



CITY OF MELROSE

CONSERVATION COMMISSION

Melrose Conservation
Commission

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Corrected

Melrose Conservation Commission Minutes for October 17, 2013

*app. @ 11/7/13
mtg*

Present: Susan Murphy, Kate Hickey, Kevin Anderson, Erin Heacock, Richard Doucette
and Aaron Weieneth

Ms. Murphy called the meeting to order at 7:30 PM

Certificate of Compliance

Boardman Ave. (217-0171)

Nothing was received from the applicant

Continued Public Hearing

77 & 79 Messenger Ct. (217-0187)

Paul Brinkman, Project Manager at Wright-Pierce, working with the Town of Wakefield on a drainage system analysis, looking at drainage pipes and conveyance channels throughout the town to see where the flooding is and trying to find a way to mitigate it, finding additional storage, putting the water back into the ground. He said he has been working with the town for about a year, working with GIS and trying to get the right data into the system. Subcatchment W02 drains into Messenger Court project site and represents the first area that they are dealing with. They received all the data about a month ago and put it into a hydrologic and hydraulic modeling program called InfoSWMM, which was developed by the EPA. They analyzed the rainfall depth and the conveyance of the water through the major portions of their system. He said the system in this area has some pipe conveyance and some open channel, so it's a mixture of both.

Mr. Brinkman said that SWMM is largely used for closed piped drainage systems, but it is acceptable to use it for open conveyance channels. Mr. Collins, the Town Engineer in Wakefield, asked them to analyze the 10, 25 & 100 year design storms to see what kind of impacts were happening throughout the system as a result. Wright-Pierce used rainfall depths and dimensionless rainfall distribution curves from the Northeast Regional Climate Center (NRCC). They modeled the pipe that enters into Melrose. (He referred to

pictures submitted in handout) Mr. Brinkman referred to factors, data from the CN table, that are put into the hydraulic model that represent the types of soils and the way that the land is laid out. When analyzing a drainage system in a town, typically their pipes are mostly sized to handle 5 or 10 year design storms. It's rare to find a system that's sized to handle a 100 year storm. Mr. Brinkman reviewed the hydraulic profile, the system from the top end to the bottom on its side, basically the pipe system viewed from the side. The line at the top represents the ground elevation, determined by points where manholes and where the inlets are to the culvert and the swales. When it jumps up that indicates an open area where it's wide and the sides are steep. The pipes are lower down. There is a line that represents the max water level. Mr. Brinkman said that for this sub-basin, it takes about 2 hours to get to the maximum elevation of the period.

Mr. Brinkman went over the 10 & 25 year design storms and their elevations, 10 year being 71.9 and 25 year/24 hour 72.5 and for the 100 year storm/24 hour; the model predicted a 74.3 elevation. There were three profiles identified under the 100 year storm at different periods of time to see how the bottom reacts, the elevation before a storm, at the peak level, and then afterwards. Mr. Brinkman said their analysis was not intended to set a 100 year flood elevation, but rather what the system is experiencing. Mr. Brinkman said they have not validated their model with data from an actual storm event. They need a substantial rain event to get the necessary data. Mr. Brinkman said he would love to get information from actual storm events to validate his model results.

Mr. Doucette asked for more information about the model. Mr. Brinkman said he doesn't do the modeling himself. He said SWMM is an EPA derived engine and has been updated over the last 20 years. Ms. Murphy asked what their next step would be. Mr. Brinkman said they are waiting for a rain event or some data that could point to a historic rain/flood event. Their model assumes that the Melrose storm drain system is not impacted by backwater (i.e. free discharge) based on communication with the City of Melrose DPW, and that this is a very conservative approach. There's not that much demand from the Melrose system there, that would cause it to backup; so if there was input to the Melrose system right there that was causing the water to backup, it would actually show as a higher elevation and they are showing it at a lower elevation. It could occur given in that type of system but based on the information provided by Melrose, it's saying, that system's free flowing.

Mr. Weieneth asked for additional information on the rainfall data that was used. Mr. Brinkman said, these rainfall events don't look the same in real life. Mr. Brinkman told of some recent storm events where in some instances areas received a lot of rain in a three hour period which grew to model a 24 hour storm but a lot of it happened in a very short window. He said with this system, that type of intensity isn't necessarily bad, because it takes two hours for that little section to build. If you were to run that amount of rainfall and spread it out over two hours, it's going to look very similar, it's just how long it takes, that amount of time to rise up, get to it's peak and start flowing out after two

hours. They looked into using TP40, and the total rainfall amount under the 100 year TP40 design storm, was 6.75. Their model used data from the NRCC. The NRCC 100 year design storm value is higher and is based on more recent rainfall data that reflects higher intensity rain events that the region has been experiencing.

Mr. Gryglik asked if the information given by Melrose was recent information, because there have been a lot of improvements in Melrose. He said the neighbors used three flood events in the information they provided and at those times there were deficiencies in Ell Pond, Tremont St. and a lot of other places in Melrose in the piping system and he's not sure that has been accounted for properly. Some of the recent repairs may change the projections. Mr. Gryglik said that the area has experienced the driest, drought type environment that they have had in the region and there's nothing current to look at. Mr. Gryglik also asked if there was a "grid inclusion measurement" of the Highlands. He explained that up in the Highlands there is a great build up of snow volume that melts. He said that this area has experienced flood events in early spring from the thaw. Mr. Brinkman said, yes, you are correct. You could have a fairly mild rain event on snow and get a very severe flooding event because the water runs off and doesn't want to percolate into the ground. Mr. Brinkman said it would be very complex to model that scenario, calculating the amount of snow and what that's going to look like when it rains and try to calculate what that rain event is. Mr. Gryglik said the one weak link is on Ashburton Place where the funnel is. He believes that is where a lot of the backup seems to be. He still believes the flooding backs up into Wakefield at Messenger Ct.

Mr. Anderson thanked Mr. Brinkman for coming to speak with the Commission.

Mr. Marchionda said he is very frustrated because back in January 2013, they were asked to hold off for this analysis to be done. He said Mr. Brinkman still hasn't determined the 100 year flood elevation and that's what we've been waiting for. He said the DEP guidelines say to use TP40, a type 3 rainfall distribution. He said the NRCC data used by Wright-Pierce are 30% more than DEP standards. Mr. Marchionda said that he is not sure if his client wants to move forward; he has to discuss it with him. Mr. Doucette asked Mr. Brinkman to ask his client if they will allow him to determine the 100 year flood elevation using DEP requirements. Mr. Brinkman said he will check with them. Ms. Murphy said that there's a likelihood that DEP will be dealing with this under an appeal. She said the Commission would like a sense of whether the applicant wants to go forward after reviewing this information. She said one more continuance will be reasonable.

Ms. Murphy moved to continue the Continued Public Hearing to November 7, 2013, at 7:30 pm. Mr. Anderson seconded the motion, and it was voted unanimously in favor.

Minutes

Ms. Heacock moved to approve the minutes of September 19, 2013, seconded by Mr. Weieneth, and voted unanimously in favor.

Members reviewed the Victorian Fair volunteer list. Ms. Heacock volunteered to go to the Trail Grant meeting.

Ms. Murphy moved to approve an invoice in the amount of \$11.29 from Staples. Ms. Heacock seconded the motion; and it was voted unanimously in favor

Adjourn

Mr. Anderson moved to adjourn at 8:30 pm, seconded by Ms. Heacock, and voted unanimously in favor.

Pursuant to the 'Open Meeting Law, ' G.L. 39, 23B, the approval of these minutes by the Commission constitutes a certification of the date, time and place of the meeting, the members present and absent, and the actions taken at the meeting. Any other description of statements made by any person, or the summary of the discussion of any matter, is included for the purpose of context only, and no certification, express or implied, is made by the Commission as to the completeness or accuracy of such statements.