



FEMA

November 7, 2018

Mr. Robert Hall
Supervisor, Township of Lake
248 Carolyn Drive
Lake City, MI 49651

Re: 30 Day Engineering Models Notification

Dear Mr. Hall:

Risk Mapping, Assessment, and Planning (Risk MAP) is a Federal Emergency Management Agency (FEMA) program that helps communities identify, assess, and reduce their flood risk. As a part of this initiative, and as a result of the Discovery meetings held within the Muskegon Watershed between October 30 and November 9, 2017, FEMA has identified various stream reaches that require new study investments, and funds have been allocated for this work. FEMA standards require that you receive written notification of the modeling methods that will be used to evaluate and map these reaches as they affect flood hazards in your community. Should your community have questions or comment please bring these to our attention no later than 30 days after this letter is received by your office. Our contact information is provided at bottom.

Over the next two years, hydrologic and hydraulic analysis will be developed for select stream reaches in the Township of Lake and used to determine new Special Flood Hazard Areas (SFHAs) that will be presented on draft work maps. The SFHA is an area that is subject to inundation by the 1-percent-annual-chance flood (also called the base flood). By combining quality engineering with updated flood hazard data, FEMA provides accurate and easy-to-use information to enhance local mitigation plans, improve community outreach, and increase local awareness to flood hazards. FEMA conducts updates to community Flood Insurance Rate Maps (FIRMs) for many reasons; these include availability of more current and accurate source data such as topography information (LiDAR) and rainfall. In addition, local drainage patterns can change due to changing land use and/or natural forces. Given these factors, the likelihood of flooding in certain areas may have increased or decreased over time, changing the SFHA designations and mapped floodplain.

Based on study validation records and recommendations from the Discovery process, FEMA has identified streams in the Muskegon Watershed that should be studied. FEMA standards require that you receive written notification of the modeling methods that will be used to identify flood hazards in your community. These are summarized in the enclosed Engineering Models Summary Table and online map viewer. To access information on the online map viewer visit: http://bit.ly/muskegon_osceola. In the Muskegon Watershed, these methods will be used to calculate peak flow rates, in accordance with Michigan preferences:

- Gaged streams: Bulletin 17B, USGS, March 1982
- Ungaged Streams with drainage area less than 20 sq miles: *Computing Flood Discharges for Small Ungaged Watersheds* (Sorrell); and
- Ungaged Streams with drainage area greater than 20 sq miles: *USGS WRIR 84-4207 (USGS, Statistical Models for Estimating Flow Characteristics of Michigan Streams. WRIR 84-4207. Lansing, Michigan, 1984.)*
- Recorded WSELs or statistical analysis: Information and data provided by Michigan Department of Environmental Quality

The HEC-RAS 5.0.5 hydraulic modeling software will be used to calculate water surface elevations and inundation extents of each modeled reach. These modeling methods are standard for determining the 1-percent-annual-chance floodplain in FEMA approximate study with structures study areas. FEMA has not included Effective Flood Insurance Study (FIS) model data in this tabulation of streams; it is expected that floodplain mapping compiled for Effective FIS model streams will be re-delineated using updated topography or LiDAR.

Upon receipt of this notification, your community will have 30 days to consult with Ken Hinterlong at FEMA Region V (email: ken.hinterlong@fema.dhs.gov, phone: 312-408-5529) or Matthew Leshner with the contractor team STARR II (email: matthew.lesher@stantec.com, phone: 614-844-4010) regarding any questions or comments on the appropriateness of the selected methodology for updating the Township of Lake FIRMs.

There will be additional opportunities throughout the mapping process for your community to review, comment on, and submit formal appeals to draft flood hazard information. We look forward to working with you and other community officials to increase flood risk awareness and mitigation actions in the Township of Lake.

Sincerely,



Mary Beth Caruso
Director, Mitigation Division
FEMA Region V

Enclosure:

Muskegon Watershed Engineering Model Summary Table

cc: Matt Occhipinti, State NFIP Coordinator, MDEQ
Mario Fusco, Unit Supervisor, Hydrologic Studies and Dam Safety Unit, MDEQ
Jake Patin, Floodplain Engineer, Grand Rapids District Office, MDEQ
Joy Brooks, Floodplain Engineer, Saginaw Bay District Office, MDEQ
Susan Conradson, Floodplain Engineer, Cadillac District and Gaylord Field Office, MDEQ
Ken Hinterlong, Project Engineer, FEMA Region V
Christine Meissner, Community Planning Specialist, FEMA Region V
Matthew Leshner, Project Manager, STARR II
Korinda Winkelmann, Clerk, Township of Lake

Muskegon River Watershed Engineering Model Summary Table

Flooding Source	Flood Zone on FIRM	Downstream Study Limits	Upstream Study Limits	Hydrologic Model or Method	Hydraulic Model or Method
Tamarack Lake	Zone AE	215 feet East of Park Drive and Lincoln Avenue	220 feet West of Collard Drive	Recorded WSELs or statistical analysis	HEC-RAS 5.0.5
Twin Creek		Confluence with Muskegon River	0.1 miles North of Fifth Street and 150 feet East of the City of Ewart		
Mitchell Creek		Confluence with Muskegon River	450 feet west of City of Big Rapids community boundary		
Hersey River		Confluence with Muskegon River	50 feet west of the Township of Hersey border		

Muskegon River Watershed Engineering Model Summary Table

Flooding Source	Flood Zone on FIRM	Downstream Study Limits	Upstream Study Limits	Hydrologic Model or Method	Hydraulic Model or Method
Little Muskegon River		West County Line Road, 75 feet east of South Newcoshia Road	500 feet East of the eastern edge of North County Line Road		
Clam River		Township of Clam Union southern border	Township of Lake western border	Gage Analysis	
Muskegon River		Township of Freeman western border	450 feet Northeast of East Beller Road		
Houghton Lake (Muskegon River)		East Houghton Lake Drive	Holly Avenue flowing into Houghton Lake		
North Branch Denton Creek		0.27 miles East of East Nestle Road	0.8 miles West of Crooked Road	MDEQ Modified SCS	
Sherlock Creek		30 feet east of 115th Avenue	North side of Big Stone Lake Road		
Windover Lake		70 feet Southeast of Spring Road	120 feet Northwest of Grass Lake Avenue		
Higgins Lake		40 feet south of the intersection of Michigan Central Park Boulevard and Ironwood Road	350 feet North of Surfside Drive	Recorded WSELS or statistical analysis	
Green Creek	Zone A	Confluence with Muskegon River	370 feet West of Strawberry Road		
Tamarack Creek		West County Line Road on the Township of Montcalm border	0.2 miles South of Deaner Street and Paepke Road		
Lake James		130 feet East of Silverwood Drive	350 feet Southeast of East Nestle Road		
Denton Creek		250 feet Northwest of Holly Avenue flowing into Houghton Lake	130 feet East of Silverwood Drive, flowing from Lake James		
Denton Creek		350 feet Southeast of East Nestle Road	0.8 miles West of Crooked Road	Regression	
Big Stone Creek		Confluence with Muskegon River	60 feet north of Four Mile Road		
Doc and Tom Creek		Confluence with Muskegon River	0.4 miles west of Twentieth Avenue		
Middle Branch River		Confluence with Muskegon River	0.17 miles south of Twenty One Mile Road		
West Branch Muskegon River		460 feet northeast of East Beeler Road	0.75 miles West of North Young Road		
Hershey River		Township of Hersey western border	0.5 miles North 8 Mile Road		
Clam River		Township of Wexford border with Township of Missaukee	200 feet North of Chestnut Street flowing from Lake Cadillac		
Muskegon River		0.3 miles upstream from North of US-31-BR also called Skyline Drive and South Clety Street	0.15 miles East of Juniper Avenue		
Muskegon River		Township of Aetna western border, 0.3 miles South of the Township of Mecosta border	Township of Sylvan, 160 feet South of the Township of Middle Branch	Gage Analysis	
Bear Creek		430 feet northeast of Whitehall Road	170 feet East of East River Road		
Hemlock Creek		Hemlock Avenue flowing into Doc And Tom Lake	250 feet south of Mannsiding Road	MDEQ Modified SCS/Regression	
Muskegon Lake	Zone AE	Lake Michigan	460 feet North of US-31-BR also known as Skyline Drive, 0.3 miles East of the border of the Township of Muskegon and Muskegon		
Lilly Lake		North Harding Avenue near West Lily Lake Road	300 feet north of Judy Trail		
Berry Lake		440 feet east of South Forty Seven Road	0.4 miles south of East Forty and a Half Road	Recorded WSELS or statistical analysis	
Wolf Lake		300 feet north of MacArthur Road	350 feet north of North Stewart Street		
Lake Missaukee		0.1 miles west of the intersection of South Lakeshore Drive and Henry Street	0.3 miles east of Arrowhead Trail		

HEC-RAS 5.0.5