utilize BFE information when available
  - 60.3(b)
- FEMA’s Best Available Information Policy:
  - FEMA Policy #104-008-02
- BLE MAY be considered Best Available Information (BAI) and adopted by communities
BLE Areas of Interest
Mat Hornack, ESP & Associates
SSCAFCA 2D Modeling

- Used split breaklines to allow flow to pass through embankments
SSCAFCA 2D Modeling

Camino De Los Montoyas Park
SSCAFCA Area of Interest

- Terrain near Big R Stores – Santa Ana Pueblo
  - Near the intersection of US HWY 550 and Pat D’Arco Hwy
- Terrain shows discrepancy with imagery
- Outside of BLE scope to adjust this
SSCAFCA Areas of Interest
SSCAFCA Areas of Interest

- If looking at RAS model:
  - Gaps may or may not be real
  - There are differences in mapping using calculation points and mapping from RAS Mapper

- Notice cell spacing and orientation could be adjusted for areas of interest to improve model results
SSCAFCA Areas of Interest
SSCAFCA Areas of Interest

- Along the Rio Grande, some models tie-in at the 2D flow area boundaries and others do not
- Rio Grande was not a focus of the study (most of it has been previously studied)
  - *If Rio Grande is analyzed in future study, should add levees, structures, breaklines, and establish downstream WSELs*
- La Barranca and Montoyas boundary discrepancy shown on next slide
  - *This location is within a detailed study area*
SSCAFCA Areas of Interest
SSCAFCA Areas of Interest

- Area near the north end of Loma Larga Rd in northern Corrales
- Example where an overtopping area was considered unrealistic
- Important to see some of the limitations of the BLE approach
SSCAFCA Areas of Interest

- Dam
- Overtopping Area
Lidar Returns

Forest Resource Assessment Nepal
Current 10 Meter DEM vs USGS QL2 Lidar
More BLE Information & Resources

FEMA BLE Resources
https://www.fema.gov/media-collection/base-level-engineering-ble-tools-and-resources

• Estimated BFE Viewer
• Overview – What is Base Level Engineering?
• Using the Estimated BFE Viewer
• BLE as Best Available Information
• HOW2 – Find the Right HEC-RAS Model
• Fact Sheet – Flood Depth Grids
• BLE and Letters of Map Revision

Plus many more
QUESTIONS

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