

Questions and Answers from the May 12, 2020 CTP Webinar: Coastal Letter of Map Revisions – MT-2s

In the example given for South Carolina, if the site area is naturally elevated above the coastal BFE, can an MT-1 LOMA application be done in this area? Or are MT-1 applications not allowed in coastal areas?

MT-1s are allowed, but in the event the property is in a coastal high hazard area (CHHA), there may be restrictions regarding things like the presence of a Primary Frontal Dune or fill in a V zone.

When notifying adjacent property owners of rise in flood elevation, what degree of accuracy is used? Nearest 0.1 foot?

Coastal BFEs are reported in whole foot increments, so all increases would be indicated as 1 foot or more.

Who signs the MT-2? You noted the FP admin or BO signs, but correspondence from one of FEMA's contractors indicates it is the CEO. The instructions I've received from Compass based on previous coordination with FEMA Region IV: On the County level, the CEO is the County Administrator. However, you will have to cc the BOCC and FPA. On the City level, the CEO is City Manager. You will cc the Mayor and FPA. Note, some cities/towns will not have a city/town manager. In this instance, the CEO will be the Mayor. You will cc the FPA only on the community level.

The floodplain administrator (as defined by the community's ordinances) or their designee signs Form 1. That could be the CEO, a department director, or a designated staff person who is not the official FPA but has been officially designated by the FPA with the authority to sign off on the application.

Can the addition/restoration of vegetation be considered as part of rational for C/LOMR?

Technically, yes. This would be considered a change in the conditions at the site that could be reflected in monitoring, but there may be questions regarding vegetation age, extent of establishment, and may depend on local conditions. Landscaped areas may not be considered as stable or as able to provide wave dampening as older, native-established vegetation like mangroves.

I didn't think communities needed to adopt anything to enforce CAZ regulations, if the LiMWA is on the map they have to, can you discuss?

The LiMWA is a non-regulatory feature, so communities are not required to adopt anything and FEMA does not provide any regulations for how this area is treated. Communities, more often states, have included the Coastal A zones in their building codes as areas where V zone building standards are required. This is completely up to the building and zoning authorities of the states and communities as FEMA does not regulate these areas federally.

When reviewing a CLOMR-F/LOMR-F, is there any consideration taken for the capacity of a non-certified levee? If an applicant receives approval for a CLOMR-F/LOMR-F for a project that is adjacent to a non-certified levee, can the reviewing agency assume FEMA has considered this and doesn't have any concerns regarding contain ability for the levee?

In general, non-certified structures are treated as intact/failed or are removed completely from the analysis as though it weren't there, as this structure cannot be guaranteed to provide any protection. Treatment of these structures depends on items such as: site locations, proximity to the open coast, structure type, water levels, and local conditions. Guidance requires that any non-certified structure be treated as it is assumed it is providing limited-to-no protection for the surrounding area. Examples of these types of structures could range from elevated road beds, single layer riprap revetments to large engineered levees (like in Louisiana) that are not specifically designed to withstand the coastal event. If the reviewing agency has concerns about the treatment of these types of structures, we would encourage them to independently investigate them as necessary as the evaluation undertaken for an MT-2 case may not meet the level of scrutiny required by local agencies.

Can you talk a bit more about what the threshold for when a coastal CLOMR would be required? What level of impacts within a V zone is considered equivalent to the typical A zone threshold of increases in a floodway?

FEMA requires a CLOMR to be submitted when the project will increase the base flood elevation by more than 1 foot in either the floodplain or the floodway. However, a community may additionally require a CLOMR for other reasons, such as for a project in a flood prone area as a condition of obtaining a building permit.

Would beach nourishment in a V zone result in lower flood risks after a proper erosion analysis is performed?

Not usually. Generally speaking, beach nourishment only has direct impacts up to and sometimes including the dune system. In areas where the immediate coastline area gradually increases moving inland (so not areas where the areas behind the dunes are still relatively close to sea level), most of the immediate storm generated wave action is diminished along the open coast, generally ending V zones naturally somewhere near the dune systems due to the sudden decrease in total water depth available for waves. It is possible that nourishment (more often, dune nourishment) can affect the overall post-erosion profile in such a way that the modeling BFEs or V zones are diminished sooner than no nourishment conditions, but it's also important to keep in mind that the inland limit of the V zone is governed by other variables like runup modeling and PFD delineation.

Am I to understand that there is 4-feet of freeboard built into V and Coastal-A BFEs?

No, coastal BFEs in VE and AE Zones that are published on Flood Insurance Rate Maps (FIRMs) have no freeboard added. They are a direct output from modeled coastal flood hazards at the 1-percent-annual-chance level, including, but not limited to storm surge and waves. You must add freeboard on top of the published BFEs based on your local community adopted ordinances.

How are the freeboard levels related to the freeboard requirements of communities?

Freeboard levels dictated by Federal regulations are the minimum that must be adhered to. Local communities may adopt additional freeboard requirements if it desirable to do so. Always check your local community requirements before starting a project.

If a coastal structure exists (not 1% certified) and will be considered completely failed, does the MT-2 Coastal Structures Form need to be completed to demonstrate that it is completely failed?

No, form 5 is only required for certified coastal structures.

Is an “operation and maintenance (O&M) plan” required for a coastal structure that is demonstrated to be partially failed, or completely failed?

No, it is only required for structures that are being certified to withstand the 100 yr flood (1%-annual-chance event).

What are the limits of a community’s responsibility or accountability for verifying Coastal MT-2 Application information? It may be beyond the community’s technical capabilities.

If a community does not have the technical capacity to evaluate the application analysis and is not comfortable signing Form 1, they can instead write a letter on an official community letterhead explaining their reasoning for not signing and defer the technical review to FEMA for evaluation.

Are approved LOMR's reflected in SFHA GIS layers that can be downloaded from the map service center?

Yes, once a LOMR is effective, the GIS layer will be updated on the MSC and will also appear on the NFHL.

Who decides what is a significant increase in flood level? Is about 0.1' rise significant threshold?

For coastal areas, FEMA guidance indicates that notifications must be given to any impacted property owner for *any* increase in flood risk. In order to meet CFR requirements, FEMA guidance indicates that increases of greater than 1 foot are considered significant.

Can the LOMR be submitted and the Community acknowledgement provided afterwards?

Ideally a LOMR/CLOMR, should be submitted to the community for approval prior to submitting a case to FEMA. If a community signature is not submitted with the case, the reviewer will ask the applicant to have the community sign the MT-2 form. At that time, the community should review the information provided for the

LOMR/CLOMR before signing. Community signatures or a letter from the community indicating its reasons for not signing must be provided before the case can be approved.

Will the technical information that FEMA contractors used to develop the flood maps be made available to the public? i.e. SWEL or topo rasters, starting wave conditions?

That data is provided directly to the communities during the post-study and outreach phase. Once the data is approved and a community received a Letter of Final Determination (LFD), the data is made publicly available on the FRisEL site, as mentioned. This is the data required to revise the maps. Data from historic studies are also available, but may require coordination with the engineering library to obtain as it may be archived.

If change in BFE is less than 0.5', is CLOMR required?

Coastal BFEs are measured in whole foot increments. If the BFE would ultimately not increase (meaning a change of 0.44' or less), a CLOMR is not required by FEMA, but may still be required by local agencies.

Can LOMR be filed directly without CLOMR due to time and schedule constraints?

If a flood control structure has already been built without a CLOMR, a LOMR can still be filed but will still be subject to the LOMR following a CLOMR fees and requirements in order to certify the structure. However, the desired changes to the flood boundaries may not be achieved if any issues arise with the analysis that would affect the boundary position. A CLOMR allows a developer to check that the desired protection levels can be achieved and any necessary design changes can be made prior to incurring construction costs.

2D studies in Maine, where I am located. What do they look like, or how do we use them?

Currently, these studies (York and Cumberland Counties) are in the preliminary stage and have not yet gone LFD. If you are in one of these counties, please contact your floodplain administrator for more information specific to these studies.

2D modeling is not appropriate for coastal tidal surge events! It is, was, and is maintained by the Corps of Engineers for riverine and overland flooding? Explain!!

Your opinion is noted. Typically, 2-D modeling can be accurate in capturing coastal hydraulics and processes than 1-D modeling. Any coastal modeling used for mapping on Flood Insurance Rate Maps (FIRMs) are maintained by FEMA.

Will our LAMP study be included in the FIS when our maps are done (Louisiana)?

Yes, at the end of a LAMP study, the agreed upon approach for determining flood risk behind the levee will be mapped and a revision to the Flood Insurance Rate Maps (FIRMs) will be made to represent that risk.

So what about the other regions on the West Coast and Alaska? Is this only focused on the east coast?

We covered the Pacific in brief as some methods are similar to what was already covered as well as due to time constraints for this Webinar. Future Webinars more focused on individual regions are under consideration for the future.

How are roadways treated, as a fill or a structure? If the model takes advantage of a roadway to show less hazard?

Roadways are treated as part of the topography if already existing or as fill if they are proposed (Note: roadways are not considered part of the structural fill restriction in V Zones). However, special care should be taken if a roadway promotes channelization of floodwaters.

Was seiche and glacial rebound considered in the 2D models for the Great Lakes?

Seiches were considered for the water level modeling methods for the Great Lakes. If the high water level was the result of a historic seiche and was one of the top historic highs, that event was captured and simulated in the modeling. Glacial rebound is occurring at geological time scales and is only captured as it presently exists, the current relative ground elevations. If over time glacial rebound impacts, the depiction of flood risks, updates can be made at that time. FEMA evaluates the risks of flooding and how it is shown on Flood Insurance Rate Maps (FIRMs) every five years, through the Community Needs Management System (CNMS).

What coastal features in the Great Lakes merited the different approach from the East Coast and West Coast methodologies?

Mainly the characteristic of the storm events that result in the flooding are different for the Great Lakes than the Atlantic and Pacific. The storms that produce the worst flooding condition on the Great Lakes are typically large (strong wind) winter storms or large Spring storms when lake levels are high. These historic storms cannot be broken down into parameters such as central pressure and statistically analyzed like they are on the Atlantic, hence the need to simulate historic events. In the Great Lakes, we also need to look at the events that cause high water levels separately from events that cause large waves, as each can result in flooding conditions. These differences make it necessary for the specific type of analysis in the Great Lakes, however there are pieces of the methodology that could also be used in other areas. For instance, the adoption of a processed based 1D model for erosion as opposed to empirical and parametric methods that are used for dunes on the Atlantic coast.

Is CSHORE the only acceptable model for this, or would XBeach be allowed?

How does CSHORE compare to XBEACH? Can we use XBEACH instead of CSHORE?

CSHORE is not the only acceptable model that can be used. CSHORE was selected for use in the Great Lakes by FEMA as a standard and consistent model for application across the Great Lakes. The USACE documented its validation for use in the Great Lakes, see below report links. Similar documentation and validation are needed for FEMA to accept alternative models.

<https://www.greatlakescoast.org/pubs/reports/CHL+TR-12-16.pdf>

<https://www.greatlakescoast.org/pubs/reports/CHL+TR-12-24.pdf>

<https://www.greatlakescoast.org/pubs/reports/CHL+TR-12-22.pdf>

Is the CSHORE model from USACE a free software?

Yes, CSHORE for the purposes of FEMA flood modeling is freely available. For other uses, you should check with the USACE. Note that the model is developed in partnership with the University of Delaware and there may be several versions under development. As such, please check the model version being used. Version in use by FEMA can be obtained from the following web site: <https://sites.google.com/site/cshorecode/>

Have any national level or LOMRs been performed using a 2-D overland wave model instead of WHAFIS?

2-D overland wave models are not currently included in FEMA's list of approved models for LOMRs. Investigations on how this type of modeling could be applied to overland wave modeling are under consideration at FEMA, but there are significant modeling considerations and parameters that would need to be rectified between the current 1D modeling and a 2D application.

For a Coastal Structure that is claimed to be 1% certified, or to partially fail, can an engineer send a letter stating the structure is certified, or a letter stating that it will partially fail, or is an analysis always required for either case?

Documentation of the 1% certification will be needed if an application is asserting that the structure will remain intact for the analysis, but the 1% certification is not needed if the structure is considered to partially fail. The 1% certification will require a calculations package to provide technical justification for the certification.

BFE in wave run-up zone and Overtopping zone is the same?

BFEs for wave runup are determined by the magnitude of the runup wave on the affected feature. Overtopping zones (AO zones) are a result of sheetflow from the wave runup and are measured in depth (1, 2, or 3 feet) rather than Base Flood Elevation.

With recent high Great Lakes water levels increasing, there are now or in near future be new lake levels that are above existing 1% SWEL used in new flood study analyses. Question: Can a requestor for a coastal LOMR use that new lake level information even if it has not been officially adopted and included in the new FEMA coastal studies?

The Great Lakes methodology is based on historic storms that have occurred at various lake levels, some high. Statistically, it is not expected that the current high lake levels are significant to the analysis at this time, however the future may change this if the lake levels continue to remain high. The existing studies were also based on the long term lake level average that the USACE sets. With just a few years of high lake levels, this long term average has not gone up significantly. Again, if lake levels continue to remain high in future years the long term average lake level may increase. Evaluating the flood risk to properties and structures from high lake levels is recommended however for the purposes of FEMA Flood Insurance Rate Maps (FIRMs), FEMA does not currently consider future conditions, hence it is recommended not to consider the current high lake levels for a LOMR request. Note you may choose to evaluate these impacts for a LOMR, however it would be a much larger level of effort to do so then not and is not required by FEMA at this time.

I forget... are there going to be V-zones on Lake St. Clair?

Yes, VE Zones will be mapped anywhere wave heights reaching the shoreline are greater than 3 feet. This include the shorelines of Lake St. Clair.

The ones in Ohio that have gone effective are Cuyahoga, Ashtabula, and Sandusky Counties. Lake, Lorain and Erie will likely go LFD late this summer or in the fall.

Correct.

Why is erosion not usually applied (in the Pacific)?

Beach and dune erosion analysis is applied in all appropriate sandy reaches of the open Pacific shoreline in CA, OR and WA as per the methods adopted in the FEMA 2005 Pacific G&S, and current transformed FEMA Guidance on Coastal Erosion (Nov 2015). The Most Likely Winter Profile is preferred method but requires the type of long-term beach profile monitoring mentioned in question. The two other main reasons erosion analyses are not performed for a transect and/or reach of shoreline would be due to presence of bluffs or coastal structures in the analysis area. Bluffs are generally erodible but there are no adopted methods in FEMA guidance to analyze and map shoreline change for bluffs; there is coastal structure failure and erosion considerations adopted into FEMA guidance on Coastal Structures (Nov 2015).

When you obtain a CLOMR, and construct a project as presented and approved in the CLOMR, the LOMR approval should be consistent with the CLOMR approved model and mapping, correct?

Correct. If the as-built conditions for the LOMR match the conditions proposed in the CLOMR, the proposed map changes will be made. If the as-built conditions differ from the CLOMR conditions (built in a different orientation, wall design changes, etc.), then a new analysis will be required.

On the pacific coast, dynamic setup governs, not average setup. I don't think the wave models included dynamic setup but rather average setup?

Correct, on the Pacific coast the dynamic component of wave setup is added using empirical formulas or a 1-D model, in combination with wave runup and statistically analyzed to get the 1-percent-annual-chance total water level.

PFD is defined by US Congressional legislation (not engineered or scientific based) and includes specifically that a PFD is defined as "overtopped and eroded", in other words, BOTH overtopped and eroded. In my experience, FEMA appears to define PFD differently from this legislative definition, by defining a PFD in an area where the 1% storm does not overtop the eroded dune? When mapping the PFD, Is FEMA able to redefine PFD differently than the US law?

Actually, the specific definition given in 44 CFR 59.1 for Primary Frontal Dune is as follows:

"Primary frontal dune means a continuous or nearly continuous mound or ridge of sand with relatively steep seaward and landward slopes immediately landward and adjacent to the beach and subject to erosion and overtopping from high tides and waves during major coastal storms. The inland limit of the primary frontal dune occurs at the point where there is a distinct change from a relatively steep slope to a relatively mild slope."

There is no legislative requirement that the dune be "overtopped and eroded". In addition to the PFD requirements outlined in 44 CFR 59.1, FEMA maintains guidance on the PFD as well as a fact sheet. It is also possible that for a specific county, conditions may be such that FEMA gives approval for the use of non-standard methods for delineation but ensures that these methods are compliant with federal standards. Please refer to FEMA guidance, standards, and the study FIS for information regarding the delineation of the PFD. In some instances, some states have specific requirements as to how the PFD must be delineated, so it may be necessary to coordinate with the state for permitting, etc.

Do the new studies provide a dataset for the 500-year floodplain if we want to make that our BFE?

The datasets for the 500-year modeling are available but cannot be used to determine the BFE on the FIRMs. They can, however, be used for building requirements or planning purposes if desired by local/state agencies.

When conducting a LOMR/CLOMR analysis with the new study approach, should we use the varied SWEL along the modeled transects?

The analysis should be conducted consistent with the methods employed in the effective study, so if a 2D surface was used to model SWEL along the overland transects, then yes, the varied SWEL should be used along the transect.

Is there a plan to update all these old software (WHAFIS, RUNUP) and CSHORE?

There is no current FEMA plan to update software used for recent coastal flood insurance studies. Note CSHORE is a more recently developed model and is continually being developed by the USACE and University of Delaware. FEMA is not technically responsible for many software programs used to generate FIRMs, so software updates are generally issued by the owning/developing entity.

What is the purpose of the Community Acknowledgement form? By signing it, does the County agree that the analysis is correct? Or is this more of a we understand that the Applicant is submitting the form?

Not every community has the technical capability to evaluate these modeling packages, but the form serves a couple of purposes. For one, it is basically a “we are aware of this case, it meets our community requirements, and we will enforce any changes made to the mapping as a result of this application” type of item. Secondly, as mentioned in a previous response above, the community may write a letter and specifically state that they don’t have the capacity to review the case itself and are ultimately in agreement with FEMA’s determination on the matter. Thirdly, some communities do have staff that can take a cursory review and determine whether there are specific areas of concern they see, or if they do not agree with the package and refuse to sign. If a community has specific concerns about a package, they can certainly submit a letter of their concern and the reviewers can take extra care with those items, but ultimately the review will only be able to determine whether the package is acceptable to FEMA standards and will not determine if the package is acceptable for any additional community-specific standards.

How extensive should the H&H be for a LOMR?

As extensive as it needs to be. Every situation is different. It is up to the requestor to determine the level and detail that is needed for the analysis at any given location. You may consult with FEMA before starting a project.