



Memorandum

To: Interested Parties

From: KHA FDEP Stormwater Task Force

Date: May 26, 2010

Subject: Technical Review of the following documents:

- March 2010 Draft Department of Environmental Protection and Water Management Districts Environmental Resource Permit Stormwater Quality Applicants Handbook (AHB)
- Chapter 62-347 Stormwater Quality ("New Rule") revision date 3-17-10.

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The following list comprises both questions and comments related to both the documents listed above:

Questions and comments related to Storm Water Quality Applicants Handbook (March 2010 Draft)

- On page 3, Table 1.1, Stormwater Treatment System Recertification Frequency
Comment: Should not be burdensome to agency or owner. Recommend minimum 5 years on everything for the 1st 10 years of operation. Then 2 years after that.
- On page 4, 2.0 Definitions,
Comment: We need a Better definition of both "Existing Land Use" and "Natural Vegetative Community"
- On page 6, 3.1 (c) Stormwater treatment systems serving redevelopment activities that occur on lands with two or less acres shall meet the appropriate minimum level of treatment set forth above; however, an applicant may request approval by the Agency of a lower level of treatment.



The lower level of treatment will be determined by the applicant conducting and submitting a feasibility analysis which considers the applicability of currently available treatment technologies relative to:

- The current and proposed land use and level of imperviousness
- Physical site constraints such as soil and water table characteristics
- Hydraulic constraints such as tailwater elevations
- Connections to existing infrastructure
- Local government requirements (zoning, land use intensity, codes)
- Availability of regional facilities and opportunities for offsite treatment

The Agency shall review the feasibility analysis and determine the final level of treatment that will be required for the activity.

Question: If a small property owner can't meet the criteria, must they do a feasibility analysis to demonstrate what's possible?

Comment: Need to evaluate the cost and effects of this.

- On page 7, A stormwater treatment system shall be designed to meet the following performance standards (the minimum level of treatment):
 - (a) Except as provided below, all stormwater treatment systems shall provide a minimum level of treatment sufficient to accomplish the lesser of the following:
 - i. an 85% reduction of the post-development average annual loading of nutrients from the project; or,
 - ii. a reduction such that the post-development average annual loading of nutrients do not exceed the nutrient loading from the project area's natural vegetative community types. (See Chapter 6 of the 2007 report "Evaluation of Current Stormwater Design Criteria within the State of Florida" for information on the amount of load reduction required to achieve post=pre).



- (b) Stormwater treatment systems for activities within drainage basins defined by the 12-unit HUC of an Outstanding Florida Waters shall provide a minimum level of treatment that results in a reduction such that the post-development average annual loading of nutrients does not exceed the nutrient loading from the project area's natural vegetative community types (post=pre). The 12-unit HUC maps are available at: TO BE ADDED ____
- (c) Stormwater treatment systems serving redevelopment activities that occur on lands with two or less acres shall meet the appropriate minimum level of treatment set forth above. However, an applicant may request approval by the Agency of a lower level of treatment. The lower level of treatment will be determined by the applicant conducting and submitting a feasibility analysis which considers the applicability of currently available treatment technologies relative to:
- The current and proposed land use and level of imperviousness
 - Physical site constraints such as soil and water table characteristics
 - Hydraulic constraints such as tailwater elevations
 - Connections to existing infrastructure
 - Local government requirements (zoning, land use intensity, codes)
 - Availability of regional facilities and opportunities for offsite treatment

The Agency shall review the feasibility analysis and determine the final level of treatment that will be required for the activity.

Question: The definition as shown on page 5, states "Redevelopment" means the construction of a stormwater treatment system on sites having existing commercial, industrial, institutional, or multi-family land uses where the existing impervious surface will be removed as part of the proposed activity. Does this mean that if you are considering expanding a building on an existing property and doing parking lot modifications and the total area of construction is over 2 acres that you are not allowed to submit a feasibility analysis?

Question: What is the review time for the feasibility analysis?

Question: Do we have any rights to appeal the decision to the board?



Question: How are Cities or clients going to redevelop downtown with such strict requirements?

Question: If a site has undergone redevelopment more than once, what is considered its "pre-development" condition?

- On page 19, Section 3.8 Off-site Stormwater, The volume of runoff to be treated from a site shall be determined by the minimum level of treatment set forth in Section 3.1 of this Handbook; the type of treatment system (i.e., retention, wet detention, etc.); and the meteorological region (rainfall zone) where the project is proposed. If stormwater runoff from off-site areas is allowed to co-mingle with on-site runoff, then the effects of runoff from these off-site areas must be considered in the load reduction calculations for the project site.

Comment: If offsite discharge comingles with onsite, must treat all. This is a departure from just treating onsite.

- On page 26, under Inspections, Section 4.3.1.4, A qualified inspector shall perform all necessary site inspections. A qualified inspector is defined as someone who has successfully completed the Department's Stormwater, Erosion, and Sedimentation Control Inspector Training Program. Completion of an equivalent training program shall also serve to qualify an inspector if the program is substantially equivalent to the Department's program.

Comment: On the NPDES Permit, page 4, under Part II. Definitions, a "Qualified Inspector" is, in addition to the descriptions above, defined as a person that is qualified by other training or practical experience in the field of stormwater pollution prevention and erosion and sedimentation control. Training of inspectors already who are already qualified under NPDES and who possess practical experience in the field will be an additional cost.

- On page 31, Section 5.4 (c) The seasonal high ground water table shall be at least two feet beneath the bottom of the retention basin unless the applicant demonstrates, based on plans, test results, calculations or other information, that an alternative design is appropriate for the specific site conditions.

Comment: This requirement will necessitate raising the site (since prior elevation of bottom of retention basin was one foot above the seasonal high ground water table) an additional foot of fill material over sites unless the specific reviewer feels the data is acceptable.



Comment: If the average elevation of the site must be raised, this requirement will also make it difficult to meet pre-post water quantity treatment and make floodplain compensation requirements more difficult to meet.

- On page 34, Section 6.1 – Under Exfiltration Trench Design

What changes at the Miami-Dade/ Broward County line that eliminates “Wet” exfiltration trenches to the north? “Wet” exfiltration trenches are typically used throughout SFWMD area where existing hydrogeological conditions warrant them.

- On page 34, Section 6.2 – Exfiltration trenches must be designed to have capacity to retain the required treatment volume without discharging to ground or surface water. This is a huge departure from the well-researched SFWMD exfiltration trench equation which allowed the first hour of exfiltration to be counted as part of the volume provided for water quality treatment.

Comment: If first-hour exfiltration is no longer allowed to be counted, preliminary analysis of a small Broward County site results in exfiltration trench lengths of 8 to 12 times the currently required length, effectively eliminating exfiltration trench as a viable BMP.

- On page 35, Figure 6.1 – Dry exfiltration trench cross-section.

Comment: The cross section appears to count only the pipe diameter and voids as exfiltration trench Required Treatment Volume (RTV) – This is a huge departure from the well-researched SFWMD exfiltration trench equation which allowed the first hour of exfiltration to be counted as part of the volume provided for water quality treatment. If first-hour exfiltration is no longer to be counted, preliminary analysis of a small Broward County site results in exfiltration trench lengths of 8 to 12 times the currently required length, effectively eliminating exfiltration trench as a viable BMP.

- On page 36, under Design and Performance Criteria, Section 6.4 (d)

Comment: Trench must recover in 72 hours which will mean extra calculations. As well as additional recovery analysis, including mounding affects, for exfiltration trench, and added consulting costs for the owner.



Question: What about “wet” trenches? Are there any additional calculations required?

- On page 36, under Design and Performance Criteria, Section 6.4 (g)

Comment: With the dry exfiltration being an additional 2' above seasonal high., this will create an extra 2' of fill over current criteria that allow dry to be at the seasonal high. Or, if fill is not feasible due to water quantity and floodplain compensation requirements, this requirement eliminates dry exfiltration trench as a feasible BMP in much of the SFWMD area. For example, typical Broward County site has only 2 to 3 feet between the top of trench and the water table. Eliminate 2 feet from the bottom of the trench, and there is no space left for a pipe.

- On page 36, under Design and Performance Criteria, Section 6.4 (h)

Comment: Why is wet exfiltration only allowed in Dade County? Currently wet is allowed all over SFWMD as part of treatment. We would like clarification that no dry pretreatment is required.

Question: Will the old SFWMD exfiltration trench equation apply to “Wet” trenches?

Comment: There is no guidance on calculating Required Trench Volume (RTV) for these trenches in the handbook.

- On page 37, under Design and Performance Criteria, Section 6.4 (k)

Comment: Why is a 2' sump required in exfiltration structures. There is currently no sump dictated. This will be an added cost. This is not currently an SFWMD requirement.

- On page 38, Figure 6.3, “Generic” Exfiltration Trench Sumps & Dead End Details

Comment: An FDOT underdrain is required below weep holes in all Exfiltration structures which is not currently required. Serves no real purpose in a “Wet” trench system.



- On page 38, Under Construction requirements, Section 6.6 (f)
Comment: Inflows to the trench must be temporarily blocked during construction. Why not just filtered using erosion control BMPs to remove sediment?
- On Page 39, Figure 6.4 Detail for Exfiltration Trench Trash Baffle
Comment: The weep hole as shown on Section A-A, should be 12" instead of 12'.
Question: What purpose does the weep hole serve if the weep hole is 2' below the bottom of the exfiltration trench elevation?
Comment: Groundwater could enter into the manholes 2' below the exfiltration trench elevation.
Comment: This proposed requirement would have the opposite effect of that intended; it would release pollutants back into the aquifer rather than capture it.
- On page 41, Inspections, Operation and Maintenance, Section 6.7 (a) (1)
Question: Why is the 72 hour recovery in exfiltration required to be monitored?
Question: How are the extra monitoring requirements enforced or reported?
Question: What about effects of a water table that is temporarily higher than SHGWT?
- On page 43, Design Criteria, Section 7.4 (c) thru Section 7.4(f)
Comment: SHGWT must be 2-feet below underground storage and retention system. Minimum perforated or slotted pipe diameter is 12-inches. Effectively eliminates underground storage and retention systems as a viable BMP in areas where the SHGWT is high and raising the average site grade not feasible due to water quantity treatment and floodplain compensation requirements.



- On page 44, under UNDERGROUND STORAGE AND RETENTION SYSTEMS DESIGN CRITERIA, (g). To minimize the loss of the Required Treatment Volume (RTV), the underground retention system must be designed so that the invert elevation of the trench must be at least two feet above the seasonal high ground water table elevation unless the applicant demonstrates, based on plans, test results, calculations or other information, that an alternative design is appropriate for the specific site conditions.

Comment: This requirement will impose raising the site (since prior elevation of bottom of underground retention or storage was one foot above the seasonal high ground water table) an additional foot of fill material over sites unless the specific reviewer feels the data is acceptable.

- On page 46, under Inspections, Operation and Maintenance, section (d) 2, Every 6 months: Perform a comprehensive inspection of the underground retention system for accumulated trash, debris and organic matter, and remove/dispose of these contaminants to ensure unimpeded stormwater flow. As appropriate, clean the surface of the sub-grade sands by raking, and check for accumulations in the various underground areas. If the sediment/contaminate accumulation is greater than two (2) inches, a vacuum truck and/or similar equipment may be necessary for removal operations. Removed contaminants shall be taken to an approved offsite landfill.

Comment: This requirement will cost the owner more money which would seem to be money not well spent.

Question: Is there a way to have specific manufacturer recommendations for maintenance schedules?

Comment: At the owners request, manufacturers will determine the maintenance schedule which will best provide required maintenance so the system will function as designed. If more inspections are required, the owner will be paying more for no noticeable results.



- On page 50, Design Criteria, Section 8.4 (f)

Comment: The SHGWT must be 2-feet below underground vault/ chamber system. Due to very shallow allowable depth in relation to volume, underground vault/ chamber systems will not be an economically feasible BMP in areas where the SHGWT is high and raising the average site grade not feasible due to water quantity treatment and floodplain compensation requirements.

- On page 64, under section 10.4 Design Criteria, e) The minimum buffer width (dimension parallel to flow direction) shall be 25 feet to provide adequate area for infiltration and the maximum VNB width shall be 100 feet to ensure sheet flow conditions and the integrity of the treatment system. Factors affecting the minimum width (measured parallel to the direction of runoff flow) of VNB include infiltration rate, ground slope, rainfall, cover and soil characteristics, depth to water table and overland flow length. Infiltration is the primary means of treatment in vegetated natural buffers. A sample calculation for designing a buffer to meet the above requirements is provided in Section 28 of this Handbook

Question: What is the purpose of restricting the minimum buffer width to 25', what if a lower dimension is used?

Question: Is there a mechanism in place to obtain approval for a lower dimension being used?

Comment: "A sample calculation for designing a buffer to meet the above requirements is provided in Section 28 of this Handbook"

- On page 64, Calculating Load Reduction Efficiency for a Given Retention Volume

Comment: WMD allow a minimum of 15' and 10.4(n) allows VNB and wetland buffers can be the same area. Stands to reason they may be the same width.

Comment: Section 10.4(c) calls for the seasonal high ground water table to be at least two feet below the bottom of the vegetated natural buffer. Most wetland buffers are less than two feet above the seasonal high ground water table so this would not allow compatible use.

Comment: Section 10.4(b) only allows rear-lots of residential areas to contribute runoff; however other areas, such as passive park areas, may be applicable.



Question: What is the purpose of differentiating VNBs from Natural Areas as BMPs?

Question: Should we allow both areas to receive some SW flow for treatment and both areas to be excluded from runoff calculations?

- On page 64, under section (i) The Property Association Documents and Conditions Covenants and Restrictions (CC&Rs) will require that the contributing area must be stabilized with permanent vegetative cover that is consistent with the Florida Friendly Landscaping program and which is fertilized only with Florida-friendly fertilizers.

Question: Are there any allowances for changes to the landscaping and fertilizers in the future in the guidelines?

- On page 70, Calculating Load Reduction Efficiency for a Given Retention Volume, Section 11.4

Comment: The requirements to place bottom dry retention, exfiltration trenches, underground storage and retention systems, and underground vaults/ chambers at least 2-feet above SHGWT will leave pervious pavement as one of the few BMPs that will be viable in locations where the SHGWT is high compared to existing ground elevations. These other BMPs can have structures with sumps and baffles placed in front of them to reduce sediment and/or grease/oil build-up within the porous medium.

Question: What protects pervious pavement from such build-up?

Comment: It will likely require much more frequent maintenance and replacement than the other porous medium based BMPs in order to remain effective.

- On page 83, Green Roof/Cistern System Design, Section 12.2



Question: Is a green roof considered pervious or impervious from a standpoint of site runoff calculations?

- On page 85, Design Criteria, Section 12.4 (e)

Question: Is there any research on the design life of recommended Pollution Control Media?

Question: Does it require regular cleaning or “recharging” to maintain efficacy?

- On page 109, Wet Detention Systems,

Question: Almost all designs have the control elevation for wet pond more than 6 inches below the SHGWT. According to this rule, nutrient loading from the surrounding base flows must also be treated for. Water coming from the groundwater has already percolated through soil and should be considered treated from a phosphorus and nitrogen perspective. There is no way to determine where the groundwater is flowing from, so how can any type of existing loading condition be determined?

- On page 109, Wet Detention System: Section 13.1,

Question: Will wet detention systems be permitted for use with a liner to maintain permanent pool volumes where SHGWT is not high enough to allow adequate permanent pool volume?

- On page 120, Managed Aquatic Plant Systems (Maps) Design Criteria

Comment: MAPS should be encouraged. Littoral zone nutrient removal credits should be as high as the floating wetland mats or islands.

Comment: Design criteria for wet detention littoral zones should be a maximum depth of two to 2.5 feet below the normal water level or control elevation. The pond level is allowed to rise 18 inches above the control elevation allowing for periods of 4 feet of inundation within the shelf. Most wetland species do not survive with prolonged periods of submersion; therefore Table 14-2 should be modified to exclude Planting Zone 4.

Question: Will rules provide credit for vegetative planting within swales or dry retention ponds in addition to the treatment provided by these treatment trains?



Question: Floating Wetland Mats appear to require costly maintenance, cover less surface area yet are given higher credit? More information needs to be provided.

- On page 127, Floating Wetland Design Criteria, Section 14.4 (f)

Question: What should be done to dispose of removed mature floating wetland islands?

Question: Are there any suggestions for cleaning and reusing, or must they be disposed of in a landfill?

- On page 133, under section 15.6 Inspections, Operation and Maintenance (c) Record keeping: The owner/operator of a stormwater harvesting system must keep a maintenance log of activities, which is available at any time for inspection or recertification purposes. The log will include records related to the operation of the stormwater harvesting system and the use of the harvested stormwater for irrigation or other approved purposes to demonstrate that the permitted nutrient load reduction is being achieved. A totalizing flow meter to measure the quantity and day/time of pumping and irrigation is required. The maintenance log shall include the following:
 1. Stormwater volume harvested using a flow meter specifying the day, time, and volume;
 2. Stormwater volume irrigated or otherwise used using a flow meter specifying the day, time, and volume used;
 3. Observations of the stormwater harvesting system operation, maintenance, and a list of parts that were replaced;
 4. Observations of the irrigation system operation, maintenance, and a list of parts that were replaced; and
 5. Dates on which the stormwater harvesting and irrigation (or other use systems) were inspected and maintenance activities conducted.

Question: Why is a totalizing flow meter required? This is an additional expense to the owner.



Question: Why is the FDEP interested in a daily report?

- On page 140, Underdrain Filtration System Design Criteria, Section 17.0

Question: Underdrain filtration criteria is interim. Will these criteria be completed and distributed prior to closing of the public comment period? If not, will there be another opportunity to review and comment on these criteria prior to rule adoption?

- On page 140, Underdrain Filtration System Design Criteria ,Section 17.1

Comment: All under drain information refers to areas where soils are suitable for percolation but SHGWT does not allow.

Question: May this technology also be permissible for recovery in areas where natural soils are unsuitable for percolation?

- On page 141, Underdrain Filtration System Design Criteria Section 17.3 (b)

Question: Is there research available on the design life of suggested under drain adsorption material?

Question: Is there any need for cleaning or “recharging” of material to maintain efficacy?

Comment: Retention system design criteria is limited where soils are not determined to have good capacity for percolation, the SHGWT does not allow. As a result, fill must be brought to the site to allow retention. In these design scenarios, underdrain systems would prove valuable to promote recovery of these retention areas. However, because underdrain media must be on-site soils, the treatment system cannot benefit from an underdrain system. Imported media should be permitted in the design of underdrain systems.

- On page 146, Low Impact Design, Section 18.0

Comment: Low Impact Design BMPs are a good idea. Larger credit amounts would be preferable to currently proposed levels.



- On page 146, Low Impact Design BMPS-Design and Load Reduction Credits: 18.0

Comment : LIDs are a good idea but do not go far enough. Needs to provide further incentive for reducing impervious pavement areas, allow for use of landscape requirements as credit or for treatment area and allow streetscape trees as credit in redevelopment areas.

Comment: Section 18.2, We need to require a stratified system not just canopy.

Comment: Section 18.3, DIA credits should allow more latitude to include landscaped islands and buffer requirements for treatment and credit for impervious area.

Comment: Section 18.4, The conditions for credit are too restrictive when requiring local government LDR language for Florida Friendly Lawns and Landscapes.

- On page 157, System Safeguards, Section 19.10

Question: Are there any other known drawbacks for the natural environment to alum injection besides potentially unsafe pH?

- On page 160, under 20.2 Goals and Performance Standards for urban stormwater projects,
 - Section 62-40.432(2)(c), F.A.C., states that pollutant loading from older stormwater management systems shall be reduced as necessary to restore or maintain the designated uses of waters. The applicant shall conduct a feasibility assessment to determine which BMP(s) and design criteria shall provide the greatest pollutant removal in the most cost-effective manner given the limitations of the project site.
- Question: Is the over ruling criterion the lowest cost? Does the applicant have any choice in which option is selected?



- On page 160, Urban Stormwater Retrofit projects
- Question: What is the purpose of this section if it is not for redevelopment of an existing site and hence the stormwater system?
- Comment: Should not criteria be addressed for urban centers retrofitting their existing systems to meet redevelopment needs?

- On page 204, Section 30 and Appendix G

Comment: In developing the definition for sensitive Karst areas, care should be taken to avoid unintended consequences of applying NFWMD and SJRWMD definitions within the SFWMD. Much of SFWMD has limerock within 20-feet of existing ground elevations, but does not have the intended Karst conditions.

- On page 221, under 32.4 Minimum Operation and Maintenance Standards, (a) Maintenance Access
 - Easements adjacent to water control structures must be a minimum of 20 feet wide.
 - Easements for piped stormwater conveyance must be a minimum of the width of the pipe plus 4 times the depth of the pipe invert below finished grade.
- Question: Why does an easement next to a water control structure need to be 20' wide? This seems excessive?
- Question: Why would you have an easement 40' wide? If the pipe is 10' deep, most systems are at least 5-6 feet, this would create very wide easements? Are any other utilities allowed within the easement or perpendicular crossings?
- Comment: This could greatly affect utility design for projects.



Additional Questions and Comments:

1. Comment: In general, further evaluation is necessary for the TP and TN impacts, but preliminarily we have seen increased land area required. In addition, there are additional calculation requirements, monitoring/maintenance requirements, fill and other construction requirements that will drive up cost on top of the additional treatment requirements.
2. Comment: In preliminary calculations, the wet pond with a 150-day residence time only removes 40% of nitrogen. This will require significantly more dry retention to remove the remaining 45%. The 150 day residence time of the wet pond is 7 times what current SJRWMD guidelines recommend (21 day residence time). A higher residence time directly relates to a larger permanent pool volume which means a bigger pond. Maximum depth is 12 feet, so the pond cannot be dug deeper to get additional volume. The end result is reduced developable land and higher construction costs.
3. Question: Generally, has any thought been given to the permitting of phased developments or regional facilities?
4. How will future development to a stormwater management facility built in a first phase be permitted?
5. Comment: Throughout the Handbook there are several missing sections and design examples which will be provide in the next few weeks/months according to FDEP.
6. Question: When will the third party economic analysis be completed for review?
7. Comment: There needs to be a provision that, after a period of approximately 1-2 years, the applicant's handbook can be re-reviewed by the agency and public for possible changes due to new data or hardships that it created.
8. Comment: When sold, transferred or assigned to new owners, permits are to be considered as grandfathered in, based on the rules under which the permit was issued.
9. Comment: Any permit modifications should be reviewed using the rules in effect at the time the project was designed and the original permit was issued. Otherwise, the project will be rendered much less valuable.



10. Comment: The formula to calculate PPV is not specified in the wet detention section.
11. Comment : Please clarify the formula between residence time and permanent pool volume.
12. Are bikepaths/trails/pedestrian sidewalks going to remain exempt from SW treatment criteria?

Questions and comments related to Chapter 62-347 Stormwater Quality (New Rule)

1. Question: There are many paragraphs still under development. When will they be ready for review?
2. Comment: There needs to be provisions that after a period of approximately 1-2 years that the new rule can be re-reviewed by the agency and public for possible changes due to new data or hardships that the rule creates.