

English #346 Drainage Improvement Project

Requested per ORC 6131

DELAWARE COUNTY COMMISSIONERS
DELAWARE COUNTY ENGINEER'S OFFICE
DELAWARE SOIL & WATER CONSERVATION DISTRICT

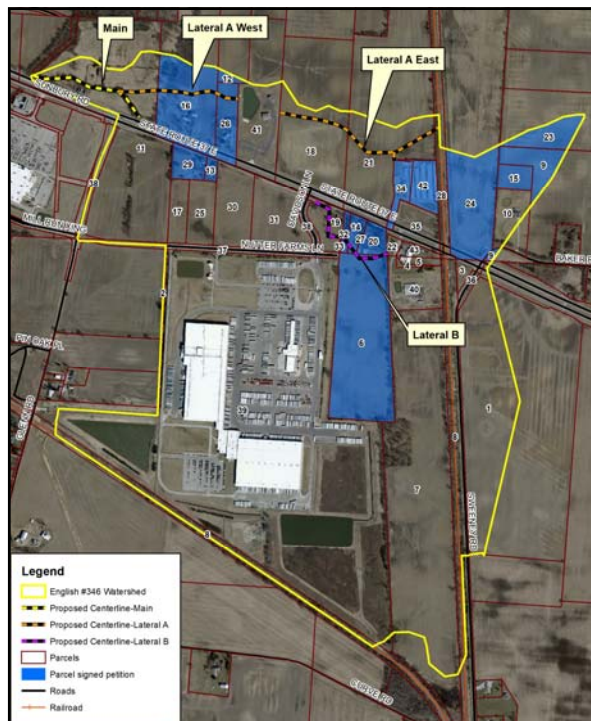
"In Delaware County, Brown & Berlin Twps within English 346 watershed and generally following, but not limited to the course and termini of the existing improvement."

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

-As quoted from the petition

Project Timeline

- **May 16, 2018:** Petition for drainage improvements filed by Christopher A. and Nicki L. Acker and others
- **August 23, 2018:** Amendment filed by Ross Carlson accepted by Commissioners
- **August 13, 2018:** View held
- **November 1, 2018:** 1st Hearing



- Watershed is approximately 439 acres
- 46% agricultural, 3% rural residential, 1% woods, 50% commercial, industrial, and road right-of-way
- Original petition signed by representatives of 12 of the 43 parcels in the English #346 watershed



Main

- Open Channel, 2-4' deep
- Clearing and snagging of brush and debris
- Rock-lined channel



Lateral A West

- Subsurface drain tile installation
- Grade stabilization structure
- Fence gate installations



Lateral A East

- Surface drain shaping and grading
- Subsurface drain tile installation
- Tile breather installations



Lateral B

- Subsurface drain tile installation
- Tile breather installations
- Clearing and snagging of brush and debris



Construction Items – Representative Pictures



OPEN CHANNEL

Construction Items – Representative Pictures



**ROCK LINED
CHANNEL**

Construction Items – Representative Pictures



**RE-SEEDING
FOLLOWING
SUBSURFACE DRAIN
INSTALLATION**

Construction Items – Representative Pictures



TILE BREATHER
INSTALLATION

Construction Items – Representative Pictures



SURFACE DRAIN
SWALE

Construction Items – Representative Pictures



**GRADE STABILIZATION
STRUCTURE**

Project Construction Cost Estimate

Section	Construction	Admin, Inspection, Drainage Maintenance Pay-in, etc.	Total
Main	\$14,950.00	\$12,125.45	\$27,075.45
Lateral A West	\$29,882.40	\$9,516.48	\$39,398.88
Lateral A East	\$14,573.00	\$4,159.20	\$18,732.20
Lateral B	\$31,906.60	\$8,681.32	\$40,087.92
		All Sections	\$125,294.45

Calculation of Assessments

- ORC instructs the County Engineer to calculate assessments to individual property owners based on the benefits received
- “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.” (ORC 6131.01)*

Calculation of Assessments

- Acres Benefited x Landuse Factor x % Use = Parcel Assessment Factor
- Parcel % Share = Parcel Assessment Factor / Sum of Assessment Factors
- Parcel Assessment = % Share x Total Estimated Cost

Payment Options

- Pay full assessment upfront within 30 days of the final hearing (by July 6, 2022, also must give Notice of Intent by June 27, 2022)
- Have assessment placed on property tax bill as a Special Assessment
- Having the assessment placed on property taxes will include interest and other fees if the project is bonded and Auditor's/Treasurer's 2% collection fee

Amortization Example

**Assuming no upfront payments & all sections of the project approved*

Total Estimated Construction Cost – Direct Assessments = \$125,294.45

Average (mean) Assessment not including ROW = \$2,667 = 2.1% Share of Project

Debt Issuing Fees (Bond Counsel, Bank) = \$8,000

Bond Interest, 4% (estimate) = \$133,294.45 x 4% = \$5,331.78

Total Estimated Cost = \$138,626.23

2.1% Share of Total Estimated Cost = \$2,911.15

Auditor/Treasurer Fees (2%) = \$58.22

Total Assessment for Average Parcel = \$2,969.37

Amortization Example

Total Assessment = \$2,969.37 Semi-annual payment = \$185.59

8-Year Repayment Schedule

	<u>1st Half</u>	<u>2nd Half</u>
2024:	\$185.59	\$185.59
2025:	\$185.59	\$185.59
2026:	\$185.59	\$185.59
2027:	\$185.59	\$185.59
2028:	\$185.59	\$185.59
2029:	\$185.59	\$185.59
2030:	\$185.59	\$185.59
2031:	\$185.59	\$185.59

Bidding & Construction

- Approved projects are advertised for public bid
- Lowest and best bid to be awarded contract
- Projects are typically not subject to prevailing wage

Bidding & Construction

- Bids may not be accepted in excess of Final Hearing Engineer's Estimate (ORC 6131.40)
- Final schedule of assessments is reduced pro rata by the difference between the estimated cost and final cost
- Upfront payments receive a refund

Drainage Maintenance

- ORC 6137 requires completed projects to be placed onto Drainage Maintenance
- Purpose of Drainage Maintenance is to keep the project operating at its designed capacity
- Maintenance funds are collected as a Special Assessment
- Common Maintenance activities include inspections, seeding, repairs, and erosion control

Drainage Maintenance

- Maintenance assessments are determined based on the Final Schedule of Construction Assessments
- Most projects average 2.5 – 5.0% annual collections
- Collection Percentage can vary depending on the maintenance needs of the project
- Drainage Maintenance is perpetual

Amortization Example

Construction Assessment = \$ 3,340.22 x 3% Maintenance Collection + 2% Auditor/Treasurer
= \$102.21 - Annual Maintenance Assessment

8-Year Repayment Schedule

	<u>1st Half</u>	<u>2nd Half</u>
2024:	\$185.59 (C) + \$102.21 (M)	\$185.59 (C) + \$102.21 (M)
2025:	\$185.59 (C) + \$102.21 (M)	\$185.59 (C) + \$102.21 (M)
2026:	\$185.59 (C) + \$102.21 (M)	\$185.59 (C) + \$102.21 (M)
2027:	\$185.59 (C) + \$102.21 (M)	\$185.59 (C) + \$102.21 (M)
2028:	\$185.59 (C) + \$102.21 (M)	\$185.59 (C) + \$102.21 (M)
2029:	\$185.59 (C) + \$102.21 (M)	\$185.59 (C) + \$102.21 (M)
2030:	\$185.59 (C) + \$102.21 (M)	\$185.59 (C) + \$102.21 (M)
2031:	\$185.59 (C) + \$102.21 (M)	\$185.59 (C) + \$102.21 (M)
2032:	\$102.21 (M)	\$102.21 (M)

Cost/Benefit Analysis

- Benefits of drainage improvements exist for both agricultural and residential parcels
- Benefit to agricultural parcels is realized by the increased yield as a result of good drainage
- Estimated yield increases given the soils in the area would average 46 bushels per acre for corn, and 14 bushels per acre for soybeans given the appropriate drainage improvements are in place

Cost/Benefit Analysis

- USDA Average Crop price (2016-2020) for corn is \$3.73 per bushel, and for soybeans is \$9.30 per bushel
- 26 acres of the land in the watershed is currently agricultural
- Corn: $46 \text{ bu/acre increase} \times \$3.73 \times 200 \text{ acres} = \$34,316$
- Soybeans: $14 \text{ bu/acre increase} \times \$9.30 \times 200 \text{ acres} = \$26,040$
- Average Annual Benefit = \$30,718

Cost/Benefit Analysis

- Benefits to residential parcels focus on quality of life, neighborhood perception, and homesite sewage treatment systems (HSTS)
- A failed HSTS can cost \$15,000 - \$25,000 to repair or replace
- New developments average \$1,000 - \$3,000 per lot spent on providing adequate drainage outlets
- 8 residential parcels = \$8,000-\$24,000 benefit at minimum

Project Sections

- Main and Lateral B can each be completed independently
- Lateral A West requires Main
- Lateral A East requires Main and Lateral A West
- Lateral A East also includes accepting existing subsurface drain onto Drainage Maintenance in existing condition

Decisions

Option 1: Approve all	Main	Lateral A West	Lateral A East	Lateral B
Option 2: Main, Lateral A	Main	Lateral A West	Lateral A East	
Option 3: Main, partial A	Main	Lateral A West		
Option 4: Main, partial A, B	Main	Lateral A West		Lateral B
Option 5: Main, Lateral B	Main			Lateral B
Option 6: Main only	Main			
Option 7: Lateral B only				Lateral B
Option 8: Deny all				

Approval will require setting repayment period and whether to bond, confirming the schedule of assessments, and ordering the project be advertised for competitive bid

Decisions

- If decision is to deny, it is recommended to distribute costs incurred to this point to the landowners in the same ratio as determined by the final schedule of assessments
- Estimated costs to date = \$5,500

Engineer's Recommendation

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.