Final Report
Kingston Twp. #2017-1 Watershed
Drainage Petition per O.R.C. 6131
January 28, 2021

This report has been prepared for the final hearing on a drainage improvement petition filed by Maribeth Meluch and others on September 1, 2017. The original general location and course of the requested improvements is stated in the petition as follows:

> *"In Delaware County, Kingston Township, within the Kingston Twp. #2017-1 watershed and generally following, but not limited to the course and termination of the existing improvements."*

The following is the nature of the work petitioned:

> *"To generally improve the drainage, both surface and subsurface, to a good and sufficient outlet, by replacing, repairing and/or altering the existing improvements as required and/or creating new surface and subsurface drainage mains or laterals as requested, by this petition."*

The Kingston Twp. #2017-1 watershed is 128.667 acres. The watershed is 31% agricultural land, 35% rural residential, 32% woods, and 2% road right-of-way. The original petition was signed by representatives of 5 of the 22 parcels in the Kingston Twp. #2017-1 watershed.

Petition Process

This petition has been submitted according to Ohio Revised Code Section 6131 which authorizes the Board of County Commissioners to act on behalf of benefited property owners to make drainage improvements. If the Commissioners decide to proceed with a project, the costs related to the improvements are collected via special assessment to the landowners in the watershed according to the benefit received. The construction assessments would be placed on the property tax bills of the benefited landowners, and can be spread over a maximum of 8 years with 16 semi-annual installments depending on the method of payment chosen by the Commissioners. Additionally, the improvements will be placed on the county drainage maintenance program per Ohio Revised Code Section 6137 with maintenance funds being collected semiannually similar to the original construction costs. These annual maintenance assessments are generally 2 to 3 percent of the construction assessment.

It should be noted that property owners are only assessed for those improvements that are located downstream from their properties. No property is assessed for improvements located "upstream" of a given parcel. In addition, units of government that hold rights-of-way for public

roads are assessed for both construction and maintenance costs in the same manner as private property owners.

The decision to approve a petition is a 3-step process involving a viewing, an initial, or first, hearing, and a second, or final, hearing. A viewing of the proposed improvements was conducted on November 20, 2017 by the Commissioners to familiarize themselves with the location and condition of the existing improvements. Next, the first hearing was held on February 22, 2018. At the first hearing, the Commissioners found in favor of the petition. They requested the Delaware County Engineer and the Delaware Soil and Water Conservation District to proceed in the development of engineering plans and specifications and the schedule of assessments. It is this information that is before the Board of Commissioners for consideration at this second and final hearing.

Project Scope

The proposed project has been divided into two distinct parts: Main and Lateral #1. The Main is proposed to commence on the north side of Kilbourne Road on the Yoke/Ramos property line and terminate approximately 3,250 feet downstream at the junction with Little Walnut Creek. The primary work items proposed are the construction of a grade stabilization structure, the installation of new subsurface drainage lines, the construction of surface drain, the installation of private drive culverts, and clearing of brush and vegetation. All disturbed areas will be returned to their pre-construction condition or seeded and mulched. Lateral #1 is proposed to begin at the Meluch/Blommel property line approximately 1,280 feet south of Kilbourne Road and extend 1,166 feet downstream to the junction with the Main on the Lovat property. The primary work items proposed are the installation of a new subsurface drainage lines and the construction of surface drain. All disturbed areas will be returned to their pre-construction condition or seeded and mulched. A section of this lateral located on the TBDB LLC property would be converted from farmed surface drain to grassed waterway. All other disturbed areas will be returned to their pre-construction condition or seeded and mulched.

Project Estimate – Main

Construction	$ 68,769.50
Administration, Planning and Inspection	$ 8,572.12
Drainage Maintenance Pay-in (5%)	$ 3,817.08
Contingency (15%)	$ 11,451.24
TOTAL ESTIMATED COST:	**$ 92,609.94**

Project Estimate – Lateral #1

Construction	$ 21,876.00
Administration, Planning and Inspection	$ 1,500.00
Drainage Maintenance Startup (5%)	$ 1,168.80
Contingency (15%)	$ 3,506.40
TOTAL ESTIMATED COST:	**$ 28,051.20**
TOTAL PROJECT ESTIMATED COST:	**$120,661.14**

Calculation of Assessments

The Ohio Revised Code instructs the County Engineer to calculate the assessments to individual property owners based on the benefits received from the improvements for the various properties in the watershed. The ORC further defines benefited land as:

> *"Lands that have been removed from their natural state by deforestation, cultivation, artificial drainage, urban development, or other manmade causes shall be considered as benefited by an improvement required to dispose of the accelerated flow of water from the uplands."*

Assessments to individual parcels have been calculated using the following formula, a rationale that is widely used throughout the state of Ohio.

(Acres Benefited) **X** (Land Use Factor) **X** (Percent of Improvement Used) **X** (Remote Factor) = (Individual Parcel Assessment Factor)

Each parcel's assessment is then determined by:

(Individual Parcel Assessment Factor) **/** (Total of all Individual Assessment Factors) **X** (Total Construction Cost) = (Parcel Assessment)

Explanation of Factors:

- **Acres Benefited**
  Total number of acres within a given parcel that contribute drainage to the improvement.
- **Land Use Factor**
  The relative benefit to parcels of drainage based on the amount of increased storm water runoff resulting from the land use of the parcel.
- **Percent of Improvement used**
  The point at which drainage from a given parcel enters the improvement. Parcels are only assessed for the portion of the improvement that lies downstream of the parcel.
- **Remote Factor**
  The remote factors are based upon a parcel's distance from the improved section of the drainage course, and is typically established in ½ mile increments. Parcels that are most "remote" from the actual improvement receive the greatest reduction on their assessment. No remote factor has been applied for this project.

Benefits versus Cost

One of the primary factors set forth for consideration in the approval or dismissal of a petition request is the actual benefit of the proposed improvements to the watershed in question. The following analysis examines this factor from the standpoint of land productivity for the agricultural acres as well as the value of drainage to residential parcels.

A publication by The Ohio State University Extension titled "Returns to Farm Drainage" details several studies, conducted by Ohio State researchers, on the effects of drainage on crop yields. The studies show that fields with good drainage will produce higher yields than fields that have poor drainage. A recently completed 25-year study showed that subsurface drainage increased corn yields by 24%-39%, and increased soybean yields by 13%-46%. This produces average yield increases of 31% and 29% respectively. The benefits of drainage will thus equal this increased yield multiplied by the market price.

Approximately 31% or 40 acres of the 128-acre watershed is agricultural land. The 2019 through 2015 average market price for corn and soybeans in Ohio, as reported by the USDA National Agricultural Statistics Service is $3.81 per bushel for corn and $9.26 per bushel for soybeans. The average estimated yield increases for the soil types present in the watershed, given appropriate drainage improvements are in place, equal 46 bushels per acre for corn and 14 bushels per acre for soybeans.

Crop Production Benefit examples:

- Corn
  (46 Bushel per acre increase in yield) **X** ($3.81 per bushel) **X** (40 acres) = $7,010.40 increase annually.

- Soybeans
  (14 Bushel per acre increase in yield) **X** ($9.26 per Bushel) **X** (40 acres) = $5,185.60 increase annually.

For this example, we will assume that cropland acres are distributed equally between corn and soybeans, for a potential average annual increase of $6,098. If this potential annual return is multiplied over a 20-year period, the benefit equals $121,960.

While this example does not take into consideration individual farm management practices, it does illustrate the fact that good agricultural drainage is a key factor in farm profitability and would reflect positively when considering a cost/benefit analysis for this project.

The increased value or benefit for residential parcels is typically found in two ways: the increased marketability of the home and functionality of the home sewage treatment system and associated drainage needs. An inadequate subsurface drainage outlet can dramatically deteriorate the condition of household sewage treatment systems potentially limiting the value of the home for resale. Locally, the cost to construct an alternate sewage treatment system, should the existing system fail, ranges from $15,000 to $25,000 on average. Other benefits that are commonly perceived as a result of suburban drainage improvements focus on quality of life and positive neighborhood perception. Watersheds that have planned and maintained drainage infrastructures generally have higher resale values than those communities that are known to have a history of drainage problems. Approximately 45 acres, or 35%, of the land use in the watershed is residential in nature. When evaluating the cost of providing adequate drainage outlets for residential properties, we find that for new construction, developers or homebuilders spend between $1,000 and $3,000 per lot to attain adequate drainage infrastructure within a development. With 12 residential parcels in the watershed, the potential average benefit is between $12,000 and $36,000 at minimum. While this analysis does not consider many potential variables, it could aid in the decision-making process

The benefits to this proposed project will be realized well beyond the construction repayment term. As previously stated, the construction assessments would be placed on the property tax bills of the benefited landowners, and can be spread over a maximum of 15 years. Alternatively, assessments can be paid in full within 30 days after the close of the final hearing without paying interest. The long-term benefits will be realized by virtue of this project being placed on the County Drainage Maintenance Program in perpetuity per Ohio Revised Code Section 6137. O.R.C. 6137 requires maintenance funds to be collected semi-annually similar to the construction costs. These maintenance funds are applied to the annual inspection and maintenance of this specific project.

Recommendations

A decision to move forward with the Main portion of the project can be made independent of Lateral #1. Approval of Lateral #1 is contingent upon approval of the Main. A decision to deny the Main will necessitate denial of Lateral #1. Approval or denial of Lateral #1 does not affect the approval or denial of the Main.

Based on all of the information gathered and generated, I believe this project as proposed is technically feasible and would serve as an adequate outlet for the drainage needs of the watershed. Furthermore, the parcel assessments for this project are within the range of assessments that can be expected for a project of this scope. The testimony brought to the Board of Commissioners by the landowners as to whether the benefits of this project exceed the costs, should be given significant consideration in the decision to move forward with this project.

A resolution affirming the order to proceed detailing the approved areas of work, confirming the schedule of assessments and ordering the project to be advertised for competitive bid per Section 6131 of the O.R.C. will be necessary. The resolution by the Board of Commissioners shall also determine how long a period of time, in semiannual installments, as taxes are paid, shall be given the owners of land benefited to pay the construction assessments.

If the Board of Commissioners chooses to dismiss the Petition in whole or in any part, I would recommend a resolution reflecting that decision, and that the costs for the proceedings, including the costs incurred by the Board of Commissioners, the County Engineer and the Delaware Soil and Water Conservation District in making surveys, plans, reports and schedules be distributed to the benefiting landowners in the same ratio as determined in the final estimated assessments presented at this hearing. This amount is estimated at $5000.

Prepared by,

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Approved by,

Chris Bauserman P.E., P.S.
Delaware County Engineer