Discovery Report Appendix M

Watershed Recommended Scope of Work Memorandum
Mid-Hudson Watershed
HUC 02020006

June 2017

Federal Emergency Management Agency
Department of Homeland Security
26 Federal Plaza
New York, NY

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

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May 26, 2017

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26 Federal Plaza
New York, NY 10278-0002

Re: Mid-Hudson Watershed Recommended Stream Segments for Study

Please accept the State's priorities for new or revised floodplain mapping within the Mid-Hudson Watershed as developed by the Mid-Hudson Discovery project. Two initial pre-Discovery community engagement meetings were held for all stakeholders within the Mid-Hudson Watershed via webinar on May 10th and 11th, 2016. The purpose of these initial webinars was to introduce stakeholders to the Discovery project concepts and discuss upcoming timelines for future meetings that should be attended.

Following the pre-Discovery community engagement meetings, the project team held five Discovery meetings for stakeholders within the Mid-Hudson Watershed during the week of October 17, 2016. The Greene County Discovery meeting was held the morning of October 18th; the Ulster County Discovery meeting was held the afternoon of October 18th; the Albany County Discovery meeting was held the afternoon of October 19th; the Rensselaer County Discovery meeting was held the morning of October 20th and the Columbia County Discovery meeting was held the afternoon of October 20th. During these meetings the project team followed up on the information collected during the pre-Discovery webinars and through Discovery stakeholder surveys sent to communities before the meetings, discussed the Discovery process, collected information on community mapping needs, as well as determined if any existing data could be incorporated into a future Risk MAP project. The project team used the information collected throughout the Discovery process to develop this list of floodplain study priorities and recommended scope of work. Since more stream study requests were provided than can be studied as part of a Risk MAP project, all study requests will be entered into FEMA's Coordinated Needs Management Strategy (CNMS) database to be considered for future floodplain mapping projects.

NYSDEC's highest priority is the development of digital countywide Flood Insurance Rate Maps (FIRMs) for both Rensselaer and Columbia Counties. The State is willing to work with FEMA to adjust the scope of work to accommodate that goal, and ensure the areas with the greatest needs are updated.

Rensselaer County would benefit greatly from the development of countywide modernized FIRMs. The northern three towns and the three associated villages were updated and modernized as part of the Hudson-Hoosic Watershed project, however the remaining 15 towns and villages within the county still utilize the older paper maps. The population of Rensselaer County has increased by approximately 4% since 1990, however the number of housing units has increased by 20%. Many

communities within the watershed have the old flat panel maps dating from the late 1970s and the early 1980s. These maps are out of date and lack the details necessary for communities to effectively administer and enforce the National Flood Insurance Program requirements.

Columbia County also would benefit from the development of modernized countywide digital FIRMs. While the population of Columbia County has held steady over the past 25 years, the number of new housing units has increased approximately 21%. Half of the 22 communities within Columbia County have the older flat style maps dating back to the late 1970s to early 1980s. Similar to Rensselaer County, these older maps are difficult to use for the administration and enforcement of the floodplain regulations and the communities would benefit from an updated and upgraded mapping product.

In both Rensselaer and Columbia Counties a wholesale restudy of the county may not be needed. Revised studies for a few key stream segments and new approximate A-zone studies in a digital format would assist both the communities and the counties in enforcing the floodplain regulations and management development. NYSDEC would also like to request that any existing lake Base Flood Elevations (BFEs) developed as part of the Letter of Map Amendment (LOMA) process be included on any new maps.

Light Detection and Ranging (LiDAR) data was collected in 2015 by the NYS GIS Program Office (NYSGPO) for Columbia County and portions of Rensselaer County. The remaining portion of Rensselaer County had LiDAR collected by FEMA in 2012 as part of the Hudson-Hoosic and Deerfield Watershed projects. The available topographic data would make upgrading these portions of the watershed to a digital product feasible and significantly reduce the cost of developing model-based approximate A-zone studies.

Greene and Ulster Counties have effective digital FIRMs that were developed in the mid-2000s. In both counties the mapping updates focused primarily on the upland and New York City watershed areas with limited hydraulic studies completed in the valley communities. NYSDEC is recommending additional detailed studies be developed in those areas of high risk to provide more recent and accurate floodplain delineations. LiDAR was collected in 2014 by the USGS for all of Ulster County and in 2010 for the eastern portions of Greene County. Again this elevation data could be leveraged by FEMA to reduce the cost of the developing both model-based approximate A zone studies and the recommended detailed hydraulic studies.

NYSDEC's highest stream study priority is an updated detailed study of the Hudson River for its entire length in the Mid-Hudson Watershed. The Hudson River borders six counties within the study area and was a high priority for both the counties and the communities on its waterfront. Several components required to update the Hudson River study have been completed though other projects. The NYSDEC Hudson River Estuary program has detailed bathymetric data available for the entire estuarine reach from New York City to the Troy Lock and Dam. FEMA has already completed a storm surge analysis for the estuarine portion of the Hudson River as part of the North Atlantic coastline floodplain mapping project for New York City and Westchester County. As mentioned previously, detailed topographic information is available for the entire watershed through past LiDAR collections. By leveraging this existing information the cost to update the existing 1977 model should be significantly reduced.

NYSDEC is aware that the number of stream requests far outweighs likely budgets for remapping. We would be happy to work with FEMA to further refine the scope of work and limits of the recommended stream study segments on a county by county basis. Beyond upgrading the existing detailed and approximate mapping to a digital format in Rensselaer and Columbia Counties, the Mid-Hudson Watershed stream restudy priorities are as follows:

Mid-Hudson Watershed Recommended Stream Segments for Study

High Priority Detailed Stream Study Requests:

1. The Hudson River needs an updated detailed study for its entire length of 61 miles in the watershed area, from the City of Kingston to the Troy Lock and Dam, due to the presence of several at-risk structures, high development pressure along the waterfront, damage from flooding, and concerns about the accuracy of the study. This includes the area around Green Island in Albany County where the current effective study is from December, 1979 and the community strongly feels it is both outdated and inaccurate. The Town of Coeymans, in Albany County, has concerns about the tidal flooding along the Hudson River within their community. The Town of New Baltimore, in Greene County, has recently completed construction of an existing floodwall at the waste water treatment plant pump station and this modification needs to be incorporated into a revised study to reflect the changes on the floodplain. Ulster County has concerns about the number of critical facilities located in the Hudson River floodplain and the City of Kingston, in Ulster County, states there is development pressure, with existing proposals, along the shoreline.

   An updated hydraulic study of the Hudson River was requested by Albany County, the Town of Coeymans and the Village of Green Island; Rensselaer County and the Cities of Troy and Rensselaer; and Ulster County, the City of Kingston, and the Town and Village of Saugerties. An updated study was also requested by the Town of New Baltimore, and the Village of Catskill in Greene County; and the City of Hudson in Columbia County.

2. Catskill Creek needs a new detailed study from the confluence with the Hudson River to County Route 67 in the Town of Durham for a distance of 24.04 miles. The stream experiences both repetitive flooding and significant erosion and the County representatives believe the Special Flood Hazard Area (SFHA) is inaccurate. The river reach through the Village of Catskill is in a populated area with commercial development that has experienced property damage from flooding. The current approximate study is dated July 1976. This study was the highest priority request of Greene County, the Village of Catskill and the Town of Cairo.

3. Kinderhook Creek should have a new or updated detailed study from the southern corporate boundary of the Village of Kinderhook through the Town of New Lebanon for a distance of 27.11 miles. In particular three stream reaches are in need of re-study. The stream has not been updated since the early 1980s and is in need of revision. NYSDEC is suggesting the three separate requests be combined due to the proximity of each stream reach to each other. These stream reaches are the highest priority requests for Columbia County, the Village of Valatie, the Town of New Lebanon, and the Village of East Nassau located in Rensselaer County.
   a. Kinderhook Creek should have a new detailed study from the southern corporate boundary of the Village of Kinderhook to the northern corporate boundary of the Village of Valatie for a length of 4.76 miles. The creek has widened and the existing topography of the floodplain has changed since the study was last completed in 1980. This stream reach is one of the few developed areas of Columbia County that is impacted by flooding, and the Village of Valatie's waste water treatment plan flooded during Hurricane Irene.

b. Kinderhook Creek is in need of an updated detailed study within the corporate boundaries of the Village of East Nassau for a length of 3.2 miles due to more frequent flooding. The last detailed study is dated May 1983.
c. Kinderhook Creek is in need of a new detailed study within the corporate boundaries of the Town of New Lebanon for a distance of 3.68 miles. This stream reach includes an area of high repetitive losses with several road segments frequently flooded as well as the Lebanon Valley Speedway and the nearby RV and mobile home parks. The last approximate study is from 1985, but the Town of New Lebanon requested an upgraded study for this segment.

4. The lower Esopus Creek from the confluence with the Hudson River to the outlet of the Ashokan Reservoir for a length of 32 miles needs an updated detailed study as well as depth grids for the various (1, 5, 10, 25, 100, 500 yr.) recurrence intervals. There is significant flooding and development pressure along this stream. The City of Kingston is concerned that the current study is outdated and there is development along the creek. The Town and Village of Saugerties both stated the creek has repeated flooded leading to damaged structures and some property buyouts in the past. There are currently a number of on-going mitigation projects along the creek, such as bulkhead replacements, that should be considered in an updated study. There may be an updated hydraulic study for the lower Esopus Creek under development by the New York City Department of Environmental Protection (NYCDEP) as part of the comprehensive environmental review of the impacts of releases from the Ashokan Reservoir on the Lower Esopus River. The information developed as part of that program could be leveraged by FEMA and used to revise the existing floodplain study from the mid-1980s. This study request is the highest priority of Ulster County, the City of Kingston, the Town of Saugerties, and the Village of Saugerties.

5. The Poesten Kill needs a new or updated detailed study for its entire reach from the City of Troy to its upstream limits within Rensselaer County for a total distance of 27.36 miles due to past flooding experienced and age of the existing study which ranges between 1978 and 1998. Both residential structures and public infrastructure was impacted by Hurricane Irene, and there is significant development, as well as two dams, located within the floodplain in the City of Troy. This study was the highest priority request of both Rensselaer County and the Town of Poestenkill. This study reach was also requested by the City of Troy and the Town of Brunswick.

6. The Wynants Kill should be restudied using detailed methods for its entire length within the City of Troy for a length of 4.6 miles due to frequent flooding and age of the effective study. The City of Troy also stated that an existing analysis for Burden Pond, which is on the Wynants Kill, is available and should be incorporated into the digital FIRM. The current detailed and approximate studies were developed in 1978 and have not been updated since. The study was requested by both Rensselaer County and the City of Troy.

7. All three reaches of the Wynants Kill within the Town of Sand Lake need an upgraded revised detailed study. The new detailed study should extend from the western corporate boundary of the Town of Sand Lake to the Route 66 crossing for a length of 7.27 miles and upgrade the existing approximate study that is included within the proposed study length. The effective study was completed in 1978 and should be updated to incorporate both residential development and several bridge replacements within the Town. The town noted that there was significant flooding, some of which is repetitive, along the Wynants Kill during Hurricane Irene. This study is the high priority request for the Town of Sand Lake in Rensselaer County.

8. Wyomanock Creek needs a new detailed study within the corporate boundaries of the Town of New Lebanon for a distance of 9.03 miles due to the age of the existing approximate study completed in 1985. There is recent development and a school located within the floodplain along this stream reach. This study was a high priority request for both the Town of New Lebanon and Columbia County.

9. Sawkill Creek is in need of a revised detailed study from the confluence with the Hudson River to the western corporate boundary of the Town of Red Hook for a length of 11.25 miles. This stream is prone to flooding and there are several repetitive loss properties along the proposed study reach. The currently effective study was developed in 1983 and requires more up to date information. This was the highest priority request of Dutchess County.

10. Bash Bish Brook is in need of a new detailed study from the Columbia County border to the confluence of the Roeliff Jansen Kill for a length of 7.24 miles due to repeated flood losses and infrastructure damage in the hamlet of Copake Falls. The current approximate study is from 1985. This study is a high priority request from Columbia County.

11. The Quacken Kill is in need of a new detailed study within the corporate boundaries of the Town of Brunswick for a length of 7.64 miles. There is development pressure in the Town of Brunswick where the population has increased by 7% between 2000 and 2015. The last study, dated June, 1978, is not accurate and there is recurrent flooding along this stream reach. This was the highest priority request from the Town of Brunswick and was also requested for restudy by Rensselaer County.

12. A segment of the Normans Kill is in need of an updated detailed study in the vicinity of the Normanside Country Club for a length of one mile. In 2015 a landslide blocked the entire stream channel. Reconstruction efforts have changed the course of the stream and the current detailed study, dated 2011, is no longer accurate. This study was requested by the City of Albany and the Town of Bethlehem in Albany County.

Medium Priority Detailed Stream Study Requests:

13. Kaaterskill Creek is in need of an updated detailed study from the confluence with Catskill Creek to the western corporate boundary of the Town of Catskill for a distance of 19.44 miles. There is repetitive flooding along this stream reach and the stream alignment has shifted. There is a residential area impacted where the creek crosses into Ulster County. A Kaaterskill Creek Floodplain Delineation Study was developed by the US Army Corps of Engineers, NY District, in 2004. This updated information potentially could be used to update a portion of the effective study last updated in 1987. This study was requested by both Greene County, and the Town of Saugerties in Ulster County.

14. Mill Creek is in need of an updated detailed study from the Hudson River to the eastern corporate limit of the City of Rensselaer for a distance of 1.18 miles due to the age of the effective study. The creek passes through an area that has development pressure and redevelopment plans. This stream reach has flooded in the past with several repetitive loss structures impacted. The effective detailed study is dated April 1978. This study was requested by the City of Rensselaer in Rensselaer County.

15. Quackenderry Creek should be restudied using detailed methods from the confluence with the Hudson River to the Route 4 crossing in the Town of North Greenbush for a length of 3.64 miles. Development along the creek, as well as the construction of a small dam in 2008, have impacted the flood extents. The City of Rensselaer noted there is significant development

pressure, as well as several repetitive loss properties along this stream reach. The effective studies are dated from 1978 and may not reflect current conditions. In particular, upstream areas frequently flood due to the on-going development. The current detailed study is dated April 1978. This study was requested by both Rensselaer County and the City of Rensselaer.

16. The entire 7.54 mile reach of Coxsackie Creek within the Town of Coxsackie needs an updated detailed study. This is a developed area that requires updated information. The effective study is dated October 1987. This study was requested by Greene County.

17. A revised detailed study is needed for Sawkill Creek from the confluence of the Esopus Creek to Kingston for a distance of 5.03 miles. The depth grids for the various (1, 5, 10, 25, 100, 500 yr.) return interval floods need to be revised to reflect the more recent flooding from Hurricane Irene. There have been buyouts in the area and the stream channel has been dredged. This study was requested by Ulster County.

18. A new detailed study is needed for the Platte Kill from the confluence with the Esopus Creek to the area around Mt. Marion for a length of 2.86 miles. There is new housing in this area and both homes and roadways have been inundated. The County feels the current approximate study from 2009 should be upgraded. This study was requested by Ulster County.

19. The Muitzes Kill needs an updated detailed study from the confluence with Schodack Creek to Schodack Landing Road for a length of 5.88 miles. There is repeated flooding and a flood risk to several structures. The current study, from 1983, does not incorporate the new flood control structures and on-going fill activity. This study was the highest priority for restudy from the Town of Schodack in Rensselaer County.

20. An updated detailed study is needed of the Kate Yaeger Kill from Pine Lane to Kate Yaeger Road for a length of 3.7 miles in the Town of Saugerties. There is a residential area near West Saugerties that is at risk of flooding. The current effective study is from 1991. This study was requested by the Town of Saugerties in Ulster County.

21. The Sawyer Kill needs a new detailed study from the confluence with the Hudson River to the northern corporate boundary of the Town of Saugerties for a distance of 7.65 miles. The floodplains are compromised and a more detailed SFHA is needed. The current approximate study is dated April, 2013. This study was requested by both the Town and Village of Saugerties in Ulster County.

22. The Moordener Kill needs an updated detailed study at the intersection of East Schodack Road and Poyneer Road for a length of 0.5 mile. There is a trailer park that was inundated during Hurricane Irene and has continuing erosion problems. An undersized culvert contributes to flooding problems in this area as well. The last detailed study is dated May 1983. This study was requested by the Town of Schodack in Rensselaer County.

23. Plattekill Creek near Carrelis Road is in need of a new detailed study from Platt Cove Road to the Saugerties Reservoir for a length of 0.6 mile in order to establish BFEs. This area experiences repeated flooding issues and a residential development is impacted. The Village of Saugerties wants to expand the reservoir which also may impact the flood extents. The current approximate study is dated April 2013. This study was requested by the Town of Saugerties in Ulster County.

24. Lake Creek, also known as Hauverville Creek, in the Town of Broome should have a new detailed study from the confluence with Catskill Creek to the Schoharie County line for a length of 3.83 miles. This is currently an unmapped stream with some residential development that is likely to develop further. The area sustained significant flood damage including the complete destruction of three homes due to Hurricane Irene in 2011. This was the highest priority request from. Schoharie County.

25. Vly Creek is in need of a new detailed study from the confluence with the Normans Kill through the Village of Voorheesville for a length of 4.48 miles. This is a densely settled area with an outdated study. The current effective study was developed in 1980. This study was requested by Albany County.

26. Tsatsawassa Creek is in need of an updated detailed study within the corporate boundaries of the Village of East Nassau in the area of Hoag's Corners for a length of 1.76 miles. There are capacity issues with older culverts along Tsatsawassa Lake Road. The current detailed study is dated May 1983. This study was requested by the Village of East Nassau in Rensselaer County.

27. The Tributary to the Poesten Kill, west of Fifty Six Road, is in need of a new detailed study from the confluence with the Poesten Kill to the corporate boundary of the Town of Poestenkill for a length of 4.39 miles. There was severe flooding that occurred in the vicinity during Hurricane Irene that washed out roads and damaged a culvert. The downstream stream segment was last studied in 1978 and the remainder of the stream does not have any effective mapping. This study was requested by the Town of Poestenkill in Rensselaer County.

28. Claverack Creek is in need of an updated detailed study from the confluence with Stockport Creek for its entire length within Columbia County for a distance of 17.1 miles due to repeated flooding. There are repetitive loss properties along this stream segment. The effective detailed study, near the confluence with Stockport Creek, is dated April 1980. The effective detailed study for the upstream reach is dated October 1987. This study was requested by Columbia County.

29. Catskill Creek, which is currently studied using approximate methods, is in need of a new detailed study from the eastern county boundary to Vlaie Pond for a length of 6.75 miles. The establishment of BFEs is needed because the area is a mix of rural residences and commercial uses. There are flash flooding issues along the stream. The current approximate study is dated October 1985. This study was requested by Schoharie County.

Lower Priority Detailed Stream Study Requests:

30. An updated detailed study of Hannacrois Creek is needed from the Alcove Reservoir to the Albany County boundary for a length of 6.78 miles. Flooding frequently occurs along this stream reach and many properties are located in the current floodplain. Several LOMAs have been issued for structures in the Hannacrois Creek floodplain. The current detailed study of this stream is dated December 2011. This study was the highest priority request from the Town of Coeymans in Albany County.

31. A tributary to the Bozen Kill needs an updated detailed study from the upstream end of the effective detailed study near Brandle Road to Leesome Road for a distance of 1.88 miles to reflect culvert upgrade projects along both Brandle Road and Park Street. The current

detailed study, which developed the mapped AO zone, is dated December 2011. This study was the number one request by the Village of Altamont in Albany County.

32. Basic Creek is in need of an updated detailed study from the Basic Creek Reservoir to the Hamlet of Westerlo for a length of 4.4 miles. This reach flooded during Hurricane Irene. The current detailed study is dated June 1987. This study was requested by Albany County.

33. The entire reach of Black Brook within the Village of East Nassau needs a revised detailed study for a length of 0.52 mile. This stream reach seems to be flooding more frequently and the flood waters are swifter and higher than in the past. The current detailed study is dated May 1983. This study was requested by the Village of East Nassau in Rensselaer County.

34. Black Creek is in need of an updated detailed study from the southern corporate limits of the Town of Guilderland to Route 156 for a length of 5.67 miles. There is new development on Meadowdale Road. The current effective approximate study ends near Gardner Road and was last updated December 2011. This study was requested by the Town of Guilderland in Albany County.

35. The Vloman Kill is in need of a new detailed study from Route 32 to Route 85 for a length of 6.18 miles. There is some new development along the stream. The current approximate study is dated December 2011. This study was requested by Albany County.

36. Patroon Creek is in need of an updated detailed study from the confluence with the Hudson River to Everett Road for a distance of 0.9 mile. The City of Albany feels the effective study from March 2015 is outdated. The City is developing a new dam break analysis model using HEC-RAS for this stream which could be used to update the existing model. This model is available from the City of Albany. This study was the number one request of the City of Albany in Albany County.

37. The Krum Kill is in need of an updated detailed study from the NYS Thruway to the eastern town boundary for a distance of 1 mile. The stream has repeated flooding problems due to undersized culverts that frequently affect a large commercial development. The effective detailed study of this stream is dated March 2015. This study was the highest priority for the Town of Guilderland in Albany County. This study was also requested by the City of Albany due to the upsizing of a culvert.

Total Detailed Riverine Study Request Mileage: 343.9 miles

- *Total High Priority Detailed Riverine Study Request Mileage: 219.54 miles*
- *Total Medium Priority Detailed Riverine Study Request Mileage: 97.03 miles*
- *Total Lower Priority Detailed Riverine Study Request Mileage: 27.33 miles*

Lake Studies

The following is a list of lakes and ponds that stakeholders identified as needing detailed studies and/or BFEs.

1. Columbia County requested the establishment of BFEs for a number of small lakes in the county that have development on them or have some development pressure. They include:
    - Copake Lake in the Town of Copake for a distance of 1.66 miles;
    - Upper Rhoda Pond in the Town of Copake for a distance of 0.40 mile;

- Lower Rhoda Pond in the Towns of Copake and Ancram for a distance of 0.48 mile;
- Chrysler Pond in the Town of Copake for a distance of 0.56 mile;
- Kinderhook Lake, which has an approximate study from 1980, in the Towns of Kinderhook and Chatham for a distance of 1.82 miles;
- Twin Lakes in the Town of Livingston for a distance of 0.75 mile.

2. Vosburg Pond is in need of a new lake study for a distance of 0.20 mile due to severe flooding that occurred during Hurricane Irene. The current approximate study is dated June 1978. This study was requested by the Town of Poestenkill in Rensselaer County.

3. Ida Lake in the City of Troy in Rensselaer County is in need of new lake study for a distance of 0.17 mile. Data from an existing dam break analysis is available to be incorporated into the FIRM. The current approximate study is dated May 1978. This study was requested by the City of Troy.

4. Thompsons Lake is in need of a new lake study for a distance of 0.9 mile. The current floodplain is not accurate. This study was requested by the Town of Berne in Albany County.

5. Helderberg Lake is in need of a new lake study for a distance of 0.4 mile. The lake currently has no flood hazards mapped. This study was requested by the Town of Berne in Albany County.

6. Mill Pond is in need of a new lake study for a distance of 0.1 mile. There is currently no SFHA shown in this location but the area floods due to an undersized culvert. This study was requested by the Town of Guilderland in Albany County.

Total Detailed Lake Study Request Mileage: 7.44 miles*
**Based on length of the of the water body*

Downgraded Detailed Stream Study Requests:

Stakeholders requested the following stream segments receive new detailed studies; however due to the rural nature and level of development, these segments may be more appropriate as new model-based approximate studies with advisory BFEs.

1. While Columbia County and the Town of Ancram both stated the Roeliff Jansen Kill is in need of a detailed study from the confluence with the Hudson River to Robinson Pond for a length of 55.85 miles, the level of development in the area makes the stream reach a good candidate for a new model-based approximate study with advisory BFEs. The effective studies for this reach date from the late-1970s to the mid-1980s and are in need of update. The segment from the confluence with Bash Bish Brook to the Robinson Pond Dam is an area of repeated flood losses and infrastructure damage and the Town of Ancram states the creek frequently floods and results in road closures. This was a high priority for restudy for both Columbia County and the Town of Ancram.

2. A new detailed study is needed for the Little Beaver Kill from the corporate boundary of the Town of Woodstock to Yankeetown Pond for a length of 3.84 miles. Homes and roadways

have been inundated by flood waters. There is currently no study along much of this stream reach. If the budget does not allow for a new detailed study, this may be a good candidate for a new model-based approximate study with advisory BFEs. The study was requested by Ulster County.

3. While the Town of Cairo requested Tributary 1 to Catskill Creek from the confluence with the Catskill Creek to Route 23 receive a new detailed study for a length of 1.71 miles, this stream segment may be a good candidate for a new model-based approximate study with advisory BFEs. This stream reach is currently unstudied and frequently floods. This study was requested by the Town of Cairo in Greene County.

4. The Town of Ancram has requested that Punch Brook have a new detailed study for its entire length from the confluence with the Roeliff Jansen Kill to its upstream limits for a length of 7.22 miles. Due to the very rural nature of the stream reach and the level of development in the area, this stream would be a good candidate for a new model-based approximate study with advisory BFEs. The current approximate study is from 1985 and is outdated. This was a high priority request from the Town of Ancram in Columbia County.

5. While the City of Hudson requested the tributary to the Hudson River on the southern corporate limit of the City of Hudson receive an upgraded detailed study for a length of 0.36 mile, this segment may be a good candidate for a new model-based approximate study with advisory BFEs. The area seems to be primarily wetlands with no impacted structures. The current approximate study is dated October 1987. This study was requested by the City of Hudson in Columbia County.

6. The Town of Ancram requested that the Drowned Lands Swamp have a new detailed study along its entire length from the confluence with Punch Brook to Ancram Road for a length of 2.79 miles. Due to the very rural nature of the area and the limited development pressure, this stream reach would be a good candidate for a new model-based approximate study with advisory BFEs. The current approximate study from 1985 is outdated and needs revision. This study was requested by the Town of Ancram in Columbia County.

Total Detailed Riverine requests downgraded to Approximate Riverine Requests: 71.77 miles

New Approximate Study Requests:

Several stakeholders provided a list of stream segments for new model-based approximate studies where currently none exist.

1. Hollowville Creek should have a new approximate study along its entire length of 6.79 miles from its confluence with Claverack Creek to County Route 11. This study was requested by Columbia County.

2. Tannery Brook is in need of a new approximate study from its confluence with Esopus Creek to the southern corporate limits of the City of Kingston for a length of 1.79 miles. Heavy rain events cause flooding along this stream reach. This study was requested by the City of Kingston in Ulster County.

3. Main Street Brook in the City of Kingston is in need of a new approximate study from Lucas Avenue to the southern corporate limits of the city for a length of 0.8 mile. Flooding occurs at the Main Street Bridge. This study was requested by the City of Kingston in Columbia County.

4. Tributary 2 to the Catskill Creek needs an approximate study from the confluence with Catskill Creek to Spahmer Road for a length of 4.93 miles. The upsized culverts on Harold Myers Road and Sandy Plain Road should be incorporated. This study was requested by the Town of Cairo in Greene County.

5. Fox Creek is in need of a new approximate study from the confluence with Catskill Creek to Rt. 353 in the Town of Rensselaerville for a length of 6 miles. There is flooding near the bridge over the county road but there are few impacted buildings in the area. This study was requested by Albany County.

Updated Approximate Study Requests:

Several stakeholders also provided a list of stream segments where updated approximate studies are needed.

6. Sickles Creek in the Town of New Baltimore is in need of a new approximate study from the confluence with Coxsackie Creek to the NYS Thruway for a length of 3.48 miles. There is tidal flooding in this area and the drainage is blocked at high tide. Route 61 frequently washes out. The current approximate study is dated July 1982. This study was requested by Greene County.

7. Indian Creek should be studied by approximate methods for its entire length within the county for a length of 9.22 miles. There is an existing approximate study for the stream segment located in the Town of Chatham from 1980 and a stream segment located in the Town of Canaan from 1985. The remainder of the stream is unstudied at this time. An updated study is needed for the stream's entire length due to the age of the effective studies. This study was requested by Columbia County.

8. Taghkanic Creek should have an updated approximate study for its entire length within Columbia County for a length of 29.69 miles due to the age of the effective mapping. The approximate study in the Town of Hillsdale is dated May 1985; the study in the Town of Taghkanic is dated January 1986; the study in the Town of Livingston is from May 1979; and the study in the Towns of Claverack and Greenport is from October 1987. There are several repetitive loss properties in the Town of Livingston. This study was requested by Columbia County.

9. Preymaker Brook is in need of a revised approximate study of a one mile segment through Stony Hollow in the Town of Ulster. This stream reach is impacted by flooding due to blocked culverts resulting from beaver activity. The area has low density development and a small population. The current approximate study is dated April 2013 but is the highest priority request from the Town of Ulster in Ulster County.

10. Catskill Creek is in need of an updated approximate study for the entirety of the stream within the corporate boundaries of the Town of Rensselaerville for a length of 5.82 miles. The current approximate study for this portion is dated December 2011. This study was requested by Albany County.

11. The Bozen Kill needs an updated approximate study from the confluence with Black Creek to the eastern boundary of the Town of Knox for a distance of 3.95 miles. The last approximate

study is dated December 2011. This study was requested by the Village of Altamont in Albany County.

12. The Tributary to Thompsons Lake is in need of an updated approximate study from the confluence with Thompsons Lake to just south of Singer Road for a length of 1.5 miles. The current approximate study is dated December 2011. This study was requested by the Town of Berne.

Total Approximate Riverine Study Requests: 74.97 miles

Stream Study Requests for Segments Located Outside the Project Area

A number of stakeholders provided study requests for stream segments located outside of the Discovery project area. These segments will not be prioritized as part of this effort; however, they will be added to FEMA's CNMS database for inclusion in a future project.

Albany County:

- The Foxen Kill is in need of a new detailed study from the confluence with the Switz Kill to Smokey Hollow Road for a length of 11.86 miles. There is significant development along the stream and the current floodplain is not accurate. This stream is located in the Schoharie Watershed. This study was requested by the Town of Berne in Albany County.
- The Switz Kill is in need of a new detailed study from the confluence with the Fox Creek to Game Farm Road for a length of 4.38 miles. This is a significant source of flooding in the community. This stream is located in the Schoharie Watershed. This study was requested by the Town of Berne in Albany County.
- The Tributary to Warners Lake is in need of a new approximate study from the confluence with Warners Lake to Knox Cave Road for a length of 2.15 miles. There have been flooding problems in this area. This stream is located in the Schoharie Watershed. This study was requested by the Town of Berne in Albany County.

Columbia County:

- Green River, located in the Housatonic Watershed, should be studied by approximate methods for its entire length within the county for a length of 11 miles. This study was requested by Columbia County.

Dutchess County:

- Wappinger Creek Reach 1 is in need of a revised detailed study from Salt Point Turnpike to Creamery Road for a length of 2 miles. There is a bridge replacement planned along this stream on Bulls Head Road. This is a developed area. This stream is located in the Hudson-Wappinger Watershed. The study was requested by the Town of Stanford in Dutchess County.
- Wappinger Creek Reach 3 is in need of a new detailed study from Creamery Road to the northern corporate limits for a length of 5.78 miles. A new business district is being designated from Reach 1 to the intersection of NY Route 82 and County Route 53. This stream is located in the Hudson-Wappinger Watershed. This study was requested by the Town of Stanford in Dutchess County.

Greene County:

- Greene County expressed concern regarding the hydrologic analysis used to develop the FEMA floodplains. They believe the models differ significantly from the results of nearby USGS gages using standard evaluation software such as Peak FQ. The flows used in the models tend to be much higher than the flows returned by Peak FQ. Therefore, the county believes there is systematic inaccuracy in the models especially for the Batavia Kill.

Rensselaer County:

- An unnamed stream, in the Hudson-Hoosic Watershed, is in need of a new detailed study due to recent flooding issues from 3,500 feet south of Haynersville to the northern corporate boundary of the Town of Brunswick for a length of 2.16 miles. This study was requested by the Town of Brunswick in Rensselaer County.
- The Paensic Kill is in need of an updated approximate study from the northern corporate boundary of the City of Troy to Route 40 for a length of 1.09 miles. There is a small amount of development in this area. The City of Troy stated that data from an existing dam break analysis are available to be incorporated into the FIRM. This stream is located in the Hudson-Hoosic Watershed. This study was requested by the City of Troy in Rensselaer County.

Schenectady County:

- The Mohawk River is in need of an updated detailed study along the northern corporate boundary of the Town of Rotterdam for a length of 10.37 miles. The recently completed roadwork along the I-890 exit near Erie Boulevard may have affected the accuracy of the SFHA. There is also development pressure and possible redevelopment of an old industrial complex in the same area. The Mohawk Watershed is located out of the study area. This study was requested by the Town of Rotterdam in Schenectady County.

Ulster County:

- Butternut Creek within the Town of Olive needs a new detailed study from the confluence with the Ashokan Reservoir to Chase Road for a length of 3.04 miles. The stream runs through a residential area and regularly floods, even in small, 2+ year return interval storm events, resulting in ponding, debris blockages, and closed roads, including Bostock Lane, where the town meeting hall and police station are located. This study was requested by Ulster County and is within the West of Hudson Watershed.
- Twaalfskill Brook is in need of an updated detailed study from the confluence with Rondout Creek to just upstream of Brook Street for a length of 0.53 mile. This stream is located in the Rondout Watershed. It was requested by the City of Kingston in Ulster County.
- Rondout Creek is in need of an updated detailed study from the confluence with the Hudson River to the corporate limits of the City of Kingston for a length of 2.94 miles. This stream is located in the Rondout Watershed. The study was requested by the City of Kingston in Ulster County.

Floodplain Study Requests Summary

Total Detailed Riverine Study Request Mileage: 343.9 miles
Total Detailed Lake Study Request Mileage: 7.44 miles
Total Detailed Riverine Study Requests downgraded to Approximate Study Mileage: 71.77 miles
Total Approximate Riverine Study Request Mileage: 74.97 miles

Total Mileage of All Requests: 498.08 miles

Thank you for providing NYSDEC with the opportunity to recommend a scope of work for areas within the Mid-Hudson Watershed. We look forward to working with you to refine and finalize this scope as we move forward. Please feel free to contact NYSDEC if you have any questions or would like additional information provided.

Sincerely,

Kelli Higgins-Roche
Environmental Engineer
Floodplain Management Section