



Date: 8-28-17

To: Toni Edwards, South Florida Water Management District

From: John Cassani, Calusa Waterkeeper (CWK)

RE: Comments on the draft revision of Caloosahatchee MFL dated July 2017.

Delivered by electronic mail

Ms. Edwards:

Thank you for the opportunity to comment on the July 2017 TECHNICAL DOCUMENT TO SUPPORT REEVALUATION OF THE MINIMUM FLOW CRITERIA FOR THE CALOOSAHATCHEE RIVER ESTUARY.

The CWK is opposed to setting the MFL at 400 cfs. We do support a MFL in the range of 600-800 cfs at S-79 for the following reasons.

Policies Conflicting or Inconsistent With MFL Implementation Should Be Considered When Setting the MFL Flow Target

For the past 10-12 years a minimum flow target of 450 cfs at S-79 has been utilized as the best available information that would create the desired salinity envelope in the estuary in recognition that 300 cfs was inadequate. The 450 cfs flow has been reported in South Florida Water Management District (SFWMD) documents as an appropriate target and the US Army Corps of Engineers has used 450 cfs where discretionary discharges are allowed as part of the Lake Okeechobee Regulation Schedule. Unfortunately, the MFL Valued Ecosystem Component (VEC) *Vallisneria americana* has not recovered since MFL Rule adoption 16 years ago.

A contributing cause for VEC recovery failure is rooted in policy decisions related to consumptive use permitting of available water. As a result, the estuary has become a “competing user” for available water and has not received adequate flow to meet the MFL rule criteria intended to prevent significant harm defined as the “limit at which further withdrawals would be significantly harmful to the water resources or ecology of the area.” [Section 373.042(1), Florida Statutes (F.S.)]. The “shared adversity” component of 40E-8 F.A.C. has not been complied with resulting in the resource experiencing significant or serious harm. The recurring failure by SFWMD to implement water use restrictions or to restrict permitted allocation for consumptive use is largely responsible for MFL violations and the lack of recovery. As such policy failures that have led to serious harm to the estuary should be a significant consideration when revising the MFL criteria at least in the context of recovery.

The Comprehensive Everglades Restoration Plan project C-43 Reservoir is intended to contribute improved flows to the Caloosahatchee estuary representing about 37% of the targeted volume anticipated to meet the current MFL criteria. Expectations of C-43 reservoir performance have been integrated into the recommended draft MFL exceedance criteria. As with conflicting policy issues, there is considerable uncertainty associated with C-43 Reservoir performance or utilization largely centered around compliance with Water Quality Based Effluent Limitations (WQBELs). The 2007 Reservoir test cell study indicated problems with various water quality parameters including chlorophyll, total phosphorus and development of cyanobacteria blooms (SFWMD C-43 West Storage Reservoir Test Cell Water Quality Summary, August 2007). WQBELs are especially pertinent regarding reservoir water quality since discharge is planned to occur in a segment of the Caloosahatchee River that is Class I (potable water supplies) and may further restrict utilization of water stored in the reservoir.

Other tools for sustaining flows to the estuary including a statutory reservation of existing water has not been utilized despite requests to initiate rule-making in this regard.

If these conflicting policy outcomes persist, setting a revised MFL flow rate is essentially an academic exercise as it has been for the past 16 years.

Ecological Relationship Between MFL Flow Rate, Flow Duration and Recovery

The duration of a targeted flow rate is a critical factor in recovery of the primary VEC *V. americana*. An appropriate duration that would theoretically prevent significant harm is embodied in the recommended exceedance criteria developed from mesocosm studies examining the response of *V. americana* to salinity durations near or greater than 10 psu. The mesocosm studies and resulting data used for the recommended MFL flow rate are an oversimplifications of actual conditions occurring in the estuary. Other factors that influence the recovery of the VEC include water transparency (light limitation), herbivory, and nutrient over enrichment that promotes the growth of epiphytic algae on *Vallisneria* shoots, thus inhibiting *Vallisneria* shoot development (unpublished enclosure studies by JC).

An assessment of the flow / salinity relationship by staff at the Sanibel Captiva Conservation Foundation clearly demonstrates that a flow as high as 600 cfs at S-79 during a 30 day period is inadequate to meet the 10 psu maximum for *V. americana* (Fig. 1). This assessment did not include the tidal basin flows to the estuary, which would have likely added additional flow above 600 cfs.

An assessment of freshwater inflows with respect to other important estuary biota and physiochemical parameters was conducted by (Tolley et al. 2010, THE RESPONSES OF TURBIDITY, CDOM, BENTHIC MICROALGAE, PHYTOPLANKTON AND ZOOPLANKTON TO VARIATION IN SEASONAL FRESHWATER INFLOW TO THE CALOOSAHATCHEE ESTUARY). The results of this study indicate flows from 800 cfs – 1100 cfs were estimated to sustain the ecological balance of the biota studied.

The recommended MFL of 400 cfs derived from the *V. americana* mesocosm study assumes 100% mortality after 55 consecutive days greater than 10 psu. Recovery was assumed to occur in two years. The suite of factors in addition to salinity as mentioned above creates an added jeopardy situation to recovery or at least additional uncertainty about the recovery return frequency. It's my opinion that a higher MFL flow target greater than 600 cfs will add certainty to the duration of a favorable oligohaline

salinity envelope less than 10 psu, especially if policy outcomes become more consistent toward achieving the MFL and the C-43 Reservoir performance is as assumed.

Revised Definition of Exceedance

Once again the context of the exceedance recommendation is derived from a mesocosm study that assumes 100 percent mortality after 55 consecutive days above 10 psu and that recovery is assumed to occur after two years. The appropriate context is that essentially 100 percent mortality has already occurred (revision document states virtually absent) and the VEC *V. americana* has not recovered in 16 years since MFL rule adoption. The assumptions about recovery are unsubstantiated considering actual ecological change in the system. A realistic assessment about recovery would likely involve two consecutive dry seasons of oligohaline conditions averaging <10 psu monthly November through May.

Including Other VECs

CWK favors the original concept of an oligohaline VEC. *V. americana* as an appropriate representative that has a well defined historic range. Other biota that can actively migrate within the ambient salinity range (fish, crabs, some invertebrates) will be less impacted by salinity extremes and are not as vulnerable a VEC or perform the same ecological function as *V. americana*.

In conclusion CWK would not support a MFL of 400 cfs. A MFL in the range of 600-800 cfs at S-79 would be more appropriate for the reasons discussed here.

Thank you for your consideration.

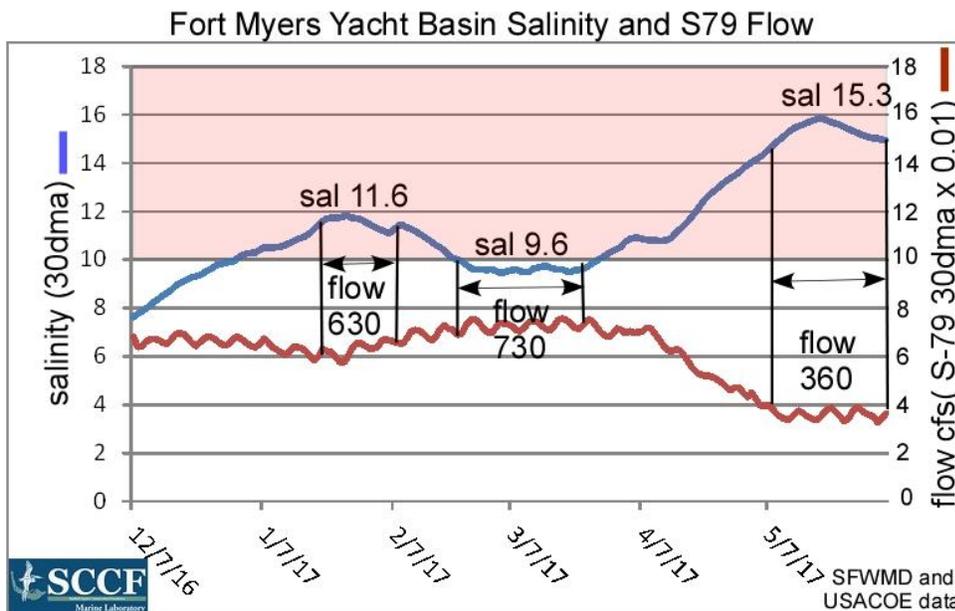


Figure 1. Salinity / flow relationship in the Caloosahatchee estuary.

