Use Attainability Analysis

1 Water Body Name	Coal Creek
2 Segment Description	Mouth to headwaters
3 Segment Length (mi)	12.7
4 Drainage Area (sq. mi.)	22.2
5 Segment Start Latitude, Longitude (DD)	41.33635, -92.30831
6 Segment End Latitude, Longitude (DD)	41.46683, -92.36931
7 Route of Flow (Next Downstream Adopted Designated Use)	Coal Creek (A2, BWW2, proposed to A3, BWW1, HH, proposed to A2, BWW1, HH, proposed) to Cedar Creek (A2, BWW2)
8 NPDES Facility and Permit Number (If Applicable)	What Cheer, City of STP (5493001)
9 Sample Site ID(s)	463-1a, 463-2, 463-3, 1526
10 Segment County Name(s)	Keokuk
11 Field Work Date(s)	9/2/2011 (BioNet 807), 9/30/2015 (463-2, 463-3), 7/29/2016 (463-1a), 6/27/2024 (1526)

12 Aquatic Life Use Attainability Analysis - Conclusion

Extent:	Mouth (41.33635, -92.30831) to 170th St. (41.40867, -92.36405)
Recommended Highest Attainable Use: Aquatic Life Use	BWW1
Physical conditions and flow are sufficient to support a viable community of game fish. Diverse species and age ranges are present, indicating a reproducing population (see Site Observations Table). Therefore, the highest attainable aquatic life use for this stream segment is BWW1.	

Extent:	170th St. (41.40867, -92.36405) to headwaters (41.46683, -92.36931)
Recommended Highest Attainable Use: Aquatic Life Use	BWW2
40 CFR 131.10(g)(2) (Flow)	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.
40 CFR 131.10(g)(5) (Physical Conditions)	Physical conditions related to the natural features of the water body are insufficient to support a viable community of game fish. Drainage area and maximum depth fall within the “consistently negative” game fish indicator responses (see Table 2 in Appendix I). Drainage area falls within the “consistently negative” game fish indicator responses (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

Extent:	Mouth (41.33635, -92.30831) to confluence with an unnamed creek (41.38910, -92.34518)

Recommended Highest Attainable Use: Recreational Use	A2
40 CFR 131.10(g)(2) (Flow)	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.

Extent:	Confluence with an unnamed creek (41.38910, -92.34518) to 170th St. (41.40867, -92.36405)
Recommended Highest Attainable Use: Recreational Use	A3
40 CFR 131.10(g)(2) (Flow)	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. However, this stream segment is in close proximity to a population center/park. Therefore, the A3 recreational use is recommended.

Extent:	170th St. (41.40867, -92.36405) to headwaters (41.46683, -92.36931)
Recommended Highest Attainable Use: Recreational Use	A2
40 CFR 131.10(g)(2) (Flow)	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.

Additional Recommended Designation(s) - Conclusion

Extent:	Mouth (41.33635, -92.30831) to 170th St. (41.40867, -92.36405)
Recommended Designation: Human Health	HH
40 CFR 131.10(g)(2) (Flow)	As this stream segment is receiving a BWW1 designation, an additional Human Health designation shall also be applied.

14 Flow

Field Work Date	Description
9/2/2011	USGS stream gage data for the area indicated stream flows were normal at the time of the assessment.
9/30/2015	USGS stream gage data for the area indicated stream flows were above normal at the time of the assessment.
7/29/2016	USGS stream gage data for the area indicated stream flows were normal at the time of the assessment.
6/27/2024	USGS stream gage data for the area indicated stream flows were normal at the time of the assessment.

Use Attainability Analysis - Data

Site Observations

Use	Site parameter	Site ID #463-1a
AL/R	**15 Latitude, Longitude (DD)**	41.39839, -92.35355
AL/R	**16 Average Depth (in)**	6
AL/R	**17 Maximum Depth (in)**	18
AL/R	**18 Stream Width (ft)**	12

Use	Site parameter	Site ID #463-1a
AL/R	**19 Pools Observed?**	Yes
AL only	**20 Non-Game Fish Present and Counts (Species: Number)**	Bluntnose minnow: 7 Central stoneroller: 2 Creek chub: 37 Green sunfish: 12 Johnny darter: 18 Red shiner: 1 Sand shiner: 5
	21 Game Fish Present and Counts (Species (Size Range): Number)	Yellow bullhead (unknown): 1 Largemouth bass (unknown): 1
	22 Stream Habitat (See also: #29 Site Photos)	Well shaded at start of transect, Some pools and debris for habitat.
R only	**23 Evidence of Use for Primary Contact Recreation? (Yes*/No)**	No
	24 Evidence of Use by Children? (Yes*/No)	No
	25 Evidence of Use for Secondary Contact Recreation? (Yes*/No)	No
AL/R	**26 Additional Description**	In town. The stream flows past a city park. Upstream of outfall. Old graffiti under bridge, old trash under bridge and in stream channel.

Use	Site parameter	Site ID #463-2
AL/R	**15 Latitude, Longitude (DD)**	41.36751, -92.32609
AL/R	**16 Average Depth (in)**	7.5
AL/R	**17 Maximum Depth (in)**	17
AL/R	**18 Stream Width (ft)**	11
AL/R	**19 Pools Observed?**	Yes
AL only	**20 Non-Game Fish Present and Counts (Species: Number)**	Not sampled
	21 Game Fish Present and Counts (Species (Size Range): Number)	Not sampled
	22 Stream Habitat (See also: #29 Site Photos)	Not sampled
R only	**23 Evidence of Use for Primary Contact Recreation? (Yes*/No)**	No
	24 Evidence of Use by Children? (Yes*/No)	No
	25 Evidence of Use for Secondary Contact Recreation? (Yes*/No)	No
AL/R	**26 Additional Description**	Surrounding land use is row crop and timber. Remote location at dead end minimum maintenance road.

Use	Site parameter	Site ID #463-3
AL/R	**15 Latitude, Longitude (DD)**	41.33650, -92.30829
AL/R	**16 Average Depth (in)**	8
AL/R	**17 Maximum Depth (in)**	27.6
AL/R	**18 Stream Width (ft)**	10.5
AL/R	**19 Pools Observed?**	Yes

Use	Site parameter	Site ID #463-3
AL only	**20 Non-Game Fish Present and Counts (Species: Number)**	Bigmouth shiner: 3 Bluntnose minnow: 7 Brassy minnow: 2 Creek chub: 25 Green sunfish: 4 Johnny darter: 1 Spotfin shiner: 1 Suckermouth minnow: 3
	21 Game Fish Present and Counts (Species (Size Range): Number)	None
	22 Stream Habitat (See also: #29 Site Photos)	Row crop to edges, heavily eroded, little shading, good flow. Entrenched stream channel with primarily run.
R only	**23 Evidence of Use for Primary Contact Recreation? (Yes*/No)**	No
	24 Evidence of Use by Children? (Yes*/No)	No
	25 Evidence of Use for Secondary Contact Recreation? (Yes*/No)	No
AL/R	**26 Additional Description**	N/A

Use	Site parameter	Site ID #1526 Fish
AL/R	**15 Latitude, Longitude (DD)**	41.35103, -92.31119
AL/R	**16 Average Depth (in)**	18
AL/R	**17 Maximum Depth (in)**	36
AL/R	**18 Stream Width (ft)**	Not sampled
AL/R	**19 Pools Observed?**	No comments noted
AL only	**20 Non-Game Fish Present and Counts (Species: Number)**	Bigmouth shiner: 3 Bluntnose minnow: 16 Central stoneroller: 2 Creek chub: 10 Green sunfish: 6 Johnny darter: 7 Red shiner: 4 White sucker: 1
	21 Game Fish Present and Counts (Species (Size Range): Number)	Bluegill (1-3”): 11 Yellow bullhead (4-6”): 1
	22 Stream Habitat (See also: #29 Site Photos)	No comments noted
R only	**23 Evidence of Use for Primary Contact Recreation? (Yes*/No)**	No comments noted
	24 Evidence of Use by Children? (Yes*/No)	No comments noted
	25 Evidence of Use for Secondary Contact Recreation? (Yes*/No)	No comments noted
AL/R	**26 Additional Description**	The photos show that the stream is a run.

Use	Site parameter	Site ID #1526 Visual 1
AL/R	**15 Latitude, Longitude (DD)**	41.39934, -92.35466
AL/R	**16 Average Depth (in)**	12
AL/R	**17 Maximum Depth (in)**	24
AL/R	**18 Stream Width (ft)**	Not sampled
AL/R	**19 Pools Observed?**	No comments noted
AL only	**20 Non-Game Fish Present and Counts (Species: Number)**	N/A

Use	Site parameter	Site ID #1526 Visual 1
	21 Game Fish Present and Counts (Species (Size Range): Number)	N/A
	22 Stream Habitat (See also: #29 Site Photos)	No comments noted
R only	**23 Evidence of Use for Primary Contact Recreation? (Yes*/No)**	No comments noted
	24 Evidence of Use by Children? (Yes*/No)	No comments noted
	25 Evidence of Use for Secondary Contact Recreation? (Yes*/No)	No comments noted
AL/R	**26 Additional Description**	The photos show woody debris in the stream and the stream flows by a baseball park.

Use	Site parameter	Site ID #1526 Visual 2
AL/R	**15 Latitude, Longitude (DD)**	41.45236, -92.37011
AL/R	**16 Average Depth (in)**	9
AL/R	**17 Maximum Depth (in)**	12
AL/R	**18 Stream Width (ft)**	Not sampled
AL/R	**19 Pools Observed?**	No comments noted
AL only	**20 Non-Game Fish Present and Counts (Species: Number)**	N/A
	21 Game Fish Present and Counts (Species (Size Range): Number)	N/A
	22 Stream Habitat (See also: #29 Site Photos)	No comments noted
R only	**23 Evidence of Use for Primary Contact Recreation? (Yes*/No)**	No comments noted
	24 Evidence of Use by Children? (Yes*/No)	No comments noted
	25 Evidence of Use for Secondary Contact Recreation? (Yes*/No)	No comments noted
AL/R	**26 Additional Description**	N/A

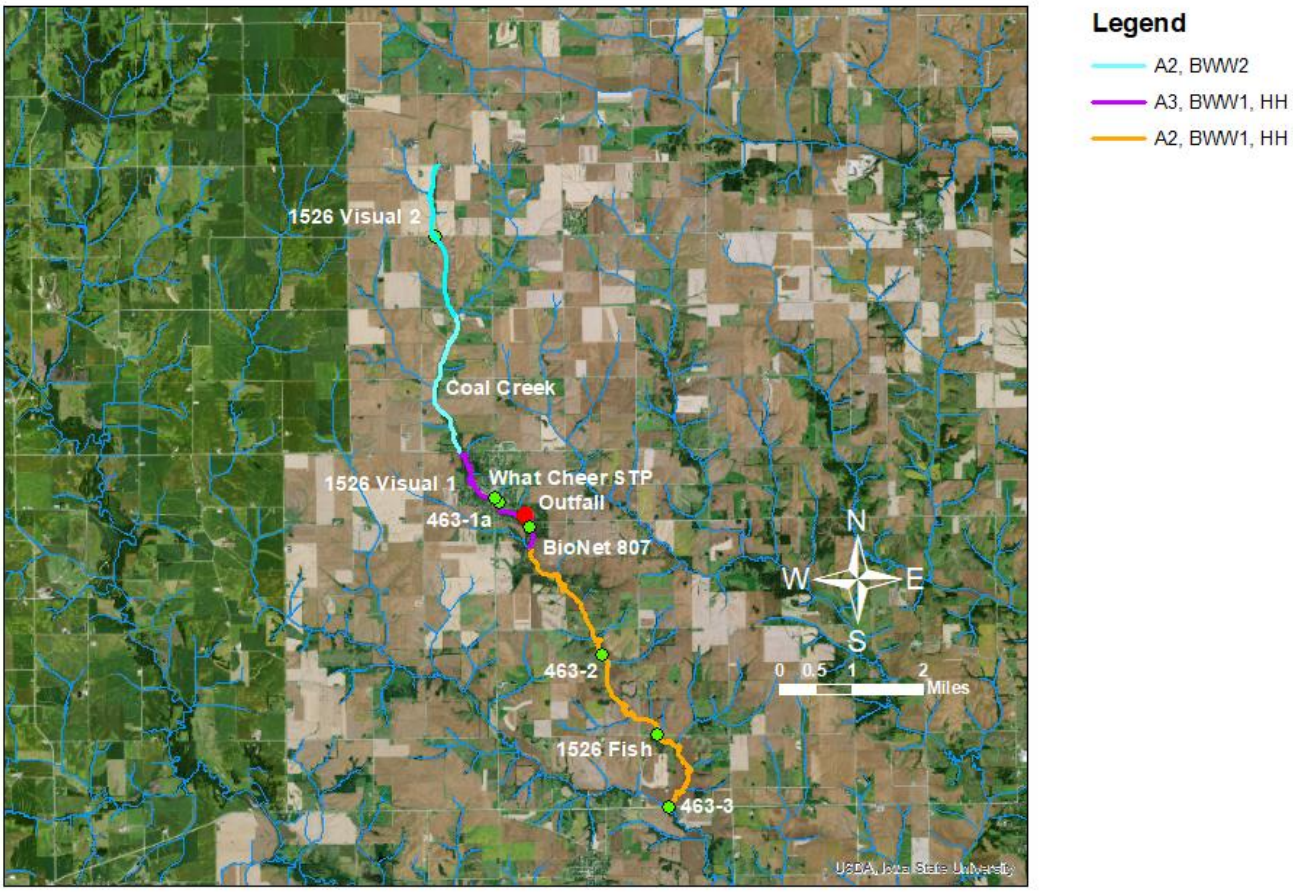
AL = Aquatic Life
R = Recreation
*If yes, elaborate.

27 Supplemental Data:

Use	Site parameter	BioNet Site ID #807 (Fish Kill Follow-Up)
AL/R	**Latitude, Longitude (DD)**	41.39326, -92.34535
AL/R	**Field Work Date**	9/2/2011
AL/R	**Average Depth (in)**	Not sampled
AL/R	**Maximum Depth (in)**	Not sampled
AL/R	**Stream Width (ft)**	Not sampled
AL only	**Pools Observed?**	N/A
	Non-Game Fish Present and Counts (Species: Number)	Bigmouth shiner: 143 Bluntnose minnow: 44 Brassy minnow: 1 Central stoneroller: 2 Creek chub: 69 Green sunfish: 48 Johnny darter: 2 Sand shiner: 11 Suckermouth minnow: 11

Use	Site parameter	BioNet Site ID #807 (Fish Kill Follow-Up)
AL/R	**Game Fish Present and Counts (Species (Size Range): Number)**	Black bullhead (unknown): 18 Bluegill (1-3”): 10 Bluegill (4-6”): 4 Largemouth bass (1-3”): 32 Largemouth bass (4-6”): 2 Largemouth bass (7-9”): 1 Yellow bullhead (unknown): 16
	Additional Description	https://programs.iowadnr.gov/bionet/Sites/807

28 Map of Segment, Outfall, Site(s)



29 Site Photos

Figure 1. 463-1a Recreational use assessment midpoint looking upstream.

Figure 2. 463-1a Recreational use assessment midpoint looking downstream.

Figure 3. 463-1a Recreational use assessment upstream looking upstream.

Figure 4. 463-1a Recreational use assessment upstream looking downstream.

Figure 5. 463-1a Recreational use assessment downstream looking upstream.

Figure 6. 463-1a Recreational use assessment downstream looking downstream.

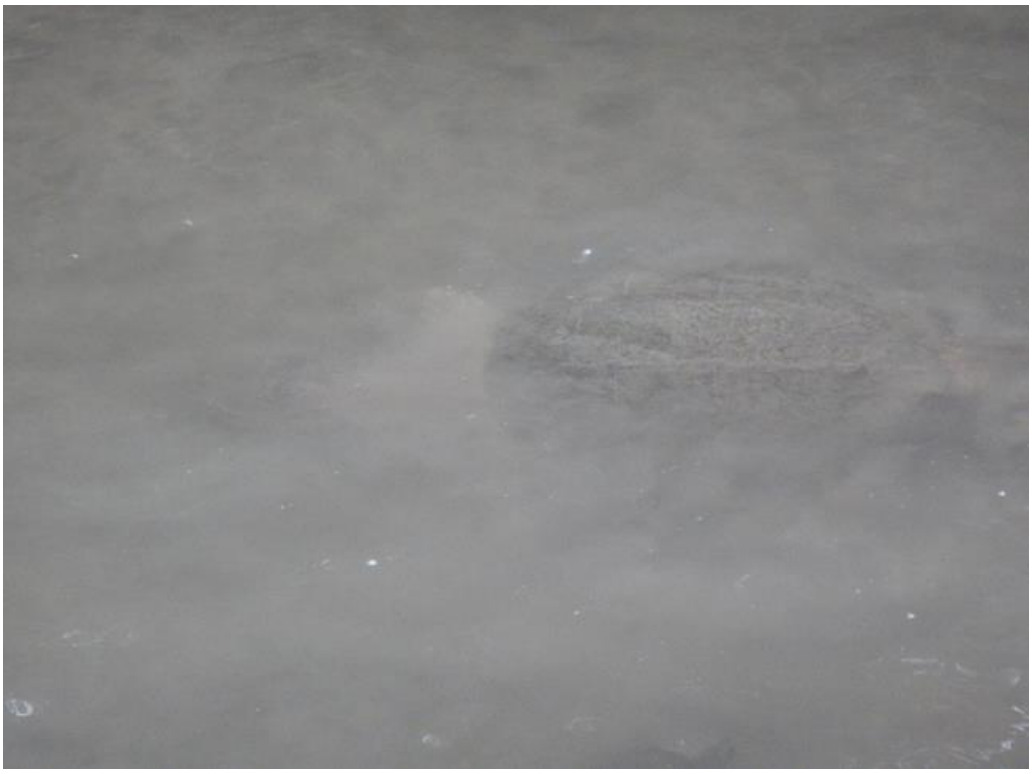


Figure 7. 463-1a Snapping turtle.

Figure 8. 463-1a Creek chub.

Figure 9. 463-2 Recreational use assessment midpoint looking upstream.

Figure 10. 463-2 Recreational use assessment midpoint looking downstream.

Figure 11. 463-2 Recreational use assessment upstream looking upstream.

Figure 12. 463-2 Recreational use assessment upstream looking downstream.

Figure 13. 463-2 Recreational use assessment downstream looking upstream.

Figure 14. 463-2 Recreational use assessment downstream looking downstream.

Figure 15. 463-2 Unfinished bridge.

Figure 16. 463-3 Recreational use assessment midpoint looking upstream.

Figure 17. 463-3 Recreational use assessment midpoint looking downstream.

Figure 18. 463-3 Recreational use assessment upstream looking upstream.

Figure 19. 463-3 Recreational use assessment upstream looking downstream.

Figure 20. 463-3 Recreational use assessment downstream looking upstream.

Figure 21. 463-3 Recreational use assessment downstream looking downstream.

Figure 22. 463-3 End of aquatic assessment looking upstream.

Figure 23. 463-3 End of aquatic assessment looking downstream.

Figure 24. 463-3 Brassy minnow.

Figure 25. 1526 Visual 1 Looking upstream.

Figure 26. 1526 Visual 1 Looking downstream.

Figure 27. 1526 Visual 2 Looking upstream.

Figure 28. 1526 Visual 2 Looking downstream.

Figure 29. 1526 Fish upstream assessment looking upstream

Figure 30. 1526 Fish Upstream assessment looking downstream

Figure 31. 1526 Fish downstream assessment looking upstream

Figure 32. 1526 Fish downstream assessment looking downstream.

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.