

Appendix B. Assessment unit scores

Sandusky River - Bucyrus headwaters to upstream Broken Sword Creek AU# 0400011 020	Total	Aquatic Life Attainment Status						Assessment Unit Score
		Full		Partial		NON		
		#	%	#	%	#	%	
Sites < 50mi ² drainage area	20	6	30	2	10	12	60	32
Miles of assessed streams with > 50mi ² and < 500mi ² drainage area	22.1	10.4	47	10.3	47	1.4	6	
Comments								
<p>Sedimentation and enrichment associated with the predominant agricultural land use were the most common impacts on aquatic life use attainment. Minimal sustained flow during the summer months limited pool depths and availability of riffle habitat at some sites. Two distinct areas impacted by organic loadings were the Sandusky River within the City of Bucyrus due to combined sewer overflows (CSOs) and Westerly Creek within the Village of Crestline due to failed septic systems, urban runoff and the wastewater treatment plant (WWTP). The compound of greatest concern regarding enrichment impacts is phosphate (PO₄) because it is often growth limiting. Elevated levels of mercury were documented in sediment tested around the City of Bucyrus. A review of the annual Toxic Release Inventory report indicated that the General Electric Lamp Plant disposed of 49 pounds of mercury into the sewer system in 2000 and 19.8 pounds in 2001. The discharge of mercury via the Bucyrus WWTP and CSOs needs to be corrected. The Ohio Department of Health advises that meals of largemouth bass caught in the Sandusky River be limited to one per month because of mercury levels. The meal advice for carp is one per week and channel catfish one per month because of PCB levels.</p>								

Appendix B. Continued

Broken Sword Creek AU# (04100011 030)	Aquatic Life Attainment Status							Assessment Unit Score
	Total	Full		Partial		NON		
		#	%	#	%	#	%	
Sites < 50mi ² drainage area	10	4	40	-	-	6	60	71
Miles of assessed streams with > 50mi ² and < 500mi ² drainage area	15.8	13.8	87	2.0	13	-	-	
Comments								
<p>Impairment of water quality and fish and macroinvertebrate communities in the Broken Sword hydrologic unit can be largely attributed to agricultural practices within the watershed. Sedimentation and elevated nutrient levels were a concern along with the low water levels encountered during the sampling period. Modification of stream channels and tiling to facilitate drainage have reduced the volume of water present during dry weather periods making drought conditions in the streams a much more frequent occurrence. The upper site on Brandywine Creek (RM 3.3) was in non-attainment of a Limited Resource Water (LRW) aquatic life use. The stream was pooled with a septic layer of black sediment. The probable source was a hog manure spill that was investigated on May 14, 2001 and traced to Liberty Lean Farm located at 3240 Quaintance Rd. Another spill and fish kill associated with this facility was investigated on October 27, 2002.</p>								

Appendix B. Continued

Sandusky River - Upper Sandusky (downstream Broken Sword Creek to upstream Tymochtee Creek)	Aquatic Life Attainment Status							Assessment Unit Score
	Total	Full		Partial		NON		
		#	%	#	%	#	%	
AU# (04100011 040)								
Sites < 50mi ² drainage area	15	4	27	2	13	9	60	52
Miles of assessed streams with > 50mi ² and < 500mi ² drainage area	29.0	26.0	90	3.0	10	-	-	
Comments								
<p>The failure of streams within the assessment unit to attain applicable aquatic life uses and water quality criteria can be largely attributed to agricultural practices within the watershed and pollution from poorly treated sewage. Sedimentation, enrichment/low dissolved oxygen and substrate embeddedness were common impacts where aquatic life use attainment was not fully met. Minimal sustained flow during the summer months also limited pool depths and availability of riffle habitat at some sites. The channelizing of streams, removal of riparian trees and field tiling to facilitate drainage have reduced the volume of water present during dry weather periods, making drought conditions in the streams a much more frequent occurrence. Significant nutrient enrichment and/or organic loading were indicated at sites on the Little Sandusky River resulting from failed on-site septic systems within the Village of Morral.</p> <p>A mercury value exceeding the level established to protect drinking water supplies and prevent contamination of fish tissue was documented in the Sandusky River at TR 124 (RM 90.27). A couple of spills were investigated in 2001. One incident was at the Qualitec Trucking, Inc. facility located at 16303 TR 124, Harpster, OH. It was determined that 1000 gallons of waste oil was deliberately dumped and subsequently leached into a field tile that led directly to the Sandusky River. The Upper Sandusky WWTP reported a spill to the Sandusky River on June 18, 2001. A lift station pump failed and resulted in the bypass of a large amount of sewage directly into the river.</p>								

Appendix B. Continued

Upper Tymochtee Creek (headwaters to Warpole Creek) AU# 04100011 050	Aquatic Life Attainment Status						Assessment Unit Score	
	Total	Full		Partial		NON		
		#	%	#	%	#		%
Sites < 50mi ² drainage area	16	7	44	-	-	9	56	13
Miles of assessed streams with > 50mi ² and < 500mi ² drainage area	19.3	-	-	7.8	40	11.5	60	
Comments								
<p>Given that farming will remain the predominant land use, modified warmwater (MWH) or Limited Resource Water (LRW) uses were recommended for a majority of small channelized streams (less than 10 mi²) where limited habitat conditions made these uses applicable. The failure of a majority of streams within the assessment unit to attain applicable aquatic life uses and water quality criteria can be largely attributed to agricultural practices within the watershed, pollution from poorly treated sewage and spills. Sedimentation, enrichment/low dissolved oxygen, ammonia and bacteria were a concern, but the most pervasive impact was simply the low water levels that were encountered during the sampling period. In addition to the widespread impacts associated with agriculture, several distinct areas were impacted by organic loadings from on-site septic systems. These were Tymochtee Creek and Prairie Run immediately downstream from the Village of Meeker, Tymochtee Creek downstream from the Village of Marseilles, Little Tymochtee Creek at Township Road 104 (RM 13.5) and Warpole Creek downstream from the Village of Harpster.</p> <p>A pollution complaint was investigated on November 9, 2001 at Corey Dairy, located at 18405 Wyandot County Rd. 70. It was determined that land applied manure leached into field tiles and entered a ditch that flows into the Little Tymochtee Creek (upper). The investigating Wildlife Officer stated that there was potential for future incidents because of the size of the operation, heavy clay soils and shallow field tiles. A complaint was investigated on March 7, 2001 concerning the Devries Dairy Farm at 15603 State Hwy. 67. It was determined that land applied manure leached into a field tile that entered Tymochtee Creek.</p>								

Appendix B. Continued

Lower Tymochtee Creek (downstream Warpole Creek to mouth) AU# 04100011 060	Aquatic Life Attainment Status						Assessment Unit Score	
	Total	Full		Partial		NON		
		#	%	#	%	#		%
Sites < 50mi ² drainage area	9	2	22	1	11	6	67	27
Miles of assessed streams with > 50mi ² and < 500mi ² drainage area	26.7	10.9	41	15.8	59	0	-	
Comments								
<p>The failure of a majority of streams within the assessment unit to attain applicable aquatic life uses and water quality criteria can be largely attributed to agricultural practices within the watershed, pollution from poorly treated sewage and spills. Sedimentation, enrichment/low dissolved oxygen, ammonia and bacteria were a concern, but the most pervasive impact was simply the low water levels that were encountered during the sampling period.</p> <p>In addition to agricultural sources discussed above, unrestricted cattle access to the stream was a significant contributor to loss of habitat function and elevated fecal coliform counts on Little Tymochtee Creek (lower) at CR 29. This was the only site in the entire Sandusky River watershed that had two bacteria results with greater than 10,000 colonies/100ml. Another incident of note is a kerosene spill into Little Tymochtee Creek (lower) investigated on April 8, 2001.</p> <p>The Carey WWTP discharge impacted County Ditch #32. Water quality data indicated impairment by enrichment/low dissolved oxygen and ammonia. This site had the highest measured phosphorus concentrations in the entire Sandusky River study area.</p> <p>Potential sources of impact on Spring Run include stormwater discharges from the Budd Co., urban runoff and the Carey WWTP via County Ditch #32. Water chemistry results suggested impairments due to elevated nutrient enrichment, ammonia and temperature. In addition, a diesel fuel spill occurred earlier in the summer when a train engine was damaged and fuel seeped into a tile that discharged to the stream.</p> <p>Redhorse suckers and northern pike were relatively common in this reach of Tymochtee Creek. Improvements in upstream portions of the watershed to lessen sediment load and improve habitat function will help to maintain the pike population and possibly allow for repopulation further upstream. Redhorse suckers, as a group, are sensitive to siltation. Their occurrence was associated with midchannel areas of relatively clean rubble due to the redistribution of fine sediment to stream margins during high flow events.</p>								

Appendix B. Continued

Sandusky River - Mexico (downstream Tymochtee Creek to upstream Honey Creek, excluding mainstem)	Aquatic Life Attainment Status							Assessment Unit Score
	Total	Full		Partial		NON		
		#	%	#	%	#	%	
AU# 04100011 070								
Sites < 50mi ² drainage area	13	6	46	3	23	4	31	56
Miles of assessed streams with > 50mi ² and < 500mi ² drainage area	10	4.1	41	5.9	59	-	-	
Comments								
<p>Impediments to full attainment of applicable aquatic life uses within the assessment unit can be largely attributed to agricultural practices within the watershed. Sedimentation and substrate embeddedness were the most common impacts where aquatic life use attainment was not fully met. Minimal sustained flow during the summer months also limited pool depths and availability of riffle habitat at some sites. The channelizing of streams, removal of riparian trees and field tiling to facilitate drainage have reduced the volume of water present during dry weather periods. Many of the sampled locations had slow current which keeps eroded sediment trapped within the stream channel. Additionally, the lack of water movement can exacerbate impacts from organic loading and nutrient enrichment by limiting reaeration of the stream.</p> <p>Thorn Run appeared to be impaired by enrichment/low dissolved oxygen in addition to reduced habitat quality. A likely source is poorly treated sewage from failed on-lot septic systems in the Village of McCutchenville.</p> <p>An impact to the macroinvertebrate community in Sycamore Creek at RM 3.8 was noted but a cause was not readily apparent. The stream did not appear to be excessively effected by enrichment, rather, the impact may have been a response to low level chronic toxicity. Possible sources include a lingering impact from the Kirby tire fire, agricultural runoff and degraded water quality from point and/or nonpoint sources in the Village of Sycamore. Additional sampling is needed to determine if the condition has persisted and to identify a cause(s).</p>								

Appendix B. Continued

Honey Creek AU# 04100011 080	Aquatic Life Attainment Status							Assessment Unit Score
	Total	Full		Partial		NON		
		#	%	#	%	#	%	
Sites < 50mi ² drainage area	19	8	42	4	21	7	39	62
Miles of assessed streams with > 50mi ² and < 500mi ² drainage area	33.2	18.2	55	7.9	24	7.1	21	
Comments								
<p>The failure of streams within the assessment unit to attain applicable aquatic life uses and water quality criteria can be largely attributed to either agricultural practices within the watershed or point source pollution loadings. Sedimentation, enrichment/low dissolved oxygen and substrate embeddedness were the most common impacts where aquatic life use attainment was not fully met. Many of the sampled locations had slow current which keeps eroded sediment trapped within the stream channel. Minimal sustained flow during the summer months also limited pool depths and availability of riffle habitat at some sites. The channelizing of streams, removal of riparian trees and field tiling to facilitate drainage have reduced the volume of water present during dry weather periods. Levels of phosphorus increase substantially in Honey Creek through the zone that includes New Washington, Attica and Bloomville. The majority of phosphorus appears to originate from the Attica Wastewater Treatment Plant (WWTP).</p> <p>Sediment sampling was conducted in Honey Creek at TR 173 (RM 18.05). Results for metals ranged from slightly elevated to extremely elevated and several values were considered above toxic levels. The substrate was almost entirely bedrock and only a very small amount of sediment was found in an isolated eddy. The results were unexpected and difficult to explain, but, because of the small quantity of sediment at the site, it should not have significant ecological impact.</p>								
Sandusky River - Tiffin (downstream Honey Cr. to upstream Wolf Creek, excluding mainstem) AU# 04100011 090	Aquatic Life Attainment Status							Assessment Unit Score
	Total	Full		Partial		NON		
		#	%	#	%	#	%	
Sites < 50mi ² drainage area	8	1	13	2	25	5	62	50
Miles of assessed streams with > 50mi ² and < 500mi ² drainage area	-	-	-	-	-	-	-	
Comments								
<p>The lack of aquatic life use attainment at all but one site within the assessment unit can be largely attributed to agricultural practices within the watershed. Sedimentation, enrichment/low dissolved oxygen and elevated bacteria levels were a concern along with the low water levels that were encountered during the sampling period. The channelizing of streams, removal of riparian trees and field tiling to facilitate drainage have reduced the volume of water present during dry weather periods.</p>								

Appendix B. Continued

Sandusky River Mainstem (mainstem exceeding 500mi ² drainage area) AU# 04100011 001	Aquatic Life Attainment Status						Assessment Unit Score	
	Total	Full		Partial		NON		
		#	%	#	%	#		%
Assessed Miles with > 500 mi ² drainage area	43.0	36.0	83	7.0	17	-	-	Not applicable
Comments								
<p>Two impounded areas failed to meet the WWH use. The Ella St. dam (RM 42.0) exists to supply drinking water for the City of Tiffin. The St. Johns dam (RM 50.2) allows for small boat recreation, but severely impairs the attainment of the designated WWH use. Both impounded areas were similarly effected by heavy siltation, limited habitat and a lack of discernible flow. Since the Ella St. dam is necessary and its removal is not a possibility, an impounded Modified Warmwater Habitat use (MWH) is appropriate. Biological communities in the impounded reach met this use. The recreational use provided by the St. Johns dam is not sufficient justification for recommending the MWH use. Biological sampling in the St. Johns dam failed to attain the designated WWH aquatic life use. Currently plans are being made for removal of the dam which would result in significant improvement in aquatic life use attainment. Very few water quality problems were documented in the assessment unit, however, urban stormwater is a concern as a source of recreational impairment. A storm on July 24, 2001 apparently produced enough rain to activate combined sewer overflows (CSOs) in Tiffin and elevated bacteria counts were subsequently documented. The associated ammonia and phosphorus concentrations were also higher. Pesticide scans indicated that insecticides used on crops were a concern in several areas. The compound dieldrin was detected in both the Ella St. and St. Johns dam pools on the Sandusky River. The level at both sites exceeded toxicity guidelines.</p>								