

CITY OF WILLIAMSPORT, PA RESOLUTION

RESOLUTION # 8931

DATE 9-26-19

TITLE

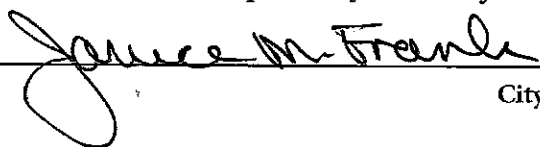
**A RESOLUTION AUTHORIZING THE EXECUTION OF A
FEASIBILITY STUDY OF A JOINT PROJECT INVOLVING THE
COOPERATION OF THE CITY OF WILLIAMSPORT AND THE
DPEARTMENT OF ENVIRONMENTAL PROTECTION PERTAINING
TO THE FLOOD PROTECTION PROGRAM**

BE IT HEREBY RESOLVED that the City Council of the City of Williamsport authorizes the execution of a feasibility study involving the cooperation of the City of Williamsport and the Department of Environmental Protection pertaining to the flood protection program and the existing conditions in the community.

WHEREAS, the City agrees to aid in the study by performing any or all of the following listed work items:

1. Conduct a flood damage inventory under the guidance of the Department.
2. Assemble mapping on underground utilities, sewers, etc., and property boundary maps as required.
3. Request a list of utilities in the community in accordance with Act 287.
4. Provide easements for subsurface exploratory contracts and topographic survey by the Department.
5. Agree to hold and save the Commonwealth and the Department free from damages to property, crops, or loss of land use, due to subsurface

exploratory or survey work. **Approved**



City Clerk



President

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THEREFORE, in consideration of the aforementioned conditions, the City does hereby resolve to sponsor a flood protection Feasibility Study on _____ in _____ . Upon reviewing the results of the study, the City may elect to accept, defer, or refuse sponsorship of a flood protection project.

SIGNED

TITLE

[Signature]
Paulette K. Novello
Jeanne M. Frank

Mayor
Deputy Controller
City Clerk

Approved

[Signature]
City Clerk

[Signature]
President



pennsylvania
DEPARTMENT OF ENVIRONMENTAL
PROTECTION

September 20, 2019

Gabriel J. Campana, Mayor
City of Williamsport
245 West Fourth Street
Williamsport, PA 17701

Re: DEP File No. C41:11
Grafius Run and Freedom Road Tributary
City of Williamsport, Lycoming County

Dear Mr. Campana:

On June 29, 2018, I attended a meeting with members of City Council, City Officials and Penn Strategies to explain the EP flood protection program and distributed information regarding the Flood Protection Program. I provided a copy of the Program Manual, Fact Sheets, damage assessment forms and instructions. I also provided guidelines for the Act 13 Flood Mitigation Grant Program, in case the City wanted to undertake a project without DEP's involvement.

Penn Strategies has since returned the completed DEP damage forms and a preliminary review indicates that a Feasibility Study can be offered. I intend to request Capital Budget Funds to hire a consultant engineer to complete the study, develop detailed hydrology and hydraulic modeling and provide flood protection alternatives that can be economically justified.

I can request legislation now, but I will not be able to request the release of the funds until the City enacts a formal resolution. A draft Resolution is enclosed for your consideration and can be used "as is" or revised to satisfy City legal requirements.

If the City decides to sign the resolution, please return one signed original and keep one for your records. Another resolution will be needed after the Feasibility Study is completed to verify that the City agrees with the recommended alternative. This is explained further in the Flood Program Manual and D-Curve memorandum, enclosed.

If you have any questions, or require any additional information, please feel free to contact me by e-mail at dohill@pa.gov or by telephone at 717.783.7723.

Sincerely,

Douglas R. Hill, P.E.
Chief
Division of Project Development

Enclosures: Sample Resolutions (2)
Flood Protection Manual
Fact Sheets
D-Curve Memo



TO File

FROM Douglas Hill, P.E.
Division Chief
Project Development

DATE September 10, 2019

RE C41:11 -- Grafius Run
City of Williamsport
Lycoming County

MESSAGE:

City consultants Penn Strategies has requested an expedited review of the damage assessment forms submitted to date and I committed to providing a D-Curve assessment. The results are preliminary, and a detailed Feasibility Study will be needed to refine the analysis and identify a viable structural alternative and scope of work.

A flood protection project is considered economically justified when it can be shown that a benefit cost ratio of at least 1.0 is provided. The D-Curve concept was created in 2006 to provide a method to estimate the maximum project cost that can be justified that would produce a satisfactory benefit cost ratio. The curve requires the number of homes flooded, the average structure value and the approximate depth and frequency of flooding.

1. The completed damage assessment forms were received in June 2019. Eighty (80) forms were returned, with 43 reporting damages to structure contents. Additional information can be added when forms for August 2019 flooding are received, but significant changes are not expected unless new homes were flooded.
2. Property values were estimated using real estate websites Zillow.com, Trulia.com, Realtor.com and other sources. The average property value reported was \$142,690. Structure values vary by location and market. For this assessment it was assumed every total property value is 75% structure value and 25% land value, so this translates to an average structure value of \$107,018.
3. The 2006 D-Curve was based on an inflation rate of 4%. The 20-year average inflation rate (for construction bond) is currently 2.8% and this may produce a lower average annual benefit when the detailed feasibility study is completed.

4. Google Street Views show the front door at 1210 Cherry Street and 1109 Elmira Street are approximately five steps up from the sidewalk. This should be above the depth of water reported on the damage assessment form, therefore all flooding reported was basement flooding.
5. Unfortunately, the D-Curve was developed for residential properties and did not capture the cost associated with the equipment and materials outside 294 Freedom Road. This is one area that will need to be refined during the detailed Feasibility Study.
6. The impact area map provided shows a wide area of flooding occurs downstream of Highland Terrace and Bloomingrove Road.
7. There is no water surface elevation information available for the project. FEMA maps are online at www.msc.fema.gov and the Flood Insurance Rate Map (FIRM) for this area shows a Zone X Flood Boundary upstream of Highland Terrace and Bloomingrove Road. Zone X is an approximate boundary that includes the 0.2% annual chance flood (aka 500-year event), so the 100-year event will be at a lower elevation and produce a smaller inundation area.
8. There are a few properties upstream of Highland Terrace and Bloomingrove Road outside the Zone X boundary. This is more indicative of overland stormwater runoff, but homes with reported contents damaged were still included in the D-Curve calculations. When the detailed Feasibility Study is completed, it will likely only consider in-channel improvements and may not be a benefit to homes above the 100-year water surface elevation.
9. A 2015 report by Gannett Fleming discusses the existing inlet capacity for the culverts on Grafius Run and the Freedom Road Tributary. The clogging of trash racks located immediately at the culvert inlets appears to be a major source of the problem. A 2018 report by Rettew Associates proposes improvements to address the clogging issue.
10. Another concept that should be considered is construction of wider debris rack, far enough upstream of the culvert inlets and wide enough that they could collect larger debris and allow multiple flow routes around the blockage. Larger debris would be trapped for removal after the storm and smaller floatable debris can usually pass safely through the culvert if a free water surface is maintained.
11. Information regarding the USGS gauge that was decommissioned in 1953 is still available at www.waterdata.usgs.gov and shows that the gauge was located near the Cochran Elementary School from 1940 to 1953. Presumably the gauge was removed when the culvert was extended, around 1953. The data shows a peak recorded 100-year discharge of 1,500 cfs.

12. The Gannett Fleming report also indicates that the 7x7 box culvert downstream of the confluence with the 84-inch diameter culvert becomes surcharged with a flow of 747 cfs.
13. Basic hydraulic calculations are possible using assumed flow rates and culvert geometry shown on the As-built drawings. These results need to be verified in the detailed study.
 - a. The 8.5x8.5 culvert downstream of Oakdale Avenue appears to have adequate capacity for the 1,500 cfs event.
 - b. The 7x7 box culvert downstream of the junction with the 84-inch culvert would be subject to flood flows from both Grafius Run and the Freedom Road Tributary and cannot pass the 1,500 cfs flowrate.
 - c. The 84-inch culvert is adequately sized for the smaller drainage area of Grafius Run.
 - d. The 7x7 culvert upstream of the junction is adequately sized for the smaller drainage area of the Freedom Road Tributary.
 - e. No further calculations were generated to determine the size of pipes or culverts upstream of Highland Terrace. This information would also be developed during the detailed study.

Summary

Damages reported for the 42 properties were used in conjunction with the "middle" basement curve to reflect damages from the 100-year event and all lesser flows. The D-Curve for \$100,000 homes shows 40 homes will justify a \$920,000 project. A ratio of 1.07 was used to account for the slightly higher structure values (\$107,018 average) increases this to \$985,394. Another ratio of 1.05 was used to account for the larger number of homes (42/40) and increases the maximum project cost \$1,034,664.

Staffing levels prevent the completion of the Detailed Feasibility Study using in-house staff. The general estimate above is enough to justify a request for \$1.0 million in the next capital budget authorization request, for a Public Improvement Project to be administered by the Department of General Services. As soon as the legislation is enacted, we will request the release of a portion of the authorization to hire a consultant to complete the Feasibility Study. It is too soon to say if the same consultant would also be allowed to design the selected recommended structural alternative.

A copy of the Feasibility Study Services Agreement is available online at <https://www.dgs.pa.gov/Design-and-Construction/Design/Pages/default.aspx>

September 10, 2019

Attachments:

Impact Area identified by City
Damages Summary Sheet
Property Values Summary Sheet
D-Curve

Reference Documents:

2018 Report by Rettew Associates
2015 Report by Gannett Fleming
1953 Chester Engineers As-Built Drawing 6
1954 Chester Engineers As-Built Drawing 22
9/2019 hand calculations
FEMA FIRM 354F segment
USGS 01551000 data
Current Inflation Rate
20-year bond inflation rate

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