HRL Uses & Goals

A QUICK REVIEW
Review of Designated Uses in HRL
Aquatic Life Use (Class C)

Aquatic life propagation [and survival] and maintenance of biological integrity

Biological integrity (defined in rule)

The ability of an aquatic ecosystem to support and maintain a balanced and indigenous community of organisms having species composition, diversity, population densities and functional organization similar to that of reference conditions.
Class C Uses Continued

Wildlife:

No definition in rule, but included in “Best Usage” of Waters language for Class C waters

Agriculture:

Agricultural uses include the use of waters for stock watering, irrigation, and other farm purposes

Fishing:

Fishing means the taking of fish by sport or commercial methods as well as the consumption of fish or shellfish or the propagation of fish and such other aquatic life as is necessary to provide a suitable environment for fish.
Secondary Recreation Use (Class C)

Wading, boating, and other uses involving human body contact with water where such activities take place in an infrequent, unorganized, or incidental manner.
Primary Recreation Use (Class B)

Swimming, skin diving, water skiing, and similar uses involving human body contact with water where such activities take place in an organized manner or on a frequent basis.
Water Supply Use (Class WS)

Waters used as sources of water supply for drinking, culinary, or food processing purposes. These waters are also protected for Class C uses.
Downstream Uses

*Water quality standards and best usage of all downstream waters are protected per 15A NCAC 02B .0203*
Management Goals
Select Management Goal(s)

Refine Management Goal(s)
* Narrative statement reflective of protecting designated use(s)

Evaluate Potential Criteria
* Come up with way(s) to protect the use (numeric, narrative, both) - measurable & most sensitive
* Generate recommended indicator list
* Data gap analysis

Analysis/Approach
* Select approach(es) to derive criteria: reference conditions, stressor-response, mechanistic model, other...reflective of protecting designated use(s)
* Fulfill any data/research needs

Develop Conceptual Model
* Shows relationship between nutrients and criteria - EX: algal blooms, organic carbon, dissolved oxygen, chlorophyll a, etc.

Develop Estimates for Criteria & Assessment Protocols

Select Scientifically Defensible, Feasible Criteria

Evaluate Feasibility of Accomplishing Criteria

Begin Adoption of Recommendations into Water Quality Standards
Draft Rule, Fiscal Note, Public Hearings, etc.
HRL Water Quality Goal As Established by the SAC (August 2015)

To provide for the protection of designated uses in the HRL reservoir by defining and proposing the appropriate level of algal related indicators for each of the following:

- Aquatic Life
- Fishing
- Fish Consumption
- Wildlife
- Secondary Recreation (e.g. wading, boating)
- Agricultural Uses (e.g. irrigation)
- Water Supply
- Lower Lake: Primary Recreation – full human body contact (i.e. swimming, water skiing)
An example...

• SAC currently discussing pH criteria to protect the aquatic life use based on the managed sports fish species in HRL.

• But how do you define aquatic life for HRL?
  • Just fish? Other organisms (mussels, zooplankton)?
  • Are the sports fish species the most sensitive?
  • Are they an appropriate indicator for other species?

• Clearly defining the goals for meeting the aquatic life use can help to focus discussions, avoid confusion, and make sure that all options are considered.
<table>
<thead>
<tr>
<th>Designated Use</th>
<th>SW Class</th>
<th>Definition (where defined in rule)</th>
<th>SAE Management Goal</th>
<th>Criteria Development Approaches by Use &amp; Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secondary Recreation</td>
<td>C</td>
<td>Secondary recreation includes wading, boating, and other uses involving human body contact with water where such activities take place in an infrequent, non-organised, or incidental manner.</td>
<td>Example: Prevent algal surface scums.</td>
<td>DO: NA, Turbidity: NA, Clarity: Maintain current standard, Chlorophyll-a: NA, Cyanotoxins: NA, TN: NA, TP: NA</td>
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<tr>
<td>Fishing</td>
<td>C</td>
<td>Fishing means the taking of fish by sport or commercial methods as well as the consumption of fish or shellfish or the propagation of fish and such other aquatic life as is necessary to provide a suitable environment for fish.</td>
<td>Maintain current standard</td>
<td>Literature review, Maintain current standard</td>
</tr>
<tr>
<td>Fish Consumption</td>
<td>C</td>
<td>Fishing means the taking of fish by sport or commercial methods as well as the consumption of fish or shellfish or the propagation of fish and such other aquatic life as is necessary to provide a suitable environment for fish.</td>
<td>Example: Prevent taste &amp; odor issues in fish tissue.</td>
<td>NA, NA, NA</td>
</tr>
<tr>
<td>Wildlife</td>
<td>C</td>
<td>Best Usage of Waters: aquatic life propagation and maintenance of biological integrity (including fishing and farm), wildlife, secondary recreation, agriculture, and any other use except for primary recreation or as a source of water supply for drinking, culinary, or food processing purposes;</td>
<td>NA</td>
<td>NA, NA, NA</td>
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<tr>
<td>Aquatic Life including propagation, survival and maintenance of biological integrity</td>
<td>C</td>
<td>Biological integrity means the ability of an aquatic ecosystem to support and maintain a balanced and indigenous community of organisms having species composition, diversity, population densities and functional organization similar to that of reference conditions.</td>
<td>Example: Ensure that water quality is such that all aquatic, and aquatic-dependent, life not considered to be either harmful or toxic to humans or animals.</td>
<td>Maintain current standard, Literature review, Maintain current standard</td>
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<tr>
<td>Agriculture</td>
<td>C</td>
<td>Agricultural uses include the use of waters for stock watering, irrigation, and other farm purposes.</td>
<td>NA</td>
<td>NA, NA, NA</td>
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<tr>
<td>Primary Recreation</td>
<td>B</td>
<td>Primary recreational activities include swimming, skin diving, water skiing, and similar uses involving human body contact with water where such activities take place in an organized manner or on a frequent basis.</td>
<td>Example: Prevent algal surface scums. Prevent potentially harmful algal blooms.</td>
<td>DO: NA, Turbidity: NA, Clarity: Maintain current standard</td>
</tr>
<tr>
<td>Water Supply IV</td>
<td>WS-IV</td>
<td>Waters used as sources of water supply for drinking, culinary, or food processing purposes where a W-III or II classification is not feasible. These waters are also protected for Class C uses. WS-IV waters are generally in moderately to highly developed watersheds or Protected Areas.</td>
<td>NA</td>
<td>NA, NA, NA</td>
</tr>
<tr>
<td>Water Supply V</td>
<td>WS-V</td>
<td>Waters protected as water supplies which are generally upstream and draining to Class WS-IV waters or waters used by industry to supply their employees with drinking water or as waters formerly used as water supply. These waters are also protected for Class C uses.</td>
<td>NA</td>
<td>NA, NA, NA</td>
</tr>
</tbody>
</table>
Questions/Comments?