

To: Cloyd Yough; Mike Houghton; Gary Evans
From: Bill Tepe
Date: July 17, 2019
Re: Knox County Cattle Dam / Lake

I spoke with Mia Kannik (614-265-6404) at ODNR for input on their decision to reclassify the Dam from II to I.

Mia said that the Dam wall is about 20' high with about 30 acre-feet of water behind it. They believe a breach would result in a "wall" of water 7' to 10' high. Several houses south of the Dam are 4' to 6' out of the stream bed. They believe a 7' to 10' wall of water would cause structural collapse of those buildings, resulting in a probable loss of life.

ODNR has no record of a contact from Mt. Vernon or the developer to review the proposed development in the Knox Cattle Dam area prior to the City's approval of the development.

In order to reconsider their classification decision, ODNR would require one of two studies by experts located in Ohio. If the City decides to pursue this, the selected organization should be vetted to be sure they've done this type of work in the past and have a working relationship with ODNR. The ODNR website includes a consultant list.

1. Bathymetry Analysis - The volume of water in lakes is estimated by combining data of water level variations with accurate bathymetry and shore topographic maps. If the analysis shows that the lake volume is less than 15 acre-feet, the Dam would be exempt from ODNR oversight. A bathymetry analysis can be done by any licensed professional surveyor. This is typically less costly than a breach analysis.

2. Breach Analysis - Dam breach analyses are used to estimate the potential hazards associated with a failure of a structure. Dam breach inundation analyses include the following elements: estimation of the dam breach parameters, estimation of the dam breach outflow hydrograph; routing of the dam breach hydrograph downstream; and estimation of downstream inundation extent and severity. A breach analysis must be done by a certified civil engineer. Mia believes it is 80% to 90% likely that a breach analysis would show probable loss of life.

Note from July 19, 2019 ODNR Knox Cattle Dam inspection. Per Mike Houghton, Mia agreed that ODNR could have reviewed the proposed construction plan before it began