

# **PRELIMINARY REPORT**

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# **MATTOCK DITCH/WEBB RUN EXTENSION #23-02**

**Tiffin Township**

**Defiance County**

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**June 2023**

PRELIMINARY REPORT  
**MATTOCK DITCH/WEBB RUN EXT. #23-02**  
TIFFIN TOWNSHIP SECTIONS 24, 25, 26, 27, & 34; DEFIANCE COUNTY, OHIO

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This Preliminary Report regarding the proposed drainage and channel improvements for the **MATTOCK DITCH/WEBB RUN EXT. #23-02** is submitted for your consideration in accordance with a request received at the *Defiance Soil and Water Conservation District*. The Natural Resources Conservation Service, the Ohio Department of Agriculture, and the Defiance Soil and Water Conservation District have investigated the area and associated concerns. This report presents the information and data we have at the present time, together with our assessment of the proposed project. Keep in mind that this is only a Preliminary Report and not a final engineering plan nor a final cost estimate. This report is based on preliminary field surveys and is not meant to be inclusive, but to serve only as a basis for the Defiance Soil and Water Conservation District's Board of Supervisors to decide whether or not to proceed with final project survey and engineering in addition to determining project cost estimates, damages, and landowners' estimated assessments.

A petition has been received from Defiance County landowners with properties at the top end of the proposed project area. The petitioners' primary goal is to maintain and improve the private drainage improvements that have been implemented south of Kammeyer Road, approximately eight years ago, on the lower end of Mattock Ditch. In addition, drainage improvements are sought through the lower reaches of the project, including a small downstream reach of Webb Run. Finally, drainage improvements have been requested for the north and south side of Kammeyer Road east of State Route 66, which ultimately outlets into the proposed Mattock Ditch Extension project.

The watershed for this project has a cumulative drainage area of approximately 5,397 acres and includes 299 parcels.

## **ENVIRONMENTAL SETTING**

### **Soils and Topography**

NRCS has developed a soil classification system that consists of four groups, identified as A, B, C, and D. Soils are classified into one of these categories based upon their minimum infiltration rate. The approximate hydrologic soil group classification breakdown for the Mattock Ditch/Webb Run Extension watershed is:

<b>Hydrologic Soil Group</b>	<b>Percent of Watershed</b>
<b>A</b>	<b>1.6</b>
<b>B</b>	<b>0.2</b>
<b>C</b>	<b>0.0</b>
<b>D</b>	<b>98.2</b>

Soil characteristics associated with each Hydrologic Soil Group are generally described as follows:

Group A: Soils with low runoff potential due to high infiltration rates, even when thoroughly wetted. These soils consist primarily of deep, well to excessively drained sands and gravels with high water transmission rates (0.30 in./hr.). Group A soils include sand, loamy sand, or sandy loam.

Group B: Soils with moderately low runoff potential due to moderate infiltration rates when thoroughly wetted. These soils consist primarily of moderately deep to deep, and moderately well to well-drained soils. Group B soils have moderate water transmission rates (0.15-0.30 in./hr.) and include silt loam or loam.

Group C: Soils with moderately high runoff potential due to slow infiltration rates when thoroughly wetted. These soils typically have a layer near the surface that impedes the downward movement of water. Group C soils have low water transmission rates (0.05-0.15 in./hr.) and include sandy clay loam.

Group D: Soils with high runoff potential due to very slow infiltration rates. These soils consist primarily of clays with high swelling potential, soils with permanently high water tables, soils with a claypan or clay layer at or near the surface, and shallow soils over nearly impervious parent material. Group D soils have very low water transmission rates (0-0.05 in./hr.) and include clay loam, silty clay loam, sandy clay, silty clay, or clay.

The majority of the soils in the Mattock Ditch/Webb Run Extension watershed are of a type that require surface and subsurface drainage for efficient agricultural production and for residential and commercial drainage. The topography of the area is relatively level with an average watershed slope of 1.7%. Elevation change from the top of the watershed to the project terminus is approximately 58 feet. Annual rainfall for the area is about 33.5 inches.

#### Land Use

The watershed is predominantly agriculture with about 74 percent in cultivated crops and 26 percent in woods, house lots, roads, and other uses. Some minor land use changes are possible with the construction of individual homes or farm buildings. This would represent only a small portion of the watershed area. Home construction in the watershed would depend upon individual type sanitary disposal facilities. It is imperative that these facilities not be tied into any subsurface drainage system unless the County Health Department approves it.

#### Fish and Wildlife Resources

Fish and wildlife throughout the project area consist of both game and non-game species. Potential channel excavation is limited to the upper reach of the project (Kammeyer Road to State Route 66). In addition to two-sided construction, one-sided construction will also be used to maintain wildlife habitat along the channel. Limited ditch bottom excavation will occur throughout this section. Work in the lower reaches of the project will consist only of removing log jams from the channel and will not involve any excavation of the ditch bottom or side slopes. Equipment will not be permitted to traverse the ditch bottom or travel through any potential wetlands that may exist adjacent to the ditch. Therefore, very little impact will be had on fish and wildlife resources.

#### Recreational Resources

Recreation resources are largely tied to privately owned properties with activities such as hunting.

## **EXISTING CONDITIONS**

The very upper reach of the project from Kammeyer Road to the confluence of the downstream reach of Peterson Ditch (approximately 800 feet in length) has been privately cleared and reconstructed approximately eight years ago. Since, brush has begun to grow on the banks. Also, several areas of bank stabilization are needed in addition to areas of widening/straightening the ditch bottom.

The next reach of the project from the confluence with the outlet of Peterson Ditch to State Route 66 has also had some recent work but has considerably more brush and trees along with areas of sediment bars within the channel. There are also several areas on this reach that have bank erosion on the south side that would benefit from stabilization. These two upper reaches currently meet Qb drainage capacities, but without maintenance, will return to the condition that the channel was in prior to the private work that was performed approximately eight years ago.

For the downstream reaches of Mattock Ditch Extension, as well as for the Webb Run Extension portion of the project, the main concern is obstructions caused by log jams. The presence of log jams begins to impact channel drainage west of State Route 66. Specifically, log jams begin to restrict channel drainage capacity near the Bockelman-Okuley property line. Two medium log jams are present upstream of this property line. In addition, a drive culvert just south of the property line is restricting flow during elevated flow conditions. Additional log jams are prevalent in much of the downstream reaches, with a few of the log jams holding back 1-2 feet of water. In addition to the log jams, preliminary surveys show that there are numerous leaning trees adjacent to the channel that will eventually fall into the ditch and create additional log jams in the future.

An inventory of log jams and leaning trees was conducted via drone and by foot in late winter/early spring of 2023 as shown in table below.

<b>Log Jam Size</b>	<b>Number as of Spring 2023</b>
Small	39
Medium	15

As noted above, leaning trees are also a concern for future channel capacity as they will inevitably end up in the channel and obstruct flow. An inventory of leaning and undercut trees was conducted in winter/early spring of 2023 as shown in table below:

<b>Tree Diameter</b>	<b>Number as of Spring 2022</b>
1" – 7"	1,174
8" – 12"	398
13" – 24"	123
25" – 36"	6
37" +	1

Finally, preliminary review of the drainage concerns along the north and south sides of Kammeyer Road show that the lack of a defined road ditch on the north side of Kammeyer Road is causing water to pond in the fields and yard north of Kammeyer Road. In addition, surface water is not efficiently flowing through the 12" tile across the Zipfel property to the State Route 66 road ditch.

### **RECOMMENDATIONS**

Two-sided reconstruction is recommended for the upper reach of the project from the south side of Kammeyer Road to the confluence with the downstream portion of Peterson Ditch. As noted above, brush has begun to regrow on this portion of the project that was privately reconstructed approximately eight years ago. This brush will be removed and placed on the adjacent field and on the back portion of the Chase Williams property. It will be the landowners' responsibility to dispose of the brush. The ditch bottom will be widened to a minimum of four feet throughout this upper, two-sided reach. In addition, ditch banks will be pulled to a 2:1 slope on each side of the ditch where needed. Spoil generated from the yard area on the east side of the ditch will be placed on the back of the east property and spoil removed from the west property will be spread along the field. Spoil will be leveled adjacent to the ditch where there is no yard. A rock pad for erosion protection will be placed just downstream of the box culvert under Kammeyer Road and three areas of curve riprap will be installed for bank erosion protection. A grade stabilization structure is also needed on the east side of the ditch near the confluence with Peterson Ditch. Two access culverts are to be installed in the Kammeyer Road ditch on each side of the reconstructed ditch. Several tile outlets will need replaced along with riprap protection being installed under all drainage tile

greater than 6" diameter. Following construction, the ditch bank will be seeded along with a 10-foot grass berm along the field. This 10-foot grass berm is considered part of the drainage improvement and shall remain intact. The berm area will be removed from the taxable valuation of the property. Any yard areas disturbed will be reseeded as part of the project.

One-sided reconstruction is recommended on the reach from the confluence of Peterson Ditch to State Route 66. This will consist of removing trees and brush from just the south side of Mattock Ditch. The trees and brush will be piled on the adjacent farm ground and it will be up to the landowner to dispose of it. The ditch bottom will be excavated to straighten the channel and remove sediment bars that are causing areas of bank erosion. The south bank will then be pulled to a 2:1 slope where needed. Spoil removed from the ditch will be spread to a thickness of 6-8 inches in the area directly adjacent to the ditch. In addition, one area of curve riprap will be installed to stabilize the ditch bank. Also, numerous grade stabilization structures are needed to prevent erosion from field surface water draining onto the side of the ditch. Several tile outlets will need replaced along with riprap protection being installed under all drainage tile greater than 6" diameter. Following reconstruction, the disturbed ditch banks will be reseeded and a mandatory 10-foot grass berm will be planted along the ditch top of bank. This 10-foot grass berm is considered part of the drainage improvement and shall remain intact. The berm area will be removed from the taxable valuation of the property.

For the downstream reaches of the project, the only feasible practice that can be utilized is the implementation of log jam and leaning tree removal. It is recommended that existing log jams be removed from the ditch and placed on the adjacent land. The logs and trees will not be removed from the property. It will be the landowner's responsibility to remove the debris if desired. In the bottom reaches of the project, it will be imperative that logs are positioned such that they are not carried away during future flooding events. Simultaneously, all leaning trees ( $>45^\circ$ ) as well as any significantly undercut (that will eventually fall into the channel) are to be removed and placed in the adjacent riparian area as described above.

An access route is to be established along the creek to permit access to the log jams and leaning trees during the project. This will consist of a 15-foot path that will be cleared of trees and brush (flush cut only). This path will be routed such that the fewest and smallest trees will be impacted. Access to the lower reaches of the project will require the construction of a low flow crossing that will replace the existing culvert on the Bockelman property. Following construction, these access routes will become a

permanent Ditch Maintenance easement and will be periodically cleared of debris and sprayed for brush/vegetation control.

Finally, for the Kammeyer Road drainage issue, it is recommended that a ditch approximately 2 feet deep be constructed on the north side of Kammeyer Road. A crossover pipe under Kammeyer Road is proposed near the east property line of the Zipfel residence. It should be noted that Tiffin Township would be required to install the crossover pipe under Kammeyer Road, separate from this project. The ditch on the south side of Kammeyer will then need to be reconstructed to the southeast corner of Kammeyer Road and State Route 66. It is proposed that the road ditch on the south side of Kammeyer Road be extended to Kappen's west property line, providing improved drainage and providing the ability to relocate the field drive culvert that is now near the intersection. All spoil generated will be spread in the adjacent field as detailed above. Four mini-rock chutes, a rock bowl, and a rock pad will be needed to convey field runoff into the ditch to prevent erosion. Ditch banks will be seeded following construction. In addition, a 10-foot, mandatory grass berm is to be planted along the new ditch and will be maintained as part of the project. This berm area will be removed from the taxable valuation of the property.

### **ENVIRONMENTAL IMPACT**

During reconstruction of the top reaches of the project (Kammeyer Road to State Route 66), areas of existing vegetation will be destroyed during the one-sided and two-sided reconstruction. It should be noted that most all trees and existing vegetation will remain on the northern side of the ditch in the one-sided construction area. All disturbed areas will be reseeded with cool season grasses upon completion of the project. The log jam and leaning tree removal project will not involve any ditch bottom or bank excavation. Impacts would be limited to lifting and placing debris outside of the channel. In addition, a permanent maintenance access route will be cleared, but will avoid most trees and consist of flush cutting only smaller trees that cannot be avoided. Equipment and the trees removed as part of the project will not be permitted within any potential wetland areas that may exist adjacent to the ditch. Therefore, there should be very minimal environmental impact as a result of the project.



**PRELIMINARY COST ESTIMATE**

<b>Mattock Ditch/Webb Run Ext. Reconstruction, Log Jam, and Leaning Tree Removal</b>			
<b>16,665 Feet - 3.16 Miles</b>			
<b><u>Items</u></b>			<b><u>Estimated Cost</u></b>
Clearing and Grubbing			\$11,375.00
Excavating and Leveling			\$9,600.00
Seeding, Fertilization, and Mulching			\$8,587.50
Riprap Erosion Protection at Kammeyer Road			\$4,000.00
Curve Riprap Erosion Protection			\$6,000.00
Grade Stabilization Structures			\$25,875.00
Tile Outlet Replacement/Riprap Protection			\$2,040.00
Access Drives			\$4,400.00
Low-Flow Crossing Installation			\$11,300.00
Log Jam Removal			\$33,000.00
Leaning Tree Removal			\$102,545.00
Access Route Clearing			\$7,600.00
Contingency			\$22,632.25
Interest, Legal, Administrative Cost			\$38,587.99
<b>Subtotal</b>			<b>\$287,542.74</b>
<b>Kammeyer Road Ditch Reconstruction</b>			
<b>1,600 Feet - 0.30 Miles</b>			
<b><u>Items</u></b>			<b><u>Estimated Cost</u></b>
Excavating and Leveling			\$3,375.00
Seeding, Fertilization, and Mulching			\$2,700.00
Grade Stabilization Structures			\$2,550.00
Access Drive			\$2,000.00
Contingency			\$1,062.50
Interest, Legal, Administrative Cost			\$1,811.56
<b>Subtotal</b>			<b>\$13,499.06</b>
<b>Total</b>			<b>\$301,041.80</b>

## **BOARD OF SUPERVISORS PROJECT REVIEW**

Having reviewed/inspected the project at the View conducted on April 18, 2023, in conjunction with the findings contained in this report, the Defiance SWCD's Board of Supervisors has provided the following comments in regards to the feasibility, favorable and unfavorable factors, and whether benefits exceed the estimated costs for this project.

### **Feasibility**

This project has been deemed feasible. Factors contributing to this decision include:

1. The majority of the ditch will have access with the utilization of field edges and existing clearings plus the clearing of access routes through the forested riparian areas.
2. Existing forested riparian areas exist throughout much of the project to permanently place trees, logs, and debris removed.

### **Favorable Factors**

Favorable factors of this project include:

1. Improved ditch condition and permanent maintenance on upper reaches to be reconstructed and on the lower reaches having log jams removed.
2. Improved localized drainage immediately upstream of larger log jams.
3. Reduction in erosion as a result of current areas of bank instability and from scouring around existing log jams.
4. Uniform method of sharing cost of project.
5. Project will be permanently maintained under the County Maintenance program.

### **Unfavorable Factors**

Unfavorable factors of this project include:

1. Existing vegetation on ditch banks to be reconstructed will be destroyed and will require reseeded.
2. Clearing of access routes through riparian areas and potential damage to crops and lawns during project construction.
3. Conversion of land for construction of the project.
4. Need for additional easement to access the project for future maintenance.
5. Maintenance of riparian access route for future log jam removals.

### **Benefits / Cost**

Given the preliminary cost estimates and the calculated benefits within the cost-benefit analysis (contained within this preliminary report), it is the Defiance SWCD's Board of Supervisors opinion that the benefits derived from this project are likely to exceed the estimated costs.

### **Alternate Proposals**

There are no other feasible, more cost-effective methods of maintaining and improving drainage other than reconstructing the upper reaches and removing log jams and leaning trees from the lower reaches of the project. For the Kammeyer Road portion of the project, the construction of a shallow road ditch is the most economical means of dealing with the drainage issue. Therefore, there are no alternate proposals recommended by the Board of Supervisors.

## LANDOWNERS

<u>Parcel Number</u>	<u>Landowner</u>	<u>Acres Owned</u>	<u>Acres Drained</u>
K14-0025-0-007-01	ACKERMAN CHAD & JILL	8.046	8.046
K14-0024-0-004-00	ANDERS ELIZABETH ETAL % MICHAEL A ZIPFEL ETAL	35.000	35.000
K14-0024-0-004-01	ANDERS ELIZABETH ETAL % MICHAEL A ZIPFEL ETAL	5.000	5.000
K14-0022-0-011-04	ANGERMEIER JOHN C	5.000	5.000
K14-0022-0-011-05	ANGERMEIER JOHN C	5.000	5.000
K14-0022-0-011-06	ANGERMEIER JOHN C	5.000	5.000
K14-0022-0-011-07	ANGERMEIER JOHN C	6.430	6.430
K14-0022-0-011-08	ANGERMEIER JOHN C	6.430	6.430
K14-0022-0-011-09	ANGERMEIER JOHN C	6.390	6.390
K14-0022-0-011-10	ANGERMEIER JOHN C	5.590	5.590
K14-0025-0-001-05	ARNOS ROGER D	10.302	10.302
K14-0035-0-004-00	ARNOS ROGER D	39.897	1.960
K14-0025-0-001-00	ARNOS ROGER D ETAL	100.732	100.732
K14-0035-0-006-01	AUER JAMES J & JOHN V %JOANNE M AUER	14.000	14.000
K14-0024-0-008-01	AVERY TIM & NANCY TRUSTEES	1.620	1.620
A07-0029-0-022-00	BADER SALLY JO & TIMOTHY JOHN	51.686	51.686
K14-0024-0-003-01	BAKLE MICHAEL W & DEBORAH C BOES	3.280	3.280
K14-0035-0-008-00	BALL ROBIN L	2.000	2.000
A07-0029-0-029-00	BD OF EDUC OF N E LOC	20.150	20.150
A07-0029-0-023-00	BECK CHARLES T & SUSAN Y TRUSTEES	40.000	40.000
A07-0020-0-006-00	BECK JOHN J & SONS INC	56.000	24.000
A07-0030-0-004-00	BECK JOHN J & SONS INC	156.820	156.820
K14-0024-0-001-01	BEEBE BARBARA A	2.000	0.500
K14-0022-0-011-21	BELCHER RONNIE L	5.000	5.000
A07-0030-0-003-01	BINGHAM BARRY & NINA	3.000	3.000
A07-0030-0-007-02	BINGHAM CURTIS & JULIE A	1.670	1.670
A07-0030-0-012-02	BISHOP MARY J TRUSTEE	3.500	3.500
A07-0030-0-005-00	BISHOP MICHAEL E	20.000	20.000
A07-0030-0-011-00	BISHOP MICHAEL E	35.932	35.932
A07-0030-0-011-02	BISHOP MICHAEL E	0.920	0.920
A07-0030-0-011-03	BISHOP MICHAEL E ETAL %MICHAEL & TERESA BISHOP	2.420	2.420
K14-0027-0-001-00	BISTEL RAYMOND EUGENE & SHELBY JEAN TRUSTEES	60.000	60.000
K14-0025-0-006-00	BOCKELMAN DAVID & REBECCA	160.000	160.000
K14-0026-0-002-00	BOCKELMAN DAVID & REBECCA	60.500	60.500
A07-0029-0-021-00	BOESLING SUE ANN & THOMAS A TRUSTEE	51.686	51.686
K14-0035-0-005-00	BOSTELMAN JASON	6.522	0.800
K14-0027-0-007-01	BOSTELMAN RICHARD F & SANDRA K	1.700	1.700
K14-0026-0-009-00	BRADY ROBERT T & BRIGETTE TRUSTEES	20.000	20.000
K14-0027-0-010-00	BRANDT ALEX S & CHERYL A	8.289	8.289
K14-0027-0-003-00	BROWN DOUGLAS G TOD	2.552	0.500
A07-0030-0-007-00	BROWN JEFFREY D & KATHY S	1.720	1.720
A07-0030-0-007-03	BROWN JEFFREY D & KATHY S	0.990	0.990
A07-0030-0-004-01	BROWN ROSE J	3.180	3.180
K14-0034-0-009-04	BUCHHOLZ BRADLEY S & KIM R TRUSTEES	6.088	0.100
K14-0034-0-009-05	BUCHHOLZ BRADLEY S & KIM R TRUSTEES	3.047	1.510
K14-0025-0-007-00	BURKHART A CHARLES	3.000	3.000
K14-0023-0-006-04	CARNAHAN SHARON J	26.331	26.331
K14-0023-0-006-06	CARNAHAN SHARON J	3.832	3.832
A07-0029-0-032-00	CHASE FARMS LTD	77.989	46.390

<u>Parcel Number</u>	<u>Landowner</u>	<u>Acres Owned</u>	<u>Acres Drained</u>
K14-0027-0-007-00	CHATHAM CAROL A TRUSTEE	35.412	27.500
K14-0034-0-007-00	CHATHAM CAROL A TRUSTEE	59.000	59.000
K14-0034-0-008-00	CHATHAM CAROL A TRUSTEE	20.000	19.370
K14-0034-0-007-01	CHATHAM CAROL A TRUSTEE % MARK & CHRISTEEN CHATHAM	1.000	1.000
K14-0027-0-010-01	CHATHAM MARK C & CHRISTEEN M	7.184	7.184
K14-0027-0-010-02	CHATHAM MARK C & CHRISTEEN M	7.717	7.717
K14-0027-0-010-04	CHATHAM MARK C & CHRISTEEN M	14.864	14.864
K14-0034-0-009-00	CHEEK JASON W & SHELAH S	1.361	1.361
K14-0025-0-007-06	CLAUSSEN JANE R	10.000	10.000
A07-0030-0-003-03	CLEMENS KYLE L & LINDSEY J	2.406	2.406
K14-0026-0-007-03	CLINE KEITH ETAL	5.000	5.000
K14-0024-0-007-15	CONLON JAMES B & MADONNA C TOD	4.896	4.896
K14-0035-0-009-00	CONLON MADONNA C TOD	40.000	10.810
K14-0026-0-010-04	CORESSEL MATTHEW P & STACY R	5.000	5.000
K14-0026-0-010-06	CORESSEL MATTHEW P & STACY R	1.754	1.754
K14-0027-0-003-02	CRAMER THOMAS R & KATHRYN E	2.657	0.500
K14-0023-0-004-01	CRIGGER DONALD R & BETTY	55.640	55.640
K14-0023-0-005-00	CRIGGER DONALD R & BETTY	40.000	40.000
K14-0024-0-007-04	CUPP DENNIS	6.988	6.988
K14-0023-0-003-02	DELABER JOSHUA J & BRANDY L	5.000	1.500
K14-0024-0-010-02	DEMAR TODD R & STEPHANIE J	2.497	2.497
A07-0019-0-006-01	DEPEW SCOTT A	1.081	1.081
A07-0030-0-003-02	DEWYSE MICHAEL J & DONNA K	5.000	5.000
A07-0019-0-006-00	DODSON JASON A TOD	3.566	3.566
K14-0024-0-007-02	DUMIRE JOSHUA & KARLA	2.001	2.001
K14-0024-0-007-08	DURHAM ROGER B & ANGELA M TOD	5.000	5.000
A07-0019-0-006-06	EATON ROBERT L & TERESA R	5.000	5.000
K14-0027-0-014-00	ENGEL JAMES R & DIANA F	1.560	1.560
K14-0027-0-014-31	ENGEL JAMES R & DIANA F	0.530	0.530
K14-0027-0-014-01	ERNST DOUGLAS D	10.847	10.847
A07-0030-0-012-00	ETCHISON BRIAN TRUSTEE	5.345	5.345
K14-0025-0-001-04	FLORO BRANDON C ETAL	15.000	15.000
K14-0026-0-003-00	FLORY TIMOTHY A	1.000	1.000
A07-0030-0-011-01	FOX MOLLIE L	1.000	1.000
K14-0023-0-004-07	FRY BRIAN	1.860	1.860
K14-0023-0-004-05	FULLER NATHAN & REBECCA K	4.510	4.510
K14-0024-0-002-00	GARMYN WILLIAM A TOD	80.000	80.000
K14-0023-0-004-04	GEBERS VICKIE S % VICKIE S STAHLER	5.000	5.000
K14-0023-0-006-01	GILL ROBERT L & LINDA L	5.000	5.000
K14-0023-0-006-05	GILL ROBERT L & LINDA L	7.648	7.648
A07-0019-0-006-10	GILLHAM BRENT	1.500	1.500
K14-0027-0-014-04	GOLLER PHILIP H & LINDA	5.000	5.000
K14-0036-0-010-01	GOVANG JAMES E & CHRISTINA L	2.123	2.123
K14-0026-0-010-01	GRANT RONALD R	4.244	4.244
K14-0025-0-005-01	GRAZIANI JILL M ETAL	2.424	2.424
A07-0029-0-031-01	GREEN EDGE PROPERTIES LLC	2.310	2.310
K14-0034-0-009-01	GREVE JOSIAH DAVID & HEATHER ANN	20.870	17.350
K14-0024-0-007-12	GRIFFITH CHASE R	10.051	10.051
K14-0022-0-011-00	HAHN JEFF A & PAULA J FILSON	1.324	1.324

<u>Parcel Number</u>	<u>Landowner</u>	<u>Acres Owned</u>	<u>Acres Drained</u>
K14-0024-0-008-00	HAMMERSMITH PROPERTIES LLC	20.134	20.134
K14-0024-0-010-00	HAMMERSMITH PROPERTIES LLC	17.503	17.503
K14-0024-0-010-01	HAMMERSMITH PROPERTIES LLC	20.000	20.000
K14-0024-0-011-01	HAMMERSMITH PROPERTIES LLC	20.000	20.000
K14-0025-0-007-07	HARDMAN JOSHUA ROBERT & MARY S	1.988	1.988
K14-0027-0-013-03	HARDY CHARLES W	66.587	66.587
K14-0028-0-003-00	HARDY CHARLES W	10.000	0.500
K14-0034-0-006-00	HARDY CHARLES W	58.550	5.330
K14-0027-0-008-00	HARDY GLEN W	40.000	40.000
K14-0027-0-009-00	HARDY GLEN W	80.000	80.000
K14-0024-0-007-14	HERR TIMOTHY L	2.554	2.554
K14-0023-0-010-01	HEUSI JANE J	14.051	11.550
A07-0019-0-009-00	HIGBEA CARL D & BERNADINE C TRUSTEES	40.000	40.000
A07-0019-0-010-00	HIGBEA CARL D & BERNADINE C TRUSTEES	33.530	33.530
A07-0020-0-004-00	HIGBEA DAVID W ETAL	20.000	20.000
A07-0019-0-008-01	HIGBEA DONALD LEE & KATHLEEN K CO TRUSTEES	2.990	2.990
A07-0019-0-008-00	HIGBEA JOHN H & BURDETTE W	76.010	76.010
A07-0019-0-011-00	HIGBEA JOHN H & CONNIE J	1.896	1.896
K14-0023-0-004-06	HILL LOIS A	2.000	2.000
A07-0019-0-008-02	HILLMAN DARLENE K ETAL % CAROL J SANDERS ETAL	0.930	0.930
K14-0023-0-006-09	HOHENBRINK EDWARD A	5.000	5.000
A07-0020-0-007-00	HOMIER ADAM L & AMANDA L	4.000	4.000
K14-0025-0-002-01	HORNISH PROPERTIES LLC	13.710	13.710
K14-0025-0-002-03	HORNISH PROPERTIES LLC	23.311	23.311
K14-0025-0-003-00	HORNISH PROPERTIES LLC	0.771	0.771
K14-0025-0-004-00	HORNISH PROPERTIES LLC	5.000	5.000
K14-0025-0-004-01	HORNISH PROPERTIES LLC	19.256	19.256
K14-0025-0-004-02	HORNISH PROPERTIES LLC	17.246	17.246
K14-0025-0-004-03	HORNISH PROPERTIES LLC	17.245	17.245
K14-0025-0-005-00	HORNISH PROPERTIES LLC	32.862	32.862
K14-0025-0-005-02	HORNISH PROPERTIES LLC	2.214	2.214
K14-0025-0-005-03	HORNISH PROPERTIES LLC	2.500	2.500
K14-0035-0-006-00	HORNISH PROPERTIES LLC	155.196	18.900
K14-0036-0-009-00	HORNISH SAMUEL J & JO ELLEN	40.000	22.000
A07-0030-0-001-02	HOSCHAK DAVID A & REBECCA J	2.496	2.496
A07-0030-0-010-01	JIMENEZ EDWARD E & GINA M	1.388	1.388
K14-0026-0-010-02	JOHNSON JOSHUA A	3.094	3.094
K14-0022-0-011-01	KAPPEN GERALD T & CATHERINE M	24.740	24.740
K14-0027-0-014-21	KAPPEN GERALD T & CATHERINE M	10.132	10.132
K14-0025-0-001-08	KAPPEN PETER J & TAMMY	5.000	5.000
K14-0024-0-007-01	KEEFER TIMOTHY A & KRISITI L	1.470	1.470
K14-0024-0-007-05	KENT TABITHA & CHARLES EDWARD HARRIS III	4.845	4.845
A07-0029-0-028-02	LEONARD BRITTANY	1.000	1.000
K14-0026-0-010-03	LOCHER GALEN R TRUSTEE	3.803	3.803
A07-0031-0-009-00	LUDEMANN DANIEL C & LINDA K	120.000	36.000
K14-0025-0-007-02	MACK CHRIS A	5.500	5.500
K14-0023-0-006-03	MANGAS NICHOLAS L	10.001	10.001
K14-0027-0-013-02	MASSENGALE DEWAYNE & SABRINA	5.000	5.000
K14-0022-0-005-03	MATTOCKS DAVID K	7.410	7.410

<u>Parcel Number</u>	<u>Landowner</u>	<u>Acres Owned</u>	<u>Acres Drained</u>
K14-0026-0-004-00	MAXWELL CHRISTOPHER E & LISA M	30.000	30.000
K14-0026-0-011-00	MAXWELL CHRISTOPHER E & LISA M	50.000	50.000
K14-0027-0-002-00	MAYNARD KEN & LYNN E	20.000	17.500
K14-0027-0-011-00	MCBRIDE W DOUGLAS & JOAN M	10.000	10.000
K14-0024-0-007-07	MCBROOM TONI K & MICHAEL	5.980	5.980
K14-0022-0-005-01	MCCARTY SHAWN C	7.410	7.410
K14-0026-0-006-00	MCGUIRE CHERYLE RENEE ETAL C/O DIANE FOSS HELF	76.000	76.000
K14-0026-0-006-01	MCGUIRE GLENN A & CHERYLE R	4.000	4.000
K14-0034-0-009-03	MCKENNEY TERRY L & KELLY	3.047	2.520
K14-0023-0-004-02	MILES SHARON L	5.000	5.000
K14-0027-0-006-00	MILLER AUSTIN D & CINDY L	3.000	3.000
K14-0024-0-003-00	MILLER TIMOTHY N & TAMARA S	30.760	30.760
K14-0024-0-009-00	MILLER TIMOTHY N & TAMARA S	40.000	40.000
K14-0024-0-003-02	MILLER TIMOTHY N & TAMARA S	3.842	3.842
K14-0024-0-003-03	MILLER TIMOTHY N & TAMARA S	3.636	3.636
K14-0024-0-008-02	MILLER TIMOTHY N & TAMARA S	18.505	18.505
A07-0019-0-006-09	MOCHERMAN TODD E & JENNIFER	5.000	5.000
K14-0024-0-001-00	MOSER FAMILY FARMS LLC	78.000	22.000
K14-0024-0-006-00	MOSER FAMILY FARMS LLC	7.790	7.790
A07-0019-0-005-00	MOSER GEORGE P	80.000	55.500
K14-0024-0-005-00	MOSER GEORGE P	16.105	16.105
A07-0019-0-002-00	MOSER JOHN D ETAL C/O DONALD & NANCY MOSER	27.030	27.030
A07-0020-0-002-00	MOSER SCOTT J C/O DONALD & NANCY MOSER	53.300	53.300
K14-0024-0-005-01	MOSER TIMOTHY P	24.454	24.454
K14-0024-0-006-02	MOSER TIMOTHY P	32.512	32.512
A07-0032-0-009-02	MOSS JOHN D & TAMALA A	1.377	1.377
K14-0023-0-010-02	MUSGRAVE LONNIE WADE & SHANE MAYNARD	5.346	1.846
A07-0020-0-015-01	NAGEL RICHARD & MARY ALICE	4.000	4.000
A07-0019-0-003-00	NAGEL RICHARD D & MARY ALICE	25.973	25.973
A07-0020-0-014-01	NAGEL RICHARD D & MARY ALICE	22.278	22.278
A07-0030-0-001-00	NAGEL RICHARD D & MARY ALICE	21.324	21.324
A07-0030-0-012-04	NAGEL RICHARD D & MARY ALICE	31.404	31.404
A07-0019-0-006-12	NAGEL STEPHANIE E	4.500	4.500
K14-0034-0-009-02	NEWTON CHRISTOPHER G & KAREN M	6.100	6.100
A07-0020-0-014-00	NOFZIGER MARY ALICE	2.722	2.722
K14-0034-0-001-01	NORDEN SCOTT A & ALESSANDRA	38.504	2.030
A07-0029-0-028-01	NORTHEASTERN LOCAL SCHOOL	40.000	40.000
A07-0029-0-030-00	NORTHEASTERN LOCAL SCHOOL	19.850	19.850
A07-0020-0-011-01	OBERHAUS THOMAS M & DAVID F OBERHAUS	3.817	3.817
A07-0020-0-012-00	OBERHAUS THOMAS M & DAVID F OBERHAUS	1.107	1.107
K14-0023-0-004-08	OKULEY GARY	1.291	1.291
K14-0026-0-005-00	OKULEY GARY E & SANDRA K	75.000	75.000
K14-0026-0-007-02	OKULEY GARY E ETAL	5.000	5.000
K14-0023-0-004-03	OKULEY SCOTT	3.707	3.707
K14-0023-0-006-07	OLASHUK ROBERT J & JILL L	3.832	3.832
K14-0023-0-006-02	OLASHUK ROBERT J & JILL L	5.000	5.000
K14-0026-0-005-01	ORDWAY DAWN	5.000	5.000
K14-0026-0-003-01	PANHANDLE EASTERN PIPELINE C/O K.E. ANDREWS & COMPANY	2.784	2.784
K14-0024-0-011-00	POHLMANN TED T & CAROL A	20.000	20.000

<u>Parcel Number</u>	<u>Landowner</u>	<u>Acres Owned</u>	<u>Acres Drained</u>
K14-0024-0-012-00	POHLMANN TED T & CAROL A	80.000	30.000
A07-0030-0-006-00	POHLMANN TED T & CAROL A	38.728	38.728
A07-0030-0-007-01	POHLMANN TED T & CAROL A CO TRUSTEES	36.009	36.009
A07-0030-0-008-00	POHLMANN TED T & CAROL A CO TRUSTEES	49.001	49.001
K14-0026-0-012-04	RAIMONDE BETH M TRUSTEE	5.000	5.000
K14-0026-0-012-00	RAIMONDE JON M TRUSTEE	20.870	20.870
K14-0026-0-012-05	RAIMONDE JON M TRUSTEE	32.000	32.000
A07-0031-0-010-01	RANDALL ROBERT A ETAL	78.645	20.000
A07-0031-0-010-02	RANDALL ROBERT A ETAL	40.000	20.000
A07-0032-0-009-01	RANDALL ROBERT A ETAL	38.623	18.630
A07-0029-0-031-00	RANDALL RYAN ETAL	37.690	37.690
K14-0036-0-010-02	RANDALL RYAN ETAL	112.586	1.380
A07-0029-0-028-00	RANDALL RYAN R ETAL	39.000	39.000
K14-0022-0-005-00	REAM GAYANNA SUC TRUSTEE	95.950	56.950
K14-0027-0-003-01	RETCHER ERIC T & TONYA S	54.791	48.000
K14-0026-0-007-05	RETHMEL ROGER & PATRICIA	65.000	65.000
K14-0026-0-007-00	RETHMEL ROY W & VICKI	73.000	73.000
K14-0027-0-012-00	RITTENHOUSE KURT M ETAL TRUSTEES	30.000	30.000
K14-0023-0-006-00	ROBERTSON SCOTT L	5.996	5.996
K14-0025-0-001-07	ROBISON LORI J & REX E	5.000	5.000
A07-0030-0-008-01	ROGERS ROBERT ETAL %DARYLE R ROGERS	3.940	3.940
K14-0024-0-007-10	ROHRS TODD F & MELLISA M	2.442	2.442
K14-0026-0-003-02	ROVER PIPELINE LLC C/O KE ANDREWS	2.216	2.216
K14-0026-0-012-01	ROVER PIPELINE LLC C/O KE ANDREWS	8.556	8.556
K14-0026-0-012-02	ROVER PIPELINE LLC C/O KE ANDREWS	14.834	14.834
A07-0030-0-003-00	ROWE JAMES R JR	3.000	3.000
K14-0026-0-012-03	RUDY HOMER E	16.160	16.160
K14-0027-0-014-03	SAUBER CHARLES M & AMANDA A	62.858	62.858
K14-0026-0-007-04	SAUBER ROBERT H & SHEILA A	7.000	7.000
K14-0026-0-008-00	SAUBER ROBERT H & SHEILA A	38.500	38.500
A07-0020-0-013-04	SAWMILLER KENN & CYNTHIA	3.276	3.276
K14-0026-0-007-01	SCHEUERMAN GERALD L & SHARON L	5.000	5.000
K14-0024-0-007-00	SCHLEGEL CHRISTOPHER L & REBECCA S	5.332	5.332
K14-0024-0-007-06	SCHLEGEL CHRISTOPHER L & REBECCA S	10.355	10.355
A07-0020-0-003-00	SCHLISSER JOSEPH W ETAL	60.000	40.000
A07-0019-0-004-00	SCHLISSER JOSEPH W ETAL % RANDY & SHERI SCHLISSER	80.000	80.000
K14-0022-0-011-02	SCHLISSER JOSEPH W ETAL % RANDY & SHERI SCHLISSER	5.160	5.160
K14-0023-0-006-08	SEVERT DOUGLAS & LAURA E	5.004	5.004
K14-0023-0-006-10	SEVERT DOUGLAS A & LAURA E	4.000	4.000
K14-0025-0-001-03	SHERROW GREGORY A	3.851	3.851
K14-0023-0-007-00	SHINNERS SHERRY L % SHERRY L DIXON	40.000	40.000
K14-0023-0-008-00	SHINNERS SHERRY L % SHERRY L DIXON	80.000	71.500
A07-0019-0-007-00	SHOCK DAVID R TRUSTEE ETAL	63.952	63.952
A07-0019-0-007-01	SHOCK DAVID R TRUSTEE ETAL	5.003	5.003
A07-0019-0-007-02	SHOCK GENE A	64.857	64.857
A07-0031-0-001-00	SHOCK GENE A	55.107	23.110
A07-0029-0-014-00	SILER LOIS A	51.686	47.286
A07-0029-0-014-01	SILER LOIS A	51.290	12.290
A07-0029-0-016-00	SILER LOIS A	4.194	4.194



<u>Parcel Number</u>	<u>Landowner</u>	<u>Acres Owned</u>	<u>Acres Drained</u>
A07-0019-0-006-11	SIMMONS DANIEL E	1.905	1.905
K14-0024-0-007-11	SLATTMAN RANDALL E & BOBBI J	8.012	8.012
K14-0022-0-011-03	SLATTMAN RAYMOND G & CRYSTAL E	4.412	4.412
K14-0023-0-004-00	SMITH R EDWARD & HAZEL M	0.980	0.980
K14-0027-0-014-02	SPRAGUE ROBERT R & SARAH A	10.132	10.132
A07-0020-0-011-00	ST MIKES GOLF INC AN OHIO CORP	78.852	78.852
A07-0020-0-012-01	ST MIKES GOLF INC AN OHIO CORP	4.546	4.546
A07-0020-0-013-00	ST MIKES GOLF INC AN OHIO CORP	15.310	15.310
A07-0020-0-013-03	ST MIKES GOLF INC AN OHIO CORP	7.519	7.519
K14-0025-0-002-00	STEEL PAUL J ETAL	13.685	13.685
K14-0025-0-002-02	STEEL PAUL J ETAL	4.626	4.626
K14-0026-0-010-00	STEFFEL CHARLES G ETAL	2.630	2.630
A07-0029-0-024-00	STEFFEL EDWARD D & DENISE B	18.092	18.092
A07-0029-0-024-01	STEFFEL EDWARD D & DENISE B	22.112	22.112
A07-0020-0-016-00	STEFFEL EDWARD ETAL	80.000	74.000
A07-0030-0-006-01	STEFFEL RUSSELL J & CATHY M	1.272	1.272
K14-0027-0-010-03	STEFFEL TYLER P	2.000	2.000
A07-0020-0-013-02	STEINGASS WM E & MARY K	4.171	4.171
A07-0030-0-008-02	STEMEN DALE L & PAMELA A	2.000	2.000
K14-0028-0-004-00	STEVER ANTHONY L & JILL D	40.000	2.500
A07-0019-0-006-07	STUBER DEBORAH D	5.000	5.000
A07-0019-0-012-00	SWEINHAGEN KARL A & PATRICIA L	2.570	2.570
A07-0019-0-010-01	SWEINHAGEN NICKI S	2.000	2.000
K14-0022-0-010-00	THIEL SHARON M ETAL % SHIRLEY D JUSTUS	69.997	31.497
K14-0023-0-003-00	TONJES AARON M	75.000	58.500
K14-0022-0-006-00	TONJES DAVID W	32.000	2.000
K14-0023-0-002-00	TONJES DAVID W	77.071	4.070
K14-0025-0-007-03	TONJES DAVID W	41.222	41.222
K14-0025-0-007-04	TONJES DAVID W	37.835	37.835
K14-0025-0-007-05	TONJES DAVID W	52.425	52.425
A07-0019-0-006-08	TREES REALTY LLC % MICHAEL & JUDY JACKSON	5.000	5.000
A07-0020-0-013-01	VANALSTINE TAMARA ETAL % SHARON POTTS	11.513	11.513
K14-0027-0-013-00	VANSCODER LONNIE A & NANCY C	4.005	4.005
K14-0035-0-007-00	VANZILE JULIE A	4.000	4.000
A07-0020-0-009-01	WAGNER DAVID A & GRETA	1.380	1.380
A07-0020-0-009-00	WAGNER DONALD J	78.620	70.620
A07-0021-0-001-00	WAGNER DONALD J	40.000	10.000
K14-0024-0-007-03	WAGNER MATTHEW A	5.000	5.000
K14-0027-0-013-01	WESTFALL KELLY R	5.000	5.000
A07-0020-0-015-00	WESTRICK AMANDA	1.385	1.385
A07-0030-0-009-00	WESTRICK AUDRA L	90.389	90.389
A07-0030-0-010-00	WESTRICK AUDRA L	34.323	34.323
A07-0030-0-010-02	WESTRICK AUDRA L	4.038	4.038
A07-0030-0-012-03	WESTRICK AUDRA L	20.000	20.000
A07-0030-0-009-01	WESTRICK AUDRA L ETAL	6.131	6.131
K14-0025-0-002-04	WILLIAMS CHARLOTTE R & CHRISTOPHER E	5.000	5.000
K14-0025-0-001-01	WILLIAMS CHASE L & KAYLEE M	5.867	5.867
K14-0025-0-001-02	WILLIAMS CHRISTOPHER E & CHARLOTTE R	1.387	1.387
K14-0025-0-001-06	WILLIAMS CHRISTOPHER E & CHARLOTTE R	11.894	11.894



<u>Parcel Number</u>	<u>Landowner</u>	<u>Acres Owned</u>	<u>Acres Drained</u>
A07-0019-0-003-01	WISEMAN COLLEEN C	0.727	0.727
K14-0024-0-007-13	WOOD SHAWN W & LORA L	5.000	5.000
A07-0031-0-001-01	YOUNG JAMI L TRUSTEE % MARY JO YOUNG	2.500	2.500
A07-0031-0-001-02	YOUNG JAMI L TRUSTEE % MARY JO YOUNG	0.393	0.393
A07-0030-0-001-01	ZOLMAN SHAWN J & NICOLE S	3.000	3.000
SR 66	ODOT	0.000	22.865
BANNER SCHOOL RD	DEFIANCE COUNTY ENGINEER	0.000	15.591
DOMERSVILLE RD	DEFIANCE COUNTY ENGINEER	0.000	21.767
MEKUS RD	DEFIANCE COUNTY ENGINEER	0.000	12.225
MOSER RD	DEFIANCE COUNTY ENGINEER	0.000	0.500
STEVEY RD	DEFIANCE COUNTY ENGINEER	0.000	2.697
BEHRENS RD	ADAMS TOWNSHIP	0.000	9.368
CARPENTER RD	ADAMS TOWNSHIP	0.000	7.300
CARPENTER RD	TIFFIN TOWNSHIP	0.000	5.615
CHRISTY RD	TIFFIN TOWNSHIP	0.000	11.488
KAMMEYER RD	TIFFIN TOWNSHIP	0.000	14.601
RATH RD	TIFFIN TOWNSHIP	0.000	1.202
		<b>Total</b>	<b>5396.925</b>

## ASSESSMENTS

Landowner assessments are calculated using a formula which takes into account factors such as: acres drained, land use, soil type, tile drainage, topography and percent of usage of the improvement. The following is a description of each of these factors:

Acres Drained – *Only the physical acreage of each landowner's property within the actual watershed boundary is considered in determining assessments. This includes farmland, woods, pastures, house lots, parking lots, roads, etc.*

Land Use – *Each tract of land contributing runoff water to the proposed improvement is assessed according to the amount of water that is actually being generated from that tract of land. High runoff areas such as roads, parking lots, residential areas, etc., are assessed at a higher rate than lower runoff areas such as farm ground and woodland regions, due to the fact that more runoff water is being produced from the more impervious areas.*

Soil Type – *The soil type of the land draining into the project is determined using the Defiance County Soil Survey and is used to account for the amount of infiltration or runoff.*

Tile Drainage – *This takes into account whether the land in the watershed area is tiled and whether or not the tile drains to or away from the drainage improvement project.*

Topography/Remoteness – *The actual distance runoff water must first travel before even reaching the drainage improvement is a determining factor on how land is assessed. The longer the distance it takes for the water to reach the improvement, the lower that ground is assessed.*

Use of the Ditch Improvement – *You only help share the cost of the drainage improvement that your runoff water travels through. You will have no responsibility to help share the cost of construction upstream from where your water enters the project.*

## **WATERSHED BENEFITS**

Benefits are defined in the drainage improvement sections of the Ohio Revised Code as advantages to land and owners, public corporations and to the state resulting from drainage, conservation, control, and management of water and from environmental, wildlife, and recreational improvements.

According to the Code, factors relevant to whether a property will benefit from an improvement include:

1. *Area of land affected by the improvement;*
2. *The volume of water draining into the improvement and the amount of water contributed by each owner;*
3. *The use to be made of the improvement;*

Benefits may also include the following factors:

1. *Elimination or reduction of damage from flooding;*
2. *Removal of water conditions which jeopardize public health, safety of welfare;*
3. *Increased land value resulting from the improvement;*
4. *Use of water for irrigation, storage, regulation of stream flow, soil conservation, water supply, or any other incidental purpose;*
5. *Providing an outlet for the accelerated runoff from artificial drainage whenever a stream, watercourse, channel or ditch under improvement is called upon to discharge functions for which it was not designed by nature; it being the legislative intent that upland property that has been removed from its natural state by deforestation, cultivation, artificial drainage, urban development, or other human methods shall be considered as benefited by an improvement requirement to dispose of the accelerated flow of water from upland property.*

Benefits can be divided into two types. Obligation benefits are the first type and are based upon the need for an outlet for drainage resulting from deforestation, artificial drainage, and urban development. Upper owners have a right to improve their drainage outlets, thus accelerating their drainage runoff. However, they are responsible or obligated to share in the cost of an outlet downstream that is adequately sized to handle their accelerated runoff.

Accelerated runoff is the difference in runoff under present conditions and what it would have been under natural vegetative conditions before being cleared and cultivated / developed.

The second benefit is from a decrease in saturated conditions/flood potential of land along the improvement area. By decreasing this flood potential, land will be able to be farmed better and will produce higher yields while residential areas will also benefit from this reduced flooding potential.

Other benefits that will be gained from this project are:

1. Reduction of bank scouring around existing log jams.
2. Reduction of localized water backups upstream of log jams.

## **COST-BENEFIT ANALYSIS**

The Cost-Benefit Analysis for this project was calculated from the potential property value increases that result from this drainage improvement and its future maintenance. Upstream landowners have benefitted through accelerated runoff with the conversion of wetlands and forests to cropland and residential/commercial development. Landowners adjacent to the project will also benefit through improved drainage as a result of the drainage improvement and its permanent maintenance. In addition, areas near the project will have the potential for crop yield increases. Both factors are quantified below for each of the two project components.

### **Mattock Ditch/Webb Run Ext. Reconstruction, Log Jam, and Leaning Tree Removal**

**Yield Increase Benefit** – It is estimated that there would be at least 588 acres affected by decreased yields due to flooding/saturated conditions. Crops in the area would be estimated at 20% wheat, 40% corn, and 40% soybeans, with a very conservative yield increase due to improved drainage of 5 bushels per acre for wheat, 10 bushels per acre for corn, and 5 bushels per acre for soybeans. Using these yield increases at current grain prices this would mean an annual increase of \$33,710.04. This breaks down as follows:

117.6 acres of Wheat @ 5 bu. /ac. X \$5.61/bu. = \$3,298.68  
235.2 acres of Corn @ 10 bu. /ac. X \$5.82/bu. = \$13,688.64  
235.2 acres of Soybeans @ 5 bu. /ac. X \$14.22/bu. = \$16,722.72

This annual increase of \$33,710.04 over the projected 10-year lifespan of the project (before significant maintenance would be needed) amounts to a total benefit of \$337,100.40.

**Property Value Benefit** – Rural residential and agricultural properties will benefit from improved drainage by increasing or maintaining their property values. According to local real estate sources, as a general rule, properties suffering from standing water over a large area are often judged to be devalued as much as 20% to 30%. Properties with some standing water could be devalued by as much as 10% to 20%. Areas that suffer even the stigma of standing water could be devalued by 5% to 10%. According to information from the County Auditor, the market value of all property within the project watershed (5,397 acres), both residential and agricultural, is approximately \$67,733,883.01. Again, using a very conservative value increase of 1.0%, this would mean an immediate potential increase in property values of \$677,338.83.

**Benefit Summary** – Therefore, combining both the yield increase and property value increase, a total of \$1,014,439.23 worth in benefits can be realized over the projected lifespan of the project. This compared to an estimated project cost of \$287,542.74 gives this project component a favorable cost-benefit ratio.

### **Kammeyer Road Ditch**

**Yield Increase Benefit** – It is estimated that there would be at least 31 acres affected by decreased yields due to flooding/saturated conditions. Crops in the area would be estimated at 20% wheat, 40% corn, and 40% soybeans, with a very conservative yield increase due to improved drainage of 5 bushels per acre for wheat, 10 bushels per acre for corn, and 5 bushels per acre for soybeans. Using these yield increases at current grain prices this would mean an annual increase of \$1,777.23. This breaks down as follows:

6.2 acres of Wheat @ 5 bu. /ac. X \$5.61/bu. = \$173.91  
12.4 acres of Corn @ 10 bu. /ac. X \$5.82/bu. = \$721.68  
12.4 acres of Soybeans @ 5 bu. /ac. X \$14.22/bu. = \$881.64

This annual increase of \$1,777.23 over the projected 10-year lifespan of the project (before significant maintenance would be needed) amounts to a total benefit of \$17,772.30.

**Property Value Benefit** – Rural residential and agricultural properties will benefit from improved drainage by increasing or maintaining their property values. According to local real estate sources, as a general rule, properties suffering from standing water over a large area are often judged to be devalued as much as 20% to 30%. Properties with some standing water could be devalued by as much as 10% to 20%. Areas that suffer even the stigma of standing water could be devalued by 5% to 10%. According to information from the County Auditor, the market value of all property within the project watershed (34 acres), both residential and agricultural, is approximately \$206,302.33. Again, using a conservative value increase of 5.0%, this would mean an immediate potential increase in property values of \$10,315.12.

**Benefit Summary** – Therefore, combining both the yield increase and property value increase, a total of \$28,087.42 worth in benefits can be realized over the projected lifespan of the project. This compared to an estimated project cost of \$13,499.06 gives this project component a favorable cost-benefit ratio.

### **COST / BENEFIT CONCLUSIONS**

Each property owner in the watershed (agricultural land, urban areas, rural housing, retail business, streets, and roads) has in some way or another increased the natural flow of water to this drainage project. While each will see a different need, the fact exists that everyone in the watershed uses the improvement to carry water discharged from their properties faster than it was 20, 50, or 100 years ago.

A few landowners on the drainage improvement have done some work on their own to help improve drainage; unfortunately, this work has limited impact on improving the overall drainage of the project to keep up with the demands that are placed on it. Anyone with water draining from his yard, or has a blacktop driveway, or has a roof somewhere has increased the flow rate and has put increased demands on the drainage way. The same is true for agricultural land, as wood lots were cleared, fencerows removed, and field tile installed, thus increasing the flow.

Therefore, it is the opinion of the Defiance SWCD's Board of Supervisors that this proposal is the best and most cost-effective method to address the demanding drainage needs of this channel and the benefits of this project are likely to exceed the costs of this project as shown above.

### **DITCH MAINTENANCE**

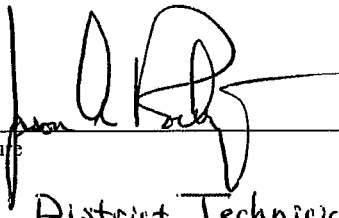
As noted above, if this project were to be completed, it would be necessary according to state law to have the project put on the "*County Maintenance Program*". As prescribed by law, every landowner involved would be subject to permanent maintenance. Maintenance assessments are collected as a special assessment on real estate taxes and would be collected usually at the rate of 10 percent of a landowner's construction assessment for the first two years after the project is completed to establish the fund. After the first two year's collections, landowners are only assessed as needed when maintenance work is done. This means that maintenance assessments may or may not be collected each year after the first two years and the amount collected may vary depending upon the needs of the improvement, but will never carry more than twenty percent in the maintenance fund for this project.

To properly maintain drainage improvement projects, permanent maintenance easements are required. For the reconstructed portions of the ditch project, there will be a maintenance easement of 25 feet, measured at right angles from the top of bank on the side(s) of the ditch that were reconstructed. In the case of the log jam removal reaches of the project, within the wooded riparian corridor, a maintenance easement may be created from the top of the bank to twenty-five feet outside of the edge of the wooded riparian corridor.

## CONCLUSION

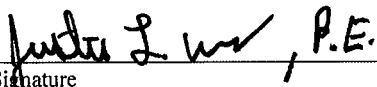
To continue this process, sufficient interest in constructing the project must be expressed by the landowners involved. Provided this is done, the *Natural Resources Conservation Service*, along with the *Defiance Soil and Water Conservation District*, shall complete the engineering plans. The County Engineer, prior to bidding and construction, must approve the plans. *Invitation to Bid* notices will be sent out to contractors and a successful bidder will be hired. The *Soil and Water Conservation District* and the *Natural Resources Conservation Service* office would supervise construction and certify completion of this project.

Prepared By:

  
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District Technician  
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Title

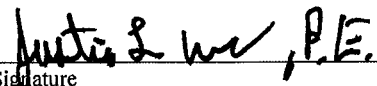
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Engineer for Ohio Dept. of Ag  
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