

# Warm Water Stream Use Assessment and Attainability Analysis Protocol



Iowa Department of Natural Resources  
Water Resources Section

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## I. Background

The Iowa Code (455B) and the Water Quality Standards (IAC 567 - Chapter 61) establish water quality goals for all waters of the state. Waters of the state are defined in Iowa Code 445B.171(36) as:

“any stream, lake, pond, marsh, watercourse, waterway, well, spring, reservoir, aquifer, irrigation system, drainage system, and any other body or accumulation of water, surface or underground, natural or artificial, public or private, which are contained within, flow through or border upon the state or any portion thereof”.

Designated waters are an important subset of the waters of the state because these waters are required to support specified beneficial uses and are subject to numeric water quality criteria designed to protect those uses. It is important to note that a blanket Class A-1 Primary Contact and Class B(WW-1) warmwater aquatic life designation was made for all non-designated perennial streams and intermittent stream reaches with perennial pools. The procedures discussed in this document are intended to provide guidance for DNR staff or other entities to use in developing recommendations regarding the attainable use designation of any warm water streams, including the stream reaches receiving blanket designation. Any change to a waterbody’s classification and any additions to the Surface Water Classification document will be done through the state’s rulemaking procedures.

The objective of this use assessment and attainability analyses protocol is to provide sufficient information regarding aquatic life and fish consumption activities and reasonably attainable uses on warm water streams. The information will be used by the department to determine the appropriate use designation, the boundaries between designations, and the upper extent of designated uses for warm water streams. The information could also be used to provide documentation necessary in the preparation of a Use Attainability Analysis - the justification needed to adopt a lesser or non-Class B(WW-1) use designation. Three separate warmwater aquatic life use designations exist (Class B(WW-1), Class B(WW-2), and Class B(WW-3)).

In addition, the human health fish consumption use is now separated from the aquatic life use designations. Previously, the human health fish consumption use was tied directly to the Class B(WW) Significant Resource, Class B(CW) Cold Water and Class B(LW) Lake and Wetlands aquatic life use designations. The separation of these uses allows flexibility when determining whether fish harvest for human consumption is occurring on any given stream, not just one specific stream class (i.e. the old Class B(WW) use designation).

The protocol is intended to promote consistency in evaluating warm water streams throughout the state, and to notify the public of the procedures generally employed by staff members in evaluating waters of the state. The protocol provides guidance regarding the approach for developing stream use recommendations and use attainability of a waterbody. The department will make recommendations for stream use designations on a case-by-case basis considering any and all relevant factors and procedures. The information, observations, and findings obtained from the field assessment may be used by the Department in the preparation of a formal Use Attainability Analysis document. This document may be prepared to justify either a particular use designation or a designation modification.

Final determination of the appropriate classification or warm water stream use designation will be made by a multidivisional committee composed of Water Quality Standards, Fisheries, and Water Quality Assessment staff. As noted in Appendix 6 - Submittal & Review Procedures, if the information gathered supports a clear decision, the decision will be integrated into a proposed Notice of Intended Action (NOIA) submitted for approval before the Environmental Protection Commission (the EPC). Any designated use modifications will be incorporated into Iowa’s Water Quality Standards through the formal rulemaking process, including public comments. All designated use modifications proposed by the EPC will be open to comments from USEPA Region 7 during the water quality standards rulemaking process to seek federal agreement with the recommendations.

## II. Surface Water Classification

The warm water stream use designations are intended to protect aquatic life and humans consuming fish harvested from the streams. Designated use definitions for aquatic life and human health are provided in Chapter 61.3(1)b as follows:

b. *Designated use segments.* These are water bodies that maintain flow throughout the year, or contain sufficient pooled areas during intermittent flow periods to maintain a viable aquatic community. Designated use waters are to be protected for all uses of general use segments in addition to the specific uses assigned. Designated use segments include:

- (8) Warm water - Type 1 (Class "B(WW-1)"). Waters in which temperature, flow and other habitat characteristics are suitable to maintain warm water game fish populations along with a resident aquatic community that includes a variety of native fish and invertebrate species. These waters generally include border rivers, large interior rivers, and the lower segments of medium-size tributary streams.
- (9) Warm water - Type 2 (Class "B(WW-2)"). Waters in which flow or other physical characteristics are capable of supporting a resident aquatic community that includes a variety of native non-game fish and invertebrate species. The flow and other physical characteristics limit the maintenance of warm water game fish populations. These waters generally consist of small perennially flowing streams.
- (10) Warm water (Class "B(WW-3)"). Waters in which flow persists during periods when antecedent soil moisture and ground water discharge levels are adequate; however, aquatic habitat typically consists of non-flowing pools during dry periods of the year. These waters generally include small streams of marginally perennial aquatic habitat status. Such waters support a limited variety of native fish and invertebrate species that are adapted to survive in relatively harsh aquatic conditions.
- (12) Human Health (Class "HH"). Waters in which fish are harvested for human consumption.

### III. Preparation for Warm Water Stream Use Assessments

Review all applicable files, databases, and maps in order to become thoroughly familiar with the stream to be inspected and to determine what sampling should be conducted. For many upper watershed stream reaches being assessed, it is important to consult county and drainage district files to determine if the assessed reach is part of an established district and the nature of maintenance activities.

### IV. Field Assessment Procedures for Warm Water Stream Use Assessments

If there is insufficient information based on literature review concerning resident aquatic communities, it will be necessary to document the aquatic life community through field assessments. Field assessments must be conducted by DNR staff, a qualified aquatic biologist, or person trained in habitat evaluation and fish sampling by appropriate DNR staff. A qualified aquatic biologist or person trained in habitat evaluation and fish sampling includes any person with appropriate post-secondary coursework in aquatic biology, aquatic ecology, aquatic invertebrate zoology, ichthyology, and/or limnology with field experience in the identification of aquatic and semiaquatic species native to Iowa.

- A. *Visual Review:* Field activities begin with a visual inspection of the targeted stream at several locations, typically bridge crossings or other available access points. Those locations deemed most representative of the waterbody are selected for further study. If a site is believed to afford unusual or outstanding biological habitat, it can be included as an additional study location even if it is unrepresentative of the waterbody as a whole. This increases the likelihood that rare or unusual biological assemblages will be identified and assigned an appropriate level of protection under the water quality standards. Use assessments will generally have more sites (a minimum of three) due to the possibility of anomalous habitat conditions at any given access point. Stream reaches selected for assessment should extend in length at least thirty times the width of the stream as measured at base flow. A minimum assessment distance should be at least 150 meters while the maximum assessment length should not exceed 350 meters.
- B. *Time of year:* Evaluations that involve sampling of fish populations should be conducted from July through September. During these months, stream flows and turbidities are usually low, and fish communities are relatively stable. Stream fish communities are typically unstable during spring spawning periods and during pre-winter movements to deeper water of rivers. Field evaluations may, however, be conducted in spring and fall if flows are relatively low and stable and if work deadlines require sampling at other than optimal conditions.

Stream evaluations should be conducted during normal base-flow conditions. Normal base-flow conditions or seasonal low flow conditions primarily exist during dry periods or when the impact of precipitation on stream is relatively non-existent. The State of Missouri has interpreted a dry period to mean the watershed has received no

24-hour rainfall in excess of 0.25" and no more than 0.5" total rainfall in the preceding two weeks during the time period between July 1 and September 30. The Department will follow this same interpretation.

Evaluations will be conducted at flows greater than the critical low flow (7-day, 10-year low flow (7Q10)). Because the aquatic community integrates results of environmental fluctuations over time, and because the resident aquatic community has survived extremes in flow and water quality, evaluation at times of maximum stress (e.g., the 7Q10 flow) is not necessary. The aquatic community present during sampling reflects the frequency and magnitude of impact from low flows and other water quality problems. Streams that experience long periods of low flow will likely have less diverse and complex communities than streams with more stable flow.

- C. *Map Documentation*: Assessment sites shall be designated for each use assessment and clearly marked on 1:24,000 scale (7.5-minute series) United States Geological Survey (USGS) maps (available at Internet sites such as [www.topozone.com](http://www.topozone.com)). Global positioning system (GPS) coordinates should be taken on-site and recorded on field forms. Geographic Information System (GIS) software may be used to provide detailed maps as well.
- D. *Physical Habitat Evaluation (Narrative Site Assessments)*: Narrative assessments are to be clearly recorded, either by electronic or written means, at each assessment site (see Appendix 4). Record observations before moving to the next assessment site to eliminate risk of mistakes or confusion regarding uses among multiple sites.

The written assessment must specify the targeted stream, its legal location (i.e. section, township/tier, range), GPS coordinates, field physical data, photographic reference numbers or exposure information, stream width, depth and flow estimations, habitat types present, observations of unusual conditions such as turbid water conditions, extensive or abnormal algal blooms (both attached and free floating forms), dead fish or animals, or unusual odors (anaerobic or objectionable), streambank water diversions, observations of aquatic life such as fish or mussels, observations of semiaquatic life such as amphibians, waterfowl, or furbearers, etc.

Important in the field assessment of physical habitat is the documentation of the nature and extent of man's activities in and directly along the stream channel and its alignment. This would include an estimation of the extent (percentage) of the stream reach that is channelized, indication of recent channel maintenance activities and the degree of natural re-meandering. A description of other activities being made in and along the stream reach should be noted, such as livestock watering, pasturing, proximity to open feedlots, barn yards with livestock present (current or past), golf courses, etc. Any physical barriers or impedances that may exist to the upstream aquatic life movement should be noted, such as silt dams, culverts with drop outlets greater than 2 feet, instream erosion control structures, dams creating on-stream impoundments or farm ponds, etc. Comments should be included in the field notes if these activities of man or other factors appeared to influence (positively or negatively) the physical habitats ability to support the aquatic habitat observed at other upstream or downstream assessment sites.

In upper watershed reaches, the observed and apparent sources of base stream flow should be described, such as tile lines, bank seeps, constructed wetlands, wastewater treatment facilities, or other man-contributed sources. Description of the estimated flow from these sources and any information on the variability of contribution should be included. Also to be included are any noted or perceived losses in stream flow between assessment sites in a reach, due to such factors as evapotranspiration, infiltration due to sand, loamy stream bed composition or fractured bedrock, water withdrawal, or even nearby irrigation equipment. Comments should be included in the field notes if the observed flow conditions appeared to influence (positively or negatively) the physical habitats ability to support the aquatic habitat observed at other upstream or downstream assessment sites.

- E. *Photographic Record*: A digital photographic record must be made of sites assessed. Photographs should be taken from the same point in the stream each time the station is sampled. When possible, successive photographs should be taken during similar light conditions and if possible, be taken at the same time of the day, or month in which the previous photographs were taken. The photographs must include an upstream view, downstream view, any photographs required to document observed or potential uses, any photographs required to document man's activities in and directly along the stream channel and its alignment, and unionid mussels found. It is encouraged to include some object in each photograph that indicates a scale or size reference, such as a statia rod, ruler, or similar

scale reference. Photographs must be marked or catalogued on a manner that indicates the site location and sampling date and what is being shown by each photograph.

- F. *Interviews*: If possible, streamside or other local landowners or residents should be interviewed regarding past and present aquatic life uses of the stream and any social benefits of the stream. Persons interviewed should be identified by name and legal address in the written assessment,
- G. *Biological Community Sampling*: Sampling will normally focus on two groups of organisms, fish and mussels. For those stream reaches where fish and mussels were not present, it is important to characterize the presence of other aquatic species, such as invertebrates. The objective of the sampling effort is to adequately document the existing aquatic community, yet targeting the sampling for less challenging organisms first. Prior to any fish or mussel collection activities, a scientific collector's permit must be obtained from Iowa Department of Natural Resources at the following website: <http://www.iowadnr.com/license/prof.html>.

A federal collector's permit is required if federally protected (threatened & endangered) species are likely to be encountered (See Appendix 2). The permit contact information for the U.S. Fish and Wildlife Service is:

U.S. Fish and Wildlife Service  
Endangered Species Permit Office  
BH Whipple Federal Building  
One Federal Drive  
Fort Snelling, MN 55111-4056

Web: <http://midwest.fws.gov/endangered>

Phone: 612-713-5350

email: [permitsR3ES@fws.gov](mailto:permitsR3ES@fws.gov)

Fax: 612-713-5292

Fish collection procedures must focus on a multi-habitat approach, allowing the sampling of habitats in relative proportion to their local availability. Each sample reach should contain riffle, run, and pool habitats, if present. If possible, the sample reach should be located away from influences of point and localized non-point sources of pollution and channelized bridge or road crossings. Ability to access and wade the stream may govern the exact placement of the sample reach.

Fish (except for young of the year) collected within the sample reach must be identified to species (or subspecies) and enumerated. Field identifications are acceptable. Voucher samples are not necessary. Detailed photographic records can be used if there is doubt about the correct identity of the fish specimen.

Immediately following the data recording phase of the procedure, specimens that have been identified and enumerated in the field should be released on-site to minimize mortality.

Unionid mussels present at the sample points must be identified, recorded, and enumerated. Live unionid mussels should be recorded, photographed, and immediately released on-site. Photographic documentation is especially important for T&E species, which should be released on-site. Remnant valves (recent, weathered, and semi-fossil) must be collected in numbers proportional to their presence and made available to the DNR for identification, cataloguing and archiving.

If inadequate fish populations are noted in a given stream segment or sampling site, then invertebrate sampling should be conducted. The invertebrate collection procedures should follow the same basic procedure as for fish collection noted above by focusing on a multi-habitat approach, allowing the sampling of habitats in relative proportion to their local availability. Each sample reach should contain riffle, run, and pool habitats, if present. If possible, the sample reach should be located away from influences of point and localized non-point sources of

pollution and channelized bridge or road crossings. Ability to access and wade the stream may govern the exact placement of the sample reach.

- H. *Findings of the Aquatic Life Use Assessment*: A written statement of finding and all supporting documentation must be presented to the DNR for review. The statement may include the sampler's professional position on the pertinent findings that indicate the supportability of the designation being proposed for adoption in the Iowa Water Quality Standards, IAC 567-61.3(5). If field and taxonomic assessments have been conducted, a statement of the qualifications of the participating biologists must be included.

## V. Use Assessment Guidelines

As stated above, the protocol provides general guidance regarding the approach for developing stream use recommendations. The department will make recommendations for stream use designations on a case-by-case basis considering any and all relevant factors and procedures. The use assessments guidelines below essentially list the attributes of each new use designation and will be used by staff to determine the appropriate use designation. Final determination of the appropriate classification or warm water stream use designation will be made by a multidivisional committee composed of Water Quality Standards, Fisheries, and Water Quality Assessment staff.

A written justification will be provided for each waterbody as the recommendations for a specific use designation are finalized.

- A. Guidelines for Class B(WW-1) Warm Water streams
  - 1. Presence of permanent flow and habitat necessary to support diverse fish communities that include sustainable populations of warm water game fish. (see Appendix 1 for a list of warm water game fish in Iowa).
  - 2. These waters generally include border rivers, large interior rivers, and lower segments of medium size tributary streams.
- B. Guidelines for Class B(WW-2) Warm Water streams
  - 1. These waters have permanent flow and habitat necessary to support an aquatic community throughout the year, but may not have adequate flow and habitat to support sustainable populations of game fish.
  - 3. These waters generally include small perennially flowing streams.
- D. Guidelines for Class B(WW-3) Warm Water streams
  - 1. These waters have very limited flow in the stream, if any, at base flow conditions with pooled conditions persisting throughout the stream reach.
  - 2. These waters have adequate habitat to support an aquatic community throughout the year but do not have adequate flow and habitat to support sustainable populations of game fish.
  - 3. The thalweg distance of each 0.5 mile segment evaluated should be either at least 20% pooled or the pooled frequency should exceed 5 pools.
- E. Guidelines for Class HH Human Health streams
  - 1. Documented game fish harvest for human consumption. Common game fish are noted in Appendix 1. For some stream reaches, it is recognized that the white sucker also is harvested for human consumption. Documentation can include all or some of the following:
    - a. Evidence of fishing (i.e., remnants of fishing line, worm containers, etc.)
    - b. Interviews of nearby residents
    - c. Staff knowledge of game fish harvest on specific streams.
    - d. Game fish of harvestable size

## Appendix 1. Common warmwater game fish of Iowa streams and rivers

(Developed from: Harlan et al. 1987)

Family	Common Name	Scientific Name
Polyodontidae	paddlefish	<i>Polyodon spathula</i>
Acipenseridae	shovelnose sturgeon	<i>Scaphirhynchus platorvnychus</i>
Esocidae	northern pike	<i>Esox lucius</i>
Cyprinidae	common carp	<i>Cyprinus carpio</i>
Ictaluridae	channel catfish	<i>Ictalurus punctatus</i>
	black bullhead	<i>Ameiurus melas</i>
	yellow bullhead	<i>Ameiurus natalis</i>
	flathead catfish	<i>Pylodictis olivaris</i>
Percichthyidae	white bass	<i>Morone chrysops</i>
	yellow bass	<i>Morone mississippiensis</i>
Centrarchidae	largemouth bass	<i>Micropterus salmoides</i>
	smallmouth bass	<i>Micropterus dolomieu</i>
	white crappie	<i>Pomoxis annularis</i>
	black crappie	<i>Pomoxis nigromaculatus</i>
	bluegill	<i>Lepomis macrochirus</i>
Percidae	yellow perch	<i>Perca flavescens</i>
	walleye	<i>Sander vitreus</i>
	sauger	<i>Sander canadensis</i>
Sciaenidae	freshwater drum	<i>Aplodinotus grunniens</i>



**Appendix 2.**  
**List of Iowa Waters Supporting Federally Listed Endangered  
Topeka Shiner or their Critical Habitat**

<b>Water Body or Watershed</b>	<b>Common Name</b>	<b>Scientific Name</b>
Boone River Watershed	Topeka shiner	<i>Notropis topeka</i>
North Raccoon River Watershed	Topeka shiner	<i>Notropis topeka</i>
Rock River Watershed	Topeka shiner	<i>Notropis topeka</i>
Upper Des Moines River Watershed	Topeka shiner	<i>Notropis topeka</i>

Note that the Iowa endangered species database shows that the Topeka shiner historically occurred in other watersheds in the State, therefore it may be encountered elsewhere.

Other federally listed endangered species are found in major rivers and are not expected to be encountered during field assessment because the major rivers of the state possess the most protective aquatic life use designations. The protocol is primarily focused on headwater-type streams where the Topeka Shiner may be encountered.

## Appendix 3 - Stream Habitat Evaluation Form (See Excel Spreadsheet) & Definitions

Descriptions of habitat variables included in analyses. Most habitat variable descriptions are taken from Simonson et al. (1994a).

### Stream Characteristics:

**Drainage Area** - The area draining into a stream at a given point. It may be of different sizes for surface runoff, subsurface flow, and base flow, but generally, the surface runoff area is considered as the drainage area.

### Stream Origin -

**Stream Order** - a method of numbering streams as part of a drainage basin network. The smallest unbranched mapped tributary is called first order, the stream receiving the tributary is called second order, and so on. Tributaries which have no branches are designated as of the first order, streams which receive only first-order tributaries are of the second order, larger branches which receive only first-order and second-order tributaries are designated third order, and so on, the main stream being always of the highest order

### Local Land Use:

**Forest** - Land dominated by trees, most of which are taller than 3 m. Includes Coniferous, and Deciduous (Hardwood) forests.

**Row Crops** - Land that is plowed, planted, and harvested on a yearly basis with crops such as soybeans, or corn.

**Grazing** - Land, either wooded or open, that is regularly grazed by livestock.

**Commercial/Industrial** - Buildings used for commerce or industry, including roads, Parking lots, and other associated areas. Concrete, metal, or other non-natural structures along the stream are included.

**Residential** - Houses and apartments and associated yards, roads, and parking lots. Included individual houses and developments in urban, suburban, or rural settings.

**Other** - Land that cannot be included with any of the other categories.

### Riparian Features:

**Trees** - Coniferous and Deciduous trees that are larger than 3 m tall.

**Shrubs** - Land dominated by small woody plants (less than 3 m tall), such as alders, honeysuckle, juvenile box elders, willows, etc.

**Grasses** - Land dominated by grass with few woody plants and not subject to any regular maintenance schedule.

**Herbaceous** - Land dominated by non-woody plant species with minimal secondary growth.

**Row Crops** - Land that is plowed, planted, and harvested on a yearly basis with crops such as soybeans, or corn.

**None** - Land that cannot be included with the other categories.

### Aquatic Vegetation:

**Rooted Emergent** - a rooted plant growing in water with the majority of the plant extending above the water surface.

**Rooted Submergent** - a rooted plant growing in water with the majority of the plant under the waters surface.

**Rooted Floating** - a rooted plant growing in the water with the plant floating on the surface of the water.

**Free Floating** - a non-rooted plant growing in the water with the ability to travel the stream channel.

**Floating Algae** - Algae that is not attached to any rock, or woody debris within the water channel.

**Attached Algae** - Algae that is attached to rocks or woody debris within the water channel, or the stream bottom is covered with attached algae.

**Instream Features:**

**Estimated Stream Width (ft)** - The width of the stream, perpendicular to the flow, at the existing water surface.

“Normal” stream width is an estimate of the width when the stream is at a stable base flow and is not subject to surface runoff or drought. If the water level is normal, then the “current” and “normal” stream widths should be the same.

“Bankfull” or “channel” width is the width of the channel, generally measured from the high water mark on the lowest bank horizontally to a point of equal height on the other bank.

**Estimated Stream Depth (ft)** - Depth of the stream is the vertical distance from the streambed to water surface. This should be determined with a meter stick or calibrated wading staff at each transect-point, to the nearest inch.

**Flow (cfs)** - Flow should be measured at each stream segment being assessed. Flow is the volume of water moving downstream per unit time, and is the product of current velocity and dimensions of the channel.

**Estimated Reach Length (ft)** - Stream reaches selected for assessment should extend in length at thirty times the width of the stream as measured at base flow. A minimum assessment distance should be at least 150 meters while the maximum assessment length should not exceed 350 meters.

**High Water Mark (ft)** - is a visual estimate of the relative stage of the stream. When the water level is “high”, the stream is assumed to be at or near bank-full conditions or the mark indicating the highest level reached by a body of water.

**Riffle** - Areas with shallower than average thalweg depths, obvious surface turbulence, and faster than average water velocities. In larger streams and rivers, deeper, faster riffles are called rapids. During high flows, some riffles may become runs. Generally, riffles are composed of coarse substrates and occur in relatively straight reaches between bends.

**Pool** - Areas with deeper than average thalweg depths and little surface turbulence. Water velocities are always slow, and eddies are often present. The longitudinal profile of the streambed in a pool is often bowl shaped, with wider than average widths. Pools usually occur at outside bends and around large obstructions to flow, with substrates of predominantly fine materials.

**Run** - Areas with average thalweg depths and little or no surface turbulence. Water velocities may be fast or slow, but the water surface appears smooth. Generally, if it is not a riffle or a pool, we define it as a run. Shallow runs with slow, non-turbulent velocities are sometimes called glides. During droughts, shallow runs may become riffles. Runs tend to occur immediately upstream or downstream of riffles, but in some streams, runs can be a predominant macrohabitat.

Channelized - Yes or No

Dam Present - Yes or No

If Yes - Please describe the location of the Dam along with possible causes for the dam (i.e.: woody debris caused by beavers).

**Turbidity:**

**Clear** - free from cloudiness; allowing light to pass through.

**Slightly Turbid** - a very small amount of haziness in the body of the water.

**Turbid** - Turbidity is a cloudiness or haziness of water (or other liquid) caused by individual particles that are too small to be seen without magnification. Colored or opaque due to matter in suspension, rivers and lakes may become turbid after a rainfall due to erosion and surface runoff containing particulate matter, there is sufficient material in suspension that visibility is decreased

**Opaque** - A substance that is not transparent or translucent. i.e. a substance that does not allow light to pass through it.

**Stained** - a discoloration of the water usually occurring after a heavy rain.

#### **Stream Bed Composition -**

**Bedrock** - Solid, uniform rock bottom.

**Boulder** - Rocks with a maximum length of >512 mm (about 20"). Large pieces of concrete and other artificial rocky aggregates also belong in this category.

**Cobble** - Rocks with a maximum of 64-256 mm.

**Gravel** - Rocks with a maximum length of 16-64 mm.

**Sand** - Inorganic particles smaller than fine gravel, but coarser than silt. The material typically found on a beach. Maximum length of 0.062 - 2 mm.

**Sludge** - Solid, semi-solid or liquid waste from municipal, commercial, or industrial waste-treatment facilities, wastewater treatment plants and air pollution control facilities. In discussions of environmental controls, the mud-like residue that results from the cleaning process of scrubbers or certain other devices designed to prevent solid particles from entering the environment.

**Silt** - Fine inorganic particles, typically dark brown in color. Feels greasy and muddy in hands. Loose; does not retain shape when compacted into a ball. Will not support a person's weight when it makes up the stream bottom. Maximum length of 0.004-0.062 mm.

**Clay** - Very fine, inorganic, dark brown or gray particles; individual particles barely or not visible to the unaided eye. Feels gummy and sticky in hands; slippery when underfoot. Retains shape when compacted, and partially or completely supports a person weight when it makes up the stream bottom. Maximum length of <0.004 mm.

**Detritus** -The percent of the streambed that is made up of organic waste material from decomposing dead plants or animals. When very fine, may appear similar to silt.

**Muck/Mud** - earth that has become wet and sticky

**Appendix 4 - Aquatic Life Assessment Field Data Sheet (See Excel Spreadsheet)**

## Appendix 5

### Evaluation Consideration for Use Attainability Analyses

The following italicized paragraphs set forth the criteria established by the U.S. Environmental Protection Agency for establishing a non-Class WW-1 Use or removal of a designated use. The paragraphs that follow the italicized portions provide additional guidance for considering the federal criteria for Iowa's waters.

40 CFR 131.10(g): States may remove a designated use which is not an existing use, as defined in section 131.3 or establish subcategories of a use if the State can demonstrate that attaining the designated use is not feasible because:

1. Naturally occurring pollutant concentrations prevent the attainment of the use.
2. Natural, ephemeral, intermittent, or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges without violating State water conservation requirements to enable uses to be met.
3. Human caused conditions or sources of pollution prevent the attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place.
4. Dams, diversions, or other types of hydrologic modifications preclude the attainment of the use, and it is not feasible to restore the water body to its original condition or to operate such modifications in a way that would result in the attainment of the use.
5. Physical conditions related to the natural features of the water body, such as lack of proper substrate, cover, flow, depth, pools, riffles, and the like unrelated to water quality, preclude attainment of aquatic life protection uses.
6. Controls more stringent than those required by sections 301(b) and 306 of the Act would result in substantial and widespread economic and social impact.

This criterion may be applicable when the construction of pollution control measures required to attain the designated use would result in widespread and substantial adverse social or economic impacts. Potential sources for evaluating substantial widespread social and economic impacts, which provide criteria for decision-making, include:

- USEPA's *Interim Economic Guidance for Water Quality Standards Workbook* (EPA 823-B-95-002, <http://www.epa.gov/waterscience/standards/econworkbook/>).

## Appendix 6 Submittal & Review Procedures

Any interested party may conduct a Use Assessment and/or Use Attainability Analysis field survey for the possible removal, downgrading, or subcategorization of a designated use and submit the report to the department. Two copies of the completed Use Assessment and/or UAA field survey report and all supporting documentation should be sent to:

**Kelly Stone, Supervisor  
Water Quality Resource Section  
Iowa Department of Natural Resources  
Des Moines, IA 50319**

The Use Assessment and/or UAA field survey report shall contain, at a minimum, a statement of the issue, presentation and an evaluation of all evidence (including data), and a summary/conclusion. **A separate UA/UAA field survey report must be submitted for each designated use modification requested.** Supporting documentation for the UA/UAA field survey report may consist of any or all of the following items: topographic maps, aerial photographs, photo-documentation of any existing uses (or evidence of existing uses), transcripts of landowner/local resident interviews and photocopies of all field notes & summaries.

Normally, the Department will assemble provided field reports and supporting documentation and prepare a formal UAA report indicating the findings of the assessment and making recommendations on appropriate use designation. However, formal UAA reports may be requested or provided to the Department for consideration. Department staff will meet periodically as needed to review completed Use Assessments and UAAs for accuracy, completeness, and adequacy.

The Iowa Department of Natural Resources (DNR) or other partnering agencies may perform QA/QC procedures and follow-up surveys on any submitted Use Assessment or UAA field survey to ensure the completeness, adequacy, and accuracy of submitted material. Any incomplete Use Assessments or UAA field survey will be returned to the submitter for revisions. If the information gathered supports a confident decision, it will be integrated into a proposed Notice of Intended Action (NOIA) submitted for approval before the Environmental Protection Commission (the EPC). Any designated use modifications will be incorporated into Iowa's Water Quality Standards through the formal rulemaking process, including public comments. All designated use modifications proposed by the EPC will be open to comments from USEPA Region 7 during the water quality standards rulemaking process to seek federal agreement with the recommendations.

### Public Participation Opportunities

All work products associated with UAA activities are open to the public. The department maintains records of each UAA conducted and will make this information available upon request. Completed UAAs will be posted on the department's web page. The proposed use designation or removal of designated uses must be promulgated into rule. Public review and comment on the Use Assessment/UAA findings and the proposed use designation or removal of designated uses will be sought during the rulemaking.

### Staff Review

The Water Resources Section staff will review Use Assessments and/or UAAs for completeness and adequacy before a recommendation is made to peruse formal rulemaking. The findings of the staff will be recorded in the format presented in Table A. This table will be posted on the department's web page.

## Table A - Results of Staff Review

Date of Staff Review: \_\_\_\_\_

Staff Members: \_\_\_\_\_

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Water Body Under Evaluation:

Water Body ID Number: \_\_\_\_\_

Name of Water Body: \_\_\_\_\_

River Basin and named downstream water bodies: \_\_\_\_\_

Length of Segment: \_\_\_\_\_

County(ies): \_\_\_\_\_

Submitter of UA/UAA Field Survey: \_\_\_\_\_ Date Rec'd: \_\_\_\_\_

Use Targeted for Lowering or Removal: \_\_\_\_\_

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UA/UAA Completeness Check:

- |   |                              |                             |
|---|------------------------------|-----------------------------|
| Does UA/UAA adequately establish lower use?       | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Does UA/UAA adequately establish no existing use? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| All Required Information Included?                | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Correct Forms Used?                               | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Forms Signed and Dated?                           | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

If information missing, what? \_\_\_\_\_

EPA's Criteria used to lower or remove Use Designation (check applicable):

- 1-Natural Pollutant Sources.
- 2-Natural, Ephemeral, Intermittent or Low-Flow Condition.
- 3-Non-Remedial, Human Caused Condition.
- 4-Hydrologic Modifications.
- 5-Natural Physical Features.
- 6-Substantial, Widespread Social and Economic Impact.

Summary of Basis for Use Designation or Removal:

Final Staff Decision -  Agrees/ Disagrees with UA/UAA Findings to modify stream use designation:

If Disagrees, Why? \_\_\_\_\_