South Carolina Department of Natural Resources
Comments on Proposed DHEC Surface Water Regulations

R.61-119, Surface Water Withdrawal, Permitting, Use and Reporting
version July 14, 2011

Submitted September 26, 2011

B. Definitions

2. "Affected Area"

'Affected area' means that portion of a county or counties within a river basin that, under the circumstances, are determined by the Department to likely be affected by a proposed surface water withdrawal. The 15 river basins related to "affected area" seem to correspond to the former interbasin-transfer basins and are described in detail in section 2.f.i.D ["*The following fifteen (15) river basins are to be used when determining the affected area for a particular surface water withdrawal application. 'Affected area' is defined in section B as that portion of a county or counties within a river basin that, under the circumstances, are determined by the Department to likely be affected by a proposed surface water withdrawal.*"].

- When determining the "affected area" for a particular surface water withdrawal, can the "affected area" be composed of areas from more than one basin? It is possible to interpret this wording ("*…that portion of a county or counties within* ***a*** *river basin…"*) to mean that the affected area can exist in only one basin. It seems inappropriate to limit the definition of "affected area" to just one basin when a withdrawal at the lower end of one basin could easily impact an area at the upper end of an adjoining, downstream basin (e.g. a withdrawal from the Upper Savannah River Basin could impact water use in the Lower Savannah River Basin).
- If "affected area" can consist of parts of more than one basin, is there a reason for defining these 15 basins, which are not referenced anywhere else in the regulations?

3. "Agricultural use" and

4. "Agricultural facility"

- Please clarify whether paper and pulp mills such as International Paper, Bowater, and MeadWestvaco, which are some of the largest surface-water users in the state, would be considered to be agricultural facilities ("*…any land, building, structure,…machinery, or equipment which is used for the commercial production or processing of crops, trees…*") and thus would be exempt from all but the reporting requirements of these regulations.

17. "Minimal changes in water quantity"

'Minimal changes in water quantity' means that greater than ninety (90) percent of the water withdrawn by a surface water withdrawer, based upon the previous twenty-four (24) months of historical data, is returned to the waters of origin; provided, that either the amount of water not returned to the water source does not:

a. exceed three million gallons during any one month; or
b. significantly reduce the safe yield at the withdrawal point.

- It is very important that the word "or" at the end of qualifying line "*a.*" be changed to the word "and". If the wording is left as is, then only one of the qualifying conditions, not both, needs to be met.

- The word "either" ["*provided, that <u>either</u> the amount of water not returned to the water source does not:"*] should be removed. Both qualifying conditions need to be met, not just one.
- Because the way "safe yield" is defined in these regulations (as essentially 80 percent of the average flow of a stream based on the entire period of record of flow data), a withdrawer could make a large net withdrawal from a stream without "significantly" reducing the safe yield, and thus still be considered a nonconsumptive use.
  For example, consider a hypothetical large withdrawal from the Congaree River at the site of the Congaree River at Columbia gage (station 0216950): At this site, for which there is more than 70 years of data, the river has a mean annual daily flow (MADF) of 8,810 cfs (through 2010), so the "safe yield" would be set at 7,048 cfs (which is 80% of the MADF). Assume that a new withdrawal resulted in a net removal of 300 cfs (admittedly a huge net loss, but it helps to point out the absurdity of this definition). Even after 10 years with this 300 cfs loss, the new MADF would be about 8,773 cfs, and the new "safe yield" would be 7,018 cfs. The reduction in "safe yield" is only 0.4 percent, which is not likely to be considered "significant". Because the MADF (and, subsequently, the "safe yield") is based upon the entire period of record, large changes in a flow regime may not become significant for many years.
- If the wording of this definition is not changed, most, if not all, water withdrawers would have to be considered to be nonconsumptive users and would thus be exempt from most of the permitting requirements of these regulations.
- If the phrase "s*ignificantly reduce the safe yield at the withdrawal point*" is intended to mean that a proposed withdrawal would amount to a large percentage of the calculated "safe yield" (rather than result in a reduction in the MADF based upon the period of record flow history, as described in the preceding comment), the wording of this condition should be changed in order to clarify its meaning.
- How much change in "safe yield" is needed to become "significant"?

18. "Minimum instream flow"

'Minimum instream flow' means the flow that provides an adequate supply of water at the surface water withdrawal point to maintain the biological, chemical, and physical integrity of the stream taking into account the needs of downstream users, recreation, and navigation and that flow is set at forty percent of the mean annual daily flow for the months of January, February, March, and April; thirty percent of the mean annual daily flow for the months of May, June, and December; and twenty percent of the mean annual daily flow for the months of July through November for surface water withdrawers as described in Section 49-4-150(A)(1).

- Defining the "minimum instream flow" as 20, 30, or 40 percent MADF **does not** take into account downstream users, as suggested by this definition. It might be better to use a term like "adjusted minimum instream flow" to mean the 20-30-40% flow plus whatever is needed for downstream withdrawals.
- Using the 20-30-40-percent MADF as the minimum flow needed for the protection of the biological, chemical, and physical integrity of a stream is a generalization that may not always be appropriate. The regulations should allow DHEC to use another flow regime for a specific reach of a stream if it has been determined by DHEC or DNR that the 20-30-40 MADF flow is inadequate and a more suitable flow regime has been determined.

19. "Minimum water level"

- Seasonal target water levels are incorporated into hydropower license articles. Minimum water levels are not set during FERC relicensing negotiations because inflow is never certain. FERC stipulates conditions for hydropower operators for achieving seasonal target water levels and dealing with low inflow conditions. In the case of Lakes Keowee and Wylie, NRC sets a minimum water level based on cooling water intake elevation.

25. "Proposed registered surface water withdrawer"

- Essentially, this definition appears to be a person proposing to make a new agricultural withdrawal. If that is the case, the definition should just say "proposed agricultural withdrawal". If there is any other non-agricultural withdrawal that fits this definition, that should be included in the definition. Otherwise, there seems to be no reason to include this term in the definitions.

29. "Safe yield"

'Safe yield' means the amount of water available for withdrawal from a particular surface water source in excess of the minimum instream flow or minimum water level for that surface water source. Safe yield is determined by comparing the natural and artificial replenishment of the surface water to the existing or planned consumptive and nonconsumptive uses.

- Although this definition is conceptually reasonable, this definition of "safe yield" is inconsistent with how it is more explicitly defined later in the regulations:
  - In section E.3.a.ii.A, for streams not influenced by impoundments, "safe yield" is defined as "the difference between the MADF and 20 percent of the MADF", which is equivalent to 80 percent of the MADF. For most streams, this "safe yield" is greater than the median flow, meaning that the "safe yield" **will not be available more than half of the time**, without even considering the need to leave some water in the stream to maintain the biological, chemical, and physical integrity of the stream. [Included at the end of this document are hydrographs for 6 South Carolina rivers, each showing the mean annual daily flow (MADF), the monthly mean flow, the 20-30-40-percent MADF flows (defined as the minimum instream flow), the median flow, and the "safe yield" flow (80% of the MADF). It is clear from these graphs that the "safe yield" usually exceeds the median flow and typically exceeds the monthly mean flows for the summer and fall months.]
  - In section E.3.a.ii.B, for streams materially influenced by an impoundment, "safe yield" is calculated as the difference between the MADF and the lowest non-drought release from the impoundment. Like the definition for "safe yield" for unregulated streams, this "safe yield" definition will produce unrealistically large values.
  - In section E.3.a.ii.C, for withdrawals from an impoundment, "safe yield" is defined as "*the maximum amount that would not cause a reservoir water level to drop below its minimum water level*". **This definition is meaningless.** Because the conditions of inflow, outflow, and initial reservoir level are not specified in this definition, there is no way to quantify how much water (rate or volume) could be removed without lowering the reservoir to its minimum water level.
- If the concept of "safe yield" is to be a consideration when issuing permits, it should be defined in a way that more realistically represents the amount of water that would be available for withdrawal during the duration of a drought.

- This philosophy that all water in excess of the minimum instream flow is safe to withdraw does not provide adequate protection to natural resources, as the final outcome of this policy would be to reduce all streams to the minimum flow.

C. Exemptions

1.(d) "for private property"

- What if spring-fed seep harbors a protected species? Water is water, whether it is on public or private land. Water on private land should not be exempt if a substantial amount of water would be withdrawn from surface water that harbors a protected species.

D. Permits for Existing Surface Water Withdrawers

1. Application Requirements.

f. "*… and the anticipated percent of water returned at each location."*

- "Anticipated" is a weak term that can be exploited. The amount of water actually returned should be monitored to verify that it is close to the "anticipated" amount, and provisions in the permit should ensure that the anticipated returns are actually made.

h. *The estimated ratio between water withdrawn and consumptive use of water withdrawn*

- It would be much simpler to have the permit application request the amount of water to be withdrawn and the amount of water to be returned, rather than the ratio between water withdrawn and consumptive use, especially since up to 10 percent of the water withdrawn can be lost (not returned) and the withdrawal still considered nonconsumptive.

3. Operations and Contingency Plan Requirements.

- The contingency plan required in the permit should be reviewed and approved by DHEC.

E. Permits for New or Expanding Surface Water Withdrawers

2. Application Requirements.

g. *The estimated ratio between water withdrawn and consumptive use of water withdrawn*

- It would be much simpler to have the permit application request the amount of water to be withdrawn and the amount of water to be returned, rather than the ratio between water withdrawn and consumptive use, especially since up to 10 percent of the water withdrawn can be lost (not returned) and the withdrawal still considered nonconsumptive.
- "Estimated" is a weak term that can be exploited. The amount of water actually returned should be monitored to verify that it is close to the "estimated" amount, and provisions in the permit should ensure that the anticipated returns are actually made.

m. "*a draft of the proposed withdrawer's contingency plan . . ."*

- Applicants should submit a final, not draft, contingency plan as part of the requirement to use the water.

3. Evaluation Criteria.

- *"Surface water withdrawals made by permitted or registered withdrawers shall be presumed to be reasonable."* This sentence should be deleted as it is an unnecessary endorsement.

a.i. *The minimum instream flow…*

- It remains unclear how DHEC will determine at what point a stream becomes no longer "materially influenced" by releases from an upstream impoundment. It could be argued

that most or all of the Pee Dee, Catawba, Wateree, Broad, Santee, and Savannah Rivers are "materially influenced" by their respective upstream impoundments.

- The last sentence of 3.a.i.(A) ("*The minimum instream flow for stream segments that are not downstream of and influenced by a licensed or otherwise flow controlled impoundment or that are no longer materially influenced by a licensed or otherwise flow controlled impoundment will be calculated as follows:*") is almost duplicative of the first sentence in the paragraph, and almost appears to present an alternate method for determining the minimum instream flow.
- The process for determining the MADF at a proposed withdrawal site involves using one "index station" whose flow data will serve as the basis for the MADF calculations. The regulations should allow for the use of more than one "index station" when calculating the MADF at the withdrawal point. The use of two or more "index stations" would be appropriate, for example, if the withdrawal point were located just downstream of the confluence of two gaged streams, or if a suitably located active gage had a short period of record, but another discontinued gage in a similar location had many years of good flow data.

a.ii. *The safe yield…*

- See earlier comments under definition of "safe yield".

3. Operations and Contingency Plan Requirements

a. "*Each permittee must prepare and maintain on site, available for inspection, an operational and contingency plan … The existence of a plan is deemed to be an enforceable part of the permit…*"

- The contingency plan required in the permit should be reviewed and approved by DHEC.

e.vi. *Upon receiving notice, the Department must determine whether all or any portion of the withdrawal will result in a significant negative impact to an existing user or the environment if the permitted withdrawal is resumed. If the Department does not make its determination within ten (10) days of receipt of notice, the permittee may make withdrawals up to the permitted amount and do so until notified by the Department whether all or any portion of the withdrawal will result in a significant negative impact to an existing user or the environment during this low flow period.*

- What is considered a "significant" negative impact?
- Does it matter if this resumed withdrawal causes a significant impact to another "new" withdrawer rather than an "existing" withdrawer?

f. *The Department must consult with the SCDNR to determine which, if any, existing stream gaging station should be utilized to quantify the stream flow at the point of the proposed withdrawal. The Department may also seek the input of the applicant in determining a suitable means to measure or extrapolate the stream flow at the point of the proposed withdrawal. If no existing stream gage is suitable for measuring or extrapolating the flow at which the applicant's water withdrawal must be reduced due to inadequate stream flow, the SCDNR will recommend the location of a new stream gage.*

- Will a new gaging station be installed by the USGS at that location? If so, will the withdrawer be responsible for providing the funding for that new gage for the duration of the withdrawal permit?

- If the applicant provides a means to measure or extrapolate the stream flow at the withdrawal point, will SCDNR be consulted to determine the suitability of the proposed mechanism?

G. Nonconsumptive Use Surface Water Withdrawal Permits

1. Requirements to be considered a Nonconsumptive Use Withdrawer:

… A nonconsumptive user is one that uses surface water in such a manner that more than ninety (90) percent of the water withdrawn is returned to its waters of origin within the boundaries of contiguous property owned by the surface water withdrawer; provided:

a. The amount of water not returned to the water source does not exceed three million gallons during any one month; or

b. The amount of water not returned to the water source does not significantly reduce the safe yield at the point of withdrawal.

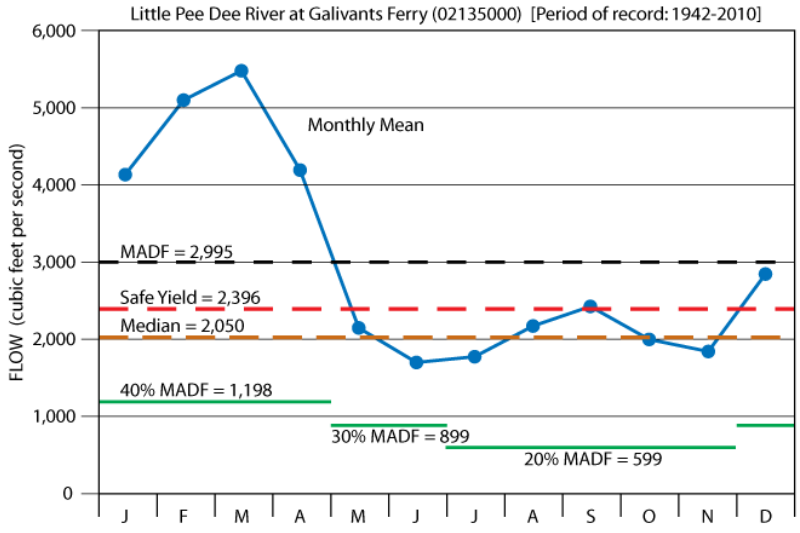
- It is very important that the word "or" at the end of qualifying line "*a.*" be changed to the word "and". If the wording is left as is, then only one of the qualifying conditions, not both, needs to be met. Because the way "safe yield" is defined in these regulations (as essentially 80 percent of the average flow of a stream based on the entire period of record of flow data), a withdrawer could make a large net withdrawal from a stream without "significantly" reducing the safe yield, and thus still be considered a nonconsumptive use. (See comments regarding definition of "minimal changes in water quantity".)
- How much change in "safe yield" is needed to become "significant"?

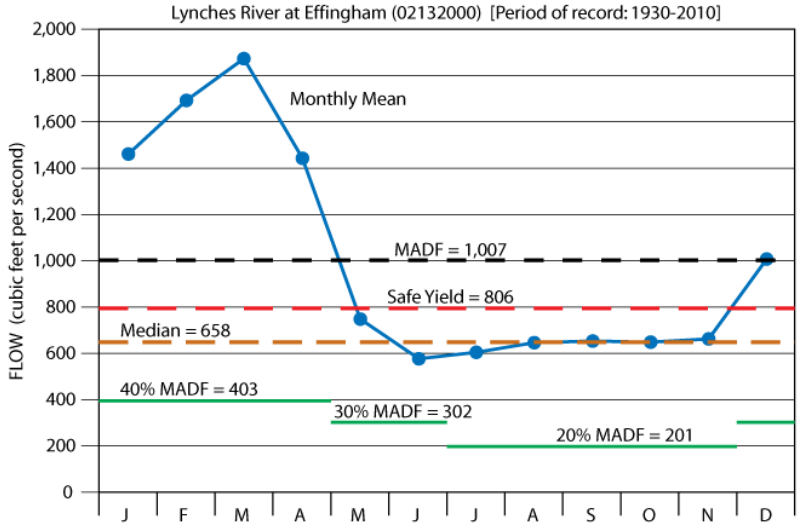
4. Information to be Included in Permit.

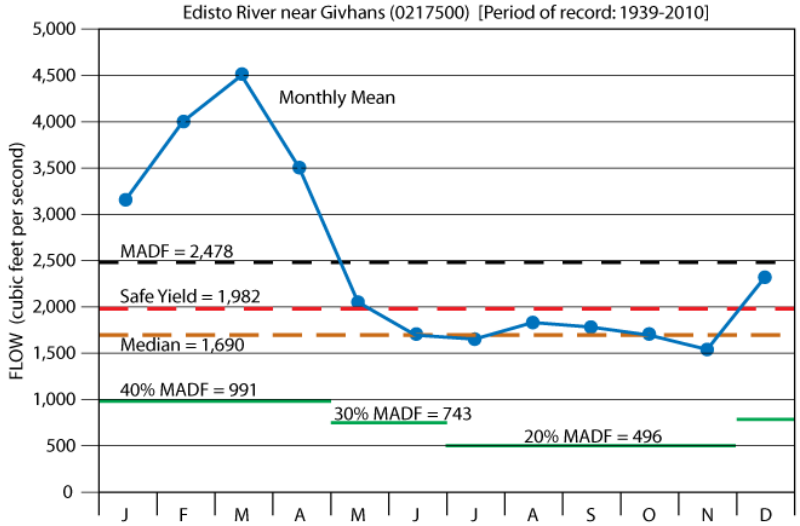
A permit for nonconsumptive use must identify the surface water withdrawer, the point of withdrawal, the maximum withdrawal amount, and the point of return.

- Because a nonconsumptive use permit can be issued for withdrawals that do not return 100 percent of the water withdrawn, the permit information should also include the amount of water being returned.

Hydrographs of selected South Carolina rivers showing mean annual daily flow (MADF), monthly mean flow, median flow, the 20-30-40% MADF flow, and the "safe yield" as defined in the proposed DHEC regulations.







Hydrographs of selected South Carolina rivers showing mean annual daily flow (MADF), monthly mean flow, median flow, the 20-30-40% MADF flow, and the "safe yield" as defined in the proposed DHEC regulations.