

## Use Attainability Analysis

<b>1 Water Body Name</b>	Wolf Creek
<b>2 Segment Description</b>	Mouth to headwaters
<b>3 Segment Length (mi)</b>	11.9
<b>4 Drainage Area (sq. mi.)</b>	20.8
<b>5 Segment Start Latitude, Longitude (DD)</b>	41.81321, -93.31790
<b>6 Segment End Latitude, Longitude (DD)</b>	41.91235, -93.33556
<b>7 Route of Flow (Next Downstream Adopted Designated Use)</b>	Wolf Creek (A3, BWW2, proposed to A2, BWW2, proposed to A1, BWW1, HH, proposed) to Indian Creek (A1, BWW2)
<b>8 NPDES Facility and Permit Number (If Applicable)</b>	Collins, City of STP (8515001)
<b>9 Sample Site ID(s)</b>	1261-3, 1261-4, 1261-5
<b>10 Segment County Name(s)</b>	Jasper / Story
<b>11 Field Work Date(s)</b>	7/23/2015

### 12 Aquatic Life Use Attainability Analysis - Conclusion

<b>Recommended Highest Attainable Use: Aquatic Life Use</b>	BWW1 (mouth to 1261-4)
Physical conditions and flow are sufficient to support a viable community of game fish. Diverse species and age ranges are present in the downstream portion of the segment, indicating a reproducing population (see Supplemental Data Table). Therefore, the highest attainable aquatic life use for this stream segment is BWW1.	

<b>Recommended Highest Attainable Use: Aquatic Life Use</b>	BWW2 (1261-4 to headwaters)
<b>40 CFR 131.10(g)(2) (Flow)</b>	The natural low flow conditions of the stream segment are insufficient to create the habitat necessary to support a viable community of game fish. A lack of age ranges and diversity of game fish species indicates a non-reproducing population (see Site Observations Table). A BWW1 designation requires multiple species and age ranges to be viable. Therefore, the highest attainable aquatic life use for this stream segment is BWW2.
<b>40 CFR 131.10(g)(5) (Physical Conditions)</b>	Physical conditions related to the natural features of the water body are insufficient to support a viable community of game fish. Drainage area, stream width, and maximum depth were within the “consistently negative” game fish indicator responses at 1261-3 (see Table 2 in Appendix I). A lack of age ranges and diversity of game fish species indicates a non-reproducing population (see Site Observations Table). A BWW1 designation requires multiple species and age ranges to be viable. Therefore, the highest attainable aquatic life use for this stream segment is BWW2.

### 13 Recreational Use Attainability Analysis - Conclusion

<b>Recommended Highest Attainable Use: Recreational Use</b>	A1 (mouth to 1261-4)
Water levels and flow are sufficient to support full body immersion (see Site Observations Table). Therefore, the highest attainable recreational use for this stream segment is A1.	

<b>Recommended Highest Attainable Use: Recreational Use</b>	A2 (1261-4 to confluence with unnamed tributary)
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<b>40 CFR 131.10(g)(2) (Flow)</b>	The natural low flow conditions and water levels of the stream segment prevent the attainment of an A1 recreational use (see Site Observations Table). An A1 designation requires the ability for full body immersion. Therefore, the highest attainable recreational use is A2.
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<b>Recommended Recreational Use</b>	A3 (confluence with unnamed tributary to headwaters)
<b>40 CFR 131.10(g)(2) (Flow)</b>	The natural low flow conditions and water levels of the stream segment prevent an A1 recreational use (see Site Observations Table). An A1 designation requires the ability for full body immersion. However, this stream segment overlaps with the Heart of Iowa Nature Trail. Therefore, the A3 recreational use is recommended.

#### Additional Recommended Designation(s) - Conclusion

<b>Recommended Designation: Human Health</b>	HH (mouth to 1261-4)
As this stream segment is receiving a BWW1 designation, an additional Human Health designation shall also be applied.	

#### 14 Flow

Field Work Date	Description
7/23/2015	Based on USGS StreamStats, the stream flow on Wolf Creek on this date was 10.8 cfs, which was within the 25th and 75th percentile flow value range (1.745 cfs - 12.4 cfs).
9/6/2016	Based on USGS StreamStats, the stream flow on Wolf Creek on this date was 6.77 cfs, which was within the 25th and 75th percentile flow value range (1.791 cfs - 12.7 cfs).

#### Use Attainability Analysis - Data Site Observations

Use	Site parameter	Site ID #1261-3
AL/R	<b>15 Latitude, Longitude (DD)</b>	41.89212, -93.32636
AL/R	<b>16 Average Depth (in)</b>	8.5
AL/R	<b>17 Maximum Depth (in)</b>	14
AL/R	<b>18 Stream Width (ft)</b>	5.75
AL/R	<b>19 Pools Observed?</b>	Yes
AL only	<b>20 Non-Game Fish Present and Counts (Species: Number)</b>	Blacknose dace: 1 Creek chub: 3 White sucker: 1
	<b>21 Game Fish Present and Counts (Species (Size Range): Number)</b>	None
R only	<b>22 Stream Habitat (See also: #29 Site Photos)</b>	Deep silt.
	<b>23 Evidence of Use for Primary Contact Recreation? (Yes*/No)</b>	No
	<b>24 Evidence of Use by Children? (Yes*/No)</b>	No
AL/R	<b>25 Evidence of Use for Secondary Contact Recreation? (Yes*/No)</b>	No
	<b>26 Additional Description</b>	Bike trail along the road.

Use	Site parameter	Site ID #1261-4
AL/R	<b>15 Latitude, Longitude (DD)</b>	
AL/R	<b>16 Average Depth (in)</b>	

Use	Site parameter	Site ID #1261-4
AL/R	<b>17 Maximum Depth (in)</b>	41.84906, -93.28528
AL/R	<b>18 Stream Width (ft)</b>	11
AL/R	<b>19 Pools Observed?</b>	>48
AL only	<b>20 Non-Game Fish Present and Counts (Species: Number)</b>	19
	<b>21 Game Fish Present and Counts (Species (Size Range): Number)</b>	Yes
	<b>22 Stream Habitat (See also: #29 Site Photos)</b>	Not sampled
R only	<b>23 Evidence of Use for Primary Contact Recreation? (Yes*/No)</b>	Not sampled
	<b>24 Evidence of Use by Children? (Yes*/No)</b>	The pool was caused by a rock structure. The stream widens and becomes more shallow after the rock structure. The deep pool downstream is approximately 200 by 24 feet.
	<b>25 Evidence of Use for Secondary Contact Recreation? (Yes*/No)</b>	No
AL/R	<b>26 Additional Description</b>	A survey indicated a nearby resident played in the creek as a child.
		No
		Site located at the bridge crossing. Deep pool downstream.

Use	Site parameter	Site ID #1261-5
AL/R	<b>15 Latitude, Longitude (DD)</b>	41.82025, -93.31517
AL/R	<b>16 Average Depth (in)</b>	7
AL/R	<b>17 Maximum Depth (in)</b>	30
AL/R	<b>18 Stream Width (ft)</b>	21
AL/R	<b>19 Pools Observed?</b>	Yes
AL only	<b>20 Non-Game Fish Present and Counts (Species: Number)</b>	Bigmouth shiner: 52 Blacknose dace: 12 Bluntnose minnow: 1 Creek chub: 12 Fathead minnow: 4 Johnny darter: 2 Sand shiner: 9 Suckermouth minnow: 1
	<b>21 Game Fish Present and Counts (Species (Size Range): Number)</b>	None
	<b>22 Stream Habitat (See also: #29 Site Photos)</b>	The stream was wide with a sandy bottom.
R only	<b>23 Evidence of Use for Primary Contact Recreation? (Yes*/No)</b>	No
	<b>24 Evidence of Use by Children? (Yes*/No)</b>	No
	<b>25 Evidence of Use for Secondary Contact Recreation? (Yes*/No)</b>	Rope was found hanging under the bridge. Fishing/seining/minnow trapping by resident. Hunting/trapping listed in public comment. People may enter the stream where a bike path crosses the stream.
AL/R	<b>26 Additional Description</b>	Site located at the bridge.

AL = Aquatic Life

R = Recreation

\*If yes, elaborate.

## 27 Supplemental Data

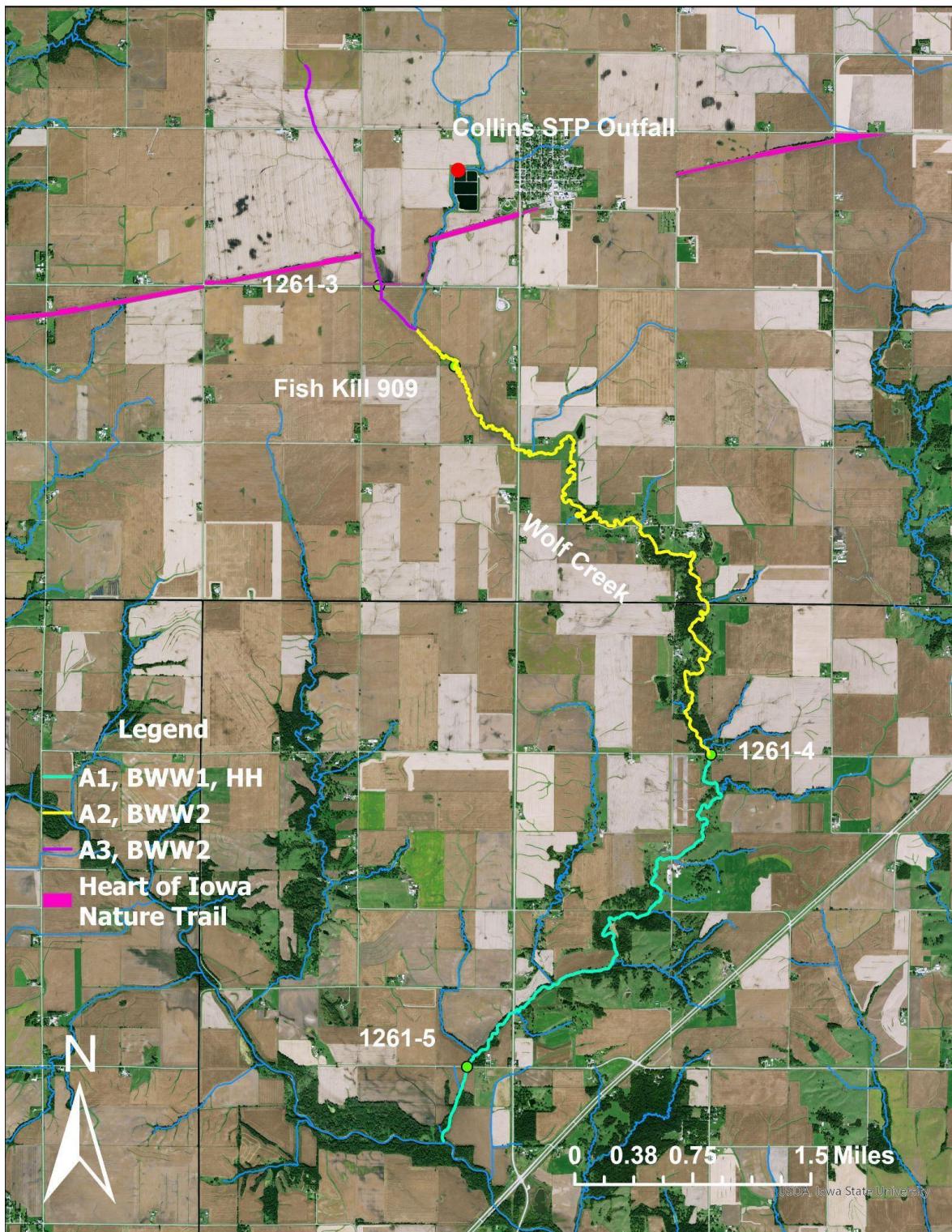
Use	Site parameter	Site ID #182-5
AL/R	Latitude, Longitude (DD)	41.88471, -93.31702
AL/R	Field Work Date	9/6/2016
AL only	Non-Game Fish Present and Counts (Species: Number)	Minnows & shiners: 49,476 Stonerollers & chubs: 15,572 Fathead minnows: 38 Suckers & redhorse: 78 Bullheads & madtoms: 353 Sunfish spp.: 141 Darter spp.: 873
	Game Fish Present and Counts (Species (Size Range): Number)	Largemouth bass: 3 Smallmouth bass: 20
AL/R	Additional Description	<a href="https://programs.iowadnr.gov/fishkill/Events/909">https://programs.iowadnr.gov/fishkill/Events/909</a> The game fish were found in the downstream (proposed BWW1) segment of Wolf Creek. The point listed notes the uppermost point of the extent of the fish kill, which extended 9.25 miles downstream.

AL = Aquatic Life

R = Recreation

Desktop review verified that the UAA field work is still valid.

## 28 Maps of Segment, Outfall, and Site(s)



Note: The game fish from Fish Kill 909 were found in the downstream (proposed BWW1) segment of Wolf Creek. The point shown notes the uppermost point of the extent of the fish kill, which extended 9.25 miles downstream. The point does not indicate the location where the game fish were found.

**29 Site Photos**



**Figure 1. 1261-3 Recreational use assessment midpoint looking upstream.**



**Figure 2. 1261-3 Recreational use assessment midpoint looking downstream.**



**Figure 3. 1261-3 Recreational use assessment upstream looking upstream.**



**Figure 4. 1261-3 Recreational use assessment upstream looking downstream.**



**Figure 5. 1261-3 Recreational use assessment downstream looking upstream.**



**Figure 6. 1261-3 Recreational use assessment downstream looking downstream.**



**Figure 7. 1261-3 Trail facing east.**



**Figure 8. 1261-3 Trail facing west.**



**Figure 9. 1261-4 Recreational use assessment midpoint looking upstream.**



**Figure 10. 1261-4 Recreational use assessment midpoint looking downstream.**



**Figure 11. 1261-4 Recreational use assessment upstream looking upstream.**



**Figure 12. 1261-4 Recreational use assessment upstream looking downstream.**



**Figure 13. 1261-4 Recreational use assessment downstream looking upstream.**



**Figure 14. 1261-4 Recreational use assessment downstream looking downstream.**



**Figure 15. 1261-5 Recreational use assessment midpoint looking upstream.**



**Figure 16. 1261-5 Recreational use assessment midpoint looking downstream.**



**Figure 17. 1261-5 Recreational use assessment upstream looking upstream.**



**Figure 18. 1261-5 Recreational use assessment upstream looking downstream.**



**Figure 19. 1261-5 Recreational use assessment downstream looking upstream.**



**Figure 20. 1261-5 Recreational use assessment downstream looking downstream.**



**Figure 21. 1261-5 Rope hanging under bridge.**

## Appendix I.

### c. Stream Flow and Habitat Data

Data analysis results for stream flow and habitat variables were similar to game fish indicator results. Stream width, average thalweg depth, maximum depth, and flow appear to be the characteristics that correlate the best with consistently positive game fish indicators. Stream flow and habitat dimensions (where available) were consistently larger for streams with watershed sizes exceeding 275 square miles. Habitat measurements are not available for the largest sample sites that were sampled by boat instead of the typical wading method.

Ranges of stream size, habitat and flow associated with varying levels of game fish indicator responses are listed in Table 2. These are general statewide values, which may assist in decision making related to the recommendation of warm water aquatic life use designations. In general terms, stream segments that have watershed area, flow and habitat characteristics in the green shaded boxes have a greater probability that game fish indicators will be consistently positive (i.e., consistent with Class B(WW-1)), while stream habitat and flow levels that equate to the red boxes are much less likely to support game fish populations (i.e., Class B(WW-2) or Class B(WW-3)). Stream segments that have a mixture of characteristics, mainly in the yellow range, may require consideration of the additional habitat features collected during the field assessment, to determine the appropriate aquatic life use designation.

**Table 2. Generalized statewide ranges of stream habitat indicator levels and associated game fish indicator responses.**

Game Fish Indicator Responses	Stream Watershed Area (sq.mi.)	Stream Flow (typical base flow - cfs)	Stream Width Average (ft)	Average Depth (ft)	Avg. Thalweg Depth (ft)	Maximum Depth (ft)
Consistently Positive	>275	>30	>65	>1.2	>2.2	>4.4
Mixed	25-275	0.8-30	11-65	0.2-1.2	0.8-2.2	1.8-4.4
Consistently Negative	<25	<0.8	<11	<0.2	<0.8	<1.8

Iowa uses U.S. EPA's Level IV Ecoregions as a template for wadeable stream biological condition assessment. Stream flow and habitat characteristics can vary from ecoregion to ecoregion. To provide additional insight into where the area of overlap exists between Class B(LR/WW-2) and Class B(WW/WW-1) streams, a query of Iowa's bioassessment database produced 476 habitat assessment records from which a summary of habitat characteristics was prepared (Table 3a-f) (see appendix for full spreadsheet). The summary is grouped by ecoregion and former designated uses in order to illustrate the extremes and ranges of overlap in habitat characteristics.