



# OWQ/WAPB Macroinvertebrate Community Assessment MHAB Report

Site Name	EPA ID	Macro Sample Type	Sample #	Macro Event #	Sample Date	County
WEL-08-0026	16T-022	MHAB	AB26682	160920401	9/20/16	Lawrence

Stream Name	Location	HUC 12	HUCTO14
Pleasant Run	Peerless Rd	051202080806	05120208090090

Northing	Easting	Ecoregion	Gradient	Drainage Area	QHEI Score
4306262.5	544056.25	71	7.446	9.067	51

Taxon	Count	Notes	HBI Tolerance
1084 (TURBELLARIA)	1		4
1234 (GLOSSIPHONIIDAE)	2		
2272 (Planorbella)	7		
2252 (Physella)	24		8
1092 (PISIDIIDAE)	1		8
1083 (ACARI)	1		4
9031 (Lirceus)	5		8
9050 (Hyalella)	2		
1251 (ISOTOMIDAE)	1		
3081 (Callibaetis)	6		6
3183 (Caenis)	94		3
3189 (Caenis punctata)	1	Slide 0346.1	
1120 (ANISOPTERA)	2		
3282 (Plathemis lydia)	9		8
3305 (Erythemis simplicicollis)	6		
1026 (COENAGRIONIDAE)	2		9
3540 (Ischnura)	7		9
7031 (Ischnura verticalis)	6		
3560 (Enallagma basidens)	4		
3568 (Argia)	1		5
3572 (Argia tibialis)	2		
7208 (Belostoma flumineum)	2		4
7220 (Ranatra nigra)	1		4
3600 (Peltodytes duodecimpunctatus)	6	6A	
9110 (Laccophilus maculosus)	1	1A	8
3846 (Berosus)	8	8L	7
3851 (Berosus peregrinus)	4	4A	6
3887 (E. pygmaeus nebulosus)	2	2A	
3959 (Helichus lithophilus)	1	1A	
7309 (Stenelmis crenata)	1	1A; Slide 0346.2	5
3432 (Cheumatopsyche)	1		3
1054 (HYDROPTILIDAE)	1		4
1060 (LEPTOCERIDAE)	2		4
8937 (Triaenodes)	2	1P	
7926 (Tanypodinae (Subfamily))	2		
8238 (Rheotanytarsus)	1		3
8241 (Tanytarsus)	1		4
9260 (Cricotopus (Cricotopus) /Orthocladius (Orthocladius))	5	1P	

Type	Value	Metric Score
Total Taxa:	38	3
Total No. Individuals:	225	3
EPT Taxa:	7	3
% Orthocladiinae + Tanytarsini of Chironomidae:	22.22	5
% Non-insects excluding Astacidae:	19.11	3
Diptera Taxa:	4	1
% Intolerant (0-3):	42.67	5
% Tolerant (8-10):	21.78	3
% Predators FFG 1:	22.67	3
% Shredders + Scrapers FFG 1:	14.22	3
% Collector-Filterers FFG 1:	1.78	5
% Sprawlers:	0	1
<b>mIBI Metric Score:</b>		<b>38</b>

### Supplemental Metrics

	HBI	
	4.89	
Shannon-Weaver Index		3.64
Shannon Equitability		0.39
% Dominant 3 Taxon		56.44
% Chironomidae		4



# OWQ/WAPB Macroinvertebrate Community Assessment MHAB Report

Site Name	EPA ID	Macro Sample Type	Sample #	Macro Event #	Sample Date	County
WEL-08-0005	16T-001	MHAB	AB26671	160829301	8/29/16	Monroe

Stream Name	Location	HUC 12	HUCTO14
Clear Creek	SR 37	051202080802	05120208090020

Northing	Easting	Ecoregion	Gradient	Drainage Area	QHEI Score
4327587.01	539240.66	71	9.978	25.654	75

Taxon	Count	Notes	HBI Tolerance
1260 (NEMATODA)	1		6
1396 (LUMBRICULIDAE)	1		5
1233 (ERPOBDELLIDAE)	1		
2215 (Elimia)	23		
2156 (Corbicula fluminea)	1		6
9031 (Lirceus)	44		8
9056 (Crangonyx)	1		6
8996 (Orconectes)	2	1M, 1J	4
1017 (HEPTAGENIIDAE)	1		4
3020 (Stenonema femoratum)	3		3
3049 (Stenacron interpunctatum)	2		7
1012 (BAETIDAE)	1		4
9129 (Acerpenna)	1		4
3386 (Pseudocloeon longipalpus)	3		
3066 (Baetis intercalaris)	4		3
3071 (Baetis flavistriga)	2		3
3188 (Caenis latipennis)	2		
7026 (Calopteryx maculata)	1		
3549 (Enallagma divagans)	1		
7293 (Psephenus herricki)	15	15L	4
7307 (Stenelmis)	5	5L	5
7309 (Stenelmis crenata)	32	32A; Slides 0344.1, 0344.2, 0.44.3	5
7300 (Dubiraphia vittata)	8	8A; Slide 0344.4	
7304 (Optioservus fastiditus)	1	1A	2
7295 (Ancyronyx variegatus)	1	1A	4
3267 (Chimarra obscura)	3		4
3432 (Cheumatopsyche)	1		3
3423 (Hydropsyche)	2		4
8980 (Hydropsyche betteni grp)	6		
9319 (Ceratopsyche "checkerboard" grp)	2		
3000 (Hydroptila)	1		3
9300 (Natarsia sp A)	1		
9261 (Thienemannimyia grp.)	7		
8112 (Dicrotendipes)	1		6
8238 (Rheotanytarsus)	7		3
8241 (Tanytarsus)	3	1P	4
9238 (Polypedilum (Uresipedilum) flavum)	18		

Type	Value	Metric Score
Total Taxa:	37	3
Total No. Individuals:	209	3
EPT Taxa:	15	5
% Orthoclaadiinae + Tanytarsini of Chironomidae:	27.03	3
% Non-insects excluding Astacidae:	34.45	3
Diptera Taxa:	6	1
% Intolerant (0-3):	9.09	1
% Tolerant (8-10):	21.05	3
% Predators FFG 1:	1.44	1
% Shredders + Scrapers FFG 1:	26.32	5
% Collector-Filterers FFG 1:	8.13	5
% Sprawlers:	0	1
<b>MIBI Metric Score:</b>		<b>34</b>

### Supplemental Metrics

	HBI	
	5.53	
Shannon-Weaver Index		4.04
Shannon Equitability		0.43
% Dominant 3 Taxon		47.37
% Chironomidae		17.7



**OWQ/WAPB Macroinvertebrate Community Assessment  
MHAB Report**

<i>Site Name</i>	<i>EPA ID</i>	<i>Macro Sample Type</i>	<i>Sample #</i>	<i>Macro Event #</i>	<i>Sample Date</i>	<i>County</i>
WEL-08-0008	16T-004	MHAB	AB26675	160829302	8/29/16	Monroe
<i>Stream Name</i>		<i>Location</i>		<i>HUC 12</i>	<i>HUCTO14</i>	
Clear Creek		W Country Club Dr		051202080801	05120208090010	
<i>Northing</i>	<i>Easting</i>	<i>Ecoregion</i>	<i>Gradient</i>	<i>Drainage Area</i>	<i>QHEI Score</i>	
4331985.69	540311.16	71	20.847	5.788	41	

<b>Taxon</b>	<b>Count</b>	<b>Notes</b>	<b>HBI Tolerance</b>
1396 (LUMBRICULIDAE)	5		5
1234 (GLOSSIPHONIIDAE)	4		
9031 (Lirceus)	11		8
8996 (Orconectes)	4	2MII, 2F	4
1017 (HEPTAGENIIDAE)	1	Damaged	4
3066 (Baetis intercalaris)	1		3
3071 (Baetis flavistriga)	7		3
3248 (Basiaeschna janata)	2		6
7026 (Calopteryx maculata)	2		
1026 (COENAGRIONIDAE)	1		9
7307 (Stenelmis)	1	1L	5
7309 (Stenelmis crenata)	12	12A; Slides 0342.1, 0342.2	5
3267 (Chimarra obscura)	6		4
8980 (Hydropsyche betteni grp)	5		
1072 (TIPULIDAE)	1	1P	3
9285 (Tipula (Yamatotipula))	2		
7814 (Simulium)	1		5
9300 (Natarsia sp A)	1		
7926 (Tanypodinae (Subfamily))	3		
8082 (Chironominae (Subfamily))	1		
9261 (Thienemannimyia grp.)	1		
9338 (Cricotopus (Isocladius) ozarks)	1		
8006 (Orthocladiinae (Subfamily))	1		
8051 (Orthocladius)	1		4
8238 (Rheotanytarsus)	4	1P	3
8241 (Tanytarsus)	1		4
9260 (Cricotopus (Cricotopus) /Orthocladius (Orthocladius))	7		
9238 (Polypedilum (Uresipedilum) flavum)	3		
9241 (Polypedilum (Polypedilum) illinoense grp.)	7		
9257 (Cricotopus (Cricotopus))	6		
8397 (Hemerodromia)	1		

<b>Type</b>	<b>Value</b>	<b>Metric Score</b>
<b>Total Taxa:</b>	31	3
<b>Total No. Individuals:</b>	104	1
<b>EPT Taxa:</b>	5	3
<b>% Orthocladiinae + Tanytarsini of Chironomidae:</b>	18.92	5
<b>% Non-insects excluding Astaciidae:</b>	19.23	3
<b>Diptera Taxa:</b>	17	5
<b>% Intolerant (0-3):</b>	12.5	1
<b>% Tolerant (8-10):</b>	11.54	5
<b>% Predators FFG 1:</b>	11.54	1
<b>% Shredders + Scrapers FFG 1:</b>	12.5	3
<b>% Collector-Filterers FFG 1:</b>	11.54	3
<b>% Sprawlers:</b>	0.96	1
<b>mIBI Metric Score:</b>		<b>34</b>

**Supplemental Metrics**

	<b>HBI</b>
	5
<b>Shannon-Weaver Index</b>	4.45
<b>Shannon Equitability</b>	0.48
<b>% Dominant 3 Taxon</b>	28.85
<b>% Chironomidae</b>	35.58



# OWQ/WAPB Macroinvertebrate Community Assessment MHAB Report

Site Name	EPA ID	Macro Sample Type	Sample #	Macro Event #	Sample Date	County
WEL-08-0033	16T-026	MHAB	AB26677	160919301	9/19/16	Lawrence

Stream Name	Location	HUC 12	HUOTO14
Salt Creek	Old SR 450/Old Williams Rd	051202080807	05120208090120

Northing	Easting	Ecoregion	Gradient	Drainage Area	QHEI Score
4298988.57	539142.18	71	0.471	627.267	43

Taxon	Count	Notes	HBI Tolerance	Type	Value	Metric Score
1426 (Branchiura sowerbyi)	1		6	<b>Total Taxa:</b>	20	1
2225 (Fossaria)	1		6	<b>Total No. Individuals:</b>	55	1
1092 (PISIDIIDAE)	1		8	<b>EPT Taxa:</b>	2	1
9050 (Hyalella)	1			<b>% Orthoclaadiinae + Tanytarsini of Chironomidae:</b>	8.7	5
3020 (Stenonema femoratum)	1		3	<b>% Non-insects excluding Astacidae:</b>	7.27	5
3049 (Stenacron interpunctatum)	4		7	<b>Diptera Taxa:</b>	7	3
3568 (Argia)	1		5	<b>% Intolerant (0-3):</b>	7.27	1
3572 (Argia tibialis)	6			<b>% Tolerant (8-10):</b>	1.82	5
3946 (Cyphon)	3	3L		<b>% Predators FFG 1:</b>	18.18	3
7300 (Dubiraphia vittata)	2	2A; Slide 0333.1		<b>% Shredders + Scrapers FFG 1:</b>	7.27	1
9326 (Dubiraphia minima grp)	1	1A; Slide 0333.2		<b>% Collector-Filterers FFG 1:</b>	7.27	5
7295 (Ancyronyx variegatus)	3	3A	4	<b>% Sprawlers:</b>	0	1
7321 (Macronychus glabratus)	3	3A	3	<b>mIBI Metric Score: 32</b>		
7732 (Anopheles)	1					
7893 (Probezzia)	3					
9250 (Ablabesmyia (Ablabesmyia) rhamphae grp.)	1					
9284 (Tribelos jucundus)	1					
8241 (Tanytarsus)	2		4			
9277 (Polypedilum (Tripodura) scalaenum grp)	1					
9241 (Polypedilum (Polypedilum) illinoense grp.)	18					

**Supplemental Metrics**

	HBI	5
Shannon-Weaver Index		3.57
Shannon Equitability		0.38
% Dominant 3 Taxon		50.91
% Chironomidae		41.82



# OWQ/WAPB Macroinvertebrate Community Assessment MHAB Report

Site Name	EPA ID	Macro Sample Type	Sample #	Macro Event #	Sample Date	County
WEL-08-0017	16T-013	MHAB	AB26678	160920102	9/20/16	Monroe

Stream Name	Location	HUC 12	HUCTO14
Little Clear Creek	E Monroe Dam Rd	051202080803	05120208090030

Northing	Easting	Ecoregion	Gradient	Drainage Area	QHEI Score
4319261.11	540624.79	71	17.937	5.702	70

Taxon	Count	Notes	HBI Tolerance
1422 (Aulodrilus plurisetia)	1		7
9031 (Lirceus)	13		8
9068 (Gammarus)	3		6
3020 (Stenonema femoratum)	1		3
3386 (Pseudocloeon longipalpus)	2		
3066 (Baetis intercalaris)	1		3
3166 (Eurylophella)	6		2
3183 (Caenis)	3		3
7026 (Calopteryx maculata)	8		
3348 (Acroneuria)	1		1
7122 (Microvelia)	1		
3740 (Heterosternuta pulcher)	4	4A	
3960 (Helichus basalis)	1	1A	
7293 (Psephenus herricki)	1	1L	4
7309 (Stenelmis crenata)	1	1A; Slide 0338.1	5
9326 (Dubiraphia minima grp)	4	4A; Slide 0338.2	
1057 (HYDROPSYCHIDAE)	1		4
3432 (Cheumatopsyche)	3		3
9261 (Thienemannimyia grp.)	2		
8168 (Paratendipes albimanus)	1		4
8238 (Rheotanytarsus)	1		3
9237 (Polypedilum (Uresipedilum) aviceps)	1		
9238 (Polypedilum (Uresipedilum) flavum)	7		
9240 (Polypedilum (Polypedilum) fallax grp.)	1		
9241 (Polypedilum (Polypedilum) illinoense grp.)	2		

Type	Value	Metric Score
Total Taxa:	25	3
Total No. Individuals:	70	1
EPT Taxa:	8	5
% Orthoclaadiinae + Tanytarsini of Chironomidae:	6.67	5
% Non-insects excluding Astacidae:	24.29	3
Diptera Taxa:	7	3
% Intolerant (0-3):	22.86	3
% Tolerant (8-10):	18.57	3
% Predators FFG 1:	14.29	1
% Shredders + Scrapers FFG 1:	11.43	3
% Collector-Filterers FFG 1:	7.14	5
% Sprawlers:	0	1
<b>mIBI Metric Score:</b>		<b>36</b>

**Supplemental Metrics**

Metric	HBI	Value
Shannon-Weaver Index	HBI	5.03
Shannon Equitability		4.08
% Dominant 3 Taxon		0.44
% Chironomidae		40
		21.43



# OWQ/WAPB Macroinvertebrate Community Assessment

## MHAB Report

Site Name	EPA ID	Macro Sample Type	Sample #	Macro Event #	Sample Date	County
WEL-08-0025	16T-021	MHAB	AB26683	160920301	9/20/16	Lawrence

Stream Name	Location	HUC 12	HUCTO14
Gulletts Creek	Peerless Rd	051202080806	05120208090100

Northing	Easting	Ecoregion	Gradient	Drainage Area	QHEI Score
4308258.48	541725.65	71	1.466	12.57	55

Taxon	Count	Notes	HBI Tolerance
1526 (Slavina appendiculata)	1		6
1507 (Nais variabilis)	1		10
2252 (Physella)	1		8
2215 (Elimia)	17		
1092 (PISIDIIDAE)	1		8
1083 (ACARI)	1		4
9031 (Lirceus)	3		8
9056 (Crangonyx)	1		6
8996 (Orconectes)	1	1F	4
1017 (HEPTAGENIIDAE)	2		4
3069 (Baetis brunneicolor)	1	Slide 0347.1	4
3081 (Callibaetis)	4		6
3130 (Paraleptophlebia)	16		3
3166 (Eurylophella)	9		2
3183 (Caenis)	14		3
3188 (Caenis latipennis)	1		
3245 (Boyeria vinosa)	1		4
3248 (Basiaeschna janata)	1		6
7026 (Calopteryx maculata)	11		
3540 (Ischnura)	1		9
3568 (Argia)	7		5
3572 (Argia tibialis)	12		
9290 (Gerridae (Gerrinae))	2		
9186 (Neoporus tennetum)	1	1A	
7309 (Stenelmis crenata)	4	4A; Slide 0347.3	5
7300 (Dubiraphia vittata)	17	17A; Slide 0347.2, 238um	
3003 (Chimarra aterrima)	1		2
1057 (HYDROPSYCHIDAE)	1		4
3432 (Cheumatopsyche)	24		3
8980 (Hydropsyche betteni grp)	1		
9222 (Cernotina/Polycentropus)	1		
7732 (Anopheles)	2		
7926 (Tanypodinae (Subfamily))	4	1P	
9248 (Ablabesmyia (Ablabesmyia mallochi grp.))	1		
9261 (Thienemannimyia grp.)	1		
8086 (Chironomus)	1		8
9296 (Microtendipes pedellus grp)	1		
8235 (Paratanytarsus)	11		4
8241 (Tanytarsus)	4		4
9238 (Polypedilum (Uresipedilum flavum))	1		
9241 (Polypedilum (Polypedilum illinoense grp.))	12		

Type	Value	Metric Score
Total Taxa:	41	5
Total No. Individuals:	197	3
EPT Taxa:	12	5
% Orthocladiinae + Tanytarsini of Chironomidae:	41.67	3
% Non-insects excluding Astacidae:	13.2	5
Diptera Taxa:	10	3
% Intolerant (0-3):	32.49	5
% Tolerant (8-10):	4.06	5
% Predators FFG 1:	18.78	3
% Shredders + Scrapers FFG 1:	7.11	1
% Collector-Filterers FFG 1:	16.75	3
% Sprawlers:	0	1
<b>mIBI Metric Score:</b>		<b>42</b>

### Supplemental Metrics

	HBI	
	3.88	
Shannon-Weaver Index		4.48
Shannon Equitability		0.48
% Dominant 3 Taxon		29.44
% Chironomidae		18.27



# OWQ/WAPB Macroinvertebrate Community Assessment MHAB Report

Site Name	EPA ID	Macro Sample Type	Sample #	Macro Event #	Sample Date	County
WEL-08-0015	16T-011	MHAB	AB26672	160920104	9/20/16	Monroe

Stream Name	Location	HUC 12	HUCTO14
Clear Creek	S Gore Rd	051202080803	05120208090030

Northing	Easting	Ecoregion	Gradient	Drainage Area	QHEI Score
4318988.51	539477.54	71	4.047	60.963	68

Taxon	Count	Notes	HBI Tolerance
1507 (Nais variabilis)	1		10
2215 (Elimia)	3		
9031 (Lirceus)	18		8
9050 (Hyalella)	3		
3020 (Stenonema femoratum)	1		3
3049 (Stenacron interpunctatum)	3		7
7011 (Acerpenna pygmaea)	2		2
3183 (Caenis)	4		3
3175 (Tricorythodes)	4		3
3248 (Basiaeschna janata)	2		6
7027 (Hetaerina americana)	3		
7026 (Calopteryx maculata)	2		
3546 (Enallagma)	4		9
3549 (Enallagma divagans)	11		
3572 (Argia tibialis)	2		
7116 (Metrobates hesperius)	1		
7132 (Rhagovelia oriander)	1	1M	
7309 (Stenelmis crenata)	4	4A; Slide 0326.3	5
7317 (Stenelmis sexlineata)	6	6A	
7296 (Dubiraphia)	1	1L	5
7300 (Dubiraphia vittata)	14	14A; Slides 0326.1, 0326.2	
7295 (Ancyronyx variegatus)	6	5A, 1L	4
7321 (Macronychus glabratus)	4	4A	3
8926 (Oecetis)	3		3
8083 (Chironomini (Tribe))	7	1P	
9248 (Ablabesmyia (Ablabesmyia mallochi grp.))	1		
8006 (Orthocladiinae (Subfamily))	1	1P	
8112 (Dicrotendipes)	1		6
8206 (Stenochironomus)	1		4
8235 (Paratanytarsus)	1	1P	4
8238 (Rheotanytarsus)	2		3
8241 (Tanytarsus)	2		4
9240 (Polypedilum (Polypedilum fallax grp.))	1		
9241 (Polypedilum (Polypedilum illinoense grp.))	21		

Type	Value	Metric Score
Total Taxa:	34	3
Total No. Individuals:	141	3
EPT Taxa:	6	3
% Orthocladiinae + Tanytarsini of Chironomidae:	15.79	5
% Non-insects excluding Astacidae:	17.73	5
Diptera Taxa:	10	3
% Intolerant (0-3):	14.18	1
% Tolerant (8-10):	16.31	3
% Predators FFG 1:	19.86	3
% Shredders + Scrapers FFG 1:	3.55	1
% Collector-Filterers FFG 1:	2.84	5
% Sprawlers:	0	1
<b>MIBI Metric Score:</b>		<b>36</b>

### Supplemental Metrics

Metric	Value
HBI	5.5
Shannon-Weaver Index	4.41
Shannon Equitability	0.47
% Dominant 3 Taxon	37.59
% Chironomidae	26.95



# OWQ/WAPB Macroinvertebrate Community Assessment MHAB Report

Site Name	EPA ID	Macro Sample Type	Sample #	Macro Event #	Sample Date	County
WEL-08-0022	16T-018	MHAB	AB26665	160921501	9/21/16	Lawrence

Stream Name	Location	HUC 12	HUCTO14
Knob Creek	Bat Hollow Rd	051202080805	05120208090080

Northing	Easting	Ecoregion	Gradient	Drainage Area	QHEI Score
4311936.9	546241.4	71	13.323	6.532	49

Taxon	Count	Notes	HBI Tolerance
1552 (Tubificidae with bifid chetae and no hair chetae)	1		
1357 (BRANCHIOBDELLIDAE)	5		6
2252 (Physella)	1		8
9031 (Lirceus)	10		8
8996 (Orconectes)	2	2F	4
3020 (Stenonema femoratum)	7		3
3065 (Baetis)	1		3
3166 (Eurylophella)	1		2
3183 (Caenis)	4		3
3188 (Caenis latipennis)	4		
3245 (Boyeria vinosa)	1		4
3248 (Basiaeschna janata)	1		6
3054 (Gomphus)	4		5
7026 (Calopteryx maculata)	9		
3546 (Enallagma)	1		9
9095 (Argia fumipennis)	4		
7061 (Perlinella)	3		
3750 (Neoporus striatopunctatus)	1	1A	
3887 (E. pygmaeus nebulosus)	1	1A	
3946 (Cyphon)	3	3L	
3959 (Helichus lithophilus)	3	3A	
3960 (Helichus basalis)	6	6A	
7309 (Stenelmis crenata)	1	1A; Slide 0324.1	5
9266 (Stenelmis grossa)	1	1A; Slide 0324.2	
7296 (Dubiraphia)	1	1F	5
3797 (Nigronia serricornis)	1		4
3432 (Cheumatopsyche)	3		3
7610 (Hexatoma)	3		2
7814 (Simulium)	1		5
9248 (Ablabesmyia (Ablabesmyia mallochi grp.))	2		
8168 (Paratendipes albimanus)	1		4
8172 (Phaenopsectra)	1		7
8221 (Pseudochironomus)	1		5
8235 (Paratanytarsus)	2		4
8241 (Tanytarsus)	3		4
9260 (Cricotopus (Cricotopus) /Orthocladius (Orthocladius))	1		
9238 (Polypedilum (Uresipedilum) flavum)	1		
9241 (Polypedilum (Polypedilum) illinoense grp.)	2		

Type	Value	Metric Score
Total Taxa:	38	3
Total No. Individuals:	98	1
EPT Taxa:	7	3
% Orthocladiinae + Tanytarsini of Chironomidae:	35.71	3
% Non-insects excluding Astacidae:	17.35	5
Diptera Taxa:	11	3
% Intolerant (0-3):	19.39	3
% Tolerant (8-10):	12.24	5
% Predators FFG 1:	27.55	3
% Shredders + Scrapers FFG 1:	7.14	1
% Collector-Filterers FFG 1:	7.14	5
% Sprawlers:	0	1
<b>mIBI Metric Score:</b>		<b>36</b>

### Supplemental Metrics

HBI	4.88
Shannon-Weaver Index	4.81
Shannon Equitability	0.51
% Dominant 3 Taxon	26.53
% Chironomidae	14.29





# OWQ/WAPB Macroinvertebrate Community Assessment MHAB Report

Site Name	EPA ID	Macro Sample Type	Sample #	Macro Event #	Sample Date	County
WEL-08-0007	16T-003	MHAB	AB26676	160829303	8/29/16	Monroe

Stream Name	Location	HUC 12	HUCTO14
Clear Creek	W Church Ln	051202080801	05120208090010

Northing	Easting	Ecoregion	Gradient	Drainage Area	QHEI Score
4328841.44	539577.53	71	28.415	8.51	65

Taxon	Count	Notes	HBI Tolerance
1552 (Tubificidae with bifid chetae and no hair chetae)	1		
1357 (BRANCHIOBDELLIDAE)	2		6
1234 (GLOSSIPHONIIDAE)	1		
2215 (Elimia)	18		
2156 (Corbicula fluminea)	1		6
2181 (Sphaerium)	1		6
9031 (Lirceus)	45		8
9056 (Crangonyx)	18		6
8996 (Orconectes)	2	1MII, 1F	4
8997 (Orconectes propinquus)	1	1MI	4
1251 (ISOTOMIDAE)	1		
1017 (HEPTAGENIIDAE)	1	Damaged	4
3049 (Stenacron interpunctatum)	6		7
7011 (Acerpenna pygmaea)	1		2
3066 (Baetis intercalaris)	5		3
9280 (Diphetero hageni)	2	Slide 0348.5	
7026 (Calopteryx maculata)	1		
1026 (COENAGRIONIDAE)	1	Damaged	9
3568 (Argia)	1	Immature	5
7116 (Metrobates hesperius)	1		
7293 (Psephenus herricki)	32	32L	4
7307 (Stenelmis)	10	10L	5
7309 (Stenelmis crenata)	21	21A; Slides 0348.2, 0348.3	5
7317 (Stenelmis sexlineata)	10	10A; Slide 0348.1	
7300 (Dubiraphia vittata)	5	5A; Slide 0348.4, 251um	
3267 (Chimarra obscura)	2		4
3003 (Chimarra aterrima)	11		2
3432 (Cheumatopsyche)	8		3
8980 (Hydropsyche betteni grp)	6		
9319 (Ceratopsyche "checkerboard" grp)	2		
1060 (LEPTOCERIDAE)	1		4
7814 (Simulium)	3		5
9261 (Thienemannimyia grp.)	2		
9238 (Polypedilum (Uresipedilum) flavum)	10		

Type	Value	Metric Score
<b>Total Taxa:</b>	34	3
<b>Total No. Individuals:</b>	233	3
<b>EPT Taxa:</b>	11	5
<b>% Orthocladiinae + Tanytarsini of Chironomidae:</b>	0	5
<b>% Non-insects excluding Astacidae:</b>	37.34	1
<b>Diptera Taxa:</b>	3	1
<b>% Intolerant (0-3):</b>	10.73	1
<b>% Tolerant (8-10):</b>	19.74	3
<b>% Predators FFG 1:</b>	1.72	1
<b>% Shredders + Scrapers FFG 1:</b>	27.47	5
<b>% Collector-Filterers FFG 1:</b>	11.16	3
<b>% Sprawlers:</b>	0	1
<b>MIBI Metric Score:</b>		<b>32</b>

**Supplemental Metrics**

Metric	HBI	Value
Shannon-Weaver Index	5.42	4.08
Shannon Equitability		0.44
% Dominant 3 Taxon		42.06
% Chironomidae		5.15



# OWQ/WAPB Macroinvertebrate Community Assessment MHAB Report

Site Name	EPA ID	Macro Sample Type	Sample #	Macro Event #	Sample Date	County
WEL-08-0019	16T-015	MHAB	AB26663	160907402	9/7/16	Lawrence

Stream Name	Location	HUC 12	HUCTO14
Henderson Creek	Humpback Ridge Rd	051202080804	05120208090060

Northing	Easting	Ecoregion	Gradient	Drainage Area	QHEI Score
4312754.01	554759.28	71	17.79	13.018	65

Taxon	Count	Notes	HBI Tolerance
1357 (BRANCHIOBDELLIDAE)	8		6
2252 (Physella)	2		8
9031 (Lirceus)	2		8
9056 (Crangonyx)	1		6
8996 (Orconectes)	2	1MII, 1F	4
8997 (Orconectes propinquus)	3	3MI	4
3020 (Stenonema femoratum)	11		3
3071 (Baetis flavistriga)	1		3
3365 (Proclleon)	1		
3166 (Eurylophella)	7		2
3183 (Caenis)	6		3
3188 (Caenis latipennis)	4		
9286 (Gomphus (Gomphurus))	2		
3448 (Somatochlora)	3		1
7026 (Calopteryx maculata)	6		
3568 (Argia)	1		5
7111 (Rheumatobates)	1		
7293 (Psephenus herricki)	19	19L	4
7300 (Dubiraphia vittata)	2	2A; Slide 0336.1, 265.2 um	
3773 (Sialis)	2		5
3797 (Nigronia serricornis)	3		4
3003 (Chimarra aterrima)	2		2
3432 (Cheumatopsyche)	1		3
8937 (Triaenodes)	1		
9222 (Cernotina/Polycentropus)	1		
7610 (Hexatoma)	4		2
1073 (CHIRONOMIDAE(all other))	1		6
7926 (Tanypodinae (Subfamily))	1		
9248 (Ablabesmyia (Ablabesmyia mallochi grp.))	1		
9249 (Ablabesmyia (Ablabesmyia monilis grp.))	1		
9261 (Thienemannimyia grp.)	1		
8006 (Orthocladiinae (Subfamily))	1		
8112 (Dicrotendipes)	1		6
9260 (Cricotopus (Cricotopus) /Orthocladius (Orthocladius))	1		

Type	Value	Metric Score
Total Taxa:	34	3
Total No. Individuals:	104	1
EPT Taxa:	10	5
% Orthocladiinae + Tanytarsini of Chironomidae:	12.5	5
% Non-insects excluding Astacidae:	12.5	5
Diptera Taxa:	9	3
% Intolerant (0-3):	33.65	5
% Tolerant (8-10):	3.85	5
% Predators FFG 1:	20.19	3
% Shredders + Scrapers FFG 1:	26.92	5
% Collector-Filterers FFG 1:	3.85	5
% Sprawlers:	0	1
<b>mIBI Metric Score:</b>		<b>46</b>

### Supplemental Metrics

Metric	HBI	Value
Shannon-Weaver Index	3.84	4.41
Shannon Equitability		0.47
% Dominant 3 Taxon		36.54
% Chironomidae		7.69





# OWQ/WAPB Macroinvertebrate Community Assessment MHAB Report

Site Name	EPA ID	Macro Sample Type	Sample #	Macro Event #	Sample Date	County
WEL-08-0006	16T-002	MHAB	AB26670	160829304	8/29/16	Monroe
Stream Name		Location		HUC 12		HUCTO14
Jackson Creek		S Rogers St		051202080801		05120208090010
Northing	Easting	Ecoregion	Gradient	Drainage Area	QHEI Score	
4327998.33	539909.82	71	14.364	10.713	67	

Taxon	Count	Notes	HBI Tolerance
1357 (BRANCHIOBDELLIDAE)	2		6
2215 (Elimia)	28		
9031 (Lirceus)	34		8
9056 (Crangonyx)	2		6
8996 (Orconectes)	5	5MII	4
3020 (Stenonema femoratum)	3		3
3049 (Stenacron interpunctatum)	2		7
1012 (BAETIDAE)	1		4
3188 (Caenis latipennis)	1		
7026 (Calopteryx maculata)	3		
7120 (Trepobates pictus)	1		
7293 (Psephenus herricki)	46	46L	4
7307 (Stenelmis)	4	4L	5
7309 (Stenelmis crenata)	10	10A; Slide 0327.2	5
7300 (Dubiraphia vittata)	2	2A; Slide 0327.1	
7304 (Optioservus fastiditus)	1	1A	2
7295 (Ancyronyx variegatus)	2	2A	4
7321 (Macronychus glabratus)	1	1A	3
3267 (Chimarra obscura)	4		4
3432 (Cheumatopsyche)	1		3
8980 (Hydropsyche betteni grp)	2		
7814 (Simulium)	1		5
7926 (Tanypodinae (Subfamily))	1		
9261 (Thienemannimyia grp.)	4		
8168 (Paratendipes albimanus)	1		4
8172 (Phaenopsectra)	1		7
8238 (Rheotanytarsus)	2		3
9260 (Cricotopus (Cricotopus) /Orthocladius (Orthocladius))	1		
9238 (Polypedilum (Uresipedilum) flavum)	3		
9241 (Polypedilum (Polypedilum) illinoense grp.)	1		

Type	Value	Metric Score
Total Taxa:	30	3
Total No. Individuals:	170	3
EPT Taxa:	7	3
% Orthocladiinae + Tanytarsini of Chironomidae:	14.29	5
% Non-insects excluding Astacidae:	38.82	1
Diptera Taxa:	9	3
% Intolerant (0-3):	4.71	1
% Tolerant (8-10):	20	3
% Predators FFG 1:	2.94	1
% Shredders + Scrapers FFG 1:	36.47	5
% Collector-Filterers FFG 1:	4.71	5
% Sprawlers:	0	1
<b>mIBI Metric Score:</b>		<b>34</b>

### Supplemental Metrics

Metric	HBI	Value
Shannon-Weaver Index	HBI	5.29
Shannon Equitability		0.38
% Dominant 3 Taxon		63.53
% Chironomidae		8.24





**OWQ/WAPB Macroinvertebrate Community Assessment  
MHAB Report**

Site Name	EPA ID	Macro Sample Type	Sample #	Macro Event #	Sample Date	County
WEL-08-0031	16T-027	MHAB	AB26686	160920502	9/20/16	Lawrence

Stream Name	Location	HUC 12	HUCTO14
Goose Creek	Patton Hill Rd, approximately 20 meters downstream of bridge	051202080807	05120208090110

Northing	Easting	Ecoregion	Gradient	Drainage Area	QHEI Score
4305762.79	540566.61	71	15.82	7.564	55

Taxon	Count	Notes	HBI Tolerance
1357 (BRANCHIOBELLELLIDAE)	1		6
2215 (Elimia)	7		
1092 (PISIDIIDAE)	2		8
9031 (Lirceus)	6		8
9068 (Gammarus)	22		6
8996 (Orconectes)	4	3MII, 1F	4
3020 (Stenonema femoratum)	5		3
3071 (Baetis flavistriga)	2		3
9280 (Diphetero hageni)	1	Slide 0325.2	
3183 (Caenis)	3		3
7026 (Calopteryx maculata)	1		
3348 (Acronuria)	4		1
7293 (Psephenus herricki)	17	17L	4
7288 (Ectopria)	1	1L	5
7307 (Stenelmis)	1	1L	5
7309 (Stenelmis crenata)	2	2A; Slide 0325.1	5
7296 (Dubiraphia)	1	1L	5
3773 (Sialis)	1		5
3267 (Chimarra obscura)	9		4
3003 (Chimarra aterrima)	16		2
3432 (Cheumatopsyche)	9		3
8980 (Hydropsyche betteni grp)	2		
7814 (Simulium)	7		5
7940 (Natarsia)	1		6
9261 (Thienemannimyia grp.)	1		
8062 (Paraphaenocladus)	1		
9296 (Microtendipes pedellus grp)	1		
9237 (Polypedilum (Uresipedilum) aviceps)	2		
9241 (Polypedilum (Polypedilum) illinoense grp.)	1		
8320 (Chrysops)	2		5

Type	Value	Metric Score
Total Taxa:	30	3
Total No. Individuals:	133	3
EPT Taxa:	9	5
% Orthoclaadiinae + Tanytarsini of Chironomidae:	14.29	5
% Non-insects excluding Astacidae:	28.57	3
Diptera Taxa:	8	3
% Intolerant (0-3):	29.32	3
% Tolerant (8-10):	6.02	5
% Predators FFG 1:	5.26	1
% Shredders + Scrapers FFG 1:	15.79	3
% Collector-Filterers FFG 1:	32.33	1
% Sprawlers:	0.75	1
<b>MIBI Metric Score:</b>		<b>36</b>

**Supplemental Metrics**

	HBI	
	4.28	
Shannon-Weaver Index		4.14
Shannon Equitability		0.44
% Dominant 3 Taxon		41.35
% Chironomidae		5.26





# OWQ/WAPB Macroinvertebrate Community Assessment MHAB Report

Site Name	EPA ID	Macro Sample Type	Sample #	Macro Event #	Sample Date	County
WEL-08-0021	16T-017	MHAB	AB27297	160920404	9/20/16	Lawrence

Stream Name	Location	HUC 12	HUCTO14
Little Salt Creek	Judah Legan Rd	051202080805	05120208090080

Northing	Easting	Ecoregion	Gradient	Drainage Area	QHEI Score
4311336.16	545099.28	71	0.702	52.705	41

Taxon	Count	Notes	HBI Tolerance
1234 (GLOSSIPHONIIDAE)	1		
1206 (PLANORBIDAE)	1		6
2181 (Sphaerium)	3		6
3049 (Stenacron interpunctatum)	4		7
3248 (Basiaeschna janata)	1		6
3043 (Dromogomphus spinosus)	1		
9287 (Gomphus (Gomphus))	3		
3382 (Didymops transversa)	2		
9315 (Epithea (Tetragoneuria))	1		
3549 (Enallagma divagans)	2		
3568 (Argia)	3	Damaged	5
3572 (Argia tibialis)	17		
3740 (Heterosternuta pulcher)	3	3A	
3946 (Cyphon)	2	2L	
7300 (Dubiraphia vittata)	11	11A; Slides 0345.1, 0345.2; 257um, 251um	
7295 (Ancyronyx variegatus)	2	2A	4
3773 (Sialis)	3		5
7732 (Anopheles)	1		
9105 (Ablabesmyia janta)	1		5
9284 (Tribelos jucundus)	2		
8099 (Cryptochironomus)	1		5
8241 (Tanytarsus)	1		4
9241 (Polypedilum (Polypedilum) illinoense grp.)	1		

Type	Value	Metric Score
Total Taxa:	23	3
Total No. Individuals:	67	1
EPT Taxa:	1	1
% Orthocladiinae + Tanytarsini of Chironomidae:	16.67	5
% Non-insects excluding Astacidae:	7.46	5
Diptera Taxa:	6	1
% Intolerant (0-3):	0	1
% Tolerant (8-10):	0	5
% Predators FFG 1:	46.27	5
% Shredders + Scrapers FFG 1:	4.48	1
% Collector-Filterers FFG 1:	7.46	5
% Sprawlers:	1.49	1
<b>mIBI Metric Score:</b>		<b>34</b>

**Supplemental Metrics**

	HBI	5.5
Shannon-Weaver Index		3.84
Shannon Equitability		0.41
% Dominant 3 Taxon		47.76
% Chironomidae		8.96





# OWQ/WAPB Macroinvertebrate Community Assessment MHAB Report

Site Name	EPA ID	Macro Sample Type	Sample #	Macro Event #	Sample Date	County
WEL090-0003	16T-028	MHAB	AB26687	160920501	9/20/16	Lawrence
Stream Name		Location		HUC 12	HUCTO14	
Salt Creek		Oolitic Rd, Near Oolitic		051202080807	05120208090110	
Northing	Easting	Ecoregion	Gradient	Drainage Area	QHEI Score	
4304511.36	542617.08	71	0.502	603.506	51	

Taxon	Count	Notes	HBI Tolerance
1233 (ERPOBDELLIDAE)	1		
2215 (Elimia)	1		
2156 (Corbicula fluminea)	4		6
8997 (Orconectes propinquus)	4	4MI	4
9156 (Maccaffertium)	4		
3024 (Maccaffertium terminatum)	2		2
3020 (Stenonema femoratum)	2		3
3049 (Stenacron interpunctatum)	13		7
3066 (Baetis intercalaris)	1		3
3175 (Tricorythodes)	2		3
3568 (Argia)	4		5
3572 (Argia tibialis)	5		
3348 (Acroneuria)	1		1
7132 (Rhagovelia oriander)	1		
3828 (Dineutus)	3	3A	4
7307 (Stenelmis)	1	1L	5
7309 (Stenelmis crenata)	1	1A; Slide 0323.3	5
9266 (Stenelmis grossa)	1	1A; Slide 0323.2	
7298 (Dubiraphia minima)	1	1A; Slide 0323.1, 338um	
7321 (Macronychus glabratus)	1	1A	3
3799 (Corydalus cornutus)	2		2
3267 (Chimarra obscura)	1		4
1057 (HYDROPSYCHIDAE)	4		4
3432 (Cheumatopsyche)	29		3
3423 (Hydropsyche)	5		4
3476 (Hydropsyche bidens)	1		3
9154 (Hydropsyche venularis)	19		3
3311 (Neureclipsis)	2		3
8083 (Chironomini (Tribe))	2		
9261 (Thienemannimyia grp.)	1		

Type	Value	Metric Score
Total Taxa:	30	3
Total No. Individuals:	119	1
EPT Taxa:	14	5
% Orthocladiinae + Tanytarsini of Chironomidae:	0	5
% Non-insects excluding Astacidae:	5.04	5
Diptera Taxa:	2	1
% Intolerant (0-3):	52.1	5
% Tolerant (8-10):	0	5
% Predators FFG 1:	13.45	1
% Shredders + Scrapers FFG 1:	3.36	1
% Collector-Filterers FFG 1:	37.82	1
% Sprawlers:	0	1
<b>mIBI Metric Score:</b>		<b>34</b>

<u>Supplemental Metrics</u>	
	HBI
Shannon-Weaver Index	3.85
Shannon Equitability	3.96
% Dominant 3 Taxon	0.42
% Chironomidae	51.26
	2.52



# OWQ/WAPB Macroinvertebrate Community Assessment MHAB Report

Site Name	EPA ID	Macro Sample Type	Sample #	Macro Event #	Sample Date	County
WEL-08-0023	16T-019	MHAB	AB26661	160920402	9/20/16	Lawrence

Stream Name	Location	HUC 12	HUCTO14
Little Salt Creek	Bat Hollow Rd	051202080805	05120208090070

Northing	Easting	Ecoregion	Gradient	Drainage Area	QHEI Score
4311333.96	546414.24	71	0.703	44.753	36

Taxon	Count	Notes	HBI Tolerance
2188 (Campeloma)	1		
2252 (Physella)	1		8
2215 (Elimia)	14		
2181 (Sphaerium)	10		6
9050 (Hyalella)	1		
3020 (Stenonema femoratum)	1		3
3049 (Stenacron interpunctatum)	1		7
3245 (Boyeria vinosa)	9		4
1020 (LIBELLULIDAE)	1		9
7026 (Calopteryx maculata)	4		
3546 (Enallagma)	1		9
3549 (Enallagma divagans)	5		
3568 (Argia)	2		5
3569 (Argia apicalis)	1		
3572 (Argia tibialis)	8		
1038 (GERRIDAE)	1		
7111 (Rheumatobates)	5		
7120 (Trepobates pictus)	1		
7123 (Microvelia americana)	1		
3600 (Peltodytes duodecimpunctatus)	3	3A	
3946 (Cyphon)	2	2L	
7296 (Dubiraphia)	1	1L	5
9326 (Dubiraphia minima grp)	12	12A	
7295 (Ancyronyx variegatus)	2	2A	4
3773 (Sialis)	1		5
8926 (Oecetis)	2		3
1077 (CERATOPOGONIDAE)	1		6
7984 (Procladius)	1		7
8083 (Chironomini (Tribe))	2		
8227 (Tanytarsini (Tribe))	1		
8084 (Axarus)	1		
8104 (Cryptotendipes)	1		4
8235 (Paratanytarsus)	2		4
8238 (Rheotanytarsus)	1		3
8241 (Tanytarsus)	7		4

Type	Value	Metric Score
Total Taxa:	35	3
Total No. Individuals:	108	1
EPT Taxa:	3	1
% Orthocladiinae + Tanytarsini of Chironomidae:	68.75	1
% Non-insects excluding Astacidae:	25	3
Diptera Taxa:	9	3
% Intolerant (0-3):	3.7	1
% Tolerant (8-10):	2.78	5
% Predators FFG 1:	39.81	5
% Shredders + Scrapers FFG 1:	3.7	1
% Collector-Filterers FFG 1:	17.59	3
% Sprawlers:	1.85	1
<b>mIBI Metric Score:</b>		<b>28</b>

**Supplemental Metrics**

HBI	4.93
Shannon-Weaver Index	4.44
Shannon Equitability	0.48
% Dominant 3 Taxon	33.33
% Chironomidae	14.81



## OWQ/WAPB Macroinvertebrate Community Assessment MHAB Report

<i>Site Name</i>	<i>EPA ID</i>	<i>Macro Sample Type</i>	<i>Sample #</i>	<i>Macro Event #</i>	<i>Sample Date</i>	<i>County</i>
WEL-08-0027	16T-023	MHAB	AB26681	160920503	9/20/16	Lawrence
<i>Stream Name</i>		<i>Location</i>		<i>HUC 12</i>		<i>HUCTO14</i>
Salt Creek		Peerless Rd		051202080806		05120208090090
<i>Northing</i>	<i>Easting</i>	<i>Ecoregion</i>	<i>Gradient</i>	<i>Drainage Area</i>	<i>QHEI Score</i>	
4308768.29	542684.68	71	0.502	576.38	30	

Taxon	Count	Notes	HBI Tolerance
2188 (Campeloma)	3		
2215 (Elimia)	5		
9056 (Crangonyx)	2		6
8996 (Orconectes)	1	1MII	4
3019 (Maccaffertium exiguum)	2		2
3018 (Maccaffertium pulchellum)	1	Slide 0328.4	2
3049 (Stenacron interpunctatum)	1		7
3175 (Tricorythodes)	19		3
3248 (Basiaeschna janata)	1		6
9287 (Gomphus (Gomphus))	1		
7026 (Calopteryx maculata)	3		
3568 (Argia)	7	Missing lamellae	5
3572 (Argia tibialis)	21		
7132 (Rhagovelia oriander)	1		
9266 (Stenelmis grossa)	4	4A; Slide 0328.1	
7300 (Dubiraphia vittata)	13	13A; Slides 0328.2, 0328.3; 250.5um, 250.5um	
7295 (Ancyronyx variegatus)	1	1A	4
7321 (Macronychus glabratus)	9	9A	3
3432 (Cheumatopsyche)	2		3
3487 (Hydropsyche simulans)	3		2
8926 (Oecetis)	5		3
9224 (Nectopsyche exquisita-candida)	5		
3311 (Neureclipsis)	5		3
7926 (Tanypodinae (Subfamily))	2	2P	
9249 (Ablabesmyia (Ablabesmyia monilis grp.))	1		
9261 (Thienemannimyia grp.)	1		
8157 (Parachironomus)	1		4
8238 (Rheotanytarsus)	1		3
9241 (Polypedilum (Polypedilum illinoense grp.))	1		

<i>Type</i>	<i>Value</i>	<i>Metric Score</i>
Total Taxa:	29	3
Total No. Individuals:	122	1
EPT Taxa:	9	3
% Orthocladiinae + Tanytarsini of Chironomidae:	14.29	5
% Non-insects excluding Astacidae:	8.2	5
Diptera Taxa:	6	1
% Intolerant (0-3):	38.52	5
% Tolerant (8-10):	0	5
% Predators FFG 1:	32.79	3
% Shredders + Scrapers FFG 1:	3.28	1
% Collector-Filterers FFG 1:	6.56	5
% Sprawlers:	0.82	1
<b>mIBI Metric Score:</b>		<b>38</b>

<u>Supplemental Metrics</u>	
	<b>HBI</b>
	3.39
<b>Shannon-Weaver Index</b>	4.1
<b>Shannon Equitability</b>	0.44
<b>% Dominant 3 Taxon</b>	43.44
<b>% Chironomidae</b>	5.74









**OWQ/WAPB Macroinvertebrate Community Assessment  
MHAB Report**

Site Name	EPA ID	Macro Sample Type	Sample #	Macro Event #	Sample Date	County
WEL-08-0029	16T-025	MHAB	AB26685	160908402	9/8/16	Lawrence

Stream Name	Location	HUC 12	HUCTO14
Wolf Creek	Guthrie Rd	051202080806	05120208090040

Northing	Easting	Ecoregion	Gradient	Drainage Area	QHEI Score
4314285.09	545229.12	71	38.554	1.696	48

Taxon	Count	Notes	HBI Tolerance
2252 (Physella)	1		8
9031 (Lirceus)	35		8
9056 (Crangonyx)	5		6
8996 (Orconectes)	3	2MII, 1F	4
8997 (Orconectes propinquus)	2	2MI	4
3020 (Stenonema femoratum)	12		3
1012 (BAETIDAE)	1		4
9129 (Acerpenna)	3		4
3365 (Procloeon)	1		
3121 (Choroterpes)	9		4
3183 (Caenis)	9		3
3188 (Caenis latipennis)	2		
3448 (Somatochlora)	1		1
7026 (Calopteryx maculata)	8		
3546 (Enallagma)	1		9
3549 (Enallagma divagans)	1		
7248 (Heterosternuta ohionis)	3	3A	
3740 (Heterosternuta pulcher)	4	4A	
3960 (Helichus basalis)	1	1A; Slide 0330.1	
7293 (Psephenus herricki)	15	15L	4
7307 (Stenelmis)	3	1F, 2L	5
3003 (Chimarra aterrima)	1		2
3432 (Cheumatopsyche)	1		3
7610 (Hexatoma)	7		2
7940 (Natarsia)	1		6
7965 (Larsia)	1		4
9261 (Thienemannimyia grp.)	2		
9277 (Polypedilum (Tripodura) scalaenum grp)	1		
9241 (Polypedilum (Polypedilum) illinoense grp.)	1		

Type	Value	Metric Score
Total Taxa:	29	3
Total No. Individuals:	135	3
EPT Taxa:	9	5
% Orthocladiinae + Tanytarsini of Chironomidae:	0	5
% Non-insects excluding Astacidae:	30.37	3
Diptera Taxa:	6	1
% Intolerant (0-3):	22.96	3
% Tolerant (8-10):	27.41	1
% Predators FFG 1:	14.81	1
% Shredders + Scrapers FFG 1:	16.3	3
% Collector-Filterers FFG 1:	1.48	5
% Sprawlers:	0.74	1
<b>mIBI Metric Score:</b>		<b>34</b>

**Supplemental Metrics**

HBI	5.11
Shannon-Weaver Index	3.92
Shannon Equitability	0.42
% Dominant 3 Taxon	45.93
% Chironomidae	4.44



## OWQ/WAPB Macroinvertebrate Community Assessment MHAB Report

Site Name	EPA ID	Macro Sample Type	Sample #	Macro Event #	Sample Date	County
WEL-08-0016	16T-012	MHAB	AB26680	160920103	9/20/16	Monroe

Stream Name	Location	HUC 12	HUCTO14
Clear Creek	Depot Hill Rd	051202080803	05120208090030

Northing	Easting	Ecoregion	Gradient	Drainage Area	QHEI Score
4318216.89	540749.39	71	4.047	68.368	57

Taxon	Count	Notes	HBI Tolerance	Type	Value	Metric Score
2211 (Pleurocera)	1			<b>Total Taxa:</b>	26	3
9031 (Lirceus)	1		8	<b>Total No. Individuals:</b>	59	1
9050 (Hyalella)	1			<b>EPT Taxa:</b>	7	3
3020 (Stenonema femoratum)	1		3	<b>% Orthoclaadiinae + Tanytarsini of Chironomidae:</b>	7.69	5
3049 (Stenacron interpunctatum)	3		7	<b>% Non-insects excluding Astacidae:</b>	5.08	5
3175 (Tricorythodes)	3		3	<b>Diptera Taxa:</b>	2	1
3248 (Basiaeschna janata)	2		6	<b>% Intolerant (0-3):</b>	20.34	3
7027 (Hetaerina americana)	4			<b>% Tolerant (8-10):</b>	5.08	5
3546 (Enallagma)	2		9	<b>% Predators FFG 1:</b>	28.81	3
3549 (Enallagma divagans)	6			<b>% Shredders + Scrapers FFG 1:</b>	5.08	1
3568 (Argia)	1		5	<b>% Collector-Filterers FFG 1:</b>	5.08	5
3572 (Argia tibialis)	1			<b>% Sprawlers:</b>	0	1
7132 (Rhagovelia oriander)	1			<b>MIBI Metric Score:</b>		<b>36</b>
3959 (Helichus lithophilus)	2	2A				
7307 (Stenelmis)	2	2L	5			
7309 (Stenelmis crenata)	1	1A; Slide 0343.1	5			
7317 (Stenelmis sexlineata)	3	3A				
9326 (Dubiraphia minima grp)	1	1A				
7295 (Ancyronyx variegatus)	1	1A	4			
7321 (Macronychus glabratus)	5	4A, 1L	3			
1057 (HYDROPSYCHIDAE)	1		4			
3432 (Cheumatopsyche)	1		3			
8926 (Oecetis)	1		3			
9222 (Cernotina/Polycentropus)	1					
8238 (Rheotanytarsus)	1		3			
9241 (Polypedilum (Polypedilum) illinoense grp.)	12					

**Supplemental Metrics**

	HBI	4.73
Shannon-Weaver Index		4.18
Shannon Equitability		0.45
% Dominant 3 Taxon		38.98
% Chironomidae		22.03





# OWQ/WAPB Macroinvertebrate Community Assessment MHAB Report

Site Name	EPA ID	Macro Sample Type	Sample #	Macro Event #	Sample Date	County
WEL-08-0010	16T-006	MHAB	AB26674	160907301	9/7/16	Monroe

Stream Name	Location	HUC 12	HUCTO14
Tributary of Clear Creek	S Victor Pike	051202080802	05120208090020

Northing	Easting	Ecoregion	Gradient	Drainage Area	QHEI Score
4325702.7	537285.84	71	15.428	4.448	67

Taxon	Count	Notes	HBI Tolerance
2215 (Elimia)	28		
9031 (Lirceus)	16		8
9068 (Gammarus)	1		6
9023 (Cambarus tenebrosus)	1	1M	
8996 (Orconectes)	3	2M, 1F	4
3025 (Maccaffertium vicarium)	1		2
3020 (Stenonema femoratum)	2		3
3036 (Leucrocuta)	1		2
1012 (BAETIDAE)	4		4
3066 (Baetis intercalaris)	8		3
3183 (Caenis)	3		3
7026 (Calopteryx maculata)	1		
3348 (Acroneuria)	10		1
7131 (Rhagovelia obesa)	1		
3740 (Heterosternuta pulcher)	1	1A	
7293 (Psephenus herricki)	30	30L	4
7307 (Stenelmis)	3	3L	5
7309 (Stenelmis crenata)	9	9A; Slide 0332.1	5
7317 (Stenelmis sexlineata)	3	3A	
7300 (Dubiraphia vittata)	5	5A; Slide 0332.2	
3003 (Chimarra aterrima)	35		2
3432 (Cheumatopsyche)	33		3
3423 (Hydropsyche)	2		4
8980 (Hydropsyche betteni grp)	4		
9319 (Ceratopsyche "checkerboard" grp)	1		
7610 (Hexatoma)	1		2
7814 (Simulium)	6		5
9248 (Ablabesmyia (Ablabesmyia mallochi grp.))	1		
9261 (Thienemannimyia grp.)	3		
8062 (Paraphaenocladus)	1		
8077 (Thienemanniella xena)	3		4
8099 (Cryptochironomus)	1		5
8238 (Rheotanytarsus)	2		3
8241 (Tanytarsus)	1		4
9238 (Polypedilum (Uresipedilum) flavum)	6		
9241 (Polypedilum (Polypedilum) illinoense grp.)	2		

Type	Value	Metric Score
Total Taxa:	36	3
Total No. Individuals:	233	3
EPT Taxa:	12	5
% Orthocladiinae + Tanytarsini of Chironomidae:	35	3
% Non-insects excluding Astacidae:	19.31	3
Diptera Taxa:	11	3
% Intolerant (0-3):	41.2	5
% Tolerant (8-10):	6.87	5
% Predators FFG 1:	6.01	1
% Shredders + Scrapers FFG 1:	18.88	3
% Collector-Filterers FFG 1:	33.91	1
% Sprawlers:	0.86	1
<b>mIBI Metric Score:</b>		<b>36</b>

**Supplemental Metrics**

	HBI	
	3.61	
Shannon-Weaver Index		4.12
Shannon Equitability		0.44
% Dominant 3 Taxon		42.06
% Chironomidae		8.58



# OWQ/WAPB Macroinvertebrate Community Assessment MHAB Report

Site Name	EPA ID	Macro Sample Type	Sample #	Macro Event #	Sample Date	County
WEL-08-0025	16T-021	MHAB	AB27298	160920302	9/20/16	Lawrence

Stream Name	Location	HUC 12	HUCTO14
Gulletts Creek	Peerless Rd	051202080806	05120208090100

Northing	Easting	Ecoregion	Gradient	Drainage Area	QHEI Score
4308258.48	541725.65	71	1.466	12.57	50

Taxon	Count	Notes	HBI Tolerance
2215 (Elimia)	9		
9031 (Lirceus)	4		8
9056 (Crangonyx)	1		6
8997 (Orconectes propinquus)	2	1MI, 1MII	4
3025 (Maccaffertium vicarium)	1		2
3036 (Leucrocuta)	1		2
3049 (Stenacron interpunctatum)	3		7
3074 (Centroptilum)	1		3
1018 (LEPTOPHLEBIIDAE)	5		2
3183 (Caenis)	7		3
3245 (Boyeria vinosa)	1		4
7026 (Calopteryx maculata)	3		
3572 (Argia tibialis)	5		
3348 (Acroneuria)	3		1
1038 (GERRIDAE)	1	Immature	
7307 (Stenelmis)	1	1L	5
7309 (Stenelmis crenata)	13	13A; Slide 0349.1	5
7296 (Dubiraphia)	1	1AF	5
3773 (Sialis)	1		5
3294 (Lype diversa)	1		3
3432 (Cheumatopsyche)	8		3
8980 (Hydropsyche betteni grp)	1		
9222 (Cernotina/Polycentropus)	1		
1072 (TIPULIDAE)	1		3
7814 (Simulium)	6		5
8083 (Chironomini (Tribe))	1		
8079 (Xylotopus par)	1		
8235 (Paratanytarsus)	1		4
9238 (Polypedilum (Uresipedilum) flavum)	2		
9241 (Polypedilum (Polypedilum) illinoense grp.)	3		

Type	Value	Metric Score
Total Taxa:	30	3
Total No. Individuals:	89	1
EPT Taxa:	11	5
% Orthocladiinae + Tanytarsini of Chironomidae:	25	3
% Non-insects excluding Astacidae:	15.73	5
Diptera Taxa:	7	3
% Intolerant (0-3):	31.46	3
% Tolerant (8-10):	4.49	5
% Predators FFG 1:	16.85	1
% Shredders + Scrapers FFG 1:	19.1	3
% Collector-Filterers FFG 1:	15.73	3
% Sprawlers:	0	1
<b>mIBI Metric Score:</b>		<b>36</b>

Supplemental Metrics	
HBI	4.13
Shannon-Weaver Index	4.34
Shannon Equitability	0.46
% Dominant 3 Taxon	33.71
% Chironomidae	8.99



# OWQ/WAPB Macroinvertebrate Community Assessment

## MHAB Report

Site Name	EPA ID	Macro Sample Type	Sample #	Macro Event #	Sample Date	County
WEL-08-0012	16T-008	MHAB	AB26673	160907303	9/7/16	Monroe

Stream Name	Location	HUC 12	HUCTO14
Clear Creek	S Ketcham Rd	051202080803	05120208090030

Northing	Easting	Ecoregion	Gradient	Drainage Area	QHEI Score
4320655.31	537476.83	71	12.985	55.088	69

Taxon	Count	Notes	HBI Tolerance
2215 (Elimia)	2		
9031 (Lirceus)	43		8
8996 (Orconectes)	2	2MII	4
1017 (HEPTAGENIIDAE)	5		4
3020 (Stenonema femoratum)	2		3
3044 (Nixe)	11		3
3048 (Stenacron)	4		3
1012 (BAETIDAE)	13		4
7011 (Acerpenna pygmaea)	12		2
3066 (Baetis intercalaris)	6		3
3071 (Baetis flavistriga)	6	Slide 0329.1	3
3183 (Caenis)	3		3
3248 (Basiaeschna janata)	1		6
7027 (Hetaerina americana)	1		
7026 (Calopteryx maculata)	2		
3568 (Argia)	1		5
7032 (Argia moesta)	1		
7116 (Metrobates hesperius)	1		
7123 (Microvelia americana)	1		
9290 (Gerridae (Gerrinae))	1		
7293 (Psephenus herricki)	19	1A, 18L	4
7307 (Stenelmis)	15	15L	5
7309 (Stenelmis crenata)	15	15A; Slide 0329.3	5
7317 (Stenelmis sexlineata)	36	36A	
7300 (Dubiraphia vittata)	11	11A; Slide 0.329.2, 238um	
7321 (Macronychus glabratus)	6	6A	3
1045 (PHILOPOTAMIDAE)	1	1P	3
3267 (Chimarra obscura)	21		4
3432 (Cheumatopsyche)	9		3
3423 (Hydropsyche)	1		4
8980 (Hydropsyche betteni grp)	14		
9319 (Ceratopsyche "checkerboard" grp)	9		
8952 (Helicopsyche borealis)	3		3
7814 (Simulium)	9	1P	5
7926 (Tanypodinae (Subfamily))	15		
8083 (Chironomini (Tribe))	7	1P	
9261 (Thienemannimyia grp.)	6		
8074 (Thienemanniella)	1		4
9337 (Thienemanniella sp B)	1		
8112 (Dicrotendipes)	2		6
9296 (Microtendipes pedellus grp)	1		
8168 (Paratendipes albimanus)	1		4
8238 (Rheotanytarsus)	13	2P	3

Type	Value	Metric Score
Total Taxa:	47	5
Total No. Individuals:	368	5
EPT Taxa:	16	5
% Orthocladiinae + Tanytarsini of Chironomidae:	30.86	3
% Non-insects excluding Astacidae:	12.23	5
Diptera Taxa:	14	5
% Intolerant (0-3):	22.83	3
% Tolerant (8-10):	11.68	5
% Predators FFG 1:	5.98	1
% Shredders + Scrapers FFG 1:	18.21	3
% Collector-Filterers FFG 1:	15.22	3
% Sprawlers:	2.45	1
<b>MIBI Metric Score:</b>		<b>44</b>

### Supplemental Metrics

	HBI	
	4.52	
Shannon-Weaver Index		4.81
Shannon Equitability		0.51
% Dominant 3 Taxon		27.17
% Chironomidae		22.01



**OWQ/WAPB Macroinvertebrate Community Assessment**  
**MHAB Report**

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<b>Taxon</b>	<b>Count</b>	<b>Notes</b>	<b>HBI Tolerance</b>
9093 (Stempellinella)	8		3
8241 (Tanytarsus)	2		4
9238 (Polypedilum (Uresipedilum) flavum)	21		
9241 (Polypedilum (Polypedilum) illinoense grp.)	3		



# OWQ/WAPB Macroinvertebrate Community Assessment

## MHAB Report

Site Name	EPA ID	Macro Sample Type	Sample #	Macro Event #	Sample Date	County
WEL-08-0013	16T-009	MHAB	AB26668	160921503	9/21/16	Monroe
Stream Name		Location		HUC 12	HUCTO14	
Tributary of Clear Creek		Will Flock Mill Rd		051202080802	05120208090020	
Northing	Easting	Ecoregion	Gradient	Drainage Area	QHEI Score	
4324660.59	537918.69	71	23.415	1.206	64	

Taxon	Count	Notes	HBI Tolerance
9031 (Lirceus)	26		8
9056 (Crangonyx)	14		6
8997 (Orconectes propinquus)	2	1MI, 1F	4
3020 (Stenonema femoratum)	20		3
3049 (Stenacron interpunctatum)	2		7
3074 (Centroptilum)	1		3
7026 (Calopteryx maculata)	1		
7122 (Microvelia)	2		
7293 (Psephenus herricki)	2	2L	4
7307 (Stenelmis)	1	1L	5
7309 (Stenelmis crenata)	2	2A; Slide 0340.1	5
7321 (Macronychus glabratus)	1	1L	3
3003 (Chimarra aterrima)	8		2
3432 (Cheumatopsyche)	2		3
3423 (Hydropsyche)	1		4
8980 (Hydropsyche betteni grp)	1		
9261 (Thienemannimyia grp.)	1		
9296 (Microtendipes pedellus grp)	3		
8168 (Paratendipes albimanus)	3		4
8172 (Phaenopsectra)	1		7
8235 (Paratanytarsus)	1		4

Type	Value	Metric Score
<b>Total Taxa:</b>	21	3
<b>Total No. Individuals:</b>	95	1
<b>EPT Taxa:</b>	7	5
<b>% Orthocladiinae + Tanytarsini of Chironomidae:</b>	11.11	5
<b>% Non-insects excluding Astacidae:</b>	42.11	1
<b>Diptera Taxa:</b>	5	1
<b>% Intolerant (0-3):</b>	33.68	5
<b>% Tolerant (8-10):</b>	27.37	1
<b>% Predators FFG 1:</b>	3.16	1
<b>% Shredders + Scrapers FFG 1:</b>	6.32	1
<b>% Collector-Filterers FFG 1:</b>	11.58	3
<b>% Sprawlers:</b>	0	1
<b>mIBI Metric Score:</b>	<b>28</b>	

### Supplemental Metrics

Metric	Value
<b>HBI</b>	5.2
<b>Shannon-Weaver Index</b>	3.33
<b>Shannon Equitability</b>	0.36
<b>% Dominant 3 Taxon</b>	63.16
<b>% Chironomidae</b>	9.47



**OWQ/WAPB Macroinvertebrate Community Assessment  
MHAB Report**

Site Name	EPA ID	Macro Sample Type	Sample #	Macro Event #	Sample Date	County
WEL-08-0014	16T-010	MHAB	AB26679	160920101	9/20/16	Monroe
Stream Name	Location		HUC 12	HUCTO14		
Judah Branch	S Old SR 37		051202080803	05120208090030		
Northing	Easting	Ecoregion	Gradient	Drainage Area	QHEI Score	
4316678.62	539371.41	71	24.37	3.306	73	

Taxon	Count	Notes	HBI Tolerance
9031 (Lirceus)	31		8
9068 (Gammarus)	34		6
9056 (Crangonyx)	1		6
8996 (Orconectes)	1	1F	4
3025 (Maccaffertium vicarium)	2		2
3020 (Stenonema femoratum)	1		3
1012 (BAETIDAE)	2		4
3071 (Baetis flavistriga)	1		3
3166 (Eurylophella)	1		2
3348 (Acroneuria)	3		1
7132 (Rhagovelia oriander)	1		
7293 (Psephenus herricki)	6	6L	4
7288 (Ectopria)	2	2L	5
7307 (Stenelmis)	2	2L	5
7309 (Stenelmis crenata)	2	2A; Slide 0339.1	5
3003 (Chimarra aterrima)	39		2
3432 (Cheumatopsyche)	12		3
8980 (Hydropsyche betteni grp)	12		
9319 (Ceratopsyche "checkerboard" grp)	1		
7814 (Simulium)	6		5
7926 (Tanypodinae (Subfamily))	1		
8083 (Chironomini (Tribe))	1		
9261 (Thienemannimyia grp.)	2	Conchapelopia?	
8168 (Paratendipes albimanus)	1		4
9238 (Polypedilum (Uresipedilum) flavum)	4		
9241 (Polypedilum (Polypedilum) illinoense grp.)	1		

Type	Value	Metric Score
Total Taxa:	26	3
Total No. Individuals:	170	3
EPT Taxa:	10	5
% Orthocladiinae + Tanytarsini of Chironomidae:	0	5
% Non-insects excluding Astacidae:	38.82	1
Diptera Taxa:	7	3
% Intolerant (0-3):	34.71	5
% Tolerant (8-10):	18.24	3
% Predators FFG 1:	2.35	1
% Shredders + Scrapers FFG 1:	8.82	1
% Collector-Filterers FFG 1:	33.53	1
% Sprawlers:	0	1
<b>mIBI Metric Score:</b>	<b>32</b>	

**Supplemental Metrics**

	HBI	Value
Shannon-Weaver Index	4.67	3.44
Shannon Equitability		0.37
% Dominant 3 Taxon		61.18
% Chironomidae		5.88