Comments on the Environmental Resource Permit Stormwater Quality Applicant's Handbook Draft dated March 2010

By Elizabeth Wong, P.E.
Stormwater Manager, City of North Port
941-429-7090 (office), 941-628-1475 (cellphone), email:
ewong@cityofnorthport.com.

I appreciate the level effort and time spent by staff from FDEP, SWFWMD, Technical Advisory Committees and stakeholders in developing a very useful Environmental Resource Permit Stormwater Quality Applicant's Handbook draft dated March 2010. I understand that there will be many future changes to the handbook and I thank the FDEP for the opportunity to provide the following comments:

1. Since this Statewide Stormwater Quality treatment rule does not apply to agriculture or silviculture, does FDEP have plans for any future stormwater quality rule that will apply to agriculture or silviculture? Both are known to be large contributors of nutrient pollution in runoff.

2. Stormwater design for partial or total redevelopment of existing facilities is extremely difficult due to constraints with existing adjacent grades and available space and the need in some instances to keep existing facilities operational. This difficulty typically exists whether an existing facility is 2 acres or less or larger than 2 acres. Thus, in urban redevelopment, the option of conducting and submitting a feasibility study should apply to **all** redevelopment sites regardless of size and not limit to 2 acres or less. If the site is not in an OFW or Impaired water or Impaired Waters with adopted TMDL or BMAP, perhaps a 50% rule should be considered; i.e. if more than 50% of the site is proposed to be redeveloped, then the whole site should be in compliance of the Section 3.1 (a) performance standards or submit a feasibility study. If less than 50% of the site is proposed to be redeveloped, then only require the portion that is to be redeveloped, to meet the Section 3.1 (a) performance standards or submit a feasibility study.

3. On page 3, Table 1.1, following are suggested frequency of recertification:
    a. Annually for first 2 years for all stormwater treatment systems
    b. If the stormwater treatment system is functioning as designed, then recertify every 2 years after the first two years for the next 8 years. If the system is still functioning well after that time period, then no need for any further recertification unless there is a change in O&M entity. If there is a change in O&M entity, then this every 2 years cycle recertification begins again.
    c. If the system is not functioning as designed, then after retrofitting, need to inspect annually for first 2 years. If after the first 2 years, the systems is functioning as designed then implement step "b" above.
    d. For underground vaults, exfiltration trenches, and underdrain filtration systems which are more susceptible to failure, the inspections should

occur during the peak of the wet season from July to August. Other systems inspection can occur any time of the year

4. On Page 6, how is the 85% reduction requirement derived?
5. On Page 7, Table 3.1, for the categories OFWs, Impaired Waters, Impaired Waters with Adopted TMDL, should the criteria be changed to "85% or Post=Pre whichever is **more**" since these waters need more protection than non-OFWs rather than less? This is seen in the example on Page 175, where the removal efficiencies for Post=Pre criterion is 74.7%, which is **less** than 85%. This is opposite to what is expected for OFWs and Impaired Waters.
6. On Page 8, the nutrient load reduction is based on the larger percent reduction for TN and TP. In a watershed, typically only either TN or TP is limiting, not both. Hence, the design should be revised to reduce just the limiting nutrient and not both nutrients. For example Tampa Bay is limited by TN and not TP, so WBIDS within the Tampa Bay watershed should be required to address TN reduction even if the calculated level for TP reduction is greater. This will ensure the best "bang-for-the-buck" is spent on stormwater treatment. Due to the vast amount of data that already exists in the FDEP and SWFWMD database, a tabulation of the FDEP water body identification codes (WBIDs) should be provided showing which nutrient is limiting.
7. On Page 10, Table 3.2, how are the TN and TP values for Group 1 and 2 derived? Please include a reference to the data used to derive these values as this table to key to the calculations of pre-development loading.
8. On Page 10, wetlands are excluded from loading calculations from both the pre-development and post development conditions. Since wetlands are a source of TN and TP, if an isolated wetland that is less than 0.5 acres is approved to be eliminated in the post-development condition, should the loading reduction from that wetland be allowed to be considered?
9. On Page 19, Table 3.4, are the TN and TP concentrations for Agriculture taken from sites with or without BMPs in place. These agricultural contributions are almost double the concentration of the remaining developments.
10. On Page 19, Section 3.6, why is a baffle/skimmer only proposed for controlling oil and grease from stormwater from vehicular traffic? A baffle/ skimmer should be required for all control structures as it serves to retain other floating pollutants such as floating leaves, grass clippings, vegetative debris and garbage. Without a baffle/skimmer, these floatables not only pollute downstream waters but will also clog the top grate of a control structure if the structure does not have a weir cut. There have been several experiences of such clogging in North Port when skimmers were "stolen".
11. On page 20, recommend installing a concrete pad under the entire skimmer/baffle to prevent weed/grass form growing up through the skimmer/baffle and clogging the control structure opening. This is a very common maintenance problem.
12. On page 28, the equations used in the design of the sediment sump does not take into account the re-entrainment of silt in the sediment sump from the incoming

turbulence of the sump pump. Also, many design engineers just use the input parameters as given in the example and specify the sump length to be 40 feet. Site specific data for d, diameter of particle, K'- cohesive factor of particle and specific gravity of particle are not used. From experience seen in many projects in North Port, the sump length of 40 feet is not sufficient and result in sump discharge with turbidity much higher than 29 NTU above background. It is much better to allow the turbid water to land spread quiescently over natural undisturbed vegetation wherever possible. Rather than clearing the entire site at the onsite of construction, the plans should specify the dedicated area when the discharge from the sediment sump can be land spread prior to flowing offsite. Long narrow sediment sumps with mounds of clean shell installed at intervals across the width of the sediment sump have been found to effective in settling fine silt.

13. On page 43, recommend renaming this Section 7.0 to Exfiltration Trenches as the current names for Section 7.0 and 8.0 are similar.

14. On page 50, Section 8.3, specifies that an underground vault cannot be used as a stand alone treatment system, but can only be used as part of a BMP treatment train. Clarification is needed on what percent reduction in the treatment train is allowed to be provided by a vault. Since an underground vault does not have the benefit of grass cover to assist in nutrient uptake, shouldn't the nutrient removal efficiency be less than those given in Appendix F.

15. On page 70, Section 11.5(c) requires the "seasonal high ground water table to be at least two feet beneath the bottom of the pervious pavement system", but Figures 11.2 and 11.3 specifies 12 to 24 inches. Recommend changing Section 11.5(c) to match the figures.

16. On page 113, Section 13.4 (d), the proposed flow path ratio (FPR) of 0.80 or greater will be very difficult to meet. Perhaps a better criterion should be the requirement for a completely submerged discharge with the top of pipe to be at least 5 feet below the normal water level in the pond and the distance from the discharge pipe to the control structure should be at least 25% of more of the longest dimension of the pond.

17. Page 114, Section 13.4(i), the intent of the drawdown notch in a wet pond is to <u>slowly and uniformly</u> allow the treatment volume to discharge with the 24 to 30 hours. The shape of V notches will defeat this purpose as the large area at the top of the V will allow the first couple inches to quickly discharge due to the width and the static head. In fact, an inverted V will be the better design although this is very difficult to construct. The bottom of the V will always be subject to clogging. It is recommended that V notches be not allowed. Recommend in this Section 13.4(i) to require a skimmer/baffle no matter what size of the drawdown device for reasons stated in previous sections.

18. On page 114, Section 13.4(j), references are made to specific sections of the SFWMD and SWFWMD Basis of Review. To facilitate the handbook user, the text from these references should be incorporated into this handbook.

19. On page 120, Section 14.2, need to require annual harvesting of the littoral zone, floating wetland mats or islands and plants on the periphery of the pond. Vegetation material should be cut back to within 0.5 to 1 ft tall and the cuttings properly disposed of. The roots on floating wetland mats or islands should be trimmed to within 6" as roots accumulate more nutrients than other parts of the plant. If harvesting is not required, the plantings will decay back into the pond and release nutrients. In theory, the total nitrogen loading in the pond can increase with littoral zones, since many plants fixate nitrogen from the air which can be then be released into the pond in the decay process.

20. On page 130, second paragraph and Figure 15.2, if water is taken from the permanent pool of a wet pond, then the exposed banks must not exceed a slope of 4:1 (horizontal to vertical).

21. Per the FDEP request for participation in research on page 140, the City of North Port has several newly constructed underdrains and sidedrains or various designs with sand media, and would like to offer FDEP, these systems to acquire data on nutrient removal effectiveness. There are several types to choose from and the City staff has carefully inspected the construction of these underdrains and side drains.

22. On page 140, Section 17.3 (a) due to the potential for media clogging in underdrains and sidedrains, it is recommended that the system be designed initially as a new system, to recover the treatment volume with 36 hrs per the current SWFWMD rules, and to require maintenance or replacement of a system if the recovery time exceeds 72 hrs.

23. On page 141, Figure 17.1, please indicate the media type within the 24" minimum thick layer between pond bottom and aggregate envelope.

24. On page 142, Section 17.3 (e), the criteria of requiring a cleanout every 400 feet seems too far apart. Recommend changing the cleanout spacing to every 50 feet due the tendency for underdrain and sidedrain to clog.

25. On page 142, Section 17.3 (g), need to add a bullet requiring a positive outfall for the perforated underdrain pipe with no tailwater condition that can cause back up. The City has several underdrain and sidedrain designs that meet the current SWFMWD 36 hour drawdown criteria. Please contact Elizabeth Wong for details of the design.

26. On page 146, why must the combined area of all natural areas conserved at the site exceed 1 acre before credit is allowed? Should not set minimum 1 acre criteria if the intent is to encourage conservation at all sites. Same comment on page 147 to eliminate the minimum required 20,000 square feet of reforestation in order for credit to be granted. Same comment on page 148 to eliminate the requirement for NDCIA to be no more than 50% larger than the overland flow area in order for credit to be granted.

27. On page 150, top paragraph, what is the basis for allowing only 3% nutrient load reduction credit if Florida Friendly landscaping is used ? Recommend that this allowance be increased to at least 5%.

28. On page 162, Section 21.3 (a), for south and southwest Florida Water Management District areas, the groundwater is extremely high, and the horizontal (not vertical) hydraulic conductivity is the controlling parameter in groundwater mounding infiltration analysis. Thus, reducing the saturated horizontal hydraulic conductivity parameter by half should be specified. Note in the MODRET infiltration software, the Safety Factor input does not affect the horizontal hydraulic conductivity.

29. On page 170, fifth bullet, the depth of soil borings should be at least 10 feet below the bottom of the proposed BMP, or to the first confining layer which ever is higher in elevation.

30. On page 172, Section 22.1(e), should the 3 acres used in the retention volume calculation be changed to 90 acres to match the data given in the example?

31. On page 173, Section 22.2(e), should the TN loading be 0.00064 kg/ac-inch/yr for both the 20acres of Sand Pine and 70 acres of Turkey Oak according to Table 3.2 Group 1 Zone 2?

32. On page 175, Section 22.1.II, it is a bit difficult to use Appendix F and perform "multiple interpolations" to derive the 0.26 inches of runoff. Can a series of formulas be provided in lieu of Appendix F tables?

33. On page 177 Table 22.3-1 shows for a 59 acre site, the total of the 6 retention ponds in parallel will provide 1.39 ac-ft of treatment volume for 87.21% removal efficiency. Per the current SWFWMD treatment criteria of 0.5" of runoff, the 59 acre site will require 2.458 ac-ft of treatment volume. This example shows that the new methodology can result in much smaller ponds. Is this the intent of the new methodology?

34. On page 184, Section 25.1 (i), Appendix E should be changed to Appendix F.

35. On page 184, the example of 90-acres residential development in Lee County using the new methodology for 85% removal, requires a treatment train of 0.85-inch of dry retention and 3.42 acre of wet pond (page 187). This is significantly more than the current SWFWMD criteria for 0.5-inch of dry retention, and no wet pond is needed. Since the City of North Port is in a watershed with soil and land cover type similar to Lee County, this example can be applicable to the City of North Port. In addition, the calculations are extremely intricate and will lead to more opportunities for error, and increased Engineering Consultant fees and regulatory staff review time. **This new methodology will raise the cost of development tremendously**.

36. For engineers that are unfamiliar with plant/tree types, it will be helpful to provide enlarged detailed photos of the various types of vegetative community in Appendix B.