



Biological and Water Quality Study of Big Walnut Creek and Selected Tributaries 2016



Big Walnut Creek downstream from Livingston Ave. (BW02)

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Franklin County, Ohio

MBI Data Report

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Prepared for:

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Table 1. Aquatic life use attainment status of Big Walnut Creek and tributary sites sampled in 2016 with the status of existing or recommended uses and causes and sources of impairments.

MBI Site ID	Ohio EPA Stream Code	River Mile (Fish/Macro.)	Drain. Area (mi. ²)	IBI ^a	MIwb ^a	ICI ^a	QHEI ^b	Attainment Status	Comments
<i>Big Walnut Creek – WWH Existing (Ohio EPA Verified)</i>									
BW01	02-100	22.05 ^W /22.05	249	50	8.45	46	82.3	FULL	Upstream from stormwater discharges
BW03E	02-100	21.82 ^W /21.90	249	45 [46/44]	7.40* [6.4/8.4]	34 ^{ns}	79.0	PARTIAL	Downstream stormwater outfall
BW02W	02-100	21.80 ^W /21.89	249	47 [50/44]	8.25 ^{ns} [7.5*/9.0]	34 ^{ns}	71.8	FULL	Downstream construction site outfall
BW04	02-100	21.65 ^W /21.60	249	52	8.50	42	83.5	FULL	Downstream all stormwater outfalls
BW05	02-100	15.90 ^W /16.00	272	52	9.00	46	87.5	FULL	Elk Run - Highland Bluff Area Parkland
<i>Big Walnut Creek – EWH Existing (Ohio EPA Verified)</i>									
BW06	02-100	9.70 ^B /9.50	547	50	9.95	42 ^{ns}	84.8	FULL	Hamilton Twp. Park; Lockbourne Rd.
<i>E. Windsor Ditch (Big Walnut Tributary @RM 28.33) – Undesignated/PHW Class 2 Recommended</i>									
UT04	02-914	0.1 ^H /0.1	1.0	30	na	<u>P</u>	54.0	NA	Urbanized watershed
<i>L. Jordan Run (Blacklick Tributary @RM 12.89) – Undesignated/WWH Recommended</i>									
JR01	02-183	0.15 ^H /0.15	2.0	46	na	MG ^{ns}	67.5	FULL	Developing watershed
<i>Dysart Run – WWH Existing (Ohio EPA Verified)</i>									
DR01	02-281	2.90 ^H /2.90	1.8	44	na	F*	65.5	PARTIAL	Urbanized watershed
<i>N. Branch French Run – EWH Existing (Ohio EPA Verified)</i>									
FR01	02-291	0.16 ^H /0.16	2.7	48 ^{ns}	na	G*	80.5	PARTIAL	Urbanizing headwaters, culverted
<i>Unnamed Tributary to Dysart Run @RM 2.58 – WWH Existing (Ohio EPA Verified)</i>									
UT05	02-292	0.10 ^H /0.10	0.4	48	na	F*	76.5	PARTIAL	Stormwater impacts
<i>Unnamed Tributary to Big Walnut Cr. @RM 37.13 – Undesignated/WWH Recommended</i>									
UT01	02-910	0.01 ^H /0.10	1.0	40	na	MG ^{ns}	68.5	FULL	Failing HSTS; EWH potential?
<i>Livingston House Tributary – Undesignated/PHW Class 2 Recommended</i>									
UT02	02-911	0.05 ^H /0.05	0.12	<u>12</u>	na	<u>P</u>	61.0	NA	Failing HSTS; intermittent flows

^a IBI and MIwb values are the average of two samples; Individual sampling pass results for BW03E and BW02W are shown in brackets.

^b An evaluation of the qualitative sample based on attributes such as EPT taxa richness, number of sensitive taxa, and community composition was used when quantitative data was not available or considered unreliable (see equivalent narratives below).

^W Wading site type.

^B Boat site type.

^H Headwater site type.

^{ns} Nonsignificant departure from biocriteria (<4 IBI or ICI units, or <0.5 MIwb units).

* Denotes significant departure from applicable biocriteria (>4 IBI or ICI units, or >0.5 MIwb units). Underlined scores are in the Poor or Very Poor range.

Biological Criteria: E. Corn Belt Plains (ECBP)			
Index	WWH	EWH	MWH
IBI - Boat	42	48	24
IBI - Wading	40	50	24
IBI - Headwater	40	50	24
MIwb - Boat	8.5	9.6	5.8
MIwb - Wading	8.3	9.4	6.2
ICI - All sites	36	46	22
ICI - Narrative	G ¹	E ¹	F ¹
¹ G=Good; E=Exceptional; F=Fair			

Figure 1. Qualitative Habitat Evaluation Index (QHEI) scores showing good and modified habitat attributes at sites in the Big Walnut Creek mainstem and selected tributaries in 2016.

Site ID	River Mile	QHEI	Good Habitat Attributes											High Influence Modified Attributes					Moderate Influence Modified Attributes												Ratios			
			No Channelization	Boulder, Cobble, Gravel	Silt Free	Good-Excellent Development	Moderate-High Sinuosity	Moderate-Extensive Cover	Fast Flow w Eddies	Little to No Embeddedness	Max Depth > 40 cm	No Riffle Embeddedness	“Good” Habitat Attributes	Channelized or No Recovery	Silt/Muck Substrates	No Sinuosity	Sparse No Cover	Max Depths <40 cm	High Influence Poor Attributes	Recovering from Channelization	Mod-High Silt Cover	Sand Substrates (Boatable sites)	Hardpan Origin	Fair- Poor Development	Low Sinuosity	≤ 2 Cover Types	Intermittent Flow or Pools <20 cm	No Fast Current Types	Mod-Extensive Embeddedness	Mod-Extensive Riffle Embeddedness	No Riffle	Poor Habitat Attributes	Ratio of Poor (High) to Good	Ratio of Poor (All) to Good
Big Walnut Creek																																		
BW01	22.05	82.3	■	■		■	■	■	■		■	■	8					0		●									●			2	3.00	0.33
BW03E	21.82	79.0	■	■		■		■	■		■		6					0		●				●					●	●		4	1.40	0.71
BW02W	21.80	71.8	■	■		■	■	■				■	6				●	●	2		●							●	●			3	1.75	0.57
BW04	21.65	83.5	■	■		■		■	■		■	■	7					0		●	●			●					●	●		5	1.33	0.75
BW05	15.90	87.5	■	■		■	■	■	■	■	■	■	9					0		●				●					●			3	2.50	0.4
BW06	9.70	84.8	■	■		■	■	■		■	■	■	8				●		1		●							●				2	3.00	0.33
E. Windsor Ditch (Big Walnut Tributary @RM 28.33)																																		
UT03	0.05	54.0		■		■		■		■	■		5					0	●					●				●			●	4	1.20	0.83
L. Jordan Run (Blacklick Tributary @RM 12.89)																																		
JR01	0.15	67.5		■		■	■	■		■	■	■	7					0	●									●				2	2.67	0.38
Dysart Run																																		
DR01	2.90	65.5	■	■		■	■	■		■	■	■	8					0		●								●				2	3.00	0.33
N. Br. French Run																																		
FR01	0.16	80.5	■	■		■	■	■		■	■	■	8					0										●				1	4.50	0.22

Figure 1. Qualitative Habitat Evaluation Index (QHEI) scores showing good and modified habitat attributes at sites in the Big Walnut Creek mainstem and selected tributaries in 2016.

Site ID	River Mile	QHEI	Good Habitat Attributes										High Influence Modified Attributes						Moderate Influence Modified Attributes												Ratios				
			No Channelization	Boulder, Cobble, Gravel	Silt Free	Good-Excellent Development	Moderate-High Sinuosity	Moderate-Extensive Cover	Fast Flow w Eddies	Little to No Embeddedness	Max Depth > 40 cm	No Riffle Embeddedness	“Good” Habitat Attributes	Channelized or No Recovery	Silt/Muck Substrates	No Sinuosity	Sparse No Cover	Max Depths <40 cm	High Influence Poor Attributes	Recovering from Channelization	Mod-High Silt Cover	Sand Substrates (Boatable sites)	Hardpan Origin	Fair- Poor Development	Low Sinuosity	≤ 2 Cover Types	Intermittent Flow or Pools <20 cm	No Fast Current Types	Mod-Extensive Embeddedness	Mod-Extensive Riffle Embeddedness	No Riffle	Poor Habitat Attributes	Ratio of Poor (High) to Good	Ratio of Poor (All) to Good	
Unnamed Tributary to Dysart Run @RM 2.58																																			
UT05	0.10	76.5	■	■		■	■	■		■	■	■	8						0									●					1	4.50	0.22
Unnamed Tributary to Big Walnut Creek @RM 37.13																																			
UT01	0.01	68.5	■	■		■	■	■	■	■	■		8						0											●			1	4.50	0.22
Livingston House Tributary																																			
UT02	0.05	61.0	■	■		■	■	■		■		■	7					●	1									●					1	4.00	0.25

Appendix A

Big Walnut Creek Macroinvertebrate Results

A-1: Invertebrate Community Index (ICI) Score & Metrics

A-2: Macroinvertebrate Taxa by Site

Appendix Table A-1. ICI metrics and values from the Big Walnut Creek watershed during 2016.

River Mile	Drainage Area (sq mi)	Number of				Percent:							ICI or Narrative
		Total Taxa	Mayfly Taxa	Caddisfly Taxa	Dipteran Taxa	Mayflies	Caddis- flies	Tany- tarsini	Other Dipt/NI	Tolerant Organisms	Qual. EPT		
Big Walnut Creek (02-100)													
Year: 2016													
22.05	249.00	34(4)	5(2)	5(6)	13(4)	38.1(6)	30.4(6)	8.7(2)	21.1(6)	0.1(6)	13(4)	46	
21.90	249.00	57(6)	8(4)	7(6)	25(6)	16.6(4)	2.9(2)	11.0(2)	65.3(0)	7.8(2)	9(2)	34	
21.89	249.00	48(6)	6(4)	7(6)	20(6)	9.6(2)	3.9(2)	11.6(2)	68.4(0)	9.1(2)	12(4)	34	
21.60	249.00	42(6)	7(4)	5(6)	16(4)	24.8(4)	17.9(4)	6.9(2)	46.3(2)	3.5(6)	12(4)	42	
16.00	272.00	33(4)	5(2)	5(6)	13(4)	24.7(4)	23.1(4)	29.7(4)	14.6(6)	3.3(6)	17(6)	46	
9.50	547.00	34(4)	11(6)	5(4)	8(2)	64.0(6)	2.8(2)	9.4(2)	20.9(4)	1.8(6)	26(6)	42	
Dysart Run (02-281)													
Year: 2016													
2.90	1.80										8	F	
L. Jordan Run (UT Blacklick Cr. at 12.89) (02-289)													
Year: 2016													
0.15	2.00										8	MG	
N. Br. French Run (02-291)													
Year: 2016													
0.16	2.70										11	G	
Unnamed Trib to Dysart Run @ RM 2.58 (02-292)													
Year: 2016													
0.05	0.90										4	F	
Unnamed Tributary to Big Walnut Cr. @RM 37.13 (02-910)													
Year: 2016													
0.10	0.10										8	MG	
Livingston House Trib (02-911)													
Year: 2016													
0.05	0.12										6	P	
E. Windsor Ditch (Big Walnut Tributary @RM 28.33) (02-914)													
Year: 2016													
0.10	1.00										2	P	

Appendix Table A-2. Macroinvertebrate taxa collected in the Big Walnut Creek study area during 2016.

River Code:02-100		River: Big Walnut Creek			Coll. Date09/08/2016		RM:	22.05	
Site ID: BW01		Location: Ust Livingston Ave			JF				
Taxa Code	Taxa	CWH Taxa	Tol.	Qt./Ql.	Taxa Code	Taxa	CWH Taxa	Tol.	Qt./Ql.
01320	Hydra sp	F		16	82220	Tvetenia discoloripes group	MI		26
01801	Turbellaria	F		34 +	82820	Cryptochironomus sp	F		+
03600	Oligochaeta	T		1 +	82880	Cryptotendipes sp	F		+
08200	Orconectes sp	F		+	83040	Dicrotendipes neomodestus	F		7 +
08601	Hydrachnidia	F		4 +	84450	Polypedilum (Uresipedilum) flavum	F		258
11020	Acerpenna pygmaea	MI		27 +	84470	Polypedilum (P.) illinoense	T		+
11130	Baetis intercalaris	F		667 +	84540	Polypedilum (Tripodura) scalaenum group	F		+
13400	Stenacron sp	F		+	84612	Saetheria tylus	F		+
13510	Maccaffertium exiguum	MI		6	84700	Stenochironomus sp	F		7
13561	Maccaffertium pulchellum	MI		6 +	84750	Stictochironomus sp	F		+
13570	Maccaffertium terminatum	MI		+	85625	Rheotanytarsus sp	F		139
16700	Tricorythodes sp	MI		77	85821	Tanytarsus glabrescens group sp 7	F		40
17200	Caenis sp	F		+	93900	Elimia sp	MI		15 +
21200	Calopteryx sp	F		+	96900	Ferrissia sp	F		1 +
22001	Coenagrionidae	T		+	97601	Corbicula fluminea	F		+
22300	Argia sp	F		+	98001	Pisidiidae			4
34700	Agnetina capitata complex	MI		3 +					
42700	Belostoma sp	T		+					
51300	Neureclipsis sp	MI		19	No. Quantitative Taxa:	34	Total Taxa;		58
52200	Cheumatopsyche sp	F		335 +	No. Qualitative Taxa:	39	ICI:		46
52430	Ceratopsyche morosa group	MI		256 +	Number of Organisms:	2055	Qual EPT:		13
53400	Protoptila sp	I		4 +					
53501	Hydroptilidae	F		11					
57900	Pycnopsyche sp	MI		+					
58505	Helicopsyche borealis	MI		+					
59100	Ceraclea sp	MI		+					
59970	Petrophila sp	MI		2 +					
68075	Psephenus herricki	MI		+					
68601	Ancyronyx variegata	F		1					
68700	Dubiraphia sp	F		+					
68901	Macronychus glabratus	F		29					
69400	Stenelmis sp	F		+					
71900	Tipula sp	F		+					
77500	Conchapelopia sp	F		+					
78450	Nilotanypus fimbriatus	F		2					
78655	Procladius (Holotanypus) sp	MT		+					
80310	Cardiocladius obscurus	MI		7					
80370	Corynoneura lobata	F		20					
80410	Cricotopus (C.) sp	F		7					
80430	Cricotopus (C.) tremulus group	MT		13					
81825	Rheocricotopus (Psilocricotopus) robacki	F		7					
82101	Thienemanniella taurocapita	MI		4 +					

Appendix Table A-2. Macroinvertebrate taxa collected in the Big Walnut Creek study area during 2016.

River Code: 02-100		River: Big Walnut Creek		Coll. Date: 09/08/2016		RM: 21.90	
Site ID: BW03E		Location: <i>Dst. stormwater outfall - East side</i>		JF		E	
Taxa Code	Taxa	CWH Taxa	Tol.	Qt./Ql.	Taxa Code	Taxa	CWH Taxa Tol. Qt./Ql.
01320	Hydra sp	F		44	83040	Dicrotendipes neomodestus	F 41 +
01801	Turbellaria	F		18	83051	Dicrotendipes simpsoni	T 4
01900	Nemertea	F		5	83200		3 +
03600	Oligochaeta	T		5 +	83840	Microtendipes pedellus group	F 8
08601	Hydrachnidia	F		2	84210	Paratendipes albimanus or P. duplicatus	F 12
11020	Acerpenna pygmaea	MI		26 +	84300	Phaenopsectra obediens group	F 8
11130	Baetis intercalaris	F		9 +	84450	Polypedilum (Uresipedilum) flavum	F 24
13000	Leucrocota sp	MI		2	84460	Polypedilum (P.) fallax group	F 16
13400	Stenacron sp	F		38	84470	Polypedilum (P.) illinoense	T 4 +
13510	Maccaffertium exiguum	MI		3	84540	Polypedilum (Tripodura) scalaenum group	F 45 +
13561	Maccaffertium pulchellum	MI		3 +	84700	Stenochironomus sp	F 4
16700	Tricorythodes sp	MI		58	84750	Stictochironomus sp	F +
17200	Caenis sp	F		18 +	84790	Tribelos fuscicorne	F 4
21200	Calopteryx sp	F		1 +	85500	Paratanytarsus sp	F 8
22001	Coenagrionidae	T		1 +	85625	Rheotanytarsus sp	F 45
22300	Argia sp	F		14 +	85720	Stempellinella fimbriata	MI 2
23900	Boyeria sp	F		+	85800	Tanytarsus sp	F 4
25010	Hagenius brevistylus	F		1	85821	Tanytarsus glabrescens group sp 7	F 45
50906	Psychomyia flavida	MI		1	93900	Elimia sp	MI 125 +
51206	Cynellus fraternus	F		5 +	95100	Physella sp	T 1 +
51300	Neureclipsis sp	MI		3 +	95501	Planorbidae	MT 1
51600	Polycentropus sp	MI		8 +	96900	Ferrissia sp	F 44 +
52200	Cheumatopsyche sp	F		3	97601	Corbicula fluminea	F +
53800	Hydroptila sp	F		6			
58505	Helicopsyche borealis	MI		+			
59100	Ceraclea sp	MI		1 +			
59970	Petrophila sp	MI		5 +	No. Quantitative Taxa:	57	Total Taxa; 64
68075	Psephenus herricki	MI		+	No. Qualitative Taxa:	29	ICI: 34
68601	Ancyronyx variegata	F		6 +	Number of Organisms:	947	Qual EPT: 9
68700	Dubiraphia sp	F		+			
68901	Macronychus glabratus	F		10 +			
69400	Stenelmis sp	F		+			
77120	Ablabesmyia mallochii	F		4			
77500	Conchapelopia sp	F		41			
77750	Hayesomyia senata or Thienemannimyia norena	F		12			
77800	Helopelopia sp	F		12			
78140	Labrundinia pilosella	F		8			
80370	Corynoneura lobata	F		112			
81825	Rheocricotopus (Psilocricotopus) robacki	F		4			
82101	Thienemanniella taurocapita	MI		6			
82141	Thienemanniella xena	F		4			

Appendix Table A-2. Macroinvertebrate taxa collected in the Big Walnut Creek study area during 2016.

River Code: 02-100		River: Big Walnut Creek		Coll. Date: 09/08/2016		RM: 21.89	
Site ID: BW02W		Location: Dst Construction Site - West side		BP		W	
Taxa Code	Taxa	CWH Taxa	Tol.	Qt./Ql.	Taxa Code	Taxa	CWH Taxa Tol. Qt./Ql.
01320	Hydra sp	F		92	82101	Thienemanniella taurocapita	MI 40
01801	Turbellaria	F		11 +	82820	Cryptochironomus sp	F +
01900	Nemertea	F		1	83040	Dicrotendipes neomodestus	F 216
03600	Oligochaeta	T		18	83840	Microtendipes pedellus group	F 32
11130	Baetis intercalaris	F		24 +	84210	Paratendipes albimanus or P. duplicatus	F 22 +
13400	Stenacron sp	F		50 +	84300	Phaenopsectra obediens group	F 22
13521	Stenonema femoratum	F		1 +	84450	Polypedilum (Uresipedilum) flavum	F 65
13561	Maccaffertium pulchellum	MI		3 +	84460	Polypedilum (P.) fallax group	F 11
16700	Tricorythodes sp	MI		39	84470	Polypedilum (P.) illinoense	T 11 +
17200	Caenis sp	F		25 +	84540	Polypedilum (Tripodura) scalaenum group	F 86
21200	Calopteryx sp	F		1 +	84700	Stenochironomus sp	F 11
22001	Coenagrionidae	T		+	85625	Rheotanytarsus sp	F 76
22300	Argia sp	F		29 +	85800	Tanytarsus sp	F 11 +
23600	Aeshna sp	MT		+	85821	Tanytarsus glabrescens group sp 7	F 86
23900	Boyeria sp	F		1	93200	Hydrobiidae	F 11
43300	Ranatra sp	F		+	93900	Elimia sp	MI 51 +
51001	Polycentropodidae			+	95100	Physella sp	T 29 +
51206	Cyrnellus fraternus	F		8	96900	Ferrissia sp	F 66
51300	Neureclipsis sp	MI		8	97601	Corbicula fluminea	F +
51600	Polycentropus sp	MI		24	No. Quantitative Taxa: 48 Total Taxa; 61 No. Qualitative Taxa: 31 ICI: 34 Number of Organisms: 1486 Qual EPT: 12		
52200	Cheumatopsyche sp	F		7			
53400	Protoptila sp	I		+			
53501	Hydroptilidae	F		9			
58505	Helicopsyche borealis	MI		1 +			
59100	Ceraclea sp	MI		+			
59300	Mystacides sp	MI		+			
59410	Nectopsyche diarina	MI		+			
59500	Oecetis sp	F		1 +			
59970	Petrophila sp	MI		15 +			
60900	Peltodytes sp	MT		+			
68075	Psephenus herricki	MI		+			
68601	Ancyronyx variegata	F		28			
68700	Dubiraphia sp	F		+			
68901	Macronychus glabratus	F		22			
69400	Stenelmis sp	F		1 +			
77500	Conchapelopia sp	F		86			
77750	Hayesomyia senata or Thienemannimyia norena	F		22			
78140	Labrundinia pilosella	F		8			
78655	Procladius (Holotanypus) sp	MT		22 +			
80370	Corynoneura lobata	F		40			
80410	Cricotopus (C.) sp	F		32			
80430	Cricotopus (C.) tremulus group	MT		11			

Appendix Table A-2. Macroinvertebrate taxa collected in the Big Walnut Creek study area during 2016.

River Code:02-100		River: <i>Big Walnut Creek</i>			Coll. Date:09/08/2016		RM:	21.60
Site ID: BW04		Location: <i>Dst. Livingston Ave. Far field site</i>				JF		
Taxa Code	Taxa	CWH Taxa	Tol.	Qt./Ql.	Taxa Code	Taxa	CWH Taxa	Tol. Qt./Ql.
01320	Hydra sp	F		9	82141	Thienemanniella xena	F	2
01801	Turbellaria	F		18	82220	Tvetenia discoloripes group	MI	4
03600	Oligochaeta	T		+	83840	Microtendipes pedellus group	F	16
08250	Orconectes (Procericambarus) rusticus	F		+	84210	Paratendipes albimanus or P. duplicatus	F	+
08601	Hydrachnidia	F		2 +	84450	Polypedilum (Uresipedilum) flavum	F	138 +
11020	Acerpenna pygmaea	MI		35 +	84460	Polypedilum (P.) fallax group	F	16
11130	Baetis intercalaris	F		145 +	84540	Polypedilum (Tripodura) scalaenum group	F	28 +
13000	Leucrocota sp	MI		3 +				
13400	Stenacron sp	F		7	84750	Stictochironomus sp	F	+
13510	Maccaffertium exiguum	MI		14	85615	Rheotanytarsus pellucidus	MI	4
13521	Stenonema femoratum	F		+	85625	Rheotanytarsus sp	F	53
13561	Maccaffertium pulchellum	MI		4	85752	Sublettea coffmani	MI	4
13570	Maccaffertium terminatum	MI		+	85821	Tanytarsus glabrescens group sp 7	F	4
16700	Tricorythodes sp	MI		26 +	93200	Hydrobiidae	F	10
21200	Calopteryx sp	F		+	93900	Elimia sp	MI	129 +
21300	Hetaerina sp	F		+	95100	Physella sp	T	2
22001	Coenagrionidae	T		+	95900	Gyraulus sp	MT	1
22300	Argia sp	F		7 +	96120	Menetus (Micromenetus) dilatatus	MT	+
23909	Boyeria vinosa	F		+	96900	Ferrissia sp	F	15 +
25010	Hagenius brevistylus	F		+	96930	Laevapex fuscus	MT	+
34700	Agnatina capitata complex	MI		2	97601	Corbicula fluminea	F	+
50315	Chimarra obscura	MI		1 +	99180	Strophitus undulatus undulatus	MI	+
51300	Neureclipsis sp	MI		7 +	99200	Alasmidonta marginata	MI	+
52200	Cheumatopsyche sp	F		107 +	99320	Tritogonia verrucosa	MI	+
52430	Ceratopsyche morosa group	MI		27	99420	Amblema plicata plicata	MI	+
53400	Protoptila sp	I		+	99440	Fusconaia flava	MI	+
53800	Hydroptila sp	F		27	99560	Ptychobranchnus fasciolaris	MI	+
58505	Helicopsyche borealis	MI		+	99660	Truncilla truncata	MI	+
59120	Ceraclea flava complex	MI		+	99830	Lampsilis fasciola	MI	+
59970	Petrophila sp	MI		6 +	99860	Lampsilis radiata luteola	MI	+
68075	Psephenus herricki	MI		+	99880	Lampsilis cardium	MI	+
68601	Ancyronyx variegata	F		2				
68708	Dubiraphia vittata group	F		+	No. Quantitative Taxa:	42	Total Taxa;	71
68901	Macronychus glabratus	F		16 +	No. Qualitative Taxa:	45	ICI:	42
69400	Stenelmis sp	F		5 +	Number of Organisms:	942	Qual EPT:	12
77800	Helopelopia sp	F		4				
80360	Corynoneura floridaensis	MI		6				
80370	Corynoneura lobata	F		6				
81825	Rheocricotopus (Psilocricotopus) robacki	F		12				
82101	Thienemanniella taurocapita	MI		16				
82130	Thienemanniella similis	MI		2				

Appendix Table A-2. Macroinvertebrate taxa collected in the Big Walnut Creek study area during 2016.

River Code:02-100		River: <i>Big Walnut Creek</i>			Coll. Date:09/14/2016		RM:		16.00	
Site ID: BW05		Location: <i>Ust Williams Rd.</i>					JF			
Taxa Code	Taxa	CWH Taxa	Tol.	Qt./Ql.	Taxa Code	Taxa	CWH Taxa	Tol.	Qt./Ql.	
01801	Turbellaria	F		4 +	82101	Thienemanniella taurocapita	MI		6	
03600	Oligochaeta	T		+	82220	Tvetenia discoloripes group	MI		6	
06700	Crangonyx sp	MT		+	82820	Cryptochironomus sp	F		+	
08250	Orconectes (Procericambarus) rusticus	F		1 +	84450	Polypedilum (Uresipedilum) flavum	F		78 +	
					84470	Polypedilum (P.) illinoense	T		18 +	
11130	Baetis intercalaris	F		98 +	84540	Polypedilum (Tripodura) scalaenum group	F		+	
11670	Procloeon viridoculare	MI		+						
13100	Nixe sp	MI		+	84700	Stenochironomus sp	F		12	
13400	Stenacron sp	F		25 +	84750	Stictochironomus sp	F		+	
13521	Stenonema femoratum	F		+	85615	Rheotanytarsus pellucidus	MI		12	
13561	Maccaffertium pulchellum	MI		28	85625	Rheotanytarsus sp	F		384	
13570	Maccaffertium terminatum	MI		12 +	85752	Sublettea coffmani	MI		18	
16700	Tricorythodes sp	MI		191 +	85821	Tanytarsus glabrescens group sp 7	F		12	
17200	Caenis sp	F		+	93900	Elimia sp	MI		14 +	
21200	Calopteryx sp	F		+	96900	Ferrissia sp	F		30 +	
22300	Argia sp	F		1 +	97601	Corbicula fluminea	F		+	
34700	Agnetina capitata complex	MI		29 +						
50315	Chimarra obscura	MI		1	No. Quantitative Taxa:		33	Total Taxa;		55
50906	Psychomyia flavida	MI		+	No. Qualitative Taxa:		40	ICI:		46
51300	Neureclipsis sp	MI		60	Number of Organisms:		1436	Qual EPT:		17
52200	Cheumatopsyche sp	F		122 +						
52530	Hydropsyche depravata group	F		144 +						
53400	Protophila sp	I		+						
53800	Hydroptila sp	F		5 +						
58505	Helicopsyche borealis	MI		+						
59720	Trienodes ignitus	MI		+						
59740	Trienodes perna	MI		+						
59970	Petrophila sp	MI		19 +						
60800	Haliplus sp	MT		+						
68075	Psephenus herricki	MI		+						
68601	Ancyronyx variegata	F		2						
68708	Dubiraphia vittata group	F		+						
68901	Macronychus glabratus	F		47 +						
69400	Stenelmis sp	F		17 +						
72700	Anopheles sp	F		+						
77500	Conchapelopia sp	F		6						
77750	Hayesomyia senata or Thienemannimyia norena	F		12						
78655	Procladius (Holotanypus) sp	MT		+						
80310	Cardiocladius obscurus	MI		+						
80370	Corynoneura lobata	F		16						
81825	Rheocricotopus (Psilocricotopus) robacki	F		6						

Appendix Table A-2. Macroinvertebrate taxa collected in the Big Walnut Creek study area during 2016.

River Code:02-100		River: <i>Big Walnut Creek</i>			Coll. Date:09/23/2016		RM:		9.50	
Site ID: BW06		Location: <i>Dst. Lockbourne Rd.</i>					JF			
Taxa Code	Taxa	CWH Taxa	Tol.	Qt./Ql.	Taxa Code	Taxa	CWH Taxa	Tol.	Qt./Ql.	
01801	Turbellaria	F		13 +	68708	Dubiraphia vittata group	F		+	
03600	Oligochaeta	T		4	68901	Macronychus glabratus	F		28 +	
06700	Crangonyx sp	MT		+	69400	Stenelmis sp	F		2 +	
08250	Orconectes (Procericambarus) rusticus	F		+	72700	Anopheles sp	F		+	
08601	Hydrachnidia	F		8 +	77750	Hayesomyia senata or Thienemannimyia norena	F		12	
11020	Acerpenna pygmaea	MI		1 +	78140	Labrundinia pilosella	F		+	
11119	Plauditus dubius or P. virilis	I		4	80350	Corynoneura sp			6	
11130	Baetis intercalaris	F		71 +	82130	Thienemanniella similis	MI		28	
11155	Iswaeon anoka	MI		+	84450	Polypedilum (Uresipedilum) flavum	F		243 +	
11251	Anafroptilum (Centroptilum sp, w/ hindwing pads)	F		+	84470	Polypedilum (P.) illinoense	T		+	
11620	Paracloeodes minutus	MI		+	84540	Polypedilum (Tripodura) scalaenum group	F		6	
11670	Procloeon viridoculare	MI		+	84750	Stictochironomus sp	F		+	
13000	Leucrocuta sp	MI		8 +	85500	Paratanytarsus sp	F		12	
13100	Nixe sp	MI		+	85625	Rheotanytarsus sp	F		133 +	
13400	Stenacron sp	F		526 +	85800	Tanytarsus sp	F		+	
13510	Maccaffertium exiguum	MI		300	85821	Tanytarsus glabrescens group sp 7	F		35	
13521	Stenonema femoratum	F		8	92516	Campeloma decisum	F		+	
13561	Maccaffertium pulchellum	MI		80 +	93900	Elimia sp	MI		52 +	
13570	Maccaffertium terminatum	MI		42 +	95100	Physella sp	T		+	
16700	Tricorythodes sp	MI		186 +	96900	Ferrissia sp	F		31	
17200	Caenis sp	F		6 +	97601	Corbicula fluminea	F		+	
18100	Anthopotamus sp	MI		+	97710	Dreissena polymorpha	F		+	
21300	Hetaerina sp	F		+	98600	Sphaerium sp	F		+	
22001	Coenagrionidae	T		+						
22300	Argia sp	F		11 +	No. Quantitative Taxa: 34		Total Taxa; 64			
34700	Agnetina capitata complex	MI		3 +	No. Qualitative Taxa: 51		ICI: 42			
51300	Neureclipsis sp	MI		4 +	Number of Organisms: 1925		Qual EPT: 26			
51600	Polycentropus sp	MI		3 +						
52200	Cheumatopsyche sp	F		33 +						
52430	Ceratopsyche morosa group	MI		11 +						
52801	Potamyia flava	MI		+						
53400	Protoptila sp	I		+						
53800	Hydroptila sp	F		3						
58505	Helicopsyche borealis	MI		+						
59300	Mystacides sp	MI		+						
59407	Nectopsyche candida	MI		+						
59410	Nectopsyche diarina	MI		+						
59720	Triaenodes ignitus	MI		+						
59970	Petrophila sp	MI		+						
68075	Psephenus herricki	MI		+						
68601	Ancyronyx variegata	F		12						

Appendix Table A-2. Macroinvertebrate taxa collected in the Big Walnut Creek study area during 2016.

River Code: 02-281		River: Dysart Run			Coll. Date: 09/14/2016			RM: 2.90
Site ID: DR01		Location: Dst. Chapel Stone Rd.			JF			
Taxa Code	Taxa	CWH Taxa	Tol.	Qt./Ql.	Taxa Code	Taxa	CWH Taxa	Tol. Qt./Ql.
01801	Turbellaria	F		+				
01900	Nemertea	F		+				
03360	Plumatella sp	F		+				
03600	Oligochaeta	T		+				
04666	Helobdella papillata	MT		+				
08200	Orconectes sp	F		+				
08601	Hydrachnidia	F		+				
11120	Baetis flavistriga	F		+				
11130	Baetis intercalaris	F		+				
13521	Stenonema femoratum	F		+				
17200	Caenis sp	F		+				
21200	Calopteryx sp	F		+				
22001	Coenagrionidae	T		+				
22300	Argia sp	F		+				
52200	Cheumatopsyche sp	F		+				
52530	Hydropsyche depravata group	F		+				
53501	Hydroptilidae	F		+				
59300	Mystacides sp	MI		+				
68075	Psephenus herricki	MI		+				
68708	Dubiraphia vittata group	F		+				
69400	Stenelmis sp	F		+				
71900	Tipula sp	F		+				
77120	Ablabesmyia mallochi	F		+				
77800	Helopelopia sp	F		+				
78655	Procladius (Holotanypus) sp	MT		+				
81825	Rheocricotopus (Psilocricotopus) robacki	F		+				
83040	Dicrotendipes neomodestus	F		+				
84210	Paratendipes albimanus or P. duplicatus	F		+				
84450	Polypedilum (Uresipedilum) flavum	F		+				
84470	Polypedilum (P.) illinoense	T		+				
84750	Stictochironomus sp	F		+				
85500	Paratanytarsus sp	F		+				
85615	Rheotanytarsus pellucidus	MI		+				
95100	Physella sp	T		+				
96002	Helisoma anceps anceps	F		+				
96280	Planorbella (Pierosoma) trivolvis	MT		+				
96900	Ferrissia sp	F		+				

No. Quantitative Taxa: 0 Total Taxa; 37
 No. Qualitative Taxa: 37 ICI: F
 Number of Organisms: 0 Qual EPT: 8

Appendix Table A-2. Macroinvertebrate taxa collected in the Big Walnut Creek study area during 2016.

River Code:02-291		River: N. Br. French Run			Coll. Date09/13/2016		RM:		0.16
Site ID: FR01		Location: behind French Run School			JF				
Taxa Code	Taxa	CWH Taxa	Tol.	Qt./Ql.	Taxa Code	Taxa	CWH Taxa	Tol.	Qt./Ql.
01801	Turbellaria		F	+					
03600	Oligochaeta		T	+					
04664	Helobdella stagnalis		T	+					
08250	Orconectes (Procericambarus) rusticus		F	+					
11130	Baetis intercalaris		F	+					
11430	Diphetor hageni		MI	+					
12501	Heptageniidae			+					
13521	Stenonema femoratum		F	+					
17200	Caenis sp		F	+					
21200	Calopteryx sp		F	+					
22300	Argia sp		F	+					
23909	Boyeria vinosa		F	+					
25510	Stylogomphus albistylus		MI	+					
50315	Chimarra obscura		MI	+					
52200	Cheumatopsyche sp		F	+					
52430	Ceratopsyche morosa group		MI	+					
52530	Hydropsyche depravata group		F	+					
59300	Mystacides sp		MI	+					
59700	Trienodes sp		MI	+					
59970	Petrophila sp		MI	+					
68075	Psephenus herricki		MI	+					
68601	Ancyronyx variegata		F	+					
68702	Dubiraphia bivittata		F	+					
68708	Dubiraphia vittata group		F	+					
68901	Macronychus glabratus		F	+					
69400	Stenelmis sp		F	+					
86100	Chrysops sp		F	+					
96900	Ferrissia sp		F	+					
No. Quantitative Taxa:		0	Total Taxa;		28				
No. Qualitative Taxa:		28	ICI:		G				
Number of Organisms:		0	Qual EPT:		11				

Appendix Table A-2. Macroinvertebrate taxa collected in the Big Walnut Creek study area during 2016.

River Code: 02-292		River: <i>Unnamed Trib to Dysart Run @ RM 2.58</i>			Coll. Date: 09/13/2016		RM: 0.05		
Site ID: UT05		Location: <i>Near mouth</i>			JF				
Taxa Code	Taxa	CWH Taxa	Tol.	Qt./Ql.	Taxa Code	Taxa	CWH Taxa	Tol.	Qt./Ql.
01801	Turbellaria		F	+					
03600	Oligochaeta		T	+					
04666	Helobdella papillata		MT	+					
04935	Erpobdella punctata punctata		MT	+					
05800	Caecidotea sp		T	+					
07840	Cambarus (Cambarus) sciotensis		MI	+					
08260	Orconectes (Crokerinus) sanbornii sanbornii		F	+					
08601	Hydrachnidia		F	+					
13521	Stenonema femoratum		F	+					
21200	Calopteryx sp		F	+					
22001	Coenagrionidae		T	+					
27500	Somatochlora sp		MT	+					
52200	Cheumatopsyche sp		F	+					
52530	Hydropsyche depravata group		F	+					
59300	Mystacides sp		MI	+					
69400	Stenelmis sp		F	+					
77120	Ablabesmyia mallochi		F	+					
78350	Meropelopia sp	X	F	+					
78655	Procladius (Holotanypus) sp		MT	+					
83000	Dicrotendipes sp		F	+					
84750	Stictochironomus sp		F	+					
96900	Ferrissia sp		F	+					
98200	Pisidium sp		MT	+					
No. Quantitative Taxa:		0	Total Taxa;		23				
No. Qualitative Taxa:		23	ICI:		F				
Number of Organisms:		0	Qual EPT:		4				

Appendix Table A-2. Macroinvertebrate taxa collected in the Big Walnut Creek study area during 2016.

River Code:02-910		River: <i>Unnamed Tributary to Big Walnut Cr. @RM 37.13</i>			Coll. Date:09/14/2016		RM: 0.10		
Site ID: UT01		Location: <i>Ust mouth Adj Central College Rd.</i>				JF			
Taxa Code	Taxa	CWH Taxa	Tol.	Qt./Ql.	Taxa Code	Taxa	CWH Taxa	Tol.	Qt./Ql.
01801	Turbellaria		F	+					
03600	Oligochaeta		T	+					
06700	Crangonyx sp		MT	+					
07800	Cambarus sp			+					
11120	Baetis flavistriga		F	+					
11130	Baetis intercalaris		F	+					
13521	Stenonema femoratum		F	+					
21200	Calopteryx sp		F	+					
22001	Coenagrionidae		T	+					
25510	Stylogomphus albistylus		MI	+					
50301	Chimarra aterrima		MI	+					
51600	Polycentropus sp		MI	+					
52200	Cheumatopsyche sp		F	+					
52315	Diplectrona modesta	X	F	+					
52530	Hydropsyche depravata group		F	+					
68075	Psephenus herricki		MI	+					
69400	Stenelmis sp		F	+					
71900	Tipula sp		F	+					
72700	Anopheles sp		F	+					
78350	Meropelopia sp	X	F	+					
79720	Diamesa sp	X	F	+					
82730	Chironomus (C.) decorus group		T	+					
84210	Paratendipes albimanus or P. duplicatus		F	+					
84450	Polypedilum (Uresipedilum) flavum		F	+					
84470	Polypedilum (P.) illinoense		T	+					
No. Quantitative Taxa:		0	Total Taxa;		25				
No. Qualitative Taxa:		25	ICI:		MG				
Number of Organisms:		0	Qual EPT:		8				

Appendix Table A-2. Macroinvertebrate taxa collected in the Big Walnut Creek study area during 2016.

River Code:02-911		River: Livingston House Trib			Coll. Date:09/17/2016		RM:		0.05	
Site ID: UT02		Location: Ust mouth Dst. Livingston Park					JF			
Taxa Code	Taxa	CWH		Qt./Ql.	Taxa Code	Taxa	CWH		Qt./Ql.	
		Taxa	Tol.				Taxa	Tol.		
01801	Turbellaria		F	+						
03600	Oligochaeta		T	+						
06700	Crangonyx sp		MT	+						
07801	Cambarus (C.) sp			+						
08601	Hydrachnidia		F	+						
11130	Baetis intercalaris		F	+						
11200	Callibaetis sp		MT	+						
52200	Cheumatopsyche sp		F	+						
71900	Tipula sp		F	+						
78350	Meropelopia sp	X	F	+						
95100	Physella sp		T	+						
No. Quantitative Taxa:		0	Total Taxa;		11					
No. Qualitative Taxa:		11	ICI:		P					
Number of Organisms:		0	Qual EPT:		6					

Appendix Table A-2. Macroinvertebrate taxa collected in the Big Walnut Creek study area during 2016.

River Code: **02-914** River: ***E. Windsor Ditch (Big Walnut Tributary @RM 28.33)*** Coll. Date **09/14/2016** RM: **0.10**

Site ID: **UT04** Location: ***Ust. Big Walnut Creek Bike Trail*** JF

Taxa Code	Taxa	CWH Taxa Tol.	Qt./Ql.	Taxa Code	Taxa	CWH Taxa Tol.	Qt./Ql.
01801	Turbellaria	F	+				
03600	Oligochaeta	T	+				
04664	Helobdella stagnalis	T	+				
04935	Erpobdella punctata punctata	MT	+				
08200	Orconectes sp	F	+				
11120	Baetis flavistriga	F	+				
21200	Calopteryx sp	F	+				
22001	Coenagrionidae	T	+				
22300	Argia sp	F	+				
52200	Cheumatopsyche sp	F	+				
72700	Anopheles sp	F	+				
77120	Ablabesmyia mallochi	F	+				
78350	Meropelopia sp	X F	+				
82820	Cryptochironomus sp	F	+				
84210	Paratendipes albimanus or P. duplicatus	F	+				
84540	Polypedilum (Tripodura) scalaenum group	F	+				
85625	Rheotanytarsus sp	F	+				

No. Quantitative Taxa: 0 Total Taxa; 17

No. Qualitative Taxa: 17 ICI: P

Number of Organisms: 0 Qual EPT: 2

Appendix B

Big Walnut Creek Fish Assemblage Results

B-1: Index of Biotic Integrity (IBI) Score & Metrics

B-2: Fish Species by Site

Appendix Table B-1. Wadeable IBI scores and metrics for site sampled in Big Walnut Creeks in 2016.

River Mile	Type	Date	Drainage area (sq mi)	Number of					Percent of Individuals						Rel.No. minus tolerants /(0.3km)	IBI	Modified Iwb
				Total species	Sunfish species	Sucker species	Intolerant species	Darter species	Simple Lithophils	Tolerant fishes	Omni- vores	Top carnivores	Insect- ivores	DELT anomalies			
Big Walnut Creek - (02100)																	
Year: 2016																	
22.05	D	08/22/2016	249.0	22(3)	4(5)	2(1)	5(3)	7(5)	42(5)	5(5)	2(5)	7.4(5)	63(5)	0.4(5)	345(3)	50	8.8
22.05	D	10/12/2016	249.0	24(5)	3(3)	3(3)	6(5)	8(5)	51(5)	3(5)	5(5)	5.0(3)	62(5)	0.5(3)	266(3)	50	8.1
21.82	D	08/22/2016	249.0	29(5)	4(5)	2(1)	6(5)	7(5)	25(3)	34(1)	24(3)	17.5(5)	55(5)	0.0(5)	284(3)	46	8.4
21.82	D	10/12/2016	249.0	19(3)	4(5)	2(1)	5(3)	6(5)	51(5)	28(3)	26(3)	9.0(5)	63(5)	0.0(5)	156(1)	44	6.4
21.80	D	08/22/2016	249.0	26(5)	5(5)	2(1)	5(3)	6(5)	25(3)	12(5)	1(5)	6.0(5)	79(5)	0.0(5)	351(3)	50	9.0
21.80	D	10/12/2016	249.0	20(3)	4(5)	2(1)	4(3)	5(3)	32(3)	15(5)	5(5)	11.2(5)	84(5)	0.0(5)	125(1) *	44	7.5
21.65	D	08/22/2016	249.0	24(5)	4(5)	2(1)	5(3)	7(5)	69(5)	4(5)	2(5)	10.6(5)	82(5)	0.0(5)	260(3)	52	8.3
21.65	D	10/12/2016	249.0	24(5)	4(5)	2(1)	5(3)	7(5)	72(5)	4(5)	2(5)	5.9(5)	86(5)	0.0(5)	294(3)	52	8.7
15.90	D	10/13/2016	272.0	25(5)	4(5)	1(1)	8(5)	8(5)	57(5)	3(5)	1(5)	3.5(3)	66(5)	0.0(5)	380(3)	52	8.6
15.90	D	07/14/2016	272.0	31(5)	6(5)	1(1)	10(5)	8(5)	47(5)	8(5)	2(5)	4.2(3)	71(5)	0.0(5)	630(3)	52	9.4

na - Qualitative data, Modified Iwb not applicable.

◆ - IBI is low end adjusted.

* - < 200 Total individuals in sample

** - < 50 Total individuals in sample

● - One or more species excluded from IBI calculation.

Appendix Table B-2. Boatable IBI scores and metrics for site sampled in Big Walnut Creek during 2016.

Site ID	River Mile	Type	Date	Drainage area (sq mi)	Number of				Percent of Individuals							Rel.No. minus tolerants /(1.0 km)	IBI	Modified lwb	Source
					Total species	Sunfish species	Sucker species	Intolerant species	Rnd-bodied suckers	Simple Lithophils	Tolerant fishes	Omni-vores	Top carnivores	Insect-ivores	DELT anomalies				
Big Walnut Creek - (02100)																			
Year: 2016																			
W06	9.70	P	08/23/2016	547	33(5)	4(5)	9(5)	9(5)	22(3)	55(5)	4(5)	19(3)	5(3)	67(5)	0.9(3)	500(5)	52	10.4	MBI
W06	9.70	P	10/13/2016	547	27(5)	4(5)	5(3)	7(5)	31(3)	62(5)	4(5)	3(5)	5(1)	80(5)	1.0(3)	370(3)	48	9.5	MBI

♦ - IBI is low end adjusted.
* - < 200 Total individuals in sample
** - < 50 Total individuals in sample

Appendix B-3: Midwest Biodiversity Institute

Fish Species List - Grand Totals

Rivers: *Big Walnut Creek; Dysart Run; L. Jordan Run (UT Blacklick Cr. at 12.89); N. Br. French Run; Unnamed Tributary to Big Walnut Cr. @RM 37.13; Livingston House Trib; E. Windsor Ditch (Big Walnut Tributary @RM 28.33)*

Years: 2016

Number of Samples: 16 **Data Sources:** 99 **Data Types:** D; F; P

Species Code:	Species Name:	Feed Guild	Tolerance	Breed Guild	IBI Group	No. Fish	Rel. No.	% by No.	Rel. Wt.	% by Wt.	Av. Wt.
10-004	LONGNOSE GAR	P		M		3	0.9	0.09	1224	5.75	1416.6
20-003	GIZZARD SHAD	O		M		62	17.9	1.80	989	4.65	55.4
40-003	BLACK BUFFALO	I		M	C	5	1.4	0.15	584	2.75	406.0
40-004	SMALLMOUTH BUFFALO	I		M	C	5	1.4	0.15	1192	5.60	828.0
40-005	QUILLBACK CARPSUCKER	O		M	C	2	0.6	0.06	201	0.95	350.0
40-006	RIVER CARPSUCKER	O		M	C	1	0.3	0.03	250	1.18	870.0
40-008	SILVER REDHORSE	I	M	S	R	1	0.3	0.03	172	0.81	600.0
40-009	BLACK REDHORSE	I	I	S	R	3	0.9	0.09	224	1.06	260.0
40-010	GOLDEN REDHORSE	I	M	S	R	66	19.0	1.92	1438	6.76	75.6
40-015	NORTHERN HOG SUCKER	I	M	S	R	212	61.1	6.16	1108	5.21	18.1
40-016	WHITE SUCKER	O	T	S	W	82	7.1	2.38	2	0.04	0.3
40-018	SPOTTED SUCKER	I		S	R	3	0.9	0.09	391	1.84	453.3
40-023	SMALLMOUTH REDHORSE	I	M	S	R	9	2.6	0.26	259	1.22	100.0
43-001	COMMON CARP	O	T	M	G	14	4.0	0.41	4924	23.15	1221.4
43-007	BIGEYE CHUB	I	I	S	N	2	0.2	0.06	0	0.01	3.5
43-008	STREAMLINE CHUB	I	R	S	N	88	25.3	2.56	166	0.78	6.5
43-009	GRAVEL CHUB	I	M	S	N	1	0.3	0.03	1	0.01	4.0
43-011	WESTERN BLACKNOSE DACE	G	T	S	N	207	17.8	6.01	0	0.01	0.0
43-013	CREEK CHUB	G	T	N	N	403	34.7	11.70	12	0.19	0.3
43-015	SUCKERMOUTH MINNOW	I		S	N	1	0.3	0.03	1	0.01	6.0
43-016	SOUTH. REDBELLY DACE	H		S	N	4	0.3	0.12	0	0.00	0.0
43-021	SILVER SHINER	I	I	S	N	64	18.4	1.86	52	0.25	2.8
43-022	ROSYFACE SHINER	I	I	S	N	44	12.7	1.28	17	0.08	1.3
43-025	STRIPED SHINER	I		S	N	72	20.7	2.09	171	0.81	8.2
43-032	SPOTFIN SHINER	I		M	N	48	13.8	1.39	31	0.15	2.2
43-034	SAND SHINER	I	M	M	N	52	15.0	1.51	18	0.09	1.2
43-035	MIMIC SHINER	I	I	M	N	9	0.8	0.26	1	0.02	1.5
43-043	BLUNTNOSE MINNOW	O	T	C	N	110	31.7	3.19	54	0.26	1.7
43-044	CENTRAL STONEROLLER	H		N	N	453	130.5	13.16	815	3.83	6.2
47-002	CHANNEL CATFISH			C	F	1	0.1	0.03	38	0.61	450.0
47-004	YELLOW BULLHEAD	I	T	C		6	0.5	0.17	37	0.59	72.5
47-007	FLATHEAD CATFISH	P		C	F	1	0.1	0.03	455	7.17	5300.0
47-008	STONECAT MADTOM	I	I	C		2	0.6	0.06	14	0.07	25.0
47-012	BRINDLED MADTOM	I	I	C		5	0.4	0.15	1	0.02	3.4
70-001	BROOK SILVERSIDE	I	M	M		8	0.7	0.23	0	0.01	0.7
77-002	BLACK CRAPPIE	I		C	S	1	0.1	0.03	6	0.11	80.0
77-003	ROCK BASS	C		C	S	73	21.0	2.12	1003	4.72	47.7
77-004	SMALLMOUTH BASS	C	M	C	F	80	23.0	2.32	822	3.86	35.6
77-005	SPOTTED BASS	C		C	F	1	0.1	0.03	52	0.83	610.0

Appendix Table B-3. Midwest Biodiversity Institute

Fish Species List

Site ID: River: 02-100 Big Walnut Creek RM: 9.70 Date: 08/23/2016

Time Fished: 3043 Distance: 0.500 Drainge (sq mi): 547.0 Depth: 0

Location: Park off Lockborne Rd. (ust & dst) Lat: 0.00000 Long: 0.00000

Species Code:	Species Name:	Feed Guild	Toler-ance	Breed Guild	IBI Group	No. Fish	Rel. No.	% by No.	Rel. Wt.	% by Wt.	Av. Wt.
20-003	GIZZARD SHAD	O		M		44	88.0	16.86	7920	7.97	90.0
40-003	BLACK BUFFALO	I		M	C	5	10.0	1.92	19000	19.11	1900.0
40-004	SMALLMOUTH BUFFALO	I		M	C	1	2.0	0.38	2400	2.41	1200.0
40-006	RIVER CARPSUCKER	O		M	C	1	2.0	0.38	1740	1.75	870.0
40-008	SILVER REDHORSE	I	M	S	R	1	2.0	0.38	1200	1.21	600.0
40-009	BLACK REDHORSE	I	I	S	R	2	4.0	0.77	2880	2.90	720.0
40-010	GOLDEN REDHORSE	I	M	S	R	26	52.0	9.96	19440	19.55	373.8
40-015	NORTHERN HOG SUCKER	I	M	S	R	23	46.0	8.81	6644	6.68	144.4
40-018	SPOTTED SUCKER	I		S	R	2	4.0	0.77	2600	2.62	650.0
40-023	SMALLMOUTH REDHORSE	I	M	S	R	3	6.0	1.15	3250	3.27	541.6
43-001	COMMON CARP	O	T	M	G	3	6.0	1.15	15200	15.29	2533.3
43-008	STREAMLINE CHUB	I	R	S	N	7	14.0	2.68	50	0.05	3.5
43-015	SUCKERMOUTH MINNOW	I		S	N	1	2.0	0.38	12	0.01	6.0
43-021	SILVER SHINER	I	I	S	N	10	20.0	3.83	46	0.05	2.3
43-022	ROSYFACE SHINER	I	I	S	N	32	64.0	12.26	80	0.08	1.2
43-025	STRIPED SHINER	I		S	N	1	2.0	0.38	4	0.00	2.0
43-032	SPOTFIN SHINER	I		M	N	10	20.0	3.83	10	0.01	0.5
43-043	BLUNTNOSE MINNOW	O	T	C	N	1	2.0	0.38	2	0.00	1.0
43-044	CENTRAL STONEROLLER	H		N	N	21	42.0	8.05	260	0.26	6.1
47-008	STONECAT MADTOM	I	I	C		1	2.0	0.38	80	0.08	40.0
77-003	ROCK BASS	C		C	S	4	8.0	1.53	1280	1.29	160.0
77-004	SMALLMOUTH BASS	C	M	C	F	3	6.0	1.15	2980	3.00	496.6
77-006	LARGEMOUTH BASS	C		C	F	3	6.0	1.15	50	0.05	8.3
77-008	GREEN SUNFISH	I	T	C	S	7	14.0	2.68	320	0.32	22.8
77-009	BLUEGILL SUNFISH	I	P	C	S	3	6.0	1.15	160	0.16	26.6
77-011	LONGEAR SUNFISH	I	M	C	S	4	8.0	1.53	260	0.26	32.5
80-011	LOGPERCH	I	M	S	D	8	16.0	3.07	230	0.23	14.3
80-015	GREENSIDE DARTER	I	M	S	D	12	24.0	4.60	50	0.05	2.0
80-016	BANDED DARTER	I	I	S	D	2	4.0	0.77	6	0.01	1.5
80-017	VARIEGATE DARTER	I	I	S	D	1	2.0	0.38	10	0.01	5.0
80-019	BLUEBREAST DARTER	I	R	S	D	8	16.0	3.07	20	0.02	1.2
80-020	TIPPECANOE DARTER	I	R	S	D	2	4.0	0.77	4	0.00	1.0
80-022	RAINBOW DARTER	I	M	S	D	3	6.0	1.15	6	0.01	1.0
80-026	SAUGER X WALLEYE	P			E	4	8.0	1.53	4120	4.14	515.0
85-001	FRESHWATER DRUM		P	M		2	4.0	0.77	7100	7.14	1775.0

No Species: 34 **Nat. Species:** 33 **Hybrids:** 1 **Total Counted:** 261 **Total Rel. Wt. :** 99414

IBI: 52.0 **MIwb:** 10.4

Appendix Table B-3. Midwest Biodiversity Institute Fish Species List

Site ID: River: 02-100 Big Walnut Creek RM: 9.70 Date: 10/13/2016

Time Fished: 2200 Distance: 0.500 Drainge (sq mi): 547.0 Depth: 0

Location: Park off Lockborne Rd. (ust & dst) Lat: 0.00000 Long: 0.00000

Species Code:	Species Name:	Feed Guild	Toler-ance	Breed Guild	IBI Group	No. Fish	Rel. No.	% by No.	Rel. Wt.	% by Wt.	Av. Wt.
10-004	LONGNOSE GAR	P		M		2	4.0	1.04	9440	15.83	2360.0
20-003	GIZZARD SHAD	O		M		4	8.0	2.08	1100	1.84	137.5
40-004	SMALLMOUTH BUFFALO	I		M	C	4	8.0	2.08	15080	25.28	1885.0
40-005	QUILLBACK CARPSUCKER	O		M	C	2	4.0	1.04	2320	3.89	580.0
40-010	GOLDEN REDHORSE	I	M	S	R	19	38.0	9.90	21790	36.53	573.4
40-015	NORTHERN HOG SUCKER	I	M	S	R	34	68.0	17.71	7020	11.77	103.2
40-023	SMALLMOUTH REDHORSE	I	M	S	R	6	12.0	3.13	260	0.44	21.6
43-008	STREAMLINE CHUB	I	R	S	N	16	32.0	8.33	220	0.37	6.8
43-009	GRAVEL CHUB	I	M	S	N	1	2.0	0.52	8	0.01	4.0
43-021	SILVER SHINER	I	I	S	N	16	32.0	8.33	160	0.27	5.0
43-022	ROSYFACE SHINER	I	I	S	N	8	16.0	4.17	30	0.05	1.8
43-025	STRIPED SHINER	I		S	N	1	2.0	0.52	80	0.13	40.0
43-032	SPOTFIN SHINER	I		M	N	8	16.0	4.17	50	0.08	3.1
43-034	SAND SHINER	I	M	M	N	4	8.0	2.08	8	0.01	1.0
43-044	CENTRAL STONEROLLER	H		N	N	23	46.0	11.98	900	1.51	19.5
47-008	STONECAT MADTOM	I	I	C		1	2.0	0.52	20	0.03	10.0
77-004	SMALLMOUTH BASS	C	M	C	F	6	12.0	3.13	400	0.67	33.3
77-006	LARGEMOUTH BASS	C		C	F	1	2.0	0.52	20	0.03	10.0
77-008	GREEN SUNFISH	I	T	C	S	7	14.0	3.65	140	0.23	10.0
77-009	BLUEGILL SUNFISH	I	P	C	S	2	4.0	1.04	10	0.02	2.5
77-010	ORANGESPOTTED SUNFISH	I		C	S	1	2.0	0.52	30	0.05	15.0
77-011	LONGEAR SUNFISH	I	M	C	S	8	16.0	4.17	400	0.67	25.0
80-011	LOGPERCH	I	M	S	D	2	4.0	1.04	70	0.12	17.5
80-015	GREENSIDE DARTER	I	M	S	D	7	14.0	3.65	60	0.10	4.2
80-016	BANDED DARTER	I	I	S	D	1	2.0	0.52	6	0.01	3.0
80-019	BLUEBREAST DARTER	I	R	S	D	3	6.0	1.56	20	0.03	3.3
80-020	TIPPECANOE DARTER	I	R	S	D	5	10.0	2.60	10	0.02	1.0

No Species: 27 **Nat. Species:** 27 **Hybrids:** 0 **Total Counted:** 192 **Total Rel. Wt. :** 59652

IBI: 48.0 **MIwb:** 9.5

Appendix Table B-3. Midwest Biodiversity Institute

Fish Species List

Site ID: River: 02-100 Big Walnut Creek RM: 21.65 Date: 08/22/2016

Time Fished: 1605 Distance: 0.200 Drainge (sq mi): 249.0 Depth: 0

Location: Dst. Livingston Ave-far Field site Lat: 39.94315 Long: -82.85677

Species Code:	Species Name:	Feed Guild	Toler-ance	Breed Guild	IBI Group	No. Fish	Rel. No.	% by No.	Rel. Wt.	% by Wt.	Av. Wt.
40-010	GOLDEN REDHORSE	I	M	S	R	5	7.5	2.78	321	3.49	42.8
40-015	NORTHERN HOG SUCKER	I	M	S	R	44	66.0	24.44	3600	39.17	54.5
43-008	STREAMLINE CHUB	I	R	S	N	4	6.0	2.22	15	0.16	2.5
43-021	SILVER SHINER	I	I	S	N	9	13.5	5.00	22	0.24	1.6
43-025	STRIPED SHINER	I		S	N	7	10.5	3.89	120	1.31	11.4
43-032	SPOTFIN SHINER	I		M	N	2	3.0	1.11	4	0.05	1.5
43-034	SAND SHINER	I	M	M	N	6	9.0	3.33	12	0.13	1.3
43-035	MIMIC SHINER	I	I	M	N	1	1.5	0.56	3	0.03	2.0
43-043	BLUNTNOSE MINNOW	O	T	C	N	4	6.0	2.22	15	0.16	2.5
43-044	CENTRAL STONEROLLER	H		N	N	10	15.0	5.56	45	0.49	3.0
70-001	BROOK SILVERSIDE	I	M	M		1	1.5	0.56	1	0.02	1.0
77-003	ROCK BASS	C		C	S	6	9.0	3.33	585	6.37	65.0
77-004	SMALLMOUTH BASS	C	M	C	F	12	18.0	6.67	2895	31.50	160.8
77-005	SPOTTED BASS	C		C	F	1	1.5	0.56	915	9.96	610.0
77-008	GREEN SUNFISH	I	T	C	S	3	4.5	1.67	75	0.82	16.6
77-009	BLUEGILL SUNFISH	I	P	C	S	1	1.5	0.56	45	0.49	30.0
77-011	LONGEAR SUNFISH	I	M	C	S	1	1.5	0.56	180	1.96	120.0
80-011	LOGPERCH	I	M	S	D	12	18.0	6.67	195	2.12	10.8
80-014	JOHNNY DARTER	I		C	D	2	3.0	1.11	3	0.03	1.0
80-015	GREENSIDE DARTER	I	M	S	D	15	22.5	8.33	90	0.98	4.0
80-016	BANDED DARTER	I	I	S	D	18	27.0	10.00	22	0.24	0.8
80-020	TIPPECANOE DARTER	I	R	S	D	5	7.5	2.78	3	0.03	0.4
80-022	RAINBOW DARTER	I	M	S	D	5	7.5	2.78	10	0.11	1.4
80-024	FANTAIL DARTER	I		C	D	6	9.0	3.33	12	0.13	1.3

No Species: 24 **Nat. Species:** 24 **Hybrids:** 0 **Total Counted:** 180 **Total Rel. Wt. :** 9190

IBI: 52.0 **MIwb:** 8.3

Appendix Table B-3. Midwest Biodiversity Institute Fish Species List

Site ID: River: 02-100 Big Walnut Creek RM: 21.65 Date: 10/12/2016

Time Fished: 1624 Distance: 0.200 Drainge (sq mi): 249.0 Depth: 0

Location: Dst. Livingston Ave-far Field site Lat: 39.94315 Long: -82.85677

Species Code:	Species Name:	Feed Guild	Toler-ance	Breed Guild	IBI Group	No. Fish	Rel. No.	% by No.	Rel. Wt.	% by Wt.	Av. Wt.
20-003	GIZZARD SHAD	O		M		4	6.0	1.95	697	7.22	116.2
40-010	GOLDEN REDHORSE	I	M	S	R	2	3.0	0.98	1395	14.44	465.0
40-015	NORTHERN HOG SUCKER	I	M	S	R	45	67.5	21.95	2632	27.26	39.0
43-008	STREAMLINE CHUB	I	R	S	N	39	58.5	19.02	420	4.35	7.1
43-013	CREEK CHUB	G	T	N	N	3	4.5	1.46	30	0.31	6.6
43-021	SILVER SHINER	I	I	S	N	5	7.5	2.44	45	0.47	6.0
43-025	STRIPED SHINER	I		S	N	9	13.5	4.39	135	1.40	10.0
43-032	SPOTFIN SHINER	I		M	N	6	9.0	2.93	37	0.39	4.1
43-034	SAND SHINER	I	M	M	N	2	3.0	0.98	4	0.05	1.5
43-044	CENTRAL STONEROLLER	H		N	N	10	15.0	4.88	195	2.02	13.0
47-004	YELLOW BULLHEAD	I	T	C		1	1.5	0.49	97	1.01	65.0
70-001	BROOK SILVERSIDE	I	M	M		1	1.5	0.49	1	0.02	1.0
77-003	ROCK BASS	C		C	S	10	15.0	4.88	1470	15.22	98.0
77-004	SMALLMOUTH BASS	C	M	C	F	2	3.0	0.98	1440	14.91	480.0
77-008	GREEN SUNFISH	I	T	C	S	5	7.5	2.44	150	1.55	20.0
77-009	BLUEGILL SUNFISH	I	P	C	S	2	3.0	0.98	90	0.93	30.0
77-011	LONGEAR SUNFISH	I	M	C	S	9	13.5	4.39	540	5.59	40.0
80-011	LOGPERCH	I	M	S	D	4	6.0	1.95	75	0.78	12.5
80-014	JOHNNY DARTER	I		C	D	2	3.0	0.98	4	0.05	1.5
80-015	GREENSIDE DARTER	I	M	S	D	21	31.5	10.24	142	1.48	4.5
80-016	BANDED DARTER	I	I	S	D	12	18.0	5.85	30	0.31	1.6
80-019	BLUEBREAST DARTER	I	R	S	D	1	1.5	0.49	1	0.02	1.0
80-020	TIPPECANOE DARTER	I	R	S	D	2	3.0	0.98	1	0.02	0.5
80-022	RAINBOW DARTER	I	M	S	D	8	12.0	3.90	22	0.23	1.8

No Species: 24 **Nat. Species:** 24 **Hybrids:** 0 **Total Counted:** 205 **Total Rel. Wt. :** 9658

IBI: 52.0 **MIwb:** 8.7

Appendix Table B-3. Midwest Biodiversity Institute Fish Species List

Site ID: River: 02-100 Big Walnut Creek RM: 21.80 Date: 08/22/2016

Time Fished: 2584 Distance: 0.200 Drainge (sq mi): 249.0 Depth: 0

Location: Lat: 39.94315 Long: -82.85677

Species Code:	Species Name:	Feed Guild	Toler-ance	Breed Guild	IBI Group	No. Fish	Rel. No.	% by No.	Rel. Wt.	% by Wt.	Av. Wt.
40-010	GOLDEN REDHORSE	I	M	S	R	5	7.5	1.87	189	3.04	25.2
40-015	NORTHERN HOG SUCKER	I	M	S	R	11	16.5	4.12	450	7.23	27.2
43-007	BIGEYE CHUB	I	I	S	N	2	3.0	0.75	10	0.17	3.5
43-008	STREAMLINE CHUB	I	R	S	N	5	7.5	1.87	75	1.20	10.0
43-022	ROSYFACE SHINER	I	I	S	N	1	1.5	0.37	3	0.05	2.0
43-025	STRIPED SHINER	I		S	N	10	15.0	3.75	195	3.13	13.0
43-032	SPOTFIN SHINER	I		M	N	16	24.0	5.99	34	0.55	1.4
43-034	SAND SHINER	I	M	M	N	37	55.5	13.86	69	1.11	1.2
43-035	MIMIC SHINER	I	I	M	N	5	7.5	1.87	9	0.14	1.2
43-043	BLUNTNOSE MINNOW	O	T	C	N	2	3.0	0.75	1	0.02	0.5
43-044	CENTRAL STONEROLLER	H		N	N	38	57.0	14.23	690	11.08	12.1
47-004	YELLOW BULLHEAD	I	T	C		2	3.0	0.75	405	6.50	135.0
70-001	BROOK SILVERSIDE	I	M	M		2	3.0	0.75	3	0.05	1.0
77-002	BLACK CRAPPIE	I		C	S	1	1.5	0.37	120	1.93	80.0
77-003	ROCK BASS	C		C	S	5	7.5	1.87	787	12.65	105.0
77-004	SMALLMOUTH BASS	C	M	C	F	9	13.5	3.37	225	3.61	16.6
77-006	LARGEMOUTH BASS	C		C	F	2	3.0	0.75	75	1.20	25.0
77-008	GREEN SUNFISH	I	T	C	S	29	43.5	10.86	322	5.18	7.4
77-009	BLUEGILL SUNFISH	I	P	C	S	27	40.5	10.11	675	10.84	16.6
77-011	LONGEAR SUNFISH	I	M	C	S	20	30.0	7.49	1566	25.15	52.2
80-011	LOGPERCH	I	M	S	D	12	18.0	4.49	225	3.61	12.5
80-014	JOHNNY DARTER	I		C	D	2	3.0	0.75	4	0.07	1.5
80-015	GREENSIDE DARTER	I	M	S	D	14	21.0	5.24	75	1.20	3.5
80-016	BANDED DARTER	I	I	S	D	6	9.0	2.25	9	0.14	1.0
80-022	RAINBOW DARTER	I	M	S	D	2	3.0	0.75	3	0.05	1.0
80-024	FANTAIL DARTER	I		C	D	2	3.0	0.75	4	0.07	1.5
No Species: 26	Nat. Species: 26		Hybrids: 0			Total Counted: 267		Total Rel. Wt. :			6226
IBI: 50.0	MIwb: 9.0										

Appendix Table B-3. Midwest Biodiversity Institute Fish Species List

Site ID: River: 02-100 Big Walnut Creek RM: 21.80 Date: 10/12/2016

Time Fished: 1478 Distance: 0.200 Drainge (sq mi): 249.0 Depth: 0

Location: Lat: 39.94315 Long: -82.85677

Species Code:	Species Name:	Feed Guild	Toler-ance	Breed Guild	IBI Group	No. Fish	Rel. No.	% by No.	Rel. Wt.	% by Wt.	Av. Wt.
20-003	GIZZARD SHAD	O		M		1	1.5	1.02	180	6.92	120.0
40-010	GOLDEN REDHORSE	I	M	S	R	4	6.0	4.08	127	4.90	21.2
40-015	NORTHERN HOG SUCKER	I	M	S	R	6	9.0	6.12	120	4.62	13.3
43-008	STREAMLINE CHUB	I	R	S	N	1	1.5	1.02	9	0.35	6.0
43-021	SILVER SHINER	I	I	S	N	2	3.0	2.04	7	0.29	2.5
43-025	STRIPED SHINER	I		S	N	1	1.5	1.02	3	0.12	2.0
43-032	SPOTFIN SHINER	I		M	N	1	1.5	1.02	4	0.17	3.0
43-035	MIMIC SHINER	I	I	M	N	1	1.5	1.02	3	0.12	2.0
43-043	BLUNTNOSE MINNOW	O	T	C	N	4	6.0	4.08	15	0.58	2.5
47-012	BRINDLED MADTOM	I	I	C		1	1.5	1.02	3	0.12	2.0
77-003	ROCK BASS	C		C	S	6	9.0	6.12	840	32.31	93.3
77-004	SMALLMOUTH BASS	C	M	C	F	5	7.5	5.10	187	7.21	25.0
77-008	GREEN SUNFISH	I	T	C	S	11	16.5	11.22	150	5.77	9.0
77-009	BLUEGILL SUNFISH	I	P	C	S	6	9.0	6.12	172	6.64	19.1
77-011	LONGEAR SUNFISH	I	M	C	S	23	34.5	23.47	600	23.08	17.3
80-011	LOGPERCH	I	M	S	D	7	10.5	7.14	120	4.62	11.4
80-014	JOHNNY DARTER	I		C	D	7	10.5	7.14	10	0.40	1.0
80-015	GREENSIDE DARTER	I	M	S	D	7	10.5	7.14	39	1.50	3.7
80-022	RAINBOW DARTER	I	M	S	D	3	4.5	3.06	4	0.17	1.0
80-024	FANTAIL DARTER	I		C	D	1	1.5	1.02	3	0.12	2.0

No Species: 20 **Nat. Species:** 20 **Hybrids:** 0 **Total Counted:** 98 **Total Rel. Wt. :** 2599

IBI: 44.0 **MIwb:** 7.5

Appendix Table B-3. Midwest Biodiversity Institute

Fish Species List

Site ID: River: 02-100 Big Walnut Creek RM: 21.82 Date: 08/22/2016

Time Fished: 2615 Distance: 0.200 Drainge (sq mi): 249.0 Depth: 0

Location: East side dst. Stormwater Outfal Lat: 39.94315 Long: -82.85677

Species Code:	Species Name:	Feed Guild	Toler-ance	Breed Guild	IBI Group	No. Fish	Rel. No.	% by No.	Rel. Wt.	% by Wt.	Av. Wt.
10-004	LONGNOSE GAR	P		M		1	1.5	0.35	75	0.17	50.0
40-010	GOLDEN REDHORSE	I	M	S	R	2	3.0	0.70	210	0.46	70.0
40-015	NORTHERN HOG SUCKER	I	M	S	R	9	13.5	3.16	1380	3.05	102.2
43-001	COMMON CARP	O	T	M	G	6	9.0	2.11	28500	62.96	3166.6
43-008	STREAMLINE CHUB	I	R	S	N	3	4.5	1.05	18	0.04	4.0
43-021	SILVER SHINER	I	I	S	N	2	3.0	0.70	9	0.02	3.0
43-022	ROSYFACE SHINER	I	I	S	N	3	4.5	1.05	6	0.01	1.3
43-025	STRIPED SHINER	I		S	N	14	21.0	4.91	187	0.41	8.9
43-032	SPOTFIN SHINER	I		M	N	1	1.5	0.35	3	0.01	2.0
43-034	SAND SHINER	I	M	M	N	1	1.5	0.35	3	0.01	2.0
43-043	BLUNTNOSE MINNOW	O	T	C	N	62	93.0	21.75	142	0.31	1.5
43-044	CENTRAL STONEROLLER	H		N	N	8	12.0	2.81	225	0.50	18.7
47-002	CHANNEL CATFISH			C	F	1	1.5	0.35	675	1.49	450.0
47-004	YELLOW BULLHEAD	I	T	C		1	1.5	0.35	195	0.43	130.0
47-007	FLATHEAD CATFISH	P		C	F	1	1.5	0.35	7950	17.56	5300.0
47-012	BRINDLED MADTOM	I	I	C		1	1.5	0.35	7	0.02	5.0
77-003	ROCK BASS	C		C	S	25	37.5	8.77	2125	4.70	56.6
77-004	SMALLMOUTH BASS	C	M	C	F	20	30.0	7.02	630	1.39	21.0
77-006	LARGEMOUTH BASS	C		C	F	3	4.5	1.05	28	0.06	6.3
77-008	GREEN SUNFISH	I	T	C	S	27	40.5	9.47	630	1.39	15.5
77-009	BLUEGILL SUNFISH	I	P	C	S	22	33.0	7.72	690	1.52	20.9
77-011	LONGEAR SUNFISH	I	M	C	S	19	28.5	6.67	1155	2.55	40.5
80-003	YELLOW PERCH			M		1	1.5	0.35	60	0.13	40.0
80-011	LOGPERCH	I	M	S	D	10	15.0	3.51	225	0.50	15.0
80-014	JOHNNY DARTER	I		C	D	5	7.5	1.75	7	0.02	1.0
80-015	GREENSIDE DARTER	I	M	S	D	15	22.5	5.26	82	0.18	3.6
80-016	BANDED DARTER	I	I	S	D	11	16.5	3.86	22	0.05	1.3
80-020	TIPPECANOE DARTER	I	R	S	D	1	1.5	0.35	1	0.00	1.0
80-022	RAINBOW DARTER	I	M	S	D	2	3.0	0.70	4	0.01	1.5
80-024	FANTAIL DARTER	I		C	D	8	12.0	2.81	15	0.03	1.2

No Species: 30 **Nat. Species:** 29 **Hybrids:** 0 **Total Counted:** 285 **Total Rel. Wt. :** 45264

IBI: 46.0 **MIwb:** 8.4

Appendix Table B-3. Midwest Biodiversity Institute

Fish Species List

Site ID: River: 02-100 Big Walnut Creek RM: 21.82 Date: 10/12/2016

Time Fished: 1318 Distance: 0.200 Drainge (sq mi): 249.0 Depth: 0

Location: East side dst. Stormwater Outfal Lat: 39.94315 Long: -82.85677

Species Code:	Species Name:	Feed Guild	Toler-ance	Breed Guild	IBI Group	No. Fish	Rel. No.	% by No.	Rel. Wt.	% by Wt.	Av. Wt.
40-010	GOLDEN REDHORSE	I	M	S	R	2	3.0	1.39	247	1.04	82.5
40-015	NORTHERN HOG SUCKER	I	M	S	R	9	13.5	6.25	540	2.27	40.0
43-001	COMMON CARP	O	T	M	G	4	6.0	2.78	20400	85.68	3400.0
43-008	STREAMLINE CHUB	I	R	S	N	5	7.5	3.47	45	0.19	6.0
43-021	SILVER SHINER	I	I	S	N	5	7.5	3.47	15	0.06	2.0
43-025	STRIPED SHINER	I		S	N	13	19.5	9.03	172	0.72	8.8
43-035	MIMIC SHINER	I	I	M	N	2	3.0	1.39	6	0.03	2.0
43-043	BLUNTNOSE MINNOW	O	T	C	N	33	49.5	22.92	97	0.41	1.9
43-044	CENTRAL STONEROLLER	H		N	N	3	4.5	2.08	112	0.47	25.0
77-003	ROCK BASS	C		C	S	7	10.5	4.86	945	3.97	90.0
77-004	SMALLMOUTH BASS	C	M	C	F	6	9.0	4.17	135	0.57	15.0
77-008	GREEN SUNFISH	I	T	C	S	3	4.5	2.08	112	0.47	25.0
77-009	BLUEGILL SUNFISH	I	P	C	S	3	4.5	2.08	90	0.38	20.0
77-011	LONGEAR SUNFISH	I	M	C	S	7	10.5	4.86	397	1.67	37.8
80-011	LOGPERCH	I	M	S	D	26	39.0	18.06	435	1.83	11.1
80-015	GREENSIDE DARTER	I	M	S	D	9	13.5	6.25	45	0.19	3.3
80-016	BANDED DARTER	I	I	S	D	2	3.0	1.39	3	0.01	1.0
80-020	TIPPECANOE DARTER	I	R	S	D	1	1.5	0.69	1	0.01	1.0
80-022	RAINBOW DARTER	I	M	S	D	1	1.5	0.69	1	0.01	1.0
80-024	FANTAIL DARTER	I		C	D	3	4.5	2.08	7	0.03	1.6

No Species: 20 **Nat. Species:** 19 **Hybrids:** 0 **Total Counted:** 144 **Total Rel. Wt. :** 23809

IBI: 44.0 **MIwb:** 6.4

Appendix Table B-3. Midwest Biodiversity Institute Fish Species List

Site ID: River: 02-100 Big Walnut Creek RM: 22.05 Date: 08/22/2016

Time Fished: 2096 Distance: 0.200 Drainge (sq mi): 249.0 Depth: 0

Location: Ust Livingston Ave Lat: 39.94315 Long: -82.85677

Species Code:	Species Name:	Feed Guild	Toler-ance	Breed Guild	IBI Group	No. Fish	Rel. No.	% by No.	Rel. Wt.	% by Wt.	Av. Wt.
20-003	GIZZARD SHAD	O		M		3	4.5	1.23	525	7.97	116.6
40-015	NORTHERN HOG SUCKER	I	M	S	R	13	19.5	5.35	1200	18.22	61.5
40-018	SPOTTED SUCKER	I		S	R	1	1.5	0.41	900	13.67	600.0
43-008	STREAMLINE CHUB	I	R	S	N	4	6.0	1.65	75	1.14	12.5
43-021	SILVER SHINER	I	I	S	N	7	10.5	2.88	15	0.23	1.4
43-025	STRIPED SHINER	I		S	N	12	18.0	4.94	135	2.05	7.5
43-032	SPOTFIN SHINER	I		M	N	4	6.0	1.65	37	0.57	6.2
43-043	BLUNTNOST MINNOW	O	T	C	N	1	1.5	0.41	7	0.11	5.0
43-044	CENTRAL STONEROLLER	H		N	N	68	102.0	27.98	870	13.21	8.5
47-012	BRINDLED MADTOM	I	I	C		3	4.5	1.23	15	0.23	3.3
77-003	ROCK BASS	C		C	S	7	10.5	2.88	990	15.03	94.2
77-004	SMALLMOUTH BASS	C	M	C	F	11	16.5	4.53	360	5.47	21.8
77-008	GREEN SUNFISH	I	T	C	S	12	18.0	4.94	301	4.58	16.7
77-009	BLUEGILL SUNFISH	I	P	C	S	2	3.0	0.82	30	0.46	10.0
77-011	LONGEAR SUNFISH	I	M	C	S	9	13.5	3.70	772	11.73	57.2
80-011	LOGPERCH	I	M	S	D	9	13.5	3.70	120	1.82	8.8
80-014	JOHNNY DARTER	I		C	D	2	3.0	0.82	3	0.05	1.0
80-015	GREENSIDE DARTER	I	M	S	D	19	28.5	7.82	127	1.94	4.4
80-016	BANDED DARTER	I	I	S	D	25	37.5	10.29	45	0.68	1.2
80-020	TIPPECANOE DARTER	I	R	S	D	2	3.0	0.82	3	0.05	1.0
80-022	RAINBOW DARTER	I	M	S	D	11	16.5	4.53	22	0.34	1.3
80-024	FANTAIL DARTER	I		C	D	18	27.0	7.41	30	0.46	1.1

No Species: 22 **Nat. Species:** 22 **Hybrids:** 0 **Total Counted:** 243 **Total Rel. Wt. :** 6585

IBI: 50.0 **MIwb:** 8.8

Appendix Table B-3. Midwest Biodiversity Institute

Fish Species List

Site ID: River: 02-100 Big Walnut Creek RM: 22.05 Date: 10/12/2016

Time Fished: 2135 Distance: 0.200 Drainge (sq mi): 249.0 Depth: 0

Location: Ust Livingston Ave Lat: 39.94315 Long: -82.85677

Species Code:	Species Name:	Feed Guild	Toler-ance	Breed Guild	IBI Group	No. Fish	Rel. No.	% by No.	Rel. Wt.	% by Wt.	Av. Wt.
20-003	GIZZARD SHAD	O		M		6	9.0	3.30	1215	10.22	135.0
40-009	BLACK REDHORSE	I	I	S	R	1	1.5	0.55	120	1.01	80.0
40-010	GOLDEN REDHORSE	I	M	S	R	1	1.5	0.55	6	0.05	4.0
40-015	NORTHERN HOG SUCKER	I	M	S	R	18	27.0	9.89	1320	11.10	48.8
43-001	COMMON CARP	O	T	M	G	1	1.5	0.55	5700	47.95	3800.0
43-008	STREAMLINE CHUB	I	R	S	N	4	6.0	2.20	37	0.32	6.2
43-021	SILVER SHINER	I	I	S	N	8	12.0	4.40	18	0.15	1.5
43-025	STRIPED SHINER	I		S	N	1	1.5	0.55	4	0.04	3.0
43-034	SAND SHINER	I	M	M	N	2	3.0	1.10	1	0.01	0.5
43-043	BLUNTNOSE MINNOW	O	T	C	N	3	4.5	1.65	7	0.06	1.6
43-044	CENTRAL STONEROLLER	H		N	N	51	76.5	28.02	1575	13.25	20.5
70-001	BROOK SILVERSIDE	I	M	M		4	6.0	2.20	4	0.04	0.7
77-003	ROCK BASS	C		C	S	2	3.0	1.10	405	3.41	135.0
77-004	SMALLMOUTH BASS	C	M	C	F	6	9.0	3.30	585	4.92	65.0
77-006	LARGEMOUTH BASS	C		C	F	1	1.5	0.55	112	0.95	75.0
77-008	GREEN SUNFISH	I	T	C	S	1	1.5	0.55	45	0.38	30.0
77-011	LONGEAR SUNFISH	I	M	C	S	5	7.5	2.75	270	2.27	36.0
80-011	LOGPERCH	I	M	S	D	17	25.5	9.34	315	2.65	12.3
80-014	JOHNNY DARTER	I		C	D	2	3.0	1.10	3	0.03	1.0
80-015	GREENSIDE DARTER	I	M	S	D	10	15.0	5.49	75	0.63	5.0
80-016	BANDED DARTER	I	I	S	D	19	28.5	10.44	27	0.23	0.9
80-019	BLUEBREAST DARTER	I	R	S	D	1	1.5	0.55	4	0.04	3.0
80-020	TIPPECANOE DARTER	I	R	S	D	1	1.5	0.55	1	0.01	1.0
80-022	RAINBOW DARTER	I	M	S	D	11	16.5	6.04	22	0.19	1.3
80-024	FANTAIL DARTER	I		C	D	6	9.0	3.30	12	0.10	1.3

No Species: 25 **Nat. Species:** 24 **Hybrids:** 0 **Total Counted:** 182 **Total Rel. Wt. :** 11887

IBI: 50.0 **MIwb:** 8.1

Appendix Table B-3. Midwest Biodiversity Institute Fish Species List

Site ID: River: 02-281 Dysart Run RM: 2.90 Date: 08/16/2016

Time Fished: 1184 Distance: 0.150 Drainge (sq mi): 1.8 Depth: 0

Location: Dst. Chapel Stone Rd. Lat: 39.99690 Long: -82.78750

Species Code:	Species Name:	Feed Guild	Toler-ance	Breed Guild	IBI Group	No. Fish	Rel. No.	% by No.	Rel. Wt.	% by Wt.	Av. Wt.
40-016	WHITE SUCKER	O	T	S	W	1	2.0	0.36	0	0.00	0.0
43-011	WESTERN BLACKNOSE DACE	G	T	S	N	1	2.0	0.36	0	0.00	0.0
43-013	CREEK CHUB	G	T	N	N	78	156.0	28.06	0	0.00	0.0
43-044	CENTRAL STONEROLLER	H		N	N	67	134.0	24.10	0	0.00	0.0
47-004	YELLOW BULLHEAD	I	T	C		2	4.0	0.72	0	0.00	0.0
77-006	LARGEMOUTH BASS	C		C	F	9	18.0	3.24	0	0.00	0.0
77-008	GREEN SUNFISH	I	T	C	S	13	26.0	4.68	0	0.00	0.0
77-009	BLUEGILL SUNFISH	I	P	C	S	17	34.0	6.12	0	0.00	0.0
90-002	MOTTLED SCULPIN	I		C		90	180.0	32.37	0	0.00	0.0

No Species: 9 **Nat. Species:** 9 **Hybrids:** 0 **Total Counted:** 278 **Total Rel. Wt. :** 0

IBI: 44.0 **MIwb:** N/A

Appendix Table B-3. Midwest Biodiversity Institute

Fish Species List

Site ID: JR01 River: 02-289 L. Jordan Run (UT Blacklick Cr. at 12.89) RM: 0.15 Date: 08/04/2016

Time Fished: Distance: Drainge (sq mi): Depth:

Location: 1322 0.120 Lat: 2.0 Long: 0

Dst. Livingston House Trib 40.62390 -83.64890

Species Code:	Species Name:	Feed Guild	Tolerance	Breed Guild	IBI Group	No. Fish	Rel. No.	% by No.	Rel. Wt.	% by Wt.	Av. Wt.
40-016	WHITE SUCKER	O	T	S	W	10	25.0	2.43	0	0.00	0.0
43-011	WESTERN BLACKNOSE DACE	G	T	S	N	121	302.5	29.44	0	0.00	0.0
43-013	CREEK CHUB	G	T	N	N	54	135.0	13.14	0	0.00	0.0
43-044	CENTRAL STONEROLLER	H		N	N	68	170.0	16.55	0	0.00	0.0
80-014	JOHNNY DARTER	I		C	D	48	120.0	11.68	0	0.00	0.0
80-022	RAINBOW DARTER	I	M	S	D	25	62.5	6.08	0	0.00	0.0
90-002	MOTTLED SCULPIN	I		C		85	212.5	20.68	0	0.00	0.0

No Species: 7 **Nat. Species:** 7 **Hybrids:** 0 **Total Counted:** 411 **Total Rel. Wt. :** 0

IBI: 46.0 **MIwb:** N/A

Appendix Table B-3. Midwest Biodiversity Institute

Fish Species List

Site ID: River: 02-291 N. Br. French Run RM: 0.16 Date: 08/04/2016

Time Fished: 2348 Distance: 0.150 Drainge (sq mi): 2.7 Depth: 0

Location: behind French Run School Lat: 39.95890 Long: -82.79780

Species Code:	Species Name:	Feed Guild	Toler-ance	Breed Guild	IBI Group	No. Fish	Rel. No.	% by No.	Rel. Wt.	% by Wt.	Av. Wt.
40-016	WHITE SUCKER	O	T	S	W	34	68.0	9.47	0	0.00	0.0
43-011	WESTERN BLACKNOSE DACE	G	T	S	N	19	38.0	5.29	0	0.00	0.0
43-013	CREEK CHUB	G	T	N	N	90	180.0	25.07	0	0.00	0.0
43-025	STRIPED SHINER	I		S	N	3	6.0	0.84	0	0.00	0.0
43-044	CENTRAL STONEROLLER	H		N	N	59	118.0	16.43	0	0.00	0.0
77-003	ROCK BASS	C		C	S	1	2.0	0.28	0	0.00	0.0
77-006	LARGEMOUTH BASS	C		C	F	3	6.0	0.84	0	0.00	0.0
77-008	GREEN SUNFISH	I	T	C	S	25	50.0	6.96	0	0.00	0.0
77-009	BLUEGILL SUNFISH	I	P	C	S	4	8.0	1.11	0	0.00	0.0
80-014	JOHNNY DARTER	I		C	D	8	16.0	2.23	0	0.00	0.0
80-022	RAINBOW DARTER	I	M	S	D	37	74.0	10.31	0	0.00	0.0
90-002	MOTTLED SCULPIN	I		C		76	152.0	21.17	0	0.00	0.0

No Species: 12 **Nat. Species:** 12 **Hybrids:** 0 **Total Counted:** 359 **Total Rel. Wt. :** 0

IBI: 48.0 **MIwb:** N/A

Appendix Table B-3. Midwest Biodiversity Institute

Fish Species List

Site ID: UT01 River: 02-910 Unnamed Tributary to Big Walnut Cr. RM: 0.01 Date: 08/04/2016
 Time Fished: Distance: @RM 37.13 Drainge (sq mi): Depth:
 Location: 591 0.150 Lat: 1.0 Long: 0
 Ust mouth Adj Central College Ave. 40.10303 -82.88201

Species Code:	Species Name:	Feed Guild	Tolerance	Breed Guild	IBI Group	No. Fish	Rel. No.	% by No.	Rel. Wt.	% by Wt.	Av. Wt.
40-016	WHITE SUCKER	O	T	S	W	12	24.0	6.12	0	0.00	0.0
43-011	WESTERN BLACKNOSE DACE	G	T	S	N	63	126.0	32.14	0	0.00	0.0
43-013	CREEK CHUB	G	T	N	N	89	178.0	45.41	0	0.00	0.0
43-016	SOUTH. REDBELLY DACE	H		S	N	4	8.0	2.04	0	0.00	0.0
43-044	CENTRAL STONEROLLER	H		N	N	21	42.0	10.71	0	0.00	0.0
77-008	GREEN SUNFISH	I	T	C	S	5	10.0	2.55	0	0.00	0.0
80-014	JOHNNY DARTER	I		C	D	2	4.0	1.02	0	0.00	0.0

No Species: 7 **Nat. Species:** 7 **Hybrids:** 0 **Total Counted:** 196 **Total Rel. Wt. :** 0
IBI: 40.0 **MIwb:** N/A

Appendix Table B-3. Midwest Biodiversity Institute
Fish Species List

Site ID:	UT02	River:	02-911	Livingston House Trib	RM:	0.05	Date:	08/04/2016			
Time Fished:	254	Distance:	0.150	Drainge (sq mi):	0.1	Depth:	0				
Location:	Ust mouth Dst. Livingston Park				Lat:	39.94692	Long:	-82.79525			
Species Code:	Species Name:	Feed Guild	Toler-ance	Breed Guild	IBI Group	No. Fish	Rel. No.	% by No.	Rel. Wt.	% by Wt.	Av. Wt.
99-999	NO FISH					0	0.0	***. **	0	0.00	*****. *
No Species: 0		Nat. Species: 1		Hybrids: 0		Total Counted:		0	Total Rel. Wt. :		0
IBI: 12.0		MIwb: N/A									

Appendix Table B-3. Midwest Biodiversity Institute

Fish Species List

Site ID: UT03 River: 02-914 E. Windsor Ditch (Big Walnut RM: 0.05 Date: 08/04/2016
 Tributary @RM 28.33)
 Time Fished: Distance: Drainage (sq mi): Depth:
 Location: 991 0.150 1.0 0
 Ust. Big Walnut Creek Trail 40.01249 -82.87657

Species Code:	Species Name:	Feed Guild	Tolerance	Breed Guild	IBI Group	No. Fish	Rel. No.	% by No.	Rel. Wt.	% by Wt.	Av. Wt.
40-016	WHITE SUCKER	O	T	S	W	25	50.0	17.61	220	19.13	4.4
43-011	WESTERN BLACKNOSE DACE	G	T	S	N	3	6.0	2.11	16	1.39	2.6
43-013	CREEK CHUB	G	T	N	N	89	178.0	62.68	680	59.13	3.8
43-044	CENTRAL STONEROLLER	H		N	N	6	12.0	4.23	50	4.35	4.1
77-006	LARGEMOUTH BASS	C		C	F	7	14.0	4.93	40	3.48	2.8
77-008	GREEN SUNFISH	I	T	C	S	3	6.0	2.11	120	10.43	20.0
80-014	JOHNNY DARTER	I		C	D	9	18.0	6.34	24	2.09	1.3

No Species: 7 Nat. Species: 7 Hybrids: 0 Total Counted: 142 Total Rel. Wt. : 1150
 IBI: 30.0 MIwb: N/A

Appendix B-3: Midwest Biodiversity Institute

Fish Species List - Grand Totals

Rivers: *Big Walnut Creek; Dysart Run; L. Jordan Run (UT Blacklick Cr. at 12.89); N. Br. French Run; Unnamed Tributary to Big Walnut Cr. @RM 37.13; Livingston House Trib; E. Windsor Ditch (Big Walnut Tributary @RM 28.33)*

Years: 2016

Number of Samples: 16 **Data Sources:** 99 **Data Types:** D; F; P

Species Code:	Species Name:	Feed Guild	Tolerance	Breed Guild	IBI Group	No. Fish	Rel. No.	% by No.	Rel. Wt.	% by Wt.	Av. Wt.
77-006	LARGEMOUTH BASS	C		C	F	29	8.4	0.84	57	0.27	6.8
77-008	GREEN SUNFISH	I	T	C	S	151	43.5	4.39	407	1.92	9.3
77-009	BLUEGILL SUNFISH	I	P	C	S	89	25.6	2.58	357	1.68	13.9
77-010	ORANGESPOTTED SUNFISH	I		C	S	1	0.3	0.03	4	0.02	15.0
77-011	LONGEAR SUNFISH	I	M	C	S	105	30.2	3.05	1146	5.39	37.9
80-003	YELLOW PERCH			M		1	0.1	0.03	3	0.05	40.0
80-011	LOGPERCH	I	M	S	D	107	30.8	3.11	371	1.75	12.0
80-014	JOHNNY DARTER	I		C	D	89	7.7	2.58	3	0.05	0.3
80-015	GREENSIDE DARTER	I	M	S	D	129	37.2	3.75	139	0.66	3.7
80-016	BANDED DARTER	I	I	S	D	96	27.7	2.79	32	0.15	1.1
80-017	VARIEGATE DARTER	I	I	S	D	1	0.3	0.03	1	0.01	5.0
80-019	BLUEBREAST DARTER	I	R	S	D	13	3.7	0.38	6	0.03	1.8
80-020	TIPPECANOE DARTER	I	R	S	D	19	5.5	0.55	4	0.02	0.7
80-022	RAINBOW DARTER	I	M	S	D	108	31.1	3.14	18	0.09	0.5
80-024	FANTAIL DARTER	I		C	D	44	3.8	1.28	4	0.08	1.2
80-026	SAUGER X WALLEYE	P			E	4	1.2	0.12	210	0.99	182.5
85-001	FRESHWATER DRUM		P	M		2	0.6	0.06	302	1.42	525.0
90-002	MOTTLED SCULPIN	I		C		251	21.6	7.29	0	0.00	0.0
99-999	NO FISH					0	0.0	0.00	0	0.00	*****.*

No Species: 58 **Nat. Species:** 56 **Hybrids:** 1 **Total Counted:** 3443 **Total Rel. Wt. :** 19815

Appendix C

Big Walnut Creek Habitat Assessment Results

C-1: QHEI Scores and Metrics

Appendix D-1. QHEI metric scores for sites sampled by MBI in the Big Walnut study study area in 2016.

River Mile	QHEI	QHEI Metrics:							Gradient & Score	Narrative
		Substrate	Cover	Channel	Riparian	Pool	Riffle			
(02100) Big Walnut Creek										
Year:2016										
21.80	71.75	14.0	13.0	17.0	7.75	5.0	5.0	8.83 - (10)	Good	
22.05	82.25	15.0	15.0	17.0	6.75	11.0	7.5	8.84 - (10)	Excellent	
21.82	79.00	15.0	15.0	16.0	6.00	11.0	6.0	8.82 - (10)	Excellent	
21.65	83.50	14.0	18.0	17.5	6.50	12.0	5.5	8.79 - (10)	Excellent	
15.90	87.50	17.0	18.0	16.5	7.50	12.0	6.5	8.11 - (10)	Excellent	
9.70	84.75	17.5	15.0	17.0	7.75	10.0	7.5	7.98 - (10)	Excellent	
9.70	82.50	17.0	16.0	16.5	5.50	11.0	6.5	7.98 - (10)	Excellent	
(02281) Dysart Run										
Year:2016										
2.90	65.50	16.0	15.0	15.0	5.50	6.0	4.0	41.40 - (4)	Good	
(02289) L. Jordan Run (UT Blacklick Cr. at 12.89)										
Year:2016										
0.15	67.50	17.0	15.0	14.0	5.00	6.0	6.5	49.80 - (4)	Good	
(02291) N. Br. French Run										
Year:2016										
0.16	80.50	18.0	20.0	17.0	6.00	10.0	5.5	51.10 - (4)	Excellent	
(02292) Unnamed Trib to Dysart Run @ RM 2.58										
Year:2016										
0.10	76.50	17.0	16.0	19.0	5.50	6.0	5.0	38.10 - (8)	Excellent	
(02910) Unnamed Tributary to Big Walnut Cr. @RM 37.13										
Year:2016										
0.01	68.50	14.0	15.0	17.0	6.50	9.0	3.0	71.40 - (4)	Good	
(02911) Livingston House Trib										
Year:2016										
0.05	61.00	17.0	12.0	15.0	6.00	3.0	4.0	100.0 - (4)	Good	
(02914) E. Windsor Ditch (Big Walnut Tributary @RM 28.33)										
Year:2016										
0.05	54.00	16.0	15.0	12.0	5.00	2.0	0.0	41.70 - (4)	Fair	