MEMORANDUM

TO: Governing Board Members

FROM: Deena Reppen, Deputy Executive Director, Regulatory and Public Affairs

DATE: August 31, 2010

SUBJECT: **Everglades Regulatory Source Control Program: C-139 Basin Adoption of amendments to Chapter 40E-63, F.A.C., Part IV and Appendix B**

Background:

On June 10, 2010, the Governing Board authorized publication of a Notice of Rulemaking to amend Part IV and Appendix B of Chapter 40E-63, F.A.C to improve the existing Regulatory Source Control Program in the C-139 Basin in order to meet the requirements of the Everglades Forever Act (EFA). The C-139 Basin has consistently exceeded historic phosphorus levels in discharges. The proposed amendments require more comprehensive BMP plans to be implemented within 90 days of the rule effective date; provide incentives to participate in demonstration projects; provide opportunities to demonstrate appropriate parcel-level water quality; require additional activities that will result in specified reduction levels if the C-139 Basin continues to be out of compliance; improve the methodology for calculating the performance measure results; and incorporate a sub-basin District monitoring program to identify areas of future improvement efforts.

In accordance with rulemaking procedural requirements, a Notice of Rulemaking was published in the Florida Administrative Weekly and copies of the amended rule text were provided to stakeholders, interested persons, the Joint Administrative Procedures Committee (JAPC), the Office of Tourism, Trade & Economic Development, and the Small Business Regulatory Advisory Council.

Since Governing Board approval, the District has revised the published rule text in response to comments from the Joint Administrative Procedures Committee, stakeholder requests for clarification, and identified typographical and Scrivener errors. These edits do not result in substantive changes from the draft text approved by the Board in June.

Recommendation:

Staff recommends adoption of the proposed amendments, with revisions made in response to comments, so that improvements to the existing program will be in effect to expedite water quality improvement.

Staff Contact: **Pamela Wade, Director, Everglades Regulation Division**
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8/30/10 4:50 PM

40E-63.400 Purpose and Policy.

(1) This part of Chapter 40E-63, F.A.C., ~~Program~~ implements requirements of the Everglades Forever Act (EFA), Sections 373.4592(4)(f)5. and 6., F.S., for the C-139 Basin, and also provides a regulatory process for landowners whose water management systems connect with and make use of the canals, structures and other Works of the District within the C-139 Basin, in accordance with Section 373.085, F.S.

(2) Since water quality monitoring data from the C-139 Basin demonstrate that the landowners within the C-139 Basin have collectively exceeded historical ~~the~~ annual phosphorus loading levels ~~of phosphorus of 28.7 metric tons~~, landowners are required to implement a best management practices (BMP) program for reduction of phosphorus in discharges that is consistent with the land uses within the basin.

(3) The objectives of this part of Chapter 40E-63, F.A.C., ~~BMP program~~ are as follows:

(a) To implement and continuously improve through adaptive management ~~immediately require initial implementation of~~ a BMP program, including modifications to existing water management systems, for reducing and controlling phosphorus discharges from the C-139 Basin ~~(later in this Chapter referred to as Level I)~~;

(b) To provide a water quality monitoring program, performance measures and a compliance methodology to evaluate the effectiveness of the BMP program in reducing phosphorus discharges; ~~for determining whether additional measures will be required of landowners (later in this Chapter referred to as Levels II through IV); and~~

(c) To establish a BMP compliance verification ~~an inspection~~ and enforcement program to

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ensure that phosphorus discharges from the basin do not exceed historic levels, based upon water quality monitoring data from the period October 1, 1978 to September 30, 1988, in accordance with Chapter 40E-63, F.A.C., Appendix B2, "C-139 Basin Performance Measure ~~Compliance~~ Methodology", dated _____ ~~October 2001~~; and

(d) To develop and conduct research and demonstration projects to improve and confirm the effectiveness of BMPs for reducing phosphorus and other constituents that are not being significantly improved by either Stormwater Treatment Areas (STAs) or BMPs.

(4) This part of Chapter 40E-63, F.A.C., ~~Program~~ requires landowners to reduce phosphorus discharges from the C-139 Basin, and in conjunction with the Stormwater Treatment Areas (STAs), ~~especially STA-5,~~ provides a sound basis for the State of Florida's long-term improvement ~~cleanup~~ and restoration objectives for the Everglades. It is recognized that achieving phosphorus and other water quality standards will involve an adaptive management approach, whereby best available information and technology are used to identify and implement incremental BMP improvement activities for further phosphorus reduction and water quality improvements, if needed.

~~(5) Except as otherwise provided in this chapter, the permittees within the C-139 Basin shall not be required to implement any additional water quality improvement measures before December 31, 2006, in accordance with the EFA, Section 373.4592(4)(f)3., F.S.~~

(5) The BMP implementation requirements, performance measures and compliance methodology established in this part of Chapter 40E-63, F.A.C., pertain to phosphorus only. Should regulation of other nutrients or constituents be required to meet statutory requirements, including water quality standards, the District shall initiate rulemaking pursuant to Chapter 120 F.S.

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(6) ~~(5)~~ Unless otherwise provided by this part ~~IV~~ of Chapter 40E-63, F.A.C., nothing herein shall be construed to modify any existing state water quality standards, nor to otherwise restrict the authority granted to the District pursuant to Chapter 373, F.S.

(7) ~~(6)~~ Section 403.067(7)(c)2., F.S., authorizes the Florida Department of Agriculture and Consumer Services (FDACS) to develop and adopt BMPs by rule ~~and assist with their implementation~~.

(8) ~~(7)~~ The District's sub-basin monitoring and maintenance program for data collection, performance measure assessment, and determination of when water quality improvement activities are required, as described in paragraphs 40E-63.446(2), (3)(a), (3)(e), and (4), F.A.C., and Appendices B3.1 and B3.2 (which are incorporated by reference in subsections 40E-63.446(2), F.A.C.), ~~and~~ are an inseparable component of this part of Chapter 40E-63, F.A.C., for ensuring that landowners are responsible for their proportional share of phosphorus load discharged from the C-139 Basin. If these provisions are declared invalid, the District shall initiate rulemaking pursuant to Chapter 120, F.S., to revise this part of Chapter 40E-63, F.A.C., to ensure that the proportional share objectives of the EFA, Section 373.4592(4)(f)~~f~~, F.S., are met.

Rulemaking ~~Specific~~ Authority 373.044, ~~373.083, 373.085, 373.086~~, 373.113, 373.4592, FS. Law Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592(4)(f) FS. History–New 1-24-02, Amended _____.

40E-63.401 Scope of Program.

(1) For the purposes of this part of Chapter 40E-63, F.A.C., ~~rule~~, the Works of the District for the C-139 Basin include water control structures, right-of-ways, canals, and other water resources that the South Florida Water Management District owns, operates and controls, and

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that have been specifically named as Works of the District pursuant to Sections 373.085 and 373.086, F.S. Works of the District for the C-139 Basin include G-96, G-134, G-135, G-136, G-150, G-151, G-152, G-406, G-342A, G-342B, G-342C, G-342D, L-1 Canal, L-2 Canal, L-3 Canal (north of G-406), and their open channel connections.

(2) Unless expressly exempted, all lands within the C-139 Basin are users of the Works of the District within the C-139 Basin, and as such must be granted a No Notice General Permit pursuant to the provisions of Rule 40E-63.415, F.A.C., or must obtain a General ~~or Individual~~ Permit pursuant to the provisions of Rule 40E-63.430 ~~40E-63.440 or 40E-63.450~~, F.A.C.~~,~~ ~~respectively.~~ The rules shall apply to existing and new discharges ~~releases of water to Works of the District~~ within the C-139 Basin.

(3) Landowners in the C-139 Basin share responsibility for achieving phosphorus load limitations in the basin. The compliance program, as established in this part of Chapter 40E-63, F.A.C., ensures that landowners are responsible for their proportional share of phosphorus load discharged from the C-139 Basin based upon their proportional share of acreage to the total C-139 Basin acreage.

(4) Permits issued under this part of Chapter 40E-63, F.A.C., do not eliminate or alter other applicable permit requirements for discharges that impact other water bodies, basins, or Works of the District, nor do they affect the permit requirements of other District regulatory programs.

Rulemaking ~~Specific~~ Authority 373.044, ~~373.083, 373.085, 373.086~~, 373.113, 373.4592, FS. Law Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592(4)(f) FS. History–New 1-24-02, Amended _____.

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Substantial rewording of Rule 40E-63.402 follows. See Florida Administrative Code for present text.

40E-63.402 Definitions.

(1) "Best Management Practice (BMP)" means a practice or combination of practices determined by the District, in cooperation with the Department of Environmental Protection (Department) and FDACS, based on research, field testing, and expert review, to be the most effective and practicable on-location means, including economical and technological considerations, of improving water quality in agricultural and urban discharges to a level that balances water quality improvements, and agricultural productivity as applicable.

(2) "BMP Plan" means a combination of BMPs that meets, but is not limited to, the requirements of Rules 40E-63.435 and 40E-63.437, F.A.C., as determined by the District.

(3) "BMP equivalent point" means the numerical value assigned to a BMP as provided in Appendix B1 (incorporated by reference in subsection 40E-63.435(1), F.A.C.). The points are used for regulatory permit review to ensure a comparable level of effort in BMP implementation among permittees. The points are an indication of relative BMP effectiveness. The points were ~~are~~ based on expert review, technical publications, best professional judgment, and cooperative workshops with stakeholders.

(4) "C-139 Basin" means those lands described in the EFA, Section 373.4592(16), F.S. or lands outside those boundaries which discharge to the C-139 Basin or to the canals or structures described in subsection 40E-63.401(1), F.A.C.

(5) "Demonstration project" means an investigation based on technical information to evaluate the feasibility and effectiveness of best management practices techniques

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offering phosphorus reduction ~~and financial~~ benefits. Criteria to be considered by the District for review are described in subsection 40E-63.437(3) and Rule 40E-63-438, F.A.C.

(6) "Discharge" means any surface water runoff generated by rainfall, irrigation, or seepage flowing off-site from a land area. Runoff may occur through a structure (pump or gravity) or may flow as uncontrolled discharge from a land area.

(7) "Nutrient control practices" means a category of BMPs that minimizes nutrient input and the movement of nutrients off-site by efficient and controlled application of nutrients (e.g., organic and chemical fertilizers, soil amendments, and residuals.)

(8) "Parcel" means a contiguous land area identified in the county tax rolls under common ownership.

(9) "Particulate matter and sediment control practices" means a category of BMPs that minimizes the movement off-site of nutrients in particulate matter and sediments by controlling the amount of eroded soil and plant matter in discharges.

(10) "Permit basin" means a parcel or group of parcels served by one or more discharge structures that collectively represent all of the discharge from that area of land. A permit may have one or more permit basins. The boundaries of a permit basin are determined by the District based on available hydrologic data to define, to the extent practicable, the land area discharging to each sub-basin.

(11) "Structure" means a structural device or hydrologic feature (e.g. pump, culvert, open connection, land surface grading, ditch) that water flows through or across and is ultimately discharged/directed from a permit basin to a receiving water body.

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(12) “Sub-basin” is an area of land determined by the District to represent all discharges to District monitoring locations based upon hydrologic mapping, and permittee submitted information, as represented in Appendix B3.1 “Permittee Annual Phosphorus Load Determination Based on Sub-basin Monitoring and the Permit Basin Discharge Monitoring Program”, dated_____.

(13) “Verification plan” means a water quality monitoring program to verify the expected effectiveness of a BMP Plan or proposed water quality improvement activities in accordance with subsection 40E-63.461~~0~~(4), F.A.C.

(14) “Water management practices” means a category of BMPs that minimizes the quantity and improves the quality of off-site discharges which carry nutrients downstream. BMPs for water management include discharge and irrigation management practices to reduce runoff.

(15) "Water management system" means the collection of devices, improvements or natural systems whereby surface waters are conveyed, controlled, impounded, or obstructed. For water management systems serving multiple entities, dams, impoundments, reservoirs and their structures and canals are referred to as the common facilities.

(16) “Water quality improvement activities” means a combination of modifications to a BMP Plan proposed by a permittee to meet the required total phosphorus reduction requirements of Appendix B3.2.(incorporated by reference in subsection 40E-63.446(2)(a), F.A.C.). Improvement activities may include revising implementation methods to increase the effectiveness of existing BMPs or implementing additional BMPs.

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(17) "Water year" or "WY" means the 12-month period beginning on May 1 and ending on the following April 30.

Rulemaking ~~Statutory~~ Authority 373.044, ~~373.083, 373.085, 373.086,~~ 373.113, 373.4592, F.S., Law Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592(4)(f), F.S., History – New 1-24-02, Amended _____.

40E-63.404 ~~Incorporation of~~ Forms, Instructions and References.

The documents listed in subsections (1) through (9 ~~8~~) are ~~hereby~~ incorporated throughout this part of Chapter 40E-63, F.A.C., ~~by reference,~~ and are available on the District's website (www.sfwmd.gov), or from the District's Clerk's Office at 3301 Gun Club Road, West Palm Beach, FL 33406, 561-686-8800, upon request.

(1) South Florida Water Management District Form 1045, ~~January 2002, entitled,~~ "Application For a ~~A~~ C-139 Basin Pollutant Source Control ~~Works Of The District~~ Permit" dated _____ ~~and "Guidebook for Preparing an Application for a C-139 Basin Pollutant Source Control Works of the District Permit", dated January 2002 ("Guidebook")~~.

(2) "Guidebook for Preparing an Application for a C-139 Basin Pollutant Source Control Permit" ("Guidebook"), dated _____.

(3) ~~(2)~~ "Appendix B1 – BMP Description and Equivalent Points Reference Table", dated _____ ~~January 2002~~,.

(4) ~~(3)~~ "Appendix B2 – C-139 Basin Performance Measure ~~Compliance~~ Methodology", dated _____ ~~January 2002, and setting forth the compliance methodology the District will follow for the C-139 Basin with regard to the applicable phosphorus load limitation~~.

(5) ~~(4)~~ "Appendix B2.1 – FORTRAN Program for Calculating C-139 Basin Flows and Phosphorus Loads", dated _____ ~~January 2002~~.

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(6) ~~(5)~~ "Appendix B2.2 – Flow Computation Methods Used to Calculate C-139 Basin Flows", dated _____ ~~January 2002, providing applicable mathematical methods for calculating flow rates through water management structures~~.

(7) ~~(6)~~ "Appendix B3.1 – Permittee Annual Phosphorus Load Determination Based on Sub-basin Monitoring and the ~~Optional~~ Permit Basin Discharge Monitoring ~~Plan~~ Program", dated _____ ~~January 2002, setting forth the procedures the District will follow to calculate a permittee's proportional share of phosphorus load in order to determine eligibility for release from implementation of additional BMPs when the permittee has elected to implement the optional discharge monitoring plan and the C-139 Basin is out of compliance.~~

(8) "Appendix B3.2 – Criteria for Required Phosphorus Reductions", dated _____.

(9) "Flow Calibration Guidelines Developed in Support of Chapter 40E-63, F.A.C., Everglades BMP Permit Program", amended July 24, 1997.

~~(7) The documents listed in subsections (1) through (6) are hereby incorporated by reference, are published by the District, and are available on the District's website (www.sfwmd.gov) or from the District at 3301 Gun Club Road, West Palm Beach, FL 33406, (561)686-8800, upon request.~~

Rulemaking ~~Specific~~ Authority 373.044, ~~373.083, 373.085, 373.086,~~ 373.113, 373.4592, FS. Law Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592(4)(f) FS. History–New 1-24-02, Amended_____.

40E-63.406 Delegation.

(1) The Governing Board delegates to and appoints the Executive Director and his or her designated agents to review and take final action on BMP Plan pre-approvals and~~,~~ applications ~~to modify or transfer existing Individual Permits and all applications~~ for ~~General~~ p~~P~~ermits issued

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under Chapter 40E-63, F.A.C., including the addition of special conditions as necessary to implement the requirements of Chapter 40E-63, F.A.C., and the Everglades Forever Act, Section 373.4592, F.S., and other applicable provisions of Chapters 373 and 403, F.S., except when the staff recommendation is for denial of such applications.

(2) All recommendations for denial of applications ~~and all other applications regarding Individual Permits (new or renewals)~~ shall be considered by the Governing Board.

Rulemaking ~~Specific~~ Authority 373.044, ~~373.083, 373.085, 373.086~~, 373.113, 373.4592, FS. Law Implemented 373.016, 373.085, ~~373.086, 373.451, 373.453,~~ 373.4592(4)(f) FS. History–New 1-24-02, Amended_____.

40E-63.415 No Notice General Permits.

(1) No Notice General Permits for Use of Works of the District within the C-139 Basin are hereby granted to the landowners of ~~permittees for the surface water system operating permit for~~ parcels of land that connect to or make use of the Works of the District within the C-139 Basin, subject to the requirements of this part ~~IV~~ of ~~this~~ Chapter 40E-63, F.A.C., including paragraphs 40E-63.444(1)(d), (g), (h) (i), (j), ~~,~~ (l), (m), (r), (s), (t), and (u), ~~40E-63.444(1)(e), (f), (g), and (i),~~ F.A.C., and the conditions specified below:

(a) The parcel ~~land~~ is not part of the common facilities of a water management system as defined in subsection 40E-63.402(15), F.A.C., of water control districts or drainage districts pursuant to Chapter 298, F.S., or any other entity operating a central drainage system already permitted under ~~this~~ Chapter 373, F.S.; ~~subject to the agricultural privilege tax, pursuant to the EFA, Section 373.4592(7)(a), F.S.;~~ and

(b) The parcels are inactive, or add up to less than 40 acres under the same ownership. "Inactive" means land parcels that are not used for agriculture, urban, commercial, industrial or

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other development, as determined by the District. It also includes lands in their undeveloped native state (unless used as pastures). Lands may be determined by the District as temporarily inactive if they are not operated or are vacant due to changes in ownership or land use. The District's determination applies only to the requirements of this part of Chapter 40E-63, F.A.C. ~~The land is served by a properly permitted and operated surface water management system (Environmental Resource Program, ERP, or Surface Water Management Permit, SWM).~~

(c) The following BMPs are implemented by the landowner, lessees, and operators, if applicable, and the property must be made available for inspection by District staff or other delegated agents ~~within 14 days~~ after ~~written~~ notice:

1. Phosphorus is only applied to correct phosphorus deficiencies based on soil testing or tissue testing, or for turf and landscape areas, phosphorus is only applied to meet initial establishment and growth needs (fertilizer composition less than 2% for an application rate not to exceed 0.25 lbs P_2O_5/1000 ft^2 per application, nor exceed 0.50 lbs P_2O_5/1000 ft^2 per year.)

2. Fertilizer or other soil amendments containing phosphorus are not applied within 10 feet of any pond, stream, lake, water course, or any designated wetland.

3. Spill prevention practices for nutrients are implemented; and

4. Runoff is managed in accordance with surface water or environmental resource permits, if applicable.

(2) No Notice General Permits ~~for Use of Works of the District~~ within the C-139 Basin granted upon adoption of this part ~~IV~~ of ~~this~~ Chapter 40E-63, F.A.C., remain effective for 5 year periods and shall be automatically renewed unless the District notifies a permittee in writing that the permit is revoked.

(3) No Notice General Permits granted upon adoption of this part of Chapter 40E-63, F.A.C.,

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do not relieve the permittee of the responsibility to comply with all other laws or regulations applicable to the use of or discharges from the parcel. ~~In the event the C-139 Basin is determined to be out of compliance a fourth time, in accordance with Appendix B2 of Chapter 40E-63, F.A.C., the District shall revoke the No Notice General Permit and initiate rulemaking pursuant to Chapter 120, F.S., to revise this Chapter to ensure that the objectives of the EFA, Section 373.4592(4)(f)5., F.S., are met. Notification shall be by certified mail.~~

(4) Landowners meeting the foregoing shall not be obligated to submit a permit application or application fee.

(5) Notwithstanding the foregoing, the District shall require the submission of applications for General Permits from No Notice General Permit holders if the District determines that the property exceeds its proportional share of phosphorus loading based on representative water quality data for the property, as determined in Appendix B3.1.(incorporated by reference in subsection 40E-63.446(2)(a), F.A.C.). Notice of the requirement shall be provided to parcel owners in writing. Applications for new General Permits shall be submitted to the District within 45 days from the date of the notice.

Rulemaking ~~Specific~~ Authority 373.044, ~~373.083, 373.085, 373.086,~~ 373.113, 373.4592, FS. Law Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592(4)(f) FS. History–New 1-24-02, Amended _____.

40E-63.420 BMP Plan Pre-approvals.

(1) For entities required to obtain a General Permit, a BMP Plan shall be submitted to the District within 30 days after the effective date of this part of Chapter 40E-63, F.A.C. Failure to provide a complete BMP Plan within 30 days from the effective date of this part of Chapter 40E-63, F.A.C., shall not justify a corresponding delay for full implementation of the approved BMP

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Plan as described in subsection 40E-63.420(2), F.A.C., and will result in enforcement action pursuant to Rule 40E-63.46~~1~~0, F.A.C. ~~In order to begin BMP implementation immediately, the proposed plan for the initial BMPs shall be submitted by the permittee for written pre-approval from the District. This will allow the permittee to initiate implementation of the approved BMP plan prior to the completion of the administrative review and processing of the permit application.~~

(2) The approved BMP Plan shall be fully implemented within 90 days of the effective date of this part of Chapter 40E-63, F.A.C., unless the District authorizes a different implementation schedule. ~~A Level I BMP Plan, as described in Appendices B1 and B2, shall be submitted to the District for approval within 30 days of the effective date of Part IV of this Chapter. Failure to provide a complete Level I plan within the 30 days shall not justify a corresponding delay for full implementation of the plan and will result in enforcement action pursuant to Rule 40E-63.470, F.A.C.~~

(3) In order to assure that the schedule mandated by subsection 40E-63.420(2), F.A.C., is met, the District will ~~may~~ pre-approve a BMP Plan by letter, as long as the BMP Plan is complete and meets the criteria required under Rules 40E-63.435 or 40E-63.437, F.A.C., as applicable. The District will attempt to make a final determination on the BMP Plan within 10 days of receipt of a complete plan and the applicant shall begin implementation in accordance with the approved implementation schedule. ~~The District shall make a final determination on the Level I BMP Plan within 10 days of receipt of a complete plan.~~

~~(4) Implementation of Level I BMPs shall be initiated within 45 days and fully implemented within 90 days of the effective date of Part IV of this Chapter.~~

Rulemaking ~~Specific~~ Authority 373.044, ~~373.083, 373.085, 373.086,~~ 373.113, 373.4592, FS. Law

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Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592(4)(f) FS. History–New 1-24-02, Amended _____.

40E-63.430 General Permit Applications.

1) A General Permit is required for parcels of land that connect to or make use of the Works of the District within the C-139 Basin that have not been issued a waiver pursuant to Rule 40E-63.410, F.A.C., or do not qualify for a No Notice General Permit pursuant to Rule 40E-63.415, F.A.C. ~~Applications for Works of the District Permits, including General Permits pursuant to Rule 40E-63.440, F.A.C., and Individual Permits pursuant to Rule 40E-63.450, F.A.C., shall be submitted to the District within 45 days of the effective date of this Part IV of Chapter 40E-63, F.A.C., and shall be made using Form 1045.~~

(2) Within 45 days after the effective date of this part of Chapter 40E-63, F.A.C., applications for new General Permits or General Permit Renewals shall be submitted to the District. Applicants shall use Form 1045, dated _____, and the "Guidebook for Preparing an Application for a C-139 Basin Pollutant Source Control Permit" ("Guidebook"), dated _____, which are ~~(~~incorporated by reference herein ~~in subsection 40E-63.404(1), F.A.C.)~~, or the equivalent electronic permitting application (e-permitting) tool, with all required supporting documentation. Copies of Form 1045 and the Guidebook are available on the District's website (www.sfwmd.gov), or from the District's Clerk's Office at 3301 Gun Club Road, West Palm Beach, FL 33406, 561-686-8800, upon request.

(3) ~~(2)~~ Landowners, lessees and/or operators of a parcel or parcels may submit applications for General Permits as an applicant or co-applicant. ~~Works of the District Permits.~~ A lessee or operator may submit an application provided the lease (or equivalent contract) is for no less than five years, is in writing, and reasonable assurance is provided that the lessee/operator has the

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legal and financial capability of implementing and complying with the BMP Plan and other permit conditions.

(4) ~~(3)~~ ~~All~~ General ~~or Individual~~ Permit applications shall include the following:

(a) Date, signature, title and authority of the person, persons or entity submitting the application;

(b) For each applicant, information that demonstrates that the applicant possesses the legal and financial authority and ability to carry out all acts necessary to implement the terms and conditions of the permit, including, at a minimum:

1. For individual applicants, recorded deeds, contracts, leases, property tax record of ownership, or other evidence of ownership or authority are required.

2. For co-applicants, a description of the legally responsible entity or cooperating group of entities together with copies of documents demonstrating its legal authority, such as enabling legislation and articles of incorporation; completed and signed Certificates of Participation indicating the individual applicant's consent and intent to participate in the General Permit; and written contracts or agreements with co-applicants indicating their consent and agreement to comply with the permit and specifying the terms of participation, where applicable.

(c) ~~(a)~~ A clear delineation of the boundaries ~~area~~ and acreage contained in the permit application, including a map which is correlated with a list of all parcel owners and corresponding county tax identification numbers, and operators or lessees associated with the acreage contained in the application. The delineation should also include drainage features depicting the permit basin, general direction of flow, inflow points, and discharge points off-site for delineation of permit basins, as defined in subsection 40E-63.402(10), F.A.C.~~, operators, and lessees with tributary discharge water and county tax identification numbers.~~

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~~(b) Copies of existing contracts, agreements, or equivalent regarding use or operation of the property or control structure between the entity responsible for operation and the parcel owners included in the application, where applicable.~~

(d) ~~(c)~~ A list of all existing and pending District permits for the application area and their status.

(e) A BMP Plan.

(f) For General Permit applications encompassing water management systems or portions thereof that serve multiple entities, an executed legally binding written agreement or contract between the owners, operators, and or users of the system, as applicable, regarding construction, use, maintenance and operational criteria, and BMP implementation requirements for the system shall be provided. Specifically, the written agreement or contract shall identify the entities and their authority and responsibility for use and operation of the system (e.g. a shared canal or off-site discharge structure).

~~(d) A completed copy of Form 1045, entitled "Application for a C-139 Basin Works of the District Permit".~~

~~(e) All of the information necessary to satisfy the Basis for Issuance, including information as specified in the application Form 1045 and the Guidebook.~~

(5) ~~(4)~~ If activities proposed in the permit application submitted pursuant to ~~Part IV of~~ this part of Chapter 40E-63, F.A.C., ~~rule~~ will affect water management systems or activities regulated pursuant to other rules (e.g. Surface Water Management, Environmental Resource Permit, Consumptive Water Use, Well Construction, Right-of-Way, or Lake Okeechobee SWIM), then the Applicant shall also submit applications for new permits or modifications to existing permits, as appropriate.

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Rulemaking ~~Specific~~ Authority 373.044, ~~373.083, 373.085, 373.086~~, 373.113, 373.4592, FS. Law Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592(4)(f) FS. History–New 1-24-02, Amended_____.

40E-63.432 Permit Modifications, Transfers and Renewals.

Specific Authority 373.044, 373.083, 373.085, 373.086, 373.113, 373.4592 FS. Law Implemented 373.085, 373.4592 FS. History–New 1-24-02, Amended 6-20-07, Repealed _____.

40E-63.434 Permit Duration.

Specific Authority 373.044, 373.083, 373.085, 373.086, 373.113, 373.4592 FS. Law Implemented 373.085, 373.4592 FS. History–New 1-24-02, Amended 6-20-07, Repealed_____.

40E-63.435 BMP Plans.

In order to obtain a General Permit, applicants shall submit a BMP Plan that includes a multi-level approach to implementation and operation ~~including the following:~~ for each crop or land use within each permit basin. A BMP Plan shall take into account site-specific conditions, potential phosphorus sources, primary phosphorus species, and transport mechanisms based on available data; and ensure that a thorough approach to implementation and maintenance will be implemented. If a water management system is shared by multiple operating entities, each entity shall submit a separate BMP Plan for their land but the water management operational plan shall be consistent. The BMP Plan shall include the following:

(1) A description of a BMP Plan, including specific methods for implementation and maintenance, based on the BMPs described in "Appendix B1, BMP Description and Equivalent Points Reference Table", dated _____, ~~(~~incorporated by reference herein ~~in subsection 40E-63.404(3), F.A.C.)~~. To ensure that approved BMP plans have a comparable level of effort among permittees, the BMP Plan shall propose a minimum of 35 BMP equivalent points. A copy of

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Appendix B1 is available on the District's website (www.sfwmd.gov), or from the District's Clerk's Office at 3301 Gun Club Road, West Palm Beach, FL 33406, 561-686-8800, upon request.

(2) Of the 35 BMP equivalent points, a minimum of 20 BMP equivalent points shall meet the following criteria:

(a) A minimum of 10 BMP equivalent points in nutrient control practices

(b) A minimum of 5 BMP equivalent points in water management practices

(c) A minimum of 5 BMP equivalent points in particulate matter and sediment control practices. Pasture management BMPs, as described in Appendix B1 (incorporated by reference in subsection 40E-63.435(1), F.A.C.), can provide equivalent points towards this category, if applicable.

(3) If at the time a BMP Plan is proposed for approval, the District has previously determined the C-139 Basin to be out compliance, and the permit basin has an approved BMP Plan including water quality improvement activities, the proposed BMP Plan shall include continuation of the approved BMP Plan and water quality improvement activities; or propose an equivalent alternative for District consideration. The applicant shall provide reasonable assurance that the alternative contains the equivalent or greater phosphorus reduction effectiveness of the approved BMP Plan and water quality improvement activities. The proposal must provide the basis that the BMP Plan and water quality improvement activities would have met the criteria indicated in subsections 40E-63.461~~0~~(3), and (4), F.A.C., as applicable, for the years when the C-139 Basin was determined by the District to be out of compliance and water quality improvement activities were required.

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(4) An education and training program for the management and operation staff responsible for implementing and monitoring the approved BMP Plan. The training may be provided in-house or arranged by the permittee or other educational resources.

(5) A description of records and documentation to be maintained on-site or at a suitable location that is readily available for District review. The records and documentation shall be sufficient to verify BMP implementation, maintenance, and training, as described in the post-permit compliance section, Appendix C of the Guidebook (incorporated by reference in subsection 40E-63.430(2). F.A.C.), on the form entitled "C-139 Basin Annual Report – Certification of BMP Implementation".

(6) A proposed implementation schedule. Except for BMP Plans required immediately upon amendment of this part of Chapter 40E-63, F.A.C., as described in Rule 40E-63.420, F.A.C., implementation of new BMPs shall be completed within 90 days after the date of District approval. Alternate implementation schedules may be considered by the District if the applicant demonstrates through reasonable assurance that an equivalent level of phosphorus source control is provided.

Rulemaking Authority 373.044, ~~373.083, 373.085, 373.086,~~ 373.113, 373.4592, F.S., Law Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592(4)(f), F.S., History – New _____, See 40E-63.442, F.A.C.

40E-63.436 Permit Application Processing Fees.

Specific Authority 373.044, 373.083, 373.085, 373.086, 373.113, 373.4592 FS. Law Implemented 373.085, 373.4592 FS. History–New 1-24-02, Repealed _____.

40E-63.437 Alternative BMP Plans.

Applicants who propose to satisfy the water quality requirements of this part of Chapter 40E-

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63, F.A.C., by employing a BMP Plan other than those described in subsections 40E-63.435(1) and (2), F.A.C., may seek approval for an equivalent alternative through the District permit process. The applicant shall provide reasonable assurance, through the information required below and the requirements indicated in subsections 40E-63.435 (3), (4), (5), and (6), F.A.C., that the alternative contains the equivalent or greater phosphorus reduction effectiveness of a 35-point BMP plan. A BMP Plan shall take into account site-specific conditions, potential phosphorus sources, primary phosphorus species, and transport mechanisms; and ensure that a thorough approach to implementation and maintenance will be implemented. In order to seek approval of an alternative BMP Plan, applicants must submit the information specified for the applicable alternative as part of the permit application process.

(1) Alternative Type BMP. If an application proposes BMPs not listed in Appendix B1 (incorporated by reference in subsection 40E-63.435(1), F.A.C.), ~~as required in subsection 40E-63.435(1), F.A.C.,~~ the application shall also include the following information for District approval:

(a) A description of the best management practice rationale for the BMP selected;

(b) a detailed explanation of the proposed BMP;

(c) a schedule for implementation of the BMP;

(d) sample documentation of the BMP implementation, how the BMP will be verified;

(e) technical basis for the reduction effectiveness of the proposed BMP. The applicant shall ~~may~~ be required to demonstrate effectiveness through a proposed monitoring program or through representative technical references including modeling results approved by the District. If approved, the District will determine

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the appropriate BMP equivalent point credit consistent with Appendix B1 (incorporated by reference in subsection 40E-63.435(1), F.A.C.).

(2) Alternative BMP Points per Category. If the BMP Plan does not meet the minimum number of equivalent points per BMP category as required in subsection 40E-63.435 (2), F.A.C., the application shall include a site assessment demonstrating that an alternative BMP Plan will provide an equivalent or greater reduction effectiveness than using the standard approach.

The site assessment shall evaluate phosphorus imports and transport in discharges; current BMPs and implementation methods; other activities for which ~~practices not covered under~~ BMPs are not being implemented; and representative water quality and soil data. Water quality data that can be used for the assessment include those available from the District sub-basin or synoptic (grab) monitoring programs, or properly collected grab samples using field kits of adequate precision by the applicant.

(3) Alternative BMP Demonstration Project. If a demonstration project is proposed to meet the BMP implementation requirements of subsection 40E-63.435(1) or (2), F.A.C., a proposed project scope of work shall be submitted for District review and approval based on the following criteria:

(a) The scope of eligible projects shall include, at a minimum, the demonstration or research hypothesis, a description of implementation, the technical basis and scientific methods that will be employed, the performance indicators that will be measured such as water quality, water quantity, soil testing, or as applicable, the progress and final reports that will be produced to verify progress and results, and a schedule that details the beginning date, critical milestones and ending date of the project.

(b) The 35 BMP equivalent point requirement shall be met in the permit basin where the project is proposed. The proposed demonstration shall account for no more than 20 BMP equivalent points as approved by the District. The remaining 15 BMP equivalent points shall include 10 BMP equivalent points in the nutrient control practices category and 5 BMP equivalent points in the water management practices category.

(c) The proposed BMP equivalent points for the demonstration project will only be considered for the period of project implementation, the permit basin where the project is located, and for the crops or land uses to which the project applies.

(d) BMP equivalent points shall be initially determined by the District prior to issuance of a permit based on the BMP equivalent points established in Appendix B1 (incorporated by reference in subsection 40E-63.435(1), F.A.C.). Additional BMP equivalent points will ~~may~~ be approved by the District, if the applicant provides reasonable assurance through plans, test results, water quality data or other information, that the BMP project will demonstrate improvement in phosphorus removal efficiency in comparison to standard BMP implementation methods.

(e) Once the demonstration project is complete and a final report is submitted in accordance with the approved scope, the permittee shall submit a Letter Modification application requesting that the approved BMP Plan be modified to incorporate the BMP or water quality improvement activity if the District determines that they were successfully developed under the project. The application shall include the information described under Rules 40E-63.430, 40E-63.435, and 40E-63.437, F.A.C., as applicable, and shall describe how the report recommendations for BMP implementation will apply to the applicable crops or land uses for District review. The District shall review the BMP

equivalent points initially assigned and will ~~may~~ adjust them based on the reported phosphorus reduction levels and approved methods for implementation of the proposed BMP or water quality improvement activity. If the permittee decides that the BMP resulting from the demonstration project is not to be proposed for continued implementation, the permittee is required to submit a permit modification proposing a BMP Plan, as described in Rules 40E-63.435 or 40E-63.437, F.A.C., as applicable. The application for modification of the approved BMP Plan shall be submitted no later than 30 days after the project completion date pursuant to the District-approved scope.

Rulemaking Authority 373.044, ~~373.083, 373.085, 373.086,~~ 373.113, 373.4592 FS. Law Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592(4)(f) FS. History–New _____.

40E-63.438 Early Implementation of Water Quality Improvement Activities.

An applicant may request approval for early implementation by opting to submit a proposal for voluntary implementation of additional BMPs (early BMPs), or a voluntary demonstration project that includes a BMP performance verification plan. ~~Based on this early implementation, applicants may quality for deferral from water quality improvement activities if the C-139 Basin is determined out of compliance in the future.~~ Applicants electing these approaches must submit for District review the following:

(1) Either proposal shall be submitted together with an application for a new permit, permit renewal, or as a Letter Modification.

(a) For optional early BMPs the application shall provide information for meeting the criteria below:

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1. A description of the BMP or group of BMPs (early BMPs) that are proposed in addition to those required by rule at the time of application (Rule 40E-63.435 or subsection 40-63E.461~~0~~(3), F.A.C., as applicable.) The proposal shall include the specific methods for implementation and maintenance of the early BMPs.
2. The proposal shall provide reasonable assurance through technical documentation, and the requirements indicated in sections 40E-63.435 (4) and (5), F.A.C., that the combined effect of the optional early BMPs and rule-required BMPs will ensure a phosphorus loading reduction for the identified permit basin or parcels sufficient for the C-139 Basin to consistently achieve ~~compliance with~~ the performance measure's Target, as described in Appendix B2 (incorporated by reference in subsection 40E-63.446(1), F.A.C.). The District will review whether the proposed loading reduction levels would be conducive to meeting the Target Unit Area Load (UAL) based on the most recent five years of water quality data.
3. The proposal shall include an implementation schedule. ~~To qualify for deferral, District-approved early BMPs shall be fully implemented during the water year for which the deferral can be applied.~~

(b) For voluntary demonstration projects, the application shall propose a BMP or water quality improvement measure demonstration project that meets the following:

1. Complies with the criteria described under section 40E-63.437 (3)(a), F.A.C,
2. Projects estimated phosphorus reductions based on available technical references, and

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3. Proposes a verification plan through a Permit Discharge Monitoring Program to confirm and quantify the estimated phosphorus reductions. The verification plan shall meet the criteria described in subsection 40E-63.461~~0~~(4), F.A.C.

(2) Upon District approval of the voluntary early BMP implementation project or demonstration project with a verification plan, the permittee will be subject to the BMP reporting and verification requirements of this Chapter for those voluntary initiatives, as described in permit conditions. Permittees cannot be deemed out of compliance solely for failure to implement the early initiatives, however, the ~~District will deem the~~ permittee cannot qualify with the conditions of 40E-63.446(2)(b) and 40E-63.446(2)(c) unless ~~unable to claim a deferral if~~:

1. The early BMPs are implemented,
2. Reporting and verification requirements for the voluntary early implementation projects are ~~not~~ met, as determined by the District~~.~~, and
3. The permittee is ~~no~~t in compliance with the BMP Plan required by the permit.

~~(3) Early implementation plans that are approved to provide deferral from additional water quality improvement activities for a water year shall become permit requirements and lose their optional status.~~

Rulemaking Authority 373.044, ~~373.083, 373.085, 373.086~~, 373.113, 373.4592 FS. Law Implemented 373.016, 373.085,373.086, 373.451, 373.453, 373.4592(4)(f) FS. History–New _____.

40E-63.439 Permit Modifications, Transfers and Renewals.

(1) Applicants for permit modifications, transfers and renewals must use the appropriate Sections of Form 1045 (incorporated by reference in subsection 40E-63.430(2)~~04(1)~~, F.A.C.), or

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equivalent electronic permitting application (e-permitting) tool.

(2) Modifications and Letter Modifications: Letter modifications are applicable for requesting approval for demonstration or verification plan projects for phosphorus reduction under Rule 40E-63.437, F.A.C., for early implementation of water quality improvement activities under Rule 40E-63.438, F.A.C., for implementing or modifying a voluntary Permit Basin Discharge Monitoring Program under Rule 40E-63.462, F.A.C., and for water quality improvement activities in accordance with subsections 40E-63.461~~0~~(3) or (4), F.A.C., if the C-139 Basin is determined to be out of compliance with the water quality requirements of this part of Chapter 40E-63, F.A.C., pursuant to Rule 40E-63.446~~50~~, F.A.C. Applications for modifications are applicable to any other changes except for clerical changes as indicated in subsection 40E-63.443(3), F.A.C.

A permittee may apply for a modification or a letter modification to an existing General Permit issued under this part of Chapter 40E-63, F.A.C., unless the permit has expired or has been otherwise revoked or suspended. An application for modification or letter modification will not be processed as a complete application if the permit is not in compliance with applicable permit conditions, unless the permit modification is required to bring the permit into compliance. Modifications and letter modifications will be evaluated based on the criteria in effect at the time that the application to modify is submitted. Applications for permit modifications and letter modifications shall be subject to the following requirements and limitations:

(a) Applications to modify an existing permit shall contain the same information required in a new application, as applicable, and shall identify the portion of the existing authorization for which the modification is requested.

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(b) Modifications to existing permits are acknowledged and approved by letter with an accompanying Permit Review Summary (Staff Report) from the District through correspondence to the permittee.

(3) Transfers: A permittee shall notify the District within 30 ~~90~~ days after any transfer, sale or conveyance of land or works permitted under this part of Chapter 40E-63, F.A.C., to allow time for processing the application. The permittee remains responsible for the requirements of the permit until the permit is transferred or closed at the request of the permit holder at the time the property is sold. A permittee or transferee may apply for a permit transfer, conveying responsibility for permit compliance. If an application for permit transfer is not received ~~within 90 days after the sale or conveyance of the property~~, the permit will become nontransferable and the transferee will be required to apply for a new permit. Permit transfers shall be subject to the following requirements and limitations:

(a) A permit may only be transferred if the land practice, total acreage, and approved BMP Plan remain the same and the permittee is in compliance with all conditions of the permit.

(b) All conditions of the existing permit will remain applicable to the new permittee.

(c) Any other changes or additions will require a permit modification in accordance with subsection 40E-63.439(2), F.A.C.

(4) Renewal: A permittee shall apply for a permit renewal prior to the expiration of an existing permit, subject to the following requirements and limitations:

(a) Applications for renewals must contain all information required for new applications and will be evaluated based on the criteria in effect at the time the application is filed.

(b) If the permittee allows the permit to expire prior to applying for a permit renewal, an application for a new permit shall be required.

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Rulemaking Authority 373.044, ~~373.083, 373.085, 373.086,~~ 373.113, 373.4592 FS. Law Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592(4)(f) FS. History–New1-24-02, Amended 6-20-07, _____, See Rule 40E-63.432, F.A.C.

40E-63.440 General Permit Application Requirements in the C-139 Basin.

Specific Authority 373.044, 373.083, 373.085, 373.086, 373.113, 373.4592 FS. Law Implemented 373.085, 373.4592 FS. History–New 1-24-02, Repealed,_____.

40E-63.441 Permit Duration.

Pursuant to the EFA, Section 373.4592(4)(f)2., F.S., permit renewals issued pursuant to this p~~P~~art of Chapter 40E-63, F.A.C., are valid for a 5-year term, beginning 90 days after the effective date of this rule amendment. Subsequent permit renewals are effective for 5-year renewal cycles from the previous expiration date, unless:

(1) The permit is automatically inactivated at the expiration of the permittee's lease or contract (where the permittee is the lessee or equivalent) that authorized the permittee to control operations (and permit compliance) on the permitted land; or

(2) The permit is otherwise modified by enforcement actions pursuant to subsection ~~or~~ (40E-63.461~~0~~(1), F.A.C.;

(3) The permit is otherwise renewed pursuant to subsection 40E-63.439(2), F.A.C.; or

(4) A permit application for a new permit or a permit renewal has been filed by a permittee on a timely basis prior to the expiration date of a previously-issued permit, and the District has not completed review of the application, in which case the previously-issued permit will remain effective until final agency action is taken by the District on the application; or

(5) A new permit has been issued within one year of the permit renewal cycle begin date. In

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that case, the new permit duration will be greater than five years, but no more than six years to align its expiration date with the expiration date of the basin's five-year renewal cycle.

(6) Permit duration will not be affected by permit transfers or modifications of any kind.

(7) All previously issued permits shall expire 90 days after the effective date of this part of Chapter 40E-63, F.A.C., unless a permit application for renewal or for a new permit has been reeceived by the District within that period.

Rulemaking Authority 373.044, ~~373.083, 373.085, 373.086,~~ 373.113, 373.4592, FS. Law Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592(4)(f) FS. History–New _____, See Rule 40E-63.434, F.A.C.

40E-63.442 Basis for Issuance of General Permits in the C-139 Basin.

Specific Authority 373.044, 373.083, 373.085, 373.113, 373.4592 FS. Law Implemented 373.085, 373.4592 FS. History–New 1-24-02, Repealed _____.

40E-63.443 Permit Application Processing Fees.

(1) The following permit application processing fees shall be paid to the District at the time the permit applications are filed.

Permit Type	New	Renewal	Modification	Letter Modification	Transfer
General Permit	$250	$250	$100	$0	$100

(2) Without the proper fee, the application shall be considered incomplete and will result in denial of the application if the fee is not paid upon notice.

(3) Notwithstanding the table above, no fees shall be charged for clerical modifications that do not alter the approved BMP Plan or monitoring requirements of the underlying permit.

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(4) In cases where more than one permit application type applies, the application shall be submitted as the permit type with the higher application fee.

Rulemaking Authority 373.016, 373.044, ~~373.083, 373.085, 373.086,~~ 373.113, 373.4592, FS. Law Implemented 373.016, 373.085, 373.086, 373.109, 373.451, 373.453, 373.4592(4)(f) FS. History–New _____ See Rule 40E-63.436, F.A.C.

40E-63.444 Limiting Conditions for General Permits in the C-139 Basin.

(1) All of the following standard limiting conditions (a) through (u) shall be attached to all General Permits:

(a) The permittee shall implement all elements and requirements of the approved BMP Plan according to schedule, including documentation of implementation, operation, and rationale where applicable. At no time shall BMP implementation be less than the required 35 BMP equivalent points using the criteria in Rules 40E-63.435 or 40E-63.437, F.A.C., as applicable ~~15 points in the Level I Plan requirements~~.

(b) Each applicant to which a General Permit is issued is a co-permittee and is jointly and severally liable for implementing the requirements of the General Permit. This includes non-compliance with permit conditions caused by lessees or operators that are not co-permittees.

(c)~~(b)~~The permittee shall submit to the District an annual report certifying BMP implementation in accordance with the permit. The report is due February 1 of each year. ~~The first report is due February 1, 2003, and annually thereafter.~~ Failure to submit the report by February 1, will result in onsite verification of BMP implementation by District staff and ~~or~~ the requirement for the permittee to submit a detailed report documenting implementation of each BMP in the approved BMP Plan for the previous calendar year. Failure to submit the required annual report ~~provide documentation of BMP implementation~~ by April 30 of each year may ~~will~~

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result in revocation of the General Permit. The notification will be sent by certified mail and indicate that the permit will be revoked within 30 days after the date of the certified mailing unless the annual report is received within those 30 days. If the permit is revoked, the permittee shall be required to apply for a new General ~~Individual~~ Permit and shall be subject to enforcement under subsection 40E-63.461~~0~~(1) ~~40E-63.470(1)~~, F.A.C. The new permit will include special conditions requiring that documentation certifying BMP implementation is submitted quarterly, at a minimum.

(d)~~(c)~~ The permittee shall allow District staff and designated agents reasonable access to the permitted property at any time to verify compliance with the rule and the permit. Since it is not possible to predict precisely when discharges will occur or problems will arise resulting in the need for a site visit, the District may not be able to provide a lengthy period of notice to the designated person in advance of a visit. However, at a minimum, the District will provide notice at least 24 hours prior to a site visit for verifying best management practice installation and operation.

~~(d) The permittee shall notify the District in writing within 30 days of any:~~

~~1. Significant change in land practice, as described in subsection 40E-63.402(6), F.A.C.; or~~

~~2. Change in the approved BMP Plan for the permitted parcel; or~~

~~3. Transfer, sale or conveyance of land or works described in the permit.~~

(e) The permittee shall notify the District in writing within 30 days after any changes in permit basin acreage.

(f) The permittee shall notify the District in writing within 30 ~~90~~ days of any transfer, sale or conveyance of land or works described in the permit.

(g)~~(e)~~ This permit does not relieve the permittee of the responsibility to comply with all other

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laws or regulations applicable to the use of or discharges from the parcel.

(h)~~(f)~~ The permit does not convey to the permittee any property right or any rights or privileges other than those specified in the permit.

(i)~~(g)~~ This permit does not relieve the permittee from liability from harm or injury to human health or welfare; animal, plant or aquatic life; or property.

(j)~~(h)~~ The surface water management and monitoring system must be effectively operated and maintained in accordance with the Environmental Resource/Surface Water Management Permit. Any change~~s~~ in drainage~~, land use~~ or operations not identified previously that could affect the surface water management system ~~BMP Plan or water quality of the discharge~~, must be reported in writing in advance to the District to determine if an Environmental Resource/Surface Water Management Permit is required.

(k) If not previously authorized by a District permit under this part of Chapter 40E-63, F.A.C., the permittee shall submit a permit modification application 30 days in advance of conducting any:

1. Changes in BMPs; or

2. Changes in land practice affecting the approved BMP Plan; or

3. Changes in water management that may affect the Sub-basin Monitoring Program (e.g., resulting from completing Environmental Resource/Surface Water Management Permit authorized water management system changes.)

(l)~~(i)~~ The permitted discharge shall not otherwise be harmful, or adversely affect proper use and operation of the Works of the District.

(m)~~(j)~~ The C-139 Basin is required to achieve compliance with the phosphorus load limitation requirement and performance measures as specified in Appendix B2 (incorporated by

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reference in subsection 40E-64.446(1) ~~40E-63.404(4),~~ F.A.C.).

(n) Legal entities or groups of cooperating owners or operators (co-permittees) responsible for implementing a General Permit shall remain legally and financially capable of peforming their responsibilities required by the permits issued pursuant to this section.

(o) Within 30 days of issuance of the permit, as of the effective date of the amendments to this part of Chapter 40E-63. F.A.C., for lessees that are not co-applicants, the permittee shall provide written certification that the lessees have received a copy of the permit and agree to implement the BMP Plan and be bound by the terms and conditions of the permit, including any amendments thereto.

(p) For leases executed after the effective date of the amendments to this part of Chapter 40E-63, F.A.C. (in which the lessee is not a co-applicant), within 30 days of its date of execution, the permittee shall provide written certification by the lessee or a copy of the lease indicating the lessee's agreement to implement the BMP Plan and be bound by the terms and conditions of the permit, including any amendments thereto.

(q)~~(2)~~ If ~~In the event that~~ the District determines that any permittee ~~participant~~ in a General Permit is not complying with the specific terms and conditions of the General Permit, or the water quality performance measures (including proportional share, in accordance with Chapter 40E-63, F.A.C.), the District will institute enforcement or corrective proceedings against the permittee, any co-permittees, ~~Permit holder, the landowner,~~ or both, as applicable pursuant to Rules 40E-63.44650 and 40E-63.4610 ~~and 40E-63.470~~, F.A.C. ~~If additional specific conditions become necessary, the District shall also require the Permit holder to apply for an Individual Permit.~~

(r) Authorizations from other agencies for disposal or application of wastewater residuals

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(biosolids), animal manure, solid waste, fill material, or other materials containing phosphorus within the C-139 Basin, shall not relieve permittees from complying with the provisions of this Rule. Permittees ~~Water quality monitoring data~~ will ~~may~~ be required by the District to demonstrate no potential impacts on phosphorus loading.

(s) The permitted discharge shall not cause adverse water quality impacts to ~~of~~ receiving water and adjacent lands regulated by Chapter 373, F.S.

(t) The permitted discharge shall not cause adverse environmental impacts.

(u) The permitted discharge shall be consistent with State Water Policy, Chapter 62-40, F.A.C.

(2) General permits shall be subject to other reasonable conditions as necessary to assure that proposed BMP and Permit Discharge Monitoring Plans meet the conditions for issuance in Rules 40E-63.435, 40E-63.437 and 40E-63.462, F.A.C.

Rulemaking ~~Specific~~ Authority 373.044, ~~373.083, 373.085, 373.086,~~ 373.113, 373.4592, FS. Law Implemented 373.016, 373.085, 373.086, 373.423, 373.451, 373.453, 373.4592(4)(f) FS. History–New 1-24-02, Amended_____.

40E-63.446 C-139 Basin Compliance.

(1) If the C-139 Basin is determined to not meet the performance measures developed in accordance with "Appendix B2, C-139 Basin Performance Measure Methodology", dated _____, Appendix B2.1 "FORTRAN Program for Calculating C-139 Basin Flows and Phosphorus Loads", and Appendix B2.2 "Flow Computation Methods Used to Calculate C-139 Basin Flows", ~~(~~incorporated by reference herein ~~in subsection 40E-63.404(4), F.A.C.)~~, the basin as a whole will be deemed out of compliance with the water quality requirements of this part of Chapter 40E-63, F.A.C. Copies of Appendices B2, B2.1 and B2.2 are available on the District's

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website (www.sfwmd.gov), or from the District's Clerk's Office at 3301 Gun Club Road, West Palm Beach, FL 33406, 561-686-8800, upon request.

(2) If the C-139 Basin is out of compliance, water quality improvement activities will be required for permit basins except in the following situations: ~~to achieve their proportional share of the basin-wide loading phosphorus load, as indicated in Appendices B3.1, and B3.2 (incorporated by reference in subsections 40E-63.404(7) and (8), F.A.C.). Exceptions are provided below in subsection (3).~~

~~(3) Upon the effective date of the amendments to this part of Chapter 40E-63, F.A.C., the first water year of compliance determination for which water quality improvement activities can be required is WY2013. The requirement for water quality improvement activities in a permit basin will be deferred for one water year if the District determines that one or more of following conditions exist.~~

(a) The permit basin is located in a sub-basin that is determined to not exceed its proportional share of the basin-wide loading based on District-collected data for the sub-basin or, if applicable, its Permit Basin Discharge Monitoring Program results are determined not to exceed the proportional share in accordance with "Appendix B3.1, Permittee Annual Phosphorus Load Determination Based on Sub-basin Monitoring and the Permit Basin Discharge Monitoring Program", dated _____ , and "Appendix B3.2, Criteria for Required Phosphorus Reductions", dated _____, both of which are incorporated by reference herein ~~in subsections 40E-63.404(7) and (8), F.A.C.)~~. Copies of Appendices B3.1 and B3.2 are available on the District's website (www.sfwmd.gov), or from the District's Clerk's Office at 3301 Gun Club Road,

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West Palm Beach, FL 33406, 561-686-8800, ~~(incorporated by reference in subsection 40E-63.404(7), F.A.C.)~~.

(b) District approved early BMPs, as described in subsection 40E-63.438(1)(a), F.A.C., were fully implemented in the permit basin during a water year that was used to deem the C-139 Basin out of compliance (this provision applies ~~, providing deferral~~ only to the parcels where the early BMPs apply),

(c) A District approved demonstration project including a verification plan, as described in subsection 40E-63.438(1)(b), F.A.C., was conducted within the permit basin during a water year that was used to deem the basin out of compliance (this provision applies~~, providing deferral~~ only to the land uses or crops to which the project applies),

(d) The permit basin, or portion thereof, has been issued and meets the conditions of a determination of impracticability as described in subsection 40E-63.46~~10~~(6), F.A.C., (this provision applies ~~providing deferral~~ to the lands where the determination applies, or

(e) The performance measure determination includes the permit basin UAL from either of the two water years immediately following a water year for which the permit basin was required to implement water quality improvement activities.

(3) Upon the effective date of the amendments to this part of Chapter 40E-63, F.A.C., the first water year of compliance determination for which water quality improvement activities can be required is WY2013.

(4) If the C-139 Basin is deemed out of compliance, the District will evaluate BMP program performance at the sub-basin level in accordance with Appendix B3.1 (incorporated by reference in subsection 40E-63.446(2)(a), F.A.C.).

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(5) The District will determine annual phosphorus discharge performance for permit basins that have an individual discharge monitoring plan in accordance with Appendix B3.1 (incorporated by reference in subsection 40E-63.446(2)(a), F.A.C.).

(6) The District will provide written notice to the C-139 Basin permittees on the C-139 Basin compliance based upon performance measure results (Appendix B2, incorporated by reference in subsection 40E-63.446(1), F.A.C.), and the sub-basin and permit basin performance results (Appendix B3.1, incorporated by reference in subsection 40E-63.446(2)(a), F.A.C.) and whether water quality improvement activities are required. The District shall attempt to transmit the written notices by August of each year. The notices shall describe permittees' required actions for proposing water quality improvement activities based on these assessments including required total phosphorus reduction levels in accordance with Appendix B3.2 (incorporated by reference in subsection 40E-63.446(2)(a), F.A.C.). These actions are described in subsection 40E-63.461~~0~~(2), F.A.C.

(7) In accordance with Appendix B2 (incorporated by reference in subsection 40E-63.446(1), F.A.C.), the District shall continue collecting monitoring data from the C-139 Basin for the purpose of determining compliance.

Rulemaking Authority 373.044, ~~373.083, 373.085, 373.086,~~ 373.113, 373.4592, , F.S., Law Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592(4)(f), F.S., History – New _____ See Rule 40E-63.461~~0~~, F.A.C.

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40E-63.450 Individual Permit Application Requirements in the C-139 Basin.

Specific Authority 373.044, 373.083, 373.085, 373.086, 373.113, 373.4592 FS. Law Implemented 373.085, 373.4592 FS. History–New 1-24-02, Repealed _____.

40E-63.452 Basis for Issuance of Individual Permits in the C-139 Basin.

Specific Authority 373.044, 373.083, 373.085, 373.086, 373.113, 373.4592 FS. Law Implemented 373.085, 373.4592 FS. History–New 1-24-02, Repealed _____.

40E-63.454 Limiting Conditions for Individual Permits in the C-139 Basin.

Specific Authority 373.044, 373.083, 373.085, 373.086, 373.113, 373.4592 FS. Law Implemented 373.085, 373.4592 FS. History–New 1-24-02, Repealed _____.

40E-63.456 Optional Discharge Monitoring Program.

Specific Authority 373.044, 373.083, 373.085, 373.086, 373.113, 373.4592 FS. Law Implemented 373.085, 373.4592 FS. History–New 1-24-02, Repealed _____.

40E-63.458 Limiting Conditions for the Optional Discharge Monitoring Program.

Specific Authority 373.044, 373.083, 373.085, 373.086, 373.113, 373.4592 FS. Law Implemented 373.085, 373.4592 FS. History–New 1-24-02, Repealed _____.

40E-63.460 C-139 Basin Compliance

Specific Authority 373.044, 373.083, 373.085, 373.086, 373.113, 373.4592 FS. Law Implemented 373.085, 373.4592 FS. History–New 1-24-02, Repealed _____.

40E-63.461 C-139 Basin Permit Compliance.

The District is authorized to seek any enforcement or corrective action available under Florida law for permittees out of compliance with the provisions of this Chapter, pursuant to Chapter 373, F.S., and rules adopted thereunder.

(1) If an individual permittee is determined to be out of compliance with permit conditions the following applies:

(a) The District shall begin reviewing "permit compliance" with BMP implementation, documentation, and operation by permittees in the C-139 Basin immediately upon the effective date of this part of Chapter 40E-63, F.A.C.

(b) All permittees who are not in compliance with their permit are subject to notification and enforcement actions by the District.

(c) All permittees who receive notice of non-compliance with their permit from the District must submit to the District, within 10 business days of receipt of the notice, a plan and schedule for achieving permit compliance within 60 days after transmittal of the District notice.

(d) Compliance with the permit includes timely submittal and implementation of any additional water quality improvement activities if required by rule. Delay by permittees in fulfilling the BMP implementation requirements will not extend the timeline for determining the need for additional water quality improvement activities at the sub-basin or permit basin level.

(2) If the C-139 Basin is determined to be out of compliance with the water quality requirements of this part of Chapter 40E-63, F.A.C., pursuant to 40E-63.450, F.A.C., the permittee shall propose water quality improvement activities in accordance with the following:

(a) The permittee shall submit a letter modification application for the District's consideration, within 120 days of the District's transmittal of the notice that the C-139 Basin is not in compliance. The submittal shall include the section entitled "Water Quality Improvement Activities" of Form 1045 dated _____.

(b) The submittal shall include a proposal for water quality improvement activities along with the estimated phosphorus reductions to be achieved in accordance with 40E-63.461~~0~~(3), F.A.C., or a verification plan in accordance with 40E-63.461~~0~~(4), F.A.C. The phosphorus reductions shall be the minimum levels necessary to meet the permit basin's proportional share of required total phosphorus reductions as determined by the District (Appendices B3.1 and B3.2, incorporated by reference in subsections 40E-63.446(2), F.A.C.). The proposal shall include a schedule to ensure that full implementation of an approved BMP Plan incorporating any proposed water quality improvement activities is in effect as soon as feasible and no later than April 30 following the District's transmittal of the notice that the C-139 Basin is not in compliance, unless otherwise approved by the District. An alternate implementation schedule~~,~~ will ~~may~~ be approved by the District with justification based on the scope of the proposed activities. A permittee shall be required to implement intermediate water quality improvement activities or BMPs, as applicable, if an alternate implementation schedule is approved.

(3) All proposals for water quality improvement activities shall meet the following criteria for District review and approval:

(a) Include a detailed description of the proposed improvements to the approved BMP Plan in comparison to the current implementation practices. The basis for the proposed BMP improvements shall consider pre-improvement conditions (e.g., current levels of BMP implementation, pre-BMP improvement water quality data) and the parameters affecting BMP performance and total phosphorus load

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(site-specific conditions, phosphorus speciation, flow). If the proposal includes implementation of additional BMPs not listed in Appendix B1 (incorporated by reference in subsection 40E-63.435(1), F.A.C), the proposal shall also include the information indicated in subsection 40E-63.437(1), F.A.C. Note that in contrast with BMP Plans, additional improvements to an approved BMP Plan do not need to be proposed for each land use or crop within a permit basin if it is demonstrated that focus on selected land uses, crops, or acreage will be sufficient to achieve the required total phosphorus reduction of the basin wide load.

(b) Indicate the expected range of percent total phosphorus removal ~~efficiency~~ resulting from the proposal as follows:

a. The expected or assumed range of percent total phosphorus removal efficiency shall equal or exceed the percent required total phosphorus reduction applicable to the permit basin.

b. The expected or assumed total phosphorus removal efficiency shall be based on data from the most current representative technical references including peer reviewed or published BMP research and demonstration projects, with consideration of permit basin specific conditions such as indentified when a site-assessment is completed pursuant to 40E-63.437(2).

c. Each proposal shall include a detailed description of the technical basis and copies of documents as applicable. All proposed total phosphorus reductions shall be based on scientific studies, calibrated models, or data collection representative of the C-139 Basin for District approval.

(c) If the permittee is unable to demonstrate that the required total phosphorus reductions can be achieved in accordance with (b) above, a verification plan shall be required.

(d) If the proposal includes a verification plan, it shall meet the criteria for approval described below. The proposal and monitoring plan shall aim to demonstrate the ability to achieve the total phosphorus reduction levels that would be necessary to meet the overall required total phosphorus reduction levels.

(4) If a permittee selects to or is required to conduct a monitoring program to confirm that required total phosphorus reductions will be achieved, a permittee shall propose a verification plan in addition to the proposal for improvements to an approved BMP Plan or water quality improvement activities. All verification plan proposals shall meet the following criteria for District review and approval:

(a) The description of who will be responsible for project implementation.

(b) The proposed reporting procedures during and at completion of the project.

(c) A Final report at completion that describes how the recommendations for BMP implementation will be applicable to the crops or land uses to meet the required total phosphorus reduction.

(d) The tools that will be used to verify total phosphorus reduction levels such as water quality and quantity monitoring to determine total phosphorus loading pre- and post-BMP improvement and to estimate total phosphorus reduction ~~efficiency~~. Total phosphorus and phosphorus speciation data collected at the District sub-basin monitoring locations may serve as representative monitoring.

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(e) The parameters under which total phosphorus reduction levels will be measured and verified so that findings are repeatable and applicable within the C-139 Basin conditions (climatic conditions, soils, geology, etc.)

(f) A schedule not to exceed three calendar years from the date of District approval of the proposal. Once the confirmatory verification is completed and a final report is submitted in accordance with the approved scope, the permittee shall either submit a Letter Modification application in accordance with Rule 40E-63.439, F.A.C., and subsections 40E-63.461~~0~~ (2) and (3), F.A.C., to either:

a. modify the approved BMP Plan to incorporate changes based on the final report recommendations for the District's consideration, or

b. propose other water quality improvement activities consistent with the requirements of this rule.

(5) The District shall repeat the procedures specified in Rule 40E-63.446, F.A.C., above as many times as required to achieve C-139 Basin compliance, and seek corrective action as appropriate against entities within the C-139 Basin, as applicable.

(6) Permittees may elect to demonstrate that water quality improvement activities are impracticable. Any such request for determination of impracticability must be submitted to the District under a permit modification application. For the District to consider the application for approval, the submittal shall:

a. Specify all of the BMPs and activities that were implemented previously and provide evidence to show that no additional BMPs and activities or refinements for the reduction of phosphorus can be reasonably accomplished at the site or sites of operation.

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b. Propose the expected amount of phosphorus discharge in comparison to the C-139 Basin's phosphorus load targets and limits, calculated in accordance with Appendices B3.1 and B3.2 (incorporated by reference in subsections 40E-63.446(2), F.A.C.), for the range of historic rainfall conditions in accordance with Appendix B2 (incorporated by reference in subsection 40E-63.446(1), F.A.C.). No increasing trend in phosphorus from the property, as determined by the District, will be allowed under any scenario. The District will review the proposed performance level in reference to available representative historic data.

c. Propose a discharge monitoring plan in accordance with Rule 40E-63.462, F.A.C., to verify that the proposed performance level is met. In the event that the farm configuration is not conducive to flow collection under a discharge monitoring program, the District may consider requests for the use of alternate representative locations or monitoring for concentration only. Upon District approval of the monitoring plan, special limiting conditions (such as applicable conditions from Rule 40E-63.464, F.A.C.) will be incorporated in the permit.

d. Such requests shall apply only to the permit basin or portion thereof (e.g., land use, crop or acreage) which demonstrated further activities are impracticable.

e. The District shall send a copy of each such request to the Department of Environmental Protection.

f. Determinations of impracticability will be valid until the next permit renewal cycle. Permittees shall re-apply for a permit in accordance with Rule 40E-63.439, F.A.C. A previously permitted impracticability status shall not be automatically renewed. The District will review each request as a new request. All requests shall be reviewed to

verify that there have been no increasing trends in phosphorus discharges in the previous 5 years and that the proposed levels of BMP implementation are in accordance with improved BMP implementation techniques based on the latest technical information, as described in Appendix B3.2 (incorporated by reference in subsection 40E-63.446(2)(a), F.A.C.).

Rulemaking ~~Specific~~ Authority 373.044, ~~373.083, 373.085~~, 373.113, 373.4592, F.S., Law Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592(4)(f), F.S., History – New 1-24-02, Amended _____, See Rule 40E-63.470, F.A.C.

40E-63.462 Permit Basin Discharge Monitoring Program.

(1) In addition to implementing an approved BMP Plan, permittees may elect or be required to participate in a discharge monitoring program pursuant to Rules 40E-63.437, 40E-63.438, paragraph 40E-63.44~~49~~(1)(r), subsection 40E-63.461~~0~~(4) or 40E-63.461~~0~~(6), F.A.C., and be subject to:

(a) For permittees electing a discharge monitoring program or permittees required to implement a monitoring program pursuant to subsection 40E-63.461~~0~~(6), F.A.C.: alternative, site-specific evaluations of compliance with phosphorus load targets and limits for the areas represented by the monitoring plan when the C-139 Basin is collectively determined to be out of compliance in accordance with Chapter 40E-63, F.A.C., Appendix B2 (incorporated by reference in subsection 40E-63.446(1), F.A.C.); and

(b) Compliance with permit conditions in accordance with Rule 40E-63.46~~4~~4, F.A.C.

(2) To implement a discharge monitoring program, permittees must submit a permit application with the following information:

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(a) An acceptable discharge (quantity and quality) monitoring plan that provides reasonable assurance that annual water discharge and total phosphorus load are accurately documented.

(b) All flow quantity discharge from the property shall be calculated using a proposed method by a Florida-Registered Professional Engineer in a flow calibration report approved by the District. A calibration report shall be required for each pump, culvert or other discharge structure. Uncontrolled off-site discharges, such as overland sheet flow, shall also be quantified in the report. Each calibration report shall contain, at a minimum: data collection methodology, instrumentation and procedures; the actual field data collected; the basis for the full operating range represented by the data; the methodology for development of the calibration equation; operational information needed to calculate flow with a temporary backup methodology to be used if the primary equipment becomes inoperable; and the final calibration equation and primary method for calculating the flow. A plan that includes the items specified in the "Flow Calibration Guidelines Developed in Support of Chapter 40E-63, F.A.C. Everglades BMP Permit Program" (incorporated by reference in subsection 40E-63.462(2)(d), F.A.C.), generally provides reasonable assurance that methods to measure water quantity will be reasonably accurate, however, other alternatives may be proposed by the applicant and authorized by the District;

(c) A schedule to install equipment and implement the monitoring plan no later than 30 days after issuance of the permit; and

(d) Other site specific information required by Appendix B3.1, (incorporated by reference in subsection 40E-63.446(2)(a), F.A.C.).

Rulemaking ~~Specific~~ Authority 373.044, ~~373.083, 373.085, 373.086,~~ 373.113, 373.4592,~~,~~ F.S., Law Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592(4)(f), F.S., History – New_____ See Rule 40E-63.456, F.A.C.

40E-63.464 Limiting Conditions for the Permit Basin Discharge Monitoring Program.

For those applicants proposing to implement the Permit Basin Discharge Monitoring Program, the District-approved monitoring plan will be incorporated into a modified ~~n amended~~ General Permit and the following limiting conditions shall be met in addition to the conditions indicated in Rule 40E-63.444, F.A.C. These limiting conditions will be attached to the General Permit.

(1) The discharge (quantity and quality) monitoring plan shall provide reasonable assurance that the annual water discharge and total phosphorus load are accurately documented.

(2) The approved discharge monitoring plan shall be incorporated by reference and made part of this permit;

(3) The equipment shall be installed and the monitoring shall start no later than 30 days after the permit issuance date. Within 60 days after the permit issuance date, the permittee shall contact the District to verify that installation of the monitoring equipment is complete and to schedule an inspection;

(4) The permittee shall implement the discharge monitoring plan in accordance with the permit and shall submit to the District any proposed modification of the plan

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by submitting an application to modify the permit for review and approval prior to implementation.

(5) The location of sample collection shall be such that water sampled is representative of all water from the monitored area that discharges off-site.

(6) All water quality sample collection, preservation, handling, transport, and chain-of-custody documentation shall be conducted in accordance with an approved Comprehensive Quality Assurance Plan as specified in the approved discharge monitoring plan. All laboratory analyses shall be conducted by a laboratory with proper certification for the specified parameter (e.g. phosphorus);

(7) In the event that water quality automatic sampling equipment becomes inoperable for any reason, grab samples shall be temporarily taken on a daily basis during flow events and composited for a maximum of 14 days for total phosphorus analysis. Reasonable effort must be made to render the automatic sampling equipment operable within 14 days;

(8) Monitoring conditions may be reduced or adjusted upon submission of data and/or studies that provide the basis for such, reasonably demonstrating that equivalent data will be obtained with the reduction or adjustment in monitoring;

(9) The District will provide at least one week notice to the permittee of the intent to conduct a quality assurance field audit of the sampling collection procedures;

(10) The water quantity and quality data shall be submitted to the District no later than 60 days from the last day of the sampling period being reported. Water quantity and quality data shall be submitted to the District in an approved electronic format on a monthly basis.

(11) All flow quantity discharged from the property shall be calculated using a method proposed by a Florida-registered Professional Engineer in a Calibration Report approved by the District. A Calibration Report shall be required for each pump, culvert or other discharge structure. The report shall also quantified uncontrolled off-site discharges, such as overland sheet flow. Each Calibration Report shall contain, at a minimum: data collection methodology, instrumentation and procedures; the actual field data collected; the basis for the full operating range represented by the data; the methodology for development of the calibration equation; operational information needed to calculate flow with a temporary backup methodology to be used if the primary equipment becomes inoperable; and the final calibration equation and primary method for calculating the flow. Any modification to the approved calibration shall require an application to modify the existing permit.

(12) During periods of off-site discharge, water quality composite samples shall be collected by automatic sampler, preserved, and the composite sample shall be: a) removed from the sample collection site and delivered to the laboratory no later than 21 days from the time the first individual sample was taken and, b) analyzed for total phosphorus no later than 28 days from the time the first individual sample was taken.

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Rulemaking Authority 373.044, ~~373.083, 373.085, 373.086,~~ 373.113, 373.4592, F.S., Law Implemented 373.016, 373.085, 373.086, 373.451, 373.453, 373.4592(4)(f), F.S., History – New 1-24-02, Formerly 40E-63.458, F.A.C., Amended _____, See Rule 40E-63.458, F.A.C.

40E-63.470 C-139 Basin Works of the District Permit Compliance.

Specific Authority 373.044, 373.083, 373.085, 373.113, 373.4592 FS. Law Implemented 373.085, 373.4592 FS. History–New 1-24-02, Repealed _____.

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BMP Description and Equivalent Points Reference Table

A BMP Plan meeting the requirements of Rule 40E-63.435, F.A.C., is required for each land use or crop. BMP Plans shall be implemented across the entire farm acreage (drainage area) with individual BMPs consistently implemented during the ~~W~~water ~~Y~~year across each land use (crop) area. The ~~T~~table below provides an array of BMPs available for selection by permittees within the C-139 Basin. However, permittees may propose alternative BMP Plans as described in Rule 40E-63.437, F.A.C.

BMP	PTS	DESCRIPTION
NUTRIENT CONTROL PRACTICES[1]		~~MINIMIZES THE MOVEMENT OF NUTRIENTS OFF-SITE BY EFFICIENT AND CONTROLLED APPLICATION~~
Nutrient Application Control~~*~~	2 ½	Uniform and controlled boundary application of nutrients with a minimum 4' setback from canals with no overlapping application for each application method (e.g. banding at the root zone or side-dressing, pneumatic controlled-edge application such as AIRMAX); fertilization through low volume irrigation system applied at root zone (fertigation); controlled placement by fertilization under plastic near root.
Nutrient Spill Prevention~~*~~	2 ½	Formal spill prevention protocols (storage, handling, transfer, and education/instruction). Pasture – Also includes restricted placement of stored feed and housekeeping to prevent spillage near storage and transfer areas (feed and molasses)
Manage Successive Vegetable Planting to Minimize Phosphorus	2 ½	Avoid successive planting of vegetables or other crops having high phosphorus ~~(P)~~ needs to avoid ~~P~~ phosphorus build up in soils. Includes successive planting with no successive ~~P~~ phosphorus application.
Recommended Nutrient Application based on Plant Tissue Analysis	2 ½ ~~5~~ 2 ½ 5	Avoid excess application of ~~P~~ phosphorus by determining plant nutrient requirements for adjustments during next growing season (crop specific). ~~Citrus only – Additional points allowed for citrus because it provides information on current season P requirements.~~ Pastures with Bahia grass – Plant tissue analysis along with soil test is required to make nutrient application recommendation. Citrus – Results are applied to the current season ~~P~~ phosphorus requirements.

[1] For purposes of this Rule the term "nutrient" refers exclusively to phosphorus.

Recommended Nutrient Application based on Soil Testing~~*~~	5	Avoid excess nutrient application by determining ~~P~~ phosphorus requirements of soil and follow standard recommendations for application rates (crop specific), or recommendations based on the analysis of optimum economic crop response to added ~~P~~ phosphorus specific to the ~~solid~~ soil and crop. The disposal or application of waste water residuals (biosolids), animal manure, or other materials containing phosphorus shall not exceed the ~~P~~ phosphorus requirements of the crop.
Split Nutrient Application	5	More efficient plant uptake of ~~P~~ phosphorus by applying small portions of total recommended ~~P~~ phosphorus at various times during the growing season. Not to exceed total recommendation based on soil test.
Slow Release Phosphorus Fertilizer	5	Avoid flushing excess ~~P~~ phosphorus from soil by using specially treated fertilizer that releases ~~P~~ phosphorus to the plant over time.
Reduce Phosphorus Fertilization	5	Reduce the P application rate by at least 30% below the recommendation based on soil tests and development of site-specific (reduced) recommendations or application methods. Provide basis for reduction credit.
No Nutrients Imported Via Direct Land Application	20 ~~15~~	No Application of ~~P~~ phosphorus, in any form, to the soil for amendments or plant nutrients. (Pastures ~~Native and Semi-improved Range~~ can claim this BMP and still apply fertilizer if done at maintenance or less than optimum production levels no more frequently than once every 6 years. Not applicable to new plantings. ~~as a grass supplement every 6-8 years.)~~
No Nutrients Imported Indirectly Through Cattle Feed	15	No ~~P~~ phosphorus import to the basin through cattle feed (Pastures where no nutrients are imported via direct land application can claim this BMP if the only feed additives are mineral supplements or molasses ~~note: native range is not excluded by use of mineral supplements or molasses~~)
Nutrient Management Plan (Levels I&II/III/IV)	5-25 ~~15-25~~ ~~35~~	A plan to manage ~~Managing~~ the amount, source, placement, form, and timing of nutrient ~~the~~ application to optimize yields and minimize the movement of phosphorus nutrients to surface and ground waters that ultimately discharge off-site. ~~of nutrients on lands with cattle operations.~~ A site management plan and budget for tracking phosphorus shall be developed. The plan shall consider all nutrient sources (including but not limited to soil residual, crop residual, animal residual (through a waste management plan), organic and chemical fertilizer, soil amendments and supplements, irrigation water quantity and timing, animal nutrient supplements) versus the required amounts of nutrients. The plan shall utilize testing, analysis, and agricultural industry standards to determine nutrient needs. At a minimum, the plan shall address the timing, placement and method of nutrient application; optimization of nutrient uptake; prevention of nutrient movement off-site; site descriptions such as aerial photographs, crop maps, and soil maps; implementation plans and schedules; sediment control BMPs; pasture management BMPs; and water quality monitoring for input into the mass balance prepared for the phosphorus budget. These actions shall be developed in accordance with Section IV, Code 590 of the United States Department of Agriculture Natural Resources Conservation Service FOTG, FL, January 2009, hereby incorporated by reference. The Plan must be approved by NRCS or a qualified technical service provider. However, other alternatives may be considered by the District with technical justification. A Nutrient Management Plan can be a component of a Conservation Plan which includes the objective of reducing phosphorus discharges on lands with

		cattle operations. The District will assign BMP points to each Nutrient Management Plan based on the relative level of treatment proposed, as evidenced by the applicant through plans, test results or other information submitted with the application.

~~A BMP Plan is required for each land use or crop. BMP Plans shall be implemented across the entire farm acreage (drainage area) with individual BMPs consistently implemented across each land use (crop) area.~~

~~*See notes at end of Appendix.~~

BMP Description and Equivalent Points Reference Table

BMP	PTS	DESCRIPTION
WATER MANAGEMENT PRACTICES		~~MINIMIZES THE QUANTITY OF OFF-SITE DISCHARGES WHICH CARRY NUTRIENTS DOWNSTREAM~~
½ Inch Detained 1 Inch Detained	5 10	Delayed discharge (based on measuring daily rain events using a rain gage).
Improvements to Water Management System Infrastructure to Further Increase Water Quality Treatment by Delayed or Minimized Discharge	5	Recirculation of water inside farm boundaries to improve water quality ~~WQ~~ prior to off-site discharge ~~(Particularly applicable to discharge from rice and vegetables),~~ includes: fallow field flood water with no direct discharge (instead dispose of via ~~allow to "drain" via~~ evapotranspiration, seepage, use as irrigation water); or increasing water detention using properly constructed canal berms.
Low Volume Irrigation ~~Reduced Flow through Water Table Management~~	5	Use of low volume irrigation methods, e.g. drip irrigation, microjet irrigation. ~~Decreasing discharge by optimizing drainage and irrigation schedules and/or by using low volume irrigation methods, e.g. drip irrigation~~
Approved and Operational Surface Water Reservoir Certified[2]	10 10 15	Properly permitted, constructed and maintained storage system meeting specified Environmental Resource Permit (ERP) Basis of Review criteria (version in effect at the time of permitting or in effect at the time of permit modification for modified systems): System meets Section 5.2.1 Water Quality Criteria-Volumetric Requirements System meets Section 6.2 Water Quantity Criteria-Discharge Rate System meets Section 6.3 Water Quantity Criteria-Design Storm (Must have a valid SFWMD construction and operation permit for the surface water system.)
Temporary Holding Pond	15	Temporary agricultural activities (as described in Chapter 40E-400, F.A.C.) with a properly constructed and permitted temporary holding pond.
Overland Sheet Flow over Entire Property ~~No Direct Discharge~~	15	No drainage improvements made to a land area so that it drains through overland sheet flow, or drainage improvements such as ditches have been removed to restore overland sheet flow

[2] Surface water reservoir certification refers to a construction completion certification by a Florida licensed Professional Engineer as required in Chapter 40E-4, F.A.C., using Form 0881A for projects permitted after October 3, 1995, and Form 0881B for projects permitted prior to October 3, 1995, which are incorporated by reference in subsection 40E-4.361(1)(b), F.A.C., and Section 10.01 of the Basis of Review for Environmental Resource Permit Applications within the South Florida Water Management District, incorporated by reference in Rule 40E-4.091, F.A.C., or the current certification requirements of Chapter 40E-4, F.A.C.

		drainage to the land area. ~~Overland Sheet Flow over entire property, no direct discharge.~~
No Point Discharge of Surface Water	15	Voluntarily disabling of offsite discharge structures or other permanent means to prevent point discharge from a land area.
Tailwater Recovery System	10	A planned irrigation system in which facilities have been installed and the system is operated to collect, store, and transport irrigation tailwater and/or rainfall runoff that would have been discharged offsite without the system.
Precision Irrigation Scheduling	10	Combination of low volume irrigation and soil-moisture measuring equipment, specialized irrigation decision tools (e.g. computer software), and/or remote sensing tools to ascertain real-time crop needs to maximize irrigation system performance and to develop precise irrigation scheduling (time, location and amount).
Water Resources Management for Pastures	5	Combination of water conservation and management practices considering the requirements of the primary forage grasses and supplemental cattle watering. Managing surface water via pump or controlled gravity structures to detain a minimum of ¼ inch of rain within soils, wetlands, canals and ditches.

~~A BMP Plan is required for each land use or crop. BMP Plans shall be implemented across the entire farm acreage (drainage area) with individual BMPs consistently implemented across each land use (crop) area.~~

~~*See notes at end of Appendix.~~

BMP Description and Equivalent Points Reference Table

BMP	PTS	DESCRIPTION
PARTICULATE MATTER AND SEDIMENT CONTROLS[31]		~~MINIMIZES THE MOVEMENT OF P, IN PARTICULATE MATTER AND SEDIMENTS, OFF-SITE BY CONTROLLING THE AMOUNT OF ERODED SOIL AND PLANT MATTER IN DISCHARGE~~
Any 2	2 ½	erosion control by leveling fields reduce soil erosion using grassed swales and field ditch connections to laterals minimize sediment transport with slow velocity in main canal near discharge structure
Any 4	5	~~reduce soil erosion using grassed swales and field ditch connections to laterals~~

[31] Approved and ~~O~~operational ~~S~~surface ~~W~~water ~~R~~reservoirs (~~C~~certified) can provide a 5 BMP equivalent points toward the ~~P~~particulate matter and ~~S~~sediment ~~C~~control ~~P~~practices category, based upon maintenance and operation of the reservoir and of a sediment canal cleaning and floating vegetation barrier or equivalent at the canals connecting the reservoir discharge and the offsite discharge locations.

Any 6	10	minimize sediment transport into canals by constructing ditch bank berms
Any 8	15	minimize sediment build-up through a canal cleaning program ~~minimize P from plants by aquatic weed control (P source) at main discharge locations~~ reduce sediments transported offsite by using field ditch drainage sumps ~~reduce debris (P source) leaving the site by using barriers at discharge locations~~ ~~reduce soil erosion with constructed ditch bank stabilization~~ minimize sediment transport with slow field ditch drainage near pumps/structure reduce sediments transported offsite by maintaining a sediment sump/trap upstream of drainage structure ~~maintain sustainable forage growth on pasture to reduce soil erosion/range seedings~~ reduce sediment transport through the use of grassed waterways reduce sediment transport through the use of filter strips or riparian conservation buffers adjacent to waterways. No ~~P~~ phosphorus is applied to these areas. reduce sediments transported offsite by raising culvert bottoms above all ditch bottoms to minimize sediment transport reduce sediments transported offsite by stabilizing soil through infrastructure improvements at canal/ditch intersections (e.g. flexible plastic pipe, polymer treatment) maintain sustainable forage growth on pasture to reduce soil/erosion/range seedlings reduce soil erosion with constructed ditch bank stabilization reduce soil erosion with cover crops (No ~~P~~ phosphorus applied) maintain vegetative cover in upland areas to reduce soil erosion reduce soil erosion with vegetation on ditch banks minimize ~~P~~ phosphorus from plants by aquatic weed control (P phosphorus source) at main discharge locations reduce debris and aquatic plants (~~P~~ phosphorus source) leaving the site by using barriers at discharge locations

~~A BMP Plan is required for each land use or crop. BMP Plans shall be implemented across the entire farm acreage (drainage area) with individual BMPs consistently implemented across each land use (crop) area.~~

~~*See notes at end of Appendix.~~

BMP Description and Equivalent Points Reference Table

BMP	PTS	DESCRIPTION

PASTURE MANAGEMENT[41]		~~MINIMIZES NUTRIENTS IN DISCHARGES THROUGH ON SITE OPERATION AND MANAGEMENT PRACTICES~~
	2½ ~~2~~ 2 ½ ~~2~~ 2½ ~~2~~ 2½ ~~5~~ 5 10	High intensity area management: • Includes restricted placement of stored feed, feeders, mineral, and molasses stations to reduce concentrated areas near drainage ditches, when applicable. • Provide restricted placement of cowpens to reduce concentrated areas near drainage ditches. • Provide shade structures to prevent cattle in waterways • Alternative cattle water sources: restricted placement of water to reduce concentrated areas near drainage ditches • Low cattle density (1 head/2 acres, non-irrigated pasture) by providing comprehensive prescribed grazing. • Restrict cattle from waterways through fencing of canals in manner that protects water quality. ~~• restricted placement of feeders to reduce "hot spots" near drainage ditches • restricted placement of cowpens to reduce "hot spots" near drainage ditches . restricted placement of feed and water to reduce "hot spots" near drainage ditches • provide shade structures to prevent cattle in waterways • low cattle density (1 head/2 acres, nonirrigated pasture) • reduced P in feed (by a minimum of 20%) • restrict cattle from waterways through fencing of canals in a manner that protects the discharge water quality~~

~~A BMP Plan is required for each land use or crop. BMP Plans shall be implemented across the entire farm acreage (drainage area) with individual BMPs consistently implemented across each land use (crop) area.~~

~~*See notes at end of Appendix.~~

[41] These ~~P~~pasture ~~M~~management BMPs can provide equivalent points towards the ~~P~~particulate ~~M~~matter and ~~S~~sediment ~~C~~control ~~P~~practices category.

~~BMP Equivalent Points Table~~

~~**NOTES**~~

~~A BMP Plan is required for each land use or crop. BMP Plans shall be implemented across the entire farm acreage (drainage area) with individual BMPs consistently implemented across each land use (crop) area.~~

~~Minimum required points for each BMP Plan:~~

~~Level I: Initial 15 points for each BMP Plan.~~
~~Level II: First out of compliance, no additional BMPs; however, onsite verification of BMPs begin. Frequency of visits based on compliance record.~~
~~Level III: Second out of compliance, 10 additional BMP points for each BMP Plan. Onsite verification of BMPs continue.~~
~~Level IV: Third out of compliance, 10 additional BMP points for each BMP Plan. Onsite verification of BMPs continue.~~

~~An asterisk (*) indicates a BMP that is required when there is a land application of nutrients and no permitted and properly operated surface water detention system.~~

C-139 Basin Performance Measure ~~Compliance~~ Methodology

INTRODUCTION

This Appendix sets forth the performance measure ~~compliance~~ methodology for determining whether the C-139 Basin is meeting the annual phosphorus load requirements described within the Everglades Forever Act (EFA), Section 373.4592(4)(f)5, F.S. ~~additional measures will be required of landowners in addition to implementation of the Level I plan for BMPs (that is, Levels II, III, and IV).~~ It includes procedures the District will follow to determine whether the entire C-139 Basin has maintained discharges at or below ~~met the goal of not exceeding~~ the collective average annual phosphorus loading based proportionally on the historical rainfall during the baseline period of October 1, 1978 to September 30, 1988. The determination requires annual calculation of the phosphorus ~~TP~~ load leaving the outfall structures from the C-139 Basin (location shown in Figure B1 and listed in Table B-1). The list of outfall structures used in the annual phosphorus load calculation will be adjusted by the South Florida Water Management District (District) to account for any changes in outflow structures from the C-139 Basin, including those changes caused by construction of regional projects.

Future water year ~~The~~ annual observed loading of phosphorus attributed to C-139 Basin for performance assessment by this methodology may be adjusted by the District to reduce basin boundary flows that are demonstrated not representative of historic conditions. Potential circumstances where the discharge attributed to C-139 Basin landowners may be reduced include discharges ~~not~~ related to the District's operation of the regional water management system for purposes other than flood control and inflows to the historic hydrologic boundary. The District shall describe the reductions and their technical basis in an annual report.

Load is the amount of phosphorus carried past a monitoring point by the movement of water. Data on water quality concentration and water quantity (flow) are required to calculate the phosphorus load discharged from a monitoring point. Data on water quality and quantity at the C-139 Basin outfall structures are available from ~~several sources~~ the District~~, the U. S. Army Corps of Engineers, and the U.S. Geological Service~~. Several methods of collecting the data are also used. Accordingly, the best method of data collection and source of data to use in a load calculation must be identified.

The water quality and quantity collection sources and methods currently available are described below. The methods are improved continuously as new equipment becomes available and technology improves. However, when new methods are introduced, existing methods of data collection are continued concurrently with the new methods for a sufficient ~~substantial~~ period of time to evaluate the impact of the method change on phosphorus load calculations. When the District reports the results of the C-139 Basin collective annual phosphorus loading for the period of May 1 through - April 30, annually ~~beginning in the year 2001~~, the sources and methods of data collection used in the

calculation will be described and available for inspection. Any changes in methods from the prior year will be specified. Substantially affected persons will have an opportunity to request an administrative hearing. The District shall incorporate permanent changes in methods into this Appendix periodically through Chapter 120, Florida Statutes, rulemaking proceedings as required.

The load calculations involve detailed procedures, which have been automated by a computer program in FORTRAN language. A flow chart of the program is shown in Figure B2. The methods and equations used in the program are outlined in Appendix B2.1, which is incorporated ~~published~~ by reference in subsection 40E-~~0~~63.446(1), F.A.C., ~~and incorporated into this Chapter~~ and is ~~are also~~ available on various electronic media.

DATA COLLECTION SOURCES AND METHODS

Water Quantity – Flows

The ~~South Florida Water Management~~ District ~~and the U.S. Geological Survey~~ computes flow at all of the water control structures serving the C-139 Basin. Water control structures may include pumps, gated spillways, and gated culverts.

The District's hydrologic database stores multiple flow data sets at each structure. Each flow data set is created using a unique combination of sources of stage and control operations data. The District uses its data to perform water budget analyses and estimation techniques to obtain a "preferred" flow data set at each structure. Table B-1 shows the "preferred" C-139 Basin discharge flow data sets available in the District's hydrologic database (DBHYDRO). ~~The SFWMD uses various methods to compute flow at water control structures. Flow at pump stations is calculated using discharge rating equations provided by the pump manufacturer and calibrated by discharge measurements. Flow at gated spillways is calculated using formulae derived by the Corps of Engineers from the Bernoulli equation. Discharge through culverts is calculated using standard equations for weir flow, orifice flow, pipe flow, and open channel flow. Flow computation methods for the C-139 Basin outfall structures are outlined in Appendix B2.2, which is published by reference and incorporated into this Chapter.~~

~~The SFWMD obtains field measurements of stage and control operations through various means. Real-time stage and control operations data are collected via telemetry systems. Analog data are obtained from chart recorders. Digital data are provided by punch tapes and solid state data loggers. Pump station operators log readings of stage and control operations hourly during pumping operations. In addition, staff gauge readings, gate opening measurements, and flashboard elevation measurements are conducted by field personnel who routinely visit unmanned structures.~~

~~The SFWMD's hydrologic database stores multiple flow data sets at each structure. Each flow data set is created using a unique combination of sources of stage and~~

~~control operations data. The USGS publishes one set of flow data for each structure. If convenient, the USGS presents combined flow data from different locations. The SFWMD uses the USGS's data as well as its own data to perform water budget analyses and estimation techniques to obtain a "preferred" flow data set at each structure. Table B1 shows the "preferred" flow data sets available in the SFWMD's hydrologic database (DBHYDRO).~~

Water Quality

A water sample collected in the field is called a "raw water sample", in differentiation with a "water sample" used in the chemistry laboratory. Current raw water sample collecting methods at ~~different~~ structures utilized in the C-13~~2~~9 Basin phosphorus load calculation are listed in Table B-2. All raw water collection sites ~~samples collected~~ in the C-139 Basin phosphorus load calculation shall be collected by automatic samplers, however grab samples will be taken when automatic samplers are not functioning or when necessary for other purposes. ~~in the future for compliance will be collected by automatic samplers.~~ Automatic samplers will be programmed to take flow proportional composite samples. Where on-site real-time flow computation is impossible, time proportional composite samples will be taken. For future sampling, if an improved sampling method is proposed ~~automatic sampler is installed~~ to replace existing sampling methods, existing methods ~~manual grab sampling, grab samples~~ will be continued concurrently until the relationship between results from existing and proposed ~~automatic and manual~~ methods have been established. The establishment of these relationships shall be based on an amount and quality of data that is sufficient to be statistically valid. When determining whether the data set is sufficient, at minimum the following shall be considered: the length of the period over which data was collected; the quality assurance of the data; and the number of events in the period. ~~After the relationship between grab and autosampler data has been established, grab samples will be taken when automatic samplers are not functioning, or when necessary for other purposes.~~

Only a portion of a well-mixed raw water sample is used as the water sample in actual quantitative analysis of a given water quality parameter. The chemical analysis is performed by a certified laboratory using accepted standard methods. In the event the District changes laboratories or analytical methods, concurrent analyses shall be conducted until a correlation can be established. Water quality parameters are identified by structure and collection site, project code, sample date, and serial number of the sample. The data are stored in data base WQDMAIN.

Data Upgrades

There are three ways in which the quality and reliability of District flow data are being improved: (1) establishment of single time series of flow for each station from multiple sources of stage and control operations data, (2) verification and calibration of flow equations through intensified discharge measurements at all major C-139 Basin structures, and (3) calibration of acoustic velocity meter ~~AVM~~ systems for future use as

an additional source of flow data.

~~Efforts are currently under way to establish a single time series of flow data calculated at each flow station.~~ A prioritized list of sources of stage and control operations data are ~~will be~~ established for each flow station. Flow will be computed from the highest ranking sources. When the highest ranking source of data is missing, the next highest source will be used, and so on. This method will ensure the calculation of the best flow values from all sources and will minimize missing data.

Stream gauging has been utilized ~~is being intensified~~ to provide discharge measurements at all major C-139 Basin structures. Statistical analyses ~~are under way to~~ verify or calibrate the discharge rating equations. ~~The upgrading of stream gauging equipment, including a portable acoustic low velocity meter, as well as improved measuring techniques will ensure valuable field measurements.~~ Statistical analysis and calibration of rating equations will continue to increase the accuracy of the calculated flow values. When new or substantially different methods or techniques are proposed for measuring discharge at any of the sites listed in Table B-1, an analysis will be done to determine the relationships between the existing method and the proposed method prior to implementing the proposed change.

If any upgrades in water quality sampling are undertaken in the future, concurrent samples will be taken by the existing methods to maintain data continuity, at least until the upgraded methods have been tested and documented as reliable in accordance with the procedures described under "Water Quality" above.

ANNUAL PERFORMANCE DETERMINATION ~~OF COMPLIANCE WITH TOTAL PHOSPHORUS LOAD~~

With regard to BMP implementation initiated in 2001, ~~requiring implementation of Levels II, III, and IV~~ the “Initial Compliance Determination Period” was the water year ~~will be the water year~~ beginning May 1, 2002 and ending April 30, 2003 (WY2003). Following four years in which the C-139 Basin was determined to be “out of compliance”, rulemaking was initiated in WY2007 to amend the existing Chapter 40E-63, F.A.C., to ensure that the objectives of the EFA, Section 373.4592(4)(f)5., F.S., are met. As a result, the “Initial Performance Measure ~~Compliance~~ Determination” period for the C-139 Basin is reset to account for additional water quality improvement activities and will be the water year beginning May 1, 2010~~0~~1 and ending April 30, 2012 (WY2012). The frequency of compliance determinations will be as set forth in Rule 40E-63.446, F.A.C. However, basin performance will be computed and reported on an annual water year basis, that is annual phosphorus loads will be compared to the collective annual average phosphorus load derived for ~~subsequent annual TP loads will be evaluated for compliance with the collective annual average TP load from~~ the baseline period (October 1, 1978 to September 30, 1988). This will occur ~~be done~~ annually as of April 30, a date that corresponds generally with the change from the dry to the wet rainfall periods.

Hydrology, that is discharge and rainfall, is a ~~are~~ dominant factor~~s~~ when computing

phosphorus ~~TP~~ loads. Because rainfall and discharge are subject to large temporal and spatial variation in south Florida, the evaluation for performance ~~compliance~~ adjusts the phosphorus ~~TP~~ load to account for hydrologic variability. In addition to annual rainfall, significant influence of intra-annual rainfall on phosphorus loads has been observed and use of a relationship based on the monthly variability of rainfall is physically justified, in addition to having the greater statistical power.

Integrating recent data reflecting changes to the operation of the water management system as well as the influence of monthly rainfall patters to the performance measure is anticipated to improve the methodology's future representation of C-139 Basin landowners' collective annual loading of phosphorus based proportionally on rainfall. For the calibration period of WY2000-2009 utilized for regression of phosphorus load from rainfall, the mean annual phosphorus load was calculated to be 51.5 metric tons. To establish a load target that preserves the objectives of the EFA, the WY2000-2009 annual phosphorus loads were proportionally adjusted by a factor of 74.05%, such that the adjusted mean annual phosphorus load was equivalent to the baseline period mean of 38.2 mtons. The adjusted annual data from the calibration period was utilized to determine a relationship between rainfall and target load.

The adjustment for hydrologic variability includes two components:

1. A model to estimate future phosphorus ~~TP~~ loads. The model estimates a future phosphorus ~~TP~~ load from the C-139 Basin rainfall characteristics by substituting future hydrologic conditions for the conditions that occurred during the calibration period (WY2000-2009), adjusting the observed annual loads by 74.05% so the average annual phosphorus load equals the average annual load of the baseline period (WY1980-1988).~~baseline period (1978-1988).~~ The estimation is based on hydrologic data collected for any time period of May 1 through - April 30 subsequent to the calibration ~~baseline~~ period. The annual adjusted rainfall range for which the model shall be applied is from 27.07 inches to 66.21 inches based upon rainfall observed during the WY1980-2009 period of record.
2. Accommodation for possible statistical error in the model. Statistical error in the model was accounted for by specifying a required level of statistical confidence in the prediction of the long-term average phosphorus ~~TP~~ load. The 90th percentile confidence level was selected as reasonable.

Evaluation of the C-139 Basin for phosphorus load performance ~~compliance~~ will be based upon the following:

1. If the actual measured phosphorus ~~TP~~ loading from the C-139 Basin in a post-baseline May 1 through April 30 period is less than the model phosphorus ~~TP~~ load estimate (target), then the C-139 Basin will be determined to meet its performance measure, ~~be "In Compliance",~~ that is, it will not have ~~having not~~ exceeded the collective average annual phosphorus loading that would have occurred during the baseline period adjusted for hydrologic variability.

2. The performance determination will be suspended if the adjusted rainfall for the May 1 through April 30 water year is outside the range of 27.97 inches to 66.21 inches and the actual measured phosphorus loading exceeds the target in any May 1 through April 30 period. Any period(s) for which the performance determination is suspended will be excluded from the calculation of the three-year average annual phosphorus load, and will be excluded from the determination of whether the target has been exceeded in three or more consecutive May 1 through April 30 periods. ~~If the actual measured TP loading from the C-139 Basin exceeds the model TP load estimate (Target) in three or more consecutive May 1 through April 30 periods, then the C-139 Basin will be determined to be "Out of Compliance" -- that is, having exceeded the collective average annual phosphorus loading that would have occurred during the baseline period adjusted for hydrologic variability. If the Target is exceeded in a May 1 through April 30 period, and the District determines that the rainfall for the period is outside the model calibration range of 31.06 inches to 71.98 inches, the Target will be suspended and the C-139 Basin will not be determined to be "Out of Compliance" for that period only. Any period(s) for which the Target is suspended will be excluded from the determination of whether the Target has been exceeded in three or more consecutive May 1 through April 30 periods. That is, the C-139 Basin will be determined to be "Out of Compliance" when the Target is exceeded for three May 1 through April 30 periods, without an intervening May 1 through April 30 period in which the C-139 Basin has been determined to be "In Compliance", even though the three periods may be interrupted by periods of suspension.~~

3. If the actual measured phosphorus ~~TP~~ loading from the C-139 Basin exceeds the model phosphorus load estimate (target) in three or more consecutive May 1 through April 30 periods, and if not suspended due to rainfall, then the C-139 Basin will be determined to exceed its performance measure, ~~upper 90% confidence level of the Target (herein after referred to as the Limit), in any May 1 through April 30 period, the C-139 Basin will be determined to be "Out of Compliance",~~ that is, it will have exceeded the collective average annual phosphorus loading that would have occurred during the baseline period adjusted for hydrologic variability. ~~If the Limit is exceeded in a May 1 through April 30 period, and the District determines that the adjusted rainfall for the period is outside the model calibration range of 31.06 inches to 71.98 inches, the Limit will be suspended and the C-139 Basin will not be determined to be "Out of Compliance" for that period only.~~

4. If the actual measured phosphorus loading from the C-139 Basin exceeds the upper 90% confidence level of the target (hereinafter referred to as the limit), in any May 1 through April 30 period, and if not suspended due to rainfall, the C-139 Basin will be determined to exceed its performance measure, that is, it will have exceeded the collective average annual phosphorus loading that would have occurred during the baseline period adjusted for hydrologic variability. ~~A determination of suspension under paragraphs 2 and 3 above and a Notice of Rights to petition for a hearing under Section 120.57, Florida Statutes, and Section 373.114, Florida Statutes, shall be published in the Florida Administrative Weekly.~~

5. The target, ~~and~~ limit and adjusted rainfall will be calculated according to the following equations and explanation:

Target = exp (-17.0124 + 4.5995 X + 3.9111 C – 1.0055 S)

Explained Variance = 74.2%, Standard Error of Estimate = 0.5440

Predictors (X, C, S) are calculated from the first three moments (m_1,m_2,m_3) of the 12 monthly rainfall totals (r_i, i=1 to 12, inches) for the current year:

m_1 = Sum [r_i] / 12

m_2 = Sum [r_i - m_1]^2 / 12

m_3 = Sum [r_i - m_1]^3 / 12

X = ln (12 m_1)

C = [(12/11) m_2]$^{0.5}$/m_1

S = (12/11) m_3 / m_2 $^{1.5}$

Limit = Target exp (1.440 SE)

SE = standard error of predicted ln(L) for May-April interval

$$SE = 0.5440 [1 + 1/10 + 4.8500 (X-X_m)^2 + 8.1932 (C-C_m)^2 + 0.9247 (S-S_m)^2 + 4.5950 (X-X_m) (C-C_m) - 0.3624 (X-X_m) (S-S_m) - 4.0048 (C-C_m) (S-S_m)]^{0.5}$$

Adjusted Rainfall = exp [X + 0.8503 (C - C_m) – 0.2186 (S - S_m)]

Where:

Target = predicted load for future rainfall conditions (metric tons/yr)

Limit = upper 90% confidence limit for target (metric tons/yr)

Adjusted Rainfall = equivalent rainfall for mean C and S variables (inches)

X = the natural logarithm of the 12-month total rainfall (inches),

C = coefficient of variation calculated from 12 monthly rainfall totals,

S = skewness coefficient calculated from 12 monthly rainfall totals,

X_m = average value of the predictor in calibration period = 3.8434,

C_m = average value of the predictor in calibration period = 0.9087,

S_m = average value of the predictor in calibration period = 0.8200,

The first predictor (X) indicates that load increases exponentially with total annual rainfall. The second and third predictors (C & S) indicate that the load resulting from a given annual rainfall is higher when the distribution of monthly rainfall has higher variance or lower skewness. For a given annual rainfall, the lowest load occurs when rainfall is evenly distributed across months and the highest load occurs when all of the rain falls in one month. Real cases fall in between.

~~ln(L) = -12.898 + 4.126ln(Rain)~~

~~[Explained Variance = 88.6%, Standard Error of Estimate = 0.387]~~

~~where: L = 12-month load attributed to C-139 Basin Runoff (metric tons)~~

~~Compliance will be tracked by comparing the measured C-139 Basin Load with:~~

~~Target = Load Predicted from current Rainfall using Base Period Model (mtons)~~
~~Target = $2.50271 \times 10^{-6} R^{4.12603}$~~

~~Limit = Target x Uncertainty Factor (mtons)~~

~~σ = Standard Error of predicted ln(L) for May-April interval~~
~~σ = $0.38700 [1 + 1/9 + 2.08621 (\ln(R) - 3.87905)^2]^{0.5}$~~

~~where:~~

~~R = Water Year total rainfall (inches)~~
~~σ = Standard error of predicted phosphorus load (on a natural logarithmic scale)~~

~~REQUIREMENTS FOLLOWING DETERMINATION OF C-139 BASIN "OUT OF COMPLIANCE"~~

~~NOTIFICATION~~

~~The District will make every reasonable effort to complete annual compliance determination calculations and publish the results by July 1st of each year for the preceding Water Year (May 1st to April 30th). If the results indicate the C-139 Basin is "out of compliance" and additional participation in BMP implementation is necessary (Levels II, III, or IV), landowners will be notified via certified mail. This notification will outline the responsibilities of the landowner based on whether it is the first, second, third, or fourth occurrence of "out of compliance". These responsibilities are identified as~~

~~"levels" of requirements as described in Rule 40E-63.442(1) that occur as part of the initial permitting process or that can occur if the C-139 Basin is determined to be "out of compliance".~~

~~Level I – Initial BMP Plan Implementation~~

~~This level includes immediate implementation of the initial BMP Plan (15 points) as a requirement of permit issuance (Rule 40E-63.442(1)(a)).~~

~~Level II – First "Out of Compliance"~~

~~The first occurrence of "out of compliance" triggers Level II (Rule 40E-63.442(1)(b)). This level does not require implementation of additional BMPs but does initiate BMP Implementation Verifications by District Staff. After receiving notification that the C-139 Basin is determined to be "out of compliance", permittees will be required to respond to the District in writing within 15 days of transmittal of the notification indicating their option to either (1) continue implementation of the original 15 points of BMPs or (2) propose a revision to the original BMP Plan totaling 15 points. In either case, permittees should prepare for a BMP Site Verification Visit. If the permittee selects option (2), the District will provide "pre-approval" or "pre-denial" of the modified BMP Plan within 10 business days of receipt of the permittee's response. If the District "preapproves" the proposed change to the BMP Plan, the permittee will be required to begin implementation of the proposed BMPs. An application for modification of the permit under Rule 40E-63.432(1) shall be submitted to the District within 45 days of transmittal of the notification of "out of compliance" by the District. The modified BMP Plan must be fully implemented within 90 days of transmittal of the District's notification of "out of compliance". If the permittee selects option (2) and the District "pre-denies" the request, the permittee will be given an additional 30 days to provide supporting information that the proposed BMP Plan meets the intent of Rule 40E-63, Part IV and the EFA or propose an alternative BMP Plan for District review. This process changes the required time to *begin implementation of the modified BMP Plan* but does not change the date to *complete implementation*. It is in the permittee's best interest to respond to the notification in a timely manner to allow time for implementation of the BMP Plan and for the BMPs to be effective prior to the next compliance determination. Permittees will be contacted by District Staff to schedule a site visit to verify that their BMP Plan has been consistently implemented across the entire acreage identified in their permit. Verification of implementation is done through review of records and documentation provided by the landowner or permittee and in-field visual verifications where applicable. The permittee will receive a follow-up report from the District indicating the results of the verification visit. If District Staff determines that the BMP Plan has been consistently implemented, no further action is required of the permittee in response to the Level II Out of Compliance other than continuing to submit the Annual BMP Implementation Certification Reports as required under Rule 40E-63.444(1)(b). If District Staff determines that the BMP Plan has not been consistently implemented across the entire acreage identified in the permit, the follow-up report will address areas of concern or deficiency and the permittee will be required to respond in writing within 30 days with an~~

~~aggressive schedule for resolving the deficiencies. Additional follow-up site visits by District Staff may be required. When the deficiencies have been resolved, District Staff will send a final report closing that specific BMP Site Verification. The permittee is still required to continue submitting Annual BMP Implementation Certification Reports as specified under Rule 40E-63.444(1)(b).~~

~~For those permittees electing to implement the Optional On-Farm Discharge Monitoring Program in accordance with the requirements of Rules 40E-63.456 and 40E-63.458, the site visit will include verification of proper implementation of the discharge monitoring plan including verification of flow data submitted to the District by the permittee as a condition of permit issuance. This will require District Staff to have access to "raw data" such as pump logs, rainfall records, electronic datalogger files, etc. The follow-up site verification report sent by District Staff will include a section for the On-Farm Discharge Monitoring Program and flow verification. If there are no areas of concern or deficiencies noted, no further action will be required of the permittee with regard to their discharge monitoring program for that review period. If the report identifies any areas of concern or deficiencies, the permittee will be required to provide a written response within 30 days with an aggressive schedule for resolving the deficiencies.~~

~~Level III – Second "Out of Compliance"~~

~~The second occurrence of "out of compliance" triggers Level III. This level requires an additional 10 points of BMPs bringing the total to 25 points (Rule 40E-63.442(1)(c)). BMP Implementation Verifications will continue to be conducted by District Staff under the same procedures described in Level II - First "Out of Compliance". After receiving notification that the C-139 Basin is determined to be "out of compliance" the second time, the permittee will be required to respond to the District indicating their option to either (1) implement the additional 10 points of BMPs identified in their permit for Level III BMPs or, (2) propose a revision to the approved BMP Plan totaling 25 points. The permittee must submit this response to the District within 15 days of transmittal of the notification. *Regardless of the option selected by the permittee, implementation of additional and/or modified BMPs must begin within 45 days of transmittal of the notification of "out of compliance" and implementation must be complete within 90 days of transmittal of the notification of "out of compliance".* If the permittee selects option (2), the District will provide "pre-approval" or "pre-denial" of the BMP Plan within 10 business days of receipt of the permittee's response. The permittee will be required to submit an application for modification of their Permit under Rule 40E-63.432(1) within 45 days of transmittal of the notification of "out of compliance". If the permittee selects option (2) and the District "pre-denies" the request, the permittee will be given an additional 30 days to provide supporting information that the proposed BMP Plan meets the intent of Rule 40E-63, Part IV and the EFA or propose an alternative BMP Plan for District review. This process changes the required time to *begin implementation of the modified BMP Plan* but does not change the date to *complete implementation.* Concurrent with the review of the modified BMP Plan for "pre-approval" by the District, the applicant must submit an application for modification of their Permit under Rule 40E-63.432(1) within 45 days of transmittal of the notice of "out of compliance". It is in the~~

~~permittee's best interest to respond to the notification in a timely manner to allow time for implementation of additional BMPs and for the BMPs to be effective prior to the next basin compliance determination.~~

~~Those permittees who have elected to implement the Optional On-Farm Discharge Monitoring Program in accordance with the requirements of Rule 40E-63.456 and 40E-63.458 may request a release from the requirement to implement additional BMPs. The release request should include a cover letter requesting the determination as well as any additional data or information necessary to complete the Water Year that has not been submitted previously. If the District determines that the permittee has not exceeded their proportional share established by the procedures in Appendix B3, the permittee will be notified in writing that the additional Level III BMPs are not required and no further action is required of the permittee for that review period other than continuing to submit Annual BMP Implementation Certification Reports as required under Rule 40E-63.444(1)(b). If the District determines that the permittee has exceeded their proportional share established by the procedures in Appendix B3, the permittee will be notified in writing that the additional Level III BMPs will be required and the schedule of implementation remains the same as for those permittees not electing to implement an Optional On-Farm Discharge Monitoring Program. Provided the permittee has submitted a complete water year data set, the District will respond to the permittees' request for a release within 10 business days of receipt of the request. In order to make this determination in a timely manner, the permittee must maintain their discharge monitoring data submitted under Rule 40E-63.458(1)(b)(9) up to date. No permittee will be released from doing the minimum required Level I BMPs.~~

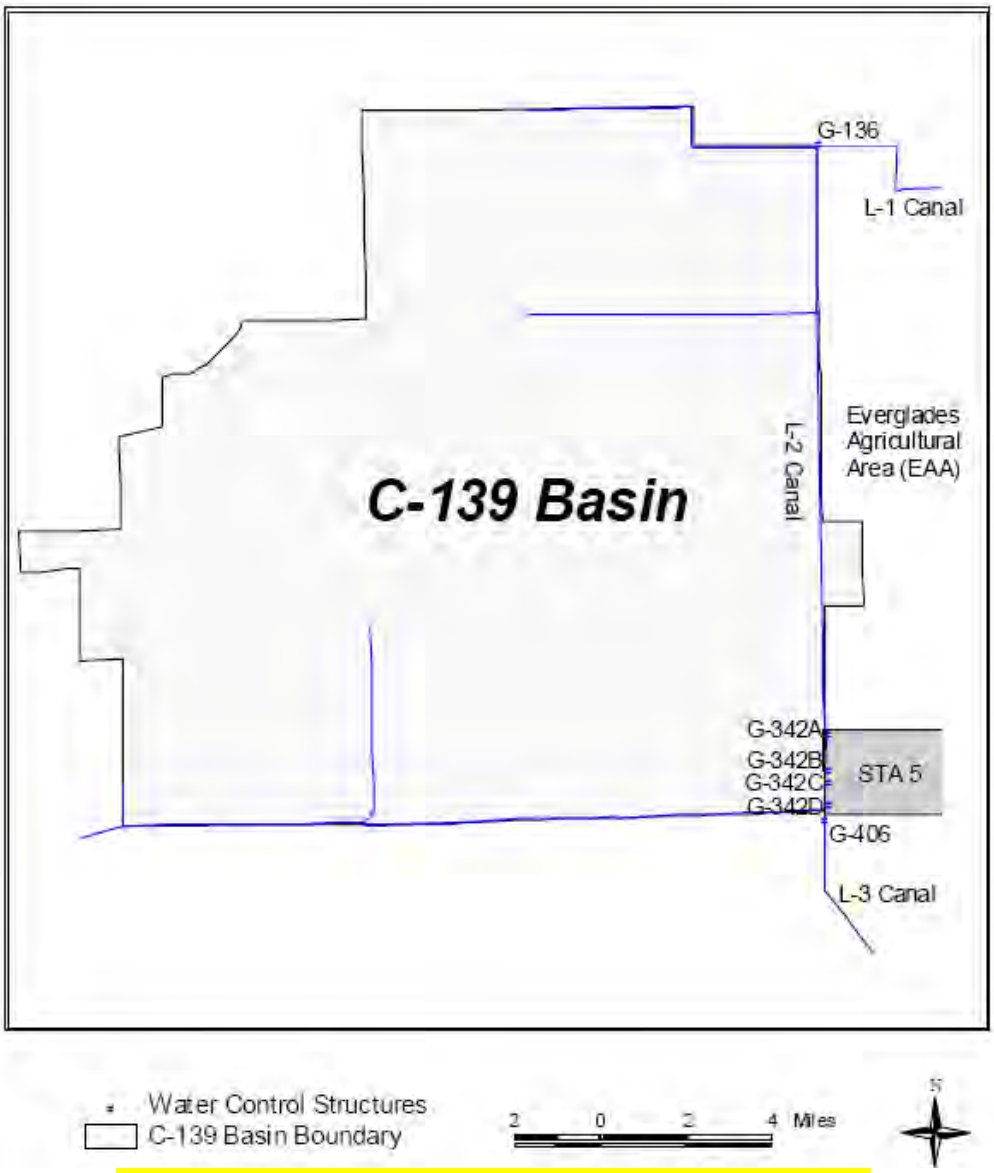
~~Level IV – Third "Out of Compliance"~~

~~The requirements for the third "Out of Compliance" are the same as Level III – Second "Out of Compliance" with the exception that the total number of BMP points will be 35 (unless releases are granted under the Optional On-Farm Discharge Monitoring Program).~~

~~Level V – Fourth "Out of Compliance"~~

~~If the C-139 Basin is determined to be "Out of Compliance" a fourth time the District will notify all permittees via certified mail and initiate a rulemaking effort pursuant to Chapter 120, F.S. to establish a program to bring the C-139 Basin back into compliance. All Permit conditions will remain in effect and compliance monitoring will continue until the modified rule is adopted unless an administrative process under Chapter 120, F.S. dictates otherwise.~~

Figure B-1
C-139 Basin Boundary and Discharge Monitoring Locations



~~C-139 Basin Boundary and Discharge Monitoring Locations~~

Figure B-2
Flowchart - Calculation of C-139 Basin Phosphorus Loads

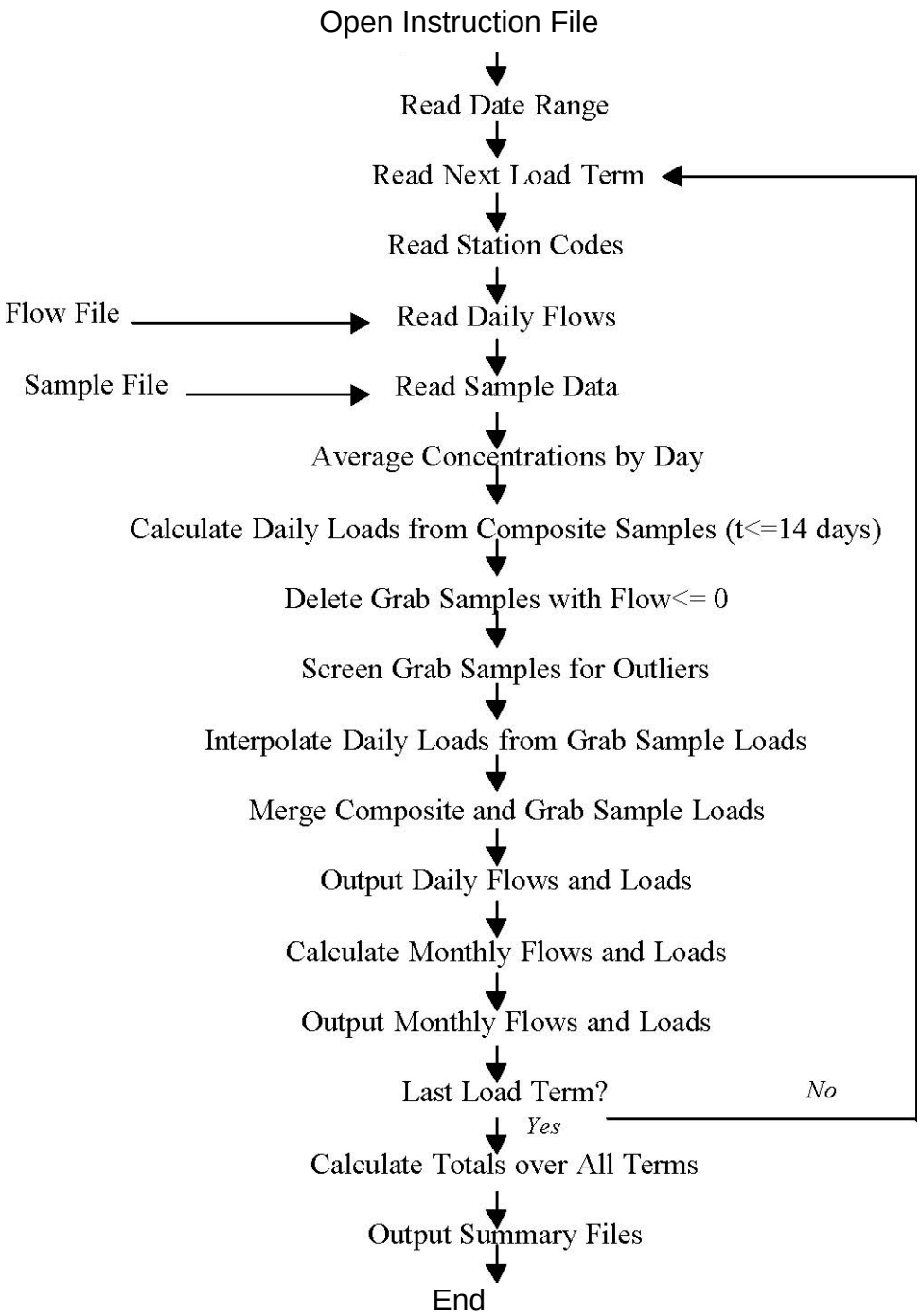
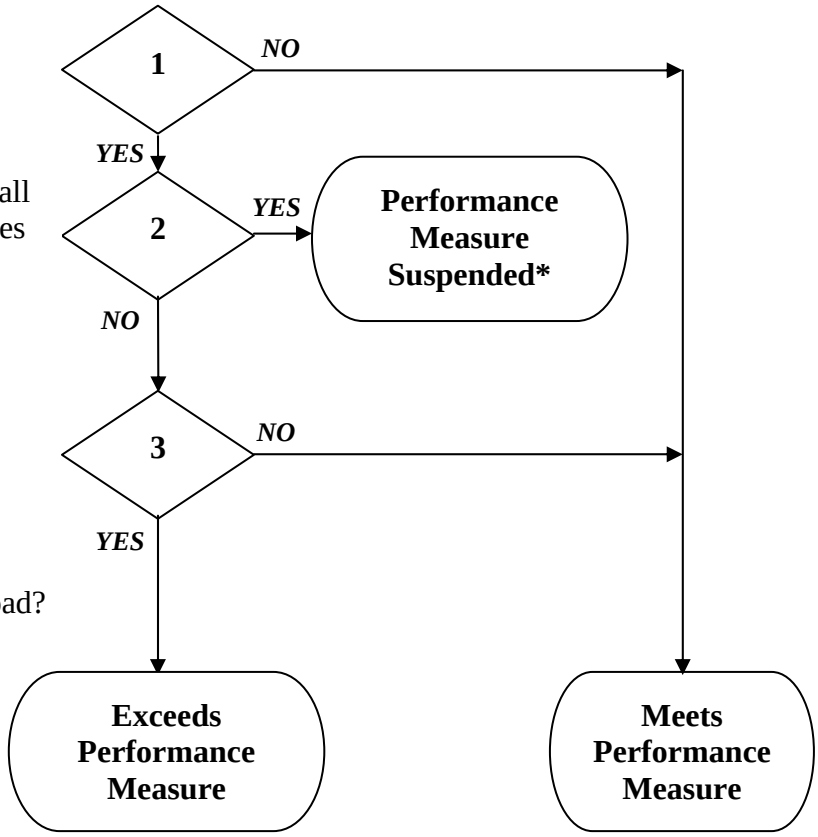


Figure B-3
Flowchart – C-139 Basin Annual Performance Determination

1. Does the calculated annual phosphorus load exceed the predicted target load?

2. Is the water year adjusted rainfall outside the range of 27.97 inches to 66.21 inches?

3. Does the calculated annual phosphorus load…
   a) cause exceedance of the predicted target load for three consecutive years (excluding suspension), or…
   b) exceed the predicted limit load?



* If the target is exceeded in a May 1 through April 30 period, and the District determines that the adjusted rainfall for the period is outside the range of 27.97 inches to 66.21 inches, the target and limit will be suspended and the C-139 Basin will not be determined to exceed its performance measure for that period only. Any period(s) for which the target and limit is suspended will be excluded from the determination of whether the target has been exceeded in three or more consecutive May 1 through April 30 periods. That is, the C-139 Basin will exceed its performance measure when the target is exceeded for three May 1 through April 30 periods, without an intervening May 1 through April 30 period in which the C-139 Basin has been determined to meet its performance measure, even though the three periods may be interrupted by periods of suspension.

Table B-1
C-139 Basin Discharge Structures
Database Keys To Flow Data Time Series

Structure	Preferred DBKEY
G-136	15195
G-342A	J6406
G-342B	J6398
G-342C	J6407
G-342D	J6405
G-406	JU789

The reference numbers in the table are keys to the data sets, known as "dbkeys".

The list of outfall structures used in the annual phosphorus load calculation will be adjusted by the District to account for any changes in outflow structures from the C-139 Basin, including those changes caused by construction of Stormwater Treatment Areas.

Table B-2
C-139 Basin Discharge Structures
Current Water Quality Sampling Methods

Structure	Collection Site	Instrument*
G-136	Gravity	A
G-342A	Gravity	A
G-342B	Gravity	A
G-342C	Gravity	A
G-342D	Gravity	A
G-406	Gravity	A

~~* G = grab sample primary method~~
* A = automatic sampler primary method, grab sample back-up

Flow Computation Methods Used to Calculate C-139 Basin Flows

PUMPS

Flow computation for such structures shall be based upon the following reference:

Imru, M. and Wang, Y. (December 2003). *Flow Rating Analysis Procedures for Pumps (Publication EMA#413).* West Palm Beach: South Florida Water Management District, West Palm Beach. ~~(There are no pumps serving as final outfall structures from the C-139 Basin)~~

GATED SPILLWAYS

Flow computation for such structures shall be based on the following reference:

Ansar, M., and Alexis, A. (2003). *Atlas of Flow Computations at District Hydraulic Structures*. Hydrology and Hydraulics Division, South Florida Water Management District, West Palm Beach, Florida. ~~(There are no gated spillways serving as final outfall structures from the C-139 Basin)~~

CULVERTS

Flow computation for such structures shall be based on the following reference:

~~Refer to~~ Fan, A. (October 1985). *A General Program to Compute Flow through Gated Culverts (Publication DRE#216)* ~~(Technical Memorandum)~~. West Palm Beach: South Florida Water Management District, West Palm Beach.

~~The parameters defined here correspond to the variables defined by A. Fan.~~

~~Barrel = barrel shaped coding, "0" = circular, "1" = box~~
~~C = orifice flow coefficient due to inlet shape~~
~~C_w = weir flow coefficient (flashboard)~~
~~D = diameter of pipe culvert or height of box culvert, in feet~~
~~G_h = height of gate, in feet~~
~~G_{type} = gate type coding, "0" = circular, "1" = rectangular, "2" = weir~~
~~G_w = width of gate, in feet~~
~~IN_{el} = inlet invert elevation, in feet m.s.l. or NGVD~~
~~K = entrance loss coefficient due to shape of gate edge~~
~~L = length of culvert, in feet~~
~~N = number of barrels~~
~~n = Manning's roughness coefficient~~
~~OUT_{el} = outlet invert elevation, in feet m.s.l. or NGVD~~
~~r = reference elevation for flashboard elevation, in feet m.s.l. or NGVD~~
~~S_{wb} = total side weir length (riser or wing wall), in feet~~
~~S_{we} = side weir crest elevation (riser or wing wall), in feet~~
~~W = width of box culvert~~
~~W_b = weir length (flashboard)~~

~~Culvert~~
~~G136~~

~~G342A~~
~~G342B~~
~~G342C~~
~~G342D~~
~~G406~~

Permittee Annual Phosphorus Load Determination Based On Sub-basin Monitoring and the Permit Basin ~~The Optional~~ Discharge Monitoring Program ~~Plan~~

INTRODUCTION

In accordance with the Everglades Forever Act (373.4592(4)(f)5 F.S.), determinations for permittees within the C-139 Basin for remedial action, if the C-139 Basin is out of compliance for that year, shall be based on the proportional share of phosphorus loading, as set forth in Appendix B2, which is incorporated by reference in subsection 40E-63.446(1), F.A.C. The proportional share value will be derived as described herein from the target UAL or limit UAL depending upon the cause of non-compliance and distributed equally over the C-139 Basin area.

This Appendix establishes the procedures for calculating assigned phosphorus unit area load (assigned UAL) for sub-basins and monitored permit basins, and for calculating their corresponding proportional share of phosphorus load (proportional share UAL) based on the performance measures established in Appendix B2, incorporated by reference in subsection 40E-63.446(1), F.A.C. The assigned UAL and proportional share UAL will be calculated each water year. Results of the calculations will be used for determining remedial action when the C-139 Basin is determined to be out of compliance pursuant to Rule 40E-63.446, F.A.C. This Appendix will be used in conjunction with the conditions established in subsection 40E-63.446(2~~3~~), F.A.C., to determine each permit basin's required ~~eligibility for permittee's deferral of~~ remedial action. ~~a permittee's "Proportional Share" in order to determine eligibility for release from implementation of additional BMPs when the C-139 Basin is out of compliance. For those permittees electing to implement the Optional On-Farm Discharge Monitoring Program in accordance with the requirements of Rules 40E-63.456 and 40E-63.458, a release from implementation of additional BMPs over and above Level I, can be requested when the C-139 Basin is out of compliance. These procedures account for differences between the "C-139 Basin acres" based on the boundaries established in the Everglades Forever Act (373.4592(16) F.S.) and the "Regulated acres" based on requirements to obtain a Works of the District Permit under Part IV of Rule 40E-63.~~

A monitoring network has been established and shall be maintained by the District for flow and phosphorus concentration at several locations within the C-139 Basin to determine loading from sub-basins. This sub-basin monitoring may be supplemented or optimized in the future by the District to improve representation of hydrologic drainage areas. ~~For all permittees within the C-139 Basin, a deferral of remedial action pursuant to subsection 40E-63.446(3), F.A.C., may be granted based upon the results of the sub-basin discharge monitoring data. Deferral will be granted to all permit basins located in a sub-basin if it is determined to have not exceeded the Proportional Share UAL.~~

For those permittees electing to implement the Permit Basin Discharge Monitoring Program in accordance with the requirements of Rules 40E-63.462 and 40E-63.464,

F.A.C., qualifying ~~a deferral of remedial action may also be granted based on~~ permittee-collected discharge monitoring data for permit basins will be considered for remedial action evaluation. For each water year the District shall calculate the observed UAL for the monitored permit basins based upon permittee submitted data. If the C-139 Basin is out of compliance, remedial action ~~eligibility for deferral~~ will be evaluated by the District pursuant to subsection 40E-63.446(2~~3~~), F.A.C. according to whether it is determined to have not exceeded the proportional share UAL.

If the flow or concentration monitoring data during the water year is not adequate as defined herein to calculate phosphorus load, no load determination will be made for that sub-basin or permit basin. In that case, load determination shall be evaluated at the levels of monitoring for which data is adequate.

DEFINITIONS

(1) "Assigned UAL" is the phosphorus load per unit area (lbs/acre) assigned to a sub-basin or permit basin for the water year evaluation of exceedance of the proportional share UAL. The assigned UAL incorporates all adjustments of the observed load data representing the sub-basin or permit basin described within this appendix.

~~(1) "Permit Basin" is a hydrologically distinct piece of land served by one or more outflow locations that collectively represent all of the discharge from that piece of land. A permit may have one or more Permit Basins.~~

~~(2) "Permit Basin Proportional Share" means the phosphorus load assigned to a Permit Basin.~~

~~(3) "Permit Basin Acres" is the total acres included in a Permit Basin.~~

(2)~~(4)~~ "C-139 Basin Acres" is the total acreage within the C-139 Basin Boundaries described in the Everglades Forever Act, Section 373.4592(16), F.S., adjusted for any identified changes to the hydrologic drainage area.

~~(3) "Deferral of remedial action" relieves eligible permittees from remedial action based on the conditions established in subsection 40E-63.446(3), F.A.C., which include the results from that water year's Permit Basin Discharge Monitoring Program and sub-basin monitoring.~~

(3~~4~~) "Limit Unit Area Load (limit UAL)" in pounds per acre is the upper 90% confidence limit of the C-139 Basin Compliance model phosphorus load estimate (also known as the limit) calculated in accordance with Appendix B2, which is incorporated by reference in subsection 40E-63.446(1), F.A.C., and divided by the C-139 Basin Acres.

(4~~5~~) "Proportional Share UAL" in pounds per acre is the calculated maximum allowable phosphorus load in proportion to land area. The proportional share UAL shall be based on the target UAL if C-139 Basin non-compliance is based on exceedance of the target, and/or on the limit UAL if the C-139 Basin non-compliance is based on exceedance of the limit.

(5~~6~~) "Target Unit Area Load (target UAL)" in pounds per acre is the C-139 Basin Compliance model phosphorus load estimate (target) calculated in accordance with Appendix B2, which is incorporated by reference in subsection 40E-

63.446(1), F.A.C., and divided by the C-139 Basin Acres.

(~~6~~7) "Observed Unit Area Load (UAL)" is the observed phosphorus load per unit area (lbs/acre) calculated for a sub-basin or permit basin during the water year and is determined from the data collected by the District under sub-basin monitoring or submitted by the permittee under the Permit Basin Discharge Monitoring Program.

~~(5) "Regulated Acres" is the total acreage within the C-139 Basin required to obtain Works of the District Permits under Part IV of Chapter 40E-63.~~

~~(6) "Permit Basin Acreage Ratio" is the ratio of the Permit Basin Acres to the Regulated Acres.~~

~~(7) "Unit Area Load Target (UAL Target)" in pounds per acre is the model TP load estimate or Target calculated in accordance with Appendix B2 and divided by the C-139 Basin Acres.~~

~~(8) "Unit Area Load Limit (UAL Limit)" in pounds per acre is the upper 90% confidence limit of the Target (Limit) calculated in accordance with Appendix B2 and divided by the C-139 Basin Acres.~~

~~(9) "Regulated Target Load" is the UAL Target times the Regulated Acres.~~

~~(10) "Regulated Limit Load" is the UAL Limit times the Regulated Acres.~~

~~(11) "Permit Basin Target Load" is calculated by multiplying the Regulated Target Load by the Permit Basin Acreage Ratio.~~

~~(12) "Permit Basin Limit Load" is calculated by multiplying the Regulated Limit Load by the Permit Basin Acreage Ratio.~~

~~(13) "Permit Basin Actual Load" is the total load contributed by the Permit Basin Acreage for the water year and is determined from the data submitted by the permittee under the Optional On-Farm Discharge Monitoring Program.~~

~~PERMIT BASIN~~ TARGET AND LIMIT UNIT AREA LOAD DETERMINATION

The target UAL and limit UAL are determined using the results of the ~~The Permit Basin Proportional Share is determined using the results of the~~ C-139 Basin Performance Measure Methodology ~~compliance model~~ calculations outlined in Appendix B2, which is incorporated by reference in subsection 40E-63.446(1), F.A.C. That methodology ~~model~~ estimates C-139 Basin target and limit loads in metric tons (one metric ton equals 2,204.6 pounds). These loads are then divided by the C-139 Basin acres to determine a target UAL and limit UAL in pounds ~~Unit Area Load Target (UAL Target) and Unit Area Load Limit (UAL Limit) in metric tons~~ per acre. ~~Since the entire C-139 Basin is not required to obtain a C-139 Basin Works of the District Permit, it is necessary to determine the Target and Limit loads attributed to the Regulated portion of the C-139 Basin. This is done by multiplying the Regulated Acres times the UAL Target and UAL Limit to obtain a Regulated Target Load and Regulated Limit Load. The Permit Basin Acreage Ratio is calculated by dividing the Permit Basin Acres by the Regulated Acres and this value is multiplied by the Regulated Target Load and Regulated Limit Load to obtain the Permit Basin Target Load and Permit Basin Limit Load.~~

C-139 Basin target load	=	38.26 mtons	=	84,348 lbs
C-139 Basin limit load	=	101.77 mtons	=	224,362 lbs
C-139 Basin acres	=			168,450 acres
target UAL	=	(84,348 / 168,450)	=	0.50 lbs/acre
limit UAL	=	(224,362 / 168,450)	=	1.33 lbs/acre

~~Example:~~	~~C-139 Basin Target Load~~	~~=~~			~~100 mtons~~
	~~C-139 Basin Limit Load~~	~~=~~			~~200 mtons~~
	~~C-139 Basin Acres~~	~~=~~			~~100,000 acres~~
	~~UAL Target~~	~~=~~	~~(100/100,000)~~	~~=~~	~~0.001 mtons per acre~~
	~~UAL Limit~~	~~=~~	~~(200/100,000)~~	~~=~~	~~0.002 mtons per acre~~
	~~Regulated Acres~~	~~=~~			~~50,000 acres~~
	~~Regulated Target Load~~	~~=~~	~~(0.001 x 50,000)~~	~~=~~	~~50 mtons~~
	~~Regulated Limit Load~~	~~=~~	~~(0.002 x 50,000)~~	~~=~~	~~100 mtons~~
	~~Permit Basin Acres~~	~~=~~			~~100 acres~~
	~~Permit Basin Acreage Ratio~~	~~=~~	~~(100/100,000)~~	~~=~~	~~0.001~~
	~~Permit Basin Target Load~~	~~=~~	~~(0.001 x 50)~~	~~=~~	~~0.05 mtons~~
	~~Permit Basin Limit Load~~	~~=~~	~~(0.001 x 100)~~	~~=~~	~~0.10 mtons~~

SUB-BASIN AND PERMIT BASIN OBSERVED AND ASSIGNED UAL DETERMINATION

Annually, individual daily records of flow and phosphorus load computed by the District at sub-basin monitoring sites or submitted under the Permit Basin Discharge Monitoring Program will be summarized by the District to determine the observed UAL for each sub-basin and permit basin.

The boundary of each sub-basin is determined based upon the hydrologic drainage areas contributing to the District monitoring locations. A permittee can have permit basins in different sub-basins and the ~~may be granted deferral of~~ remedial action required for each ~~on some~~ of their permit basins depends ~~and not on others depending~~ on the performance of each sub-basin or permit basin. The District shall prepare maps depicting the sub-basin boundaries based upon the monitoring station locations. Maps of sub-basin boundaries shall be revised by the District as necessary to account for improved information, changes to surface water drainage patterns, or changes to monitoring locations. Area adjustments for calculation of unit area loads shall be weighted to the month the change was known to occur.

In accordance with the procedures set forth in this section, for each water year the District shall: (1) determine whether monitoring deficiencies cause any sub-basins to be not eligible for UAL determination, (2) establish observed UAL values from eligible sub-basin and permit basin monitoring data, (3) account for differences between C-139 Basin, sub-basin and permit basin outlet phosphorus loads through load adjustment

factors (4) compute an assigned UAL for each sub-basin and permit basin.

Missing Data

When the water year dataset contains missing daily records (flow and/or total phosphorus concentration), the District will evaluate if the missing records can be estimated and if sufficient data are available to populate those missing records in order to create a complete data set. The steps to follow by the District for each data type are as follows:

Step 1: ESTIMATE MISSING DAILY FLOW

District staff shall determine for each monitoring site the most applicable of the following estimation methods:

1. Use of adjacent or representative site data
2. Use of a stage vs. flow relationship
3. Use of a rainfall vs. runoff relationship
4. Use of a maximum calibrated capacity
5. Other technically justified estimation

Step 2: ESTIMATE MISSING TOTAL PHOSPHORUS CONCENTRATION

1. Use the total phosphorus concentration from a representative site within the permit basin if flow conditions and land use were similar during the sampling period (not applicable to sub-basin monitoring).
2. Linear interpolation of total phosphorus concentrations from adjacent sampling periods (before and after) when the missing time period is less than or equal to 21 days.
3. Use the sampled annual flow-weighted mean concentration when the missing time period is greater than 21 days.

Step 3: ESTIMATE THE PERCENT LOAD SAMPLED

1. Daily records for estimated phosphorus loads due to missing flow and/or missing total phosphorus concentration will be “flagged” as “estimated load”.
2. The percent load sampled is determined by taking the ratio of the sum of the “estimated loads” during the water year to the total annual loads for the entire water year. The ratio is subtracted from 1 and multiplied by 100 to convert to a percentage.
3. If the percent load sampled is less than 75%, proper implementation of the Permit Basin Discharge Monitoring Program was not achieved. The results of that monitoring are not eligible for a determination of not

exceeding its proportional share of loading ~~and deferral of remedial action~~ for that water year only.

4. If the percent load sampled is greater than or equal to 75% then the permit basin load determination can be made.

Sub-basin and Permit Basin Observed UAL

When all missing data for the water year has been estimated, the annual sub-basin or permit basin total load will be calculated as the sum of the daily loads (estimated and observed). Where applicable, phosphorus load flowing into a sub-basin will be accounted for based on surface water monitoring upstream and downstream of the sub-basin. The following general calculation method will be applied to annual loads for each sub-basin and permit basin:

Sub-Basin Load = Total Annual Sub-Basin Outflow Load – Inflow Load

Permit Basin Load = Total Annual Permit Basin Outflow Load – Inflow Load[1]

[1] Permit Basin Inflow Load such as seepage or water supply is not discounted from annual loading. In some cases, monitored runoff from adjacent areas may be discounted from annual loading. The District will determine whether a permit basin's inflow load qualifies to be discounted from the runoff load calculation.

Observed UAL values are calculated as the annual total load divided by the associated hydrologic drainage area acreage (lbs/acre). For each water year:

Sub-Basin Observed UAL = Sub-Basin Load / Sub-Basin Area

Permit Basin Observed UAL = Permit Basin Load / Permit Basin Area

The permit basin observed UAL is the phosphorus load per unit area determined to represent the permit basin. In the event that total phosphorus reduction is required, collective C-139 Basin and sub-basin level loads will first be evaluated relative to the proportional share UAL as described herein to determine the requirements for ~~eligibility for deferral of~~ water quality improvement activities.

If a permit basin's discharge monitoring meets the requirements under this rule the observed UAL shall be computed for the individual permit basin. Loads for permit basins without discharge monitoring or not meeting the monitoring requirements for the water year shall be represented by the sub-basin load. In cases where one or more permit basins within a sub-basin are issued a determination of impracticability, the remaining area's UAL shall be adjusted to exclude those permit basins with discharge monitoring required due to District impracticability determinations unless the resulting observed UAL is larger than the sub-basin observed UAL. For permit basins without qualifying individual monitoring data, their observed UAL is the minimum of:

1. Sub-basin Observed UAL
2. (Sub-basin Load –Permit Basin Loads Monitored for Impracticability) / (Sub-basin area –Permit Basin area Monitored for Impracticability)

Sub-basin and Permit Basin Load Adjustment and Assigned UAL

In conjunction with observed UAL determinations for secondary and tertiary sub-basins, the District shall evaluate sub-Basin discharge phosphorus loads in relation to C-139 Basin discharge phosphorus loads. Differences between the sub-basin and C-139 Basin discharge loads may occur, as well as variations in the flow and load estimates from monitoring data. Where no permittee discharge occurs between upstream sub-basin monitoring and C-139 Basin discharge monitoring, a load adjustment factor shall be computed by the District, contingent on successful implementation of sub-basin monitoring. If any of the contributing sub-basins did not have successful implementation of its monitoring, the mass balance adjustment cannot be made and the sub-basin load adjustment factor is one. The load adjustment factor shall be computed from loads at sub-basin monitoring stations directly upstream of C-139 Basin outlets and those C-139 Basin outlets potentially receiving those sub-basin loads. Including only the load data relevant to the area between the sub-basin monitoring and the C-139 Basin outlet(s):

Sub-basin Load Adjustment Factor = C-139 Basin discharge loads / Sub-basin discharge loads

This load ratio shall be applied to the contributing upstream sub-basin and permit basin observed loads for only that water year. For sub-basins discharging load to more than one basin outlet, a weighted load adjustment factor shall be computed based on the percent load discharged in each direction. For example, a load adjustment factor less than one may indicate attenuation of load between the sub-basin and C-139 Basin discharges. A load adjustment factor less than one would lower the assigned UAL for those sub-basins, in this case, to account for the difference in measured loads. For each water year:

Sub-basin Assigned UAL = Sub-basin Observed UAL x Sub-basin Load Adjustment Factor

Application of a load adjustment factor can also be made on loads upstream within the sub-basin. If, for example, all permit basins representing an entire sub-basin successfully implement individual monitoring, the District shall calculate a permit basin load adjustment factor:

Permit Basin Load Adjustment Factor = Sub-basin discharge load / Sum of Permit Basin discharge loads

Both the sub-basin and permit basin load adjustment factor are applied to a permit basin, therefore, can be a compounded factor incorporating the adjustments downstream of its discharge. The product of a Permit Basin's observed UAL and its

load adjustment factors results in the permit basin's assigned UAL. For each water year:

Permit Basin Assigned UAL = Permit Basin Observed UAL * Sub-basin Load Adjustment Factor * Permit Basin Load Adjustment Factor

PROPORTIONAL SHARE UNIT AREA LOAD DETERMINATION AND EVALUATION OF EXCEEDANCES TO THE ~~PERMIT BASIN~~ PROPORTIONAL SHARE UAL ~~DETERMINATION~~

Once the target UAL and limit UAL ~~a Permit Basin Target Load and Permit Basin Limit Load~~ are calculated for a given water year, the ~~Permit Basin~~ proportional share UAL is determined by evaluating whether ~~the cause of~~ the C-139 Basin out of compliance condition was caused by exceedance of the target, limit or both.

If the C-139 Basin is out of compliance as a result of exceeding the target three years in a row (as described in Appendix B2, which is incorporated by reference in subsection 40E-63.446(1), F.A.C. ~~page B2-4~~, "Evaluation of the C-139 Basin for compliance…", paragraph 3 ~~4 2~~):

1. the proportional share UAL is the arithmetic average of the three target UAL values calculated for the three water years (excluding any suspension due to rainfall), and

2. a sub-basin or permit basin will be deemed to have not exceeded its proportional share of the loading if the average of the three annual assigned UAL values corresponding to the three water years causing the out of compliance condition is less than or equal to the proportional share UAL.

If the C-139 Basin is out of compliance as a result of exceeding the limit in a single year (as described in Appendix B2, which is incorporated by reference in subsection 40E-63.446(1), F.A.C., "Evaluation of the C-139 Basin for compliance…", paragraph 4 ~~5~~):

1. the proportional share UAL is the same as the limit UAL calculated for that water year, and
2. a sub-basin or permit basin will be deemed to have not exceeded its proportional share of the loading if the assigned UAL for the water year in question is less than or equal to the proportional share UAL.

If the C-139 Basin is out of compliance exceeding both the target for three years and limit the current year (e.g. target, target, limit):

1. both the current water year limit UAL and the average of the three target UAL values (excluding any suspension due to rainfall) are utilized for assessment of a proportional share UAL, and
2. a sub-basin or permit basin will be deemed to have not exceeded its proportional share of the loading if both the average of the three annual assigned UAL values

is less than or equal to the average of the three target UAL values and the current water year assigned UAL is less than or equal to the limit UAL.

Permit basins will be evaluated from the largest to smallest sub-basin that they belong to, and then based on their individually monitored permit basin data, if applicable. If a single sub-basin level to which a permit basin belongs is determined to meet the proportional share UAL, requirements for ~~a deferral of~~ water quality improvement activities will be determined by the District based on subsection 40E-63.446(2)~~.450(3)~~, F.A.C., regardless of additional sub-basin level or permit basin monitoring results. Three tiers of sub-basins have been defined for the C-139 Basin as indicated in Table B-3, which relates each initial primary, secondary and tertiary sub-basin to its larger or smaller units.

The District shall prepare maps delineating sub-basin boundaries based upon the location of monitoring sites and the hydrologic area boundaries they represent. The boundaries of sub-basins may be adjusted in the future to account for supplemental information on field conditions or revised/additional monitoring station locations. Data for the sub-basin monitoring will be stored in the District's database, Dbhydro. Reference information for the monitoring sites upon adoption of this rule, such as flow site name, flow DBkey, water quality station name are listed in Table B-4. Example equations for computation of annual load for each sub-basin are contained in Table B-5.

Table B-3: Primary, Secondary and Tertiary Sub-basin Levels

Primary Sub-basins	Secondary Sub-basins	Tertiary Sub-basins
L1		
L3	L2	L2W
		L2E
		L2S
	DF	DFW
		DFE
	SM	SMW
		SME

The steps for evaluating the permit basins are as follows:

1. Primary sub-basins represent the largest division of hydrologic drainage areas within the C-139 Basin and will be evaluated first for not exceeding the proportional share UAL. The primary sub-basins are the L-1 and the L-3.

2. If the L-1 sub-basin exceeds the proportional share UAL, the District will evaluate the individually monitored permit basins within the sub-basin. Permit basins not individually monitored shall also be evaluated by the resulting UAL computed from sub-basin load less eligible monitored permit basins' load required due to District impracticability determinations, if available.

3. If the L-3 sub-basin exceeds the proportional share UAL, the District will evaluate the secondary sub-basins within the L-3 (L2, DF, and SM).

4. If any of the L3 secondary sub-basins exceed the proportional share UAL, the tertiary sub-basins within those secondary sub-basins will be evaluated.

5. If any of the tertiary L-3 sub-basins exceed the proportional share UAL, any individually-monitored permit basins within those tertiary sub-basins will be evaluated. Permit basins not individually monitored shall also be evaluated by the resulting UAL computed from sub-basin load less eligible monitored permit basins' load required due to District impracticability determinations, if available.

6. Permit basins in the L-3 ~~not granted deferral of remedial action because of~~ exceeding the proportional share UAL at the primary, secondary, tertiary, and, if available, individual permit basin level, will be assigned the assigned UAL for the individual permit basin, if monitored individually. Permit basins not individually monitored shall be assigned the lesser of the assigned UAL of the smallest eligible sub-basin where they are located and sub-basin load less eligible monitored permit basins' load required due to District impracticability determinations.

~~the Permit Basin Proportional Share is the sum of the three Permit Basin Target Loads calculated for the three water years (excluding any suspension due to rainfall outside the model calibration range of 31.06 inches to 71.98 inches). If the C-139 Basin is out of compliance as a result of exceeding the Limit in a single year (as described in Appendix B2, page B2-5, "Evaluation of the C-139 Basin for compliance…", paragraph 3) the Permit Basin Proportional Share is the same as the Permit Basin Limit Load calculated for that water year. If the C-139 Basin is out of compliance due to a combination of exceeding the Target and Limit for three years (e.g. Target, Limit, Target), the Permit Basin Proportional Share is the sum of the three corresponding Permit Basin Target and Permit Basin Limit Loads.~~

~~PERMIT BASIN ACTUAL LOAD DETERMINATION~~

~~Individual daily records of flow and phosphorus load submitted by the permittee for the May 1 to April 30 year for which the C-139 Basin is determined to be "out of compliance" will be summarized by the District to determine the "Permit Basin Actual Load". When the data submitted by the permittee contains missing daily records (flow and/or total phosphorus concentration) a series of steps will be taken to populate those missing records in order to create a complete data set. These steps for each data type (in order of priority for each data type) are as follows:~~

~~MISSING DAILY FLOW ESTIMATION METHODS~~

1. ~~Use a Rainfall vs. Runoff relationship.~~
2. ~~Use a maximum calibrated capacity.~~

~~MISSING TOTAL PHOSPHORUS CONCENTRATION ESTIMATION METHODS~~

1. ~~Use the Total Phosphorus Concentration from an adjacent site if flow conditions and land use were similar during the sampling period.~~
2. ~~Linear Interpolation of Total Phosphorus Concentrations from adjacent sampling periods (before and after) when the missing time period is less than or equal to 21 days.~~
3. ~~Use the Annual Flow-Weighted Mean Concentration when the missing time period is greater than 21 days.~~

~~PERCENT LOAD SAMPLED~~

1. ~~Daily records for estimated phosphorus loads due to missing flow and/or missing total phosphorus concentration will be "flagged" as "Estimated Load".~~
2. ~~The Percent Load Sampled is determined by taking the ratio of the sum of the "Estimated Loads" during the water year to the total annual loads for the entire water year. The ratio is subtracted from 1 and multiplied by 100 to convert to a percentage.~~
3. ~~If the Percent Load Sampled is greater than or equal to 75% then the Permit Basin Actual Load determination can be made.~~
4. ~~If the Percent Load Sampled is less than 75%, proper implementation of the On-Farm Discharge Monitoring Program was not achieved by the permittee. The lands covered by that Permit Basin are not eligible for a release of implementation of additional BMPs for that water year only.~~

~~When all missing data for the water year has been estimated and if the Percent Load Sampled is greater than or equal to 75%, the Permit Basin Actual Load will be calculated as the sum of the daily loads (estimated and actual).~~

~~RELEASE OF ADDITIONAL BMP IMPLEMENTATION REQUIREMENTS~~

~~If the C-139 Basin is out of compliance as a result of exceeding the Target three years (as described in Appendix B2, page B2-4, "Evaluation of the C-139 Basin for compliance…", paragraph 2) a Release of Additional BMP Implementation Requirements for a Permit Basin will be granted if the sum of the three annual Permit Basin Actual Loads corresponding to the three water years causing the Out of Compliance condition is less than or equal to the Permit Basin Proportional Share. If the C-139 Basin is out of compliance as a result of exceeding the Limit in a single year (as described in Appendix B2, page B2-5, "Evaluation of the C-139 Basin for compliance…", paragraph 3) a Release of Additional BMP Implementation Requirements for a Permit Basin will be granted if the Permit Basin Actual Load for the water year in question is less than or equal to the Permit Basin Proportional Share. If the C-139 Basin is out of compliance as a result of a combination of 3 years of exceeding the Target and Limit (e.g. Target, Limit, Target), a Release of Additional BMP Implementation Requirements for a Permit Basin will be granted if the sum of the three annual Permit Basin Actual Loads corresponding to the three water years causing the Out of Compliance condition is less than or equal to the Permit Basin Proportional Share.~~

~~A Release of Additional BMP Implementation Requirements is granted at the Permit Basin level and applies only to that specific Permit Basin. A permittee with multiple Permit Basins may be required to implement additional BMPs on some of their Permit Basins and not on others depending on the results of the calculations. No permittee will be released from doing the minimum required Level I BMPs.~~

PARTICIPATION IN THE PERMIT BASIN ~~OPTIONAL~~ DISCHARGE MONITORING PROGRAM

Only data submitted by deadlines specified in the permit will be considered when reviewing Permit Basin Discharge Monitoring Program submitted data for annual observed and assigned UAL determination. If the results of a Quality Assurance Audit or an on-site verification of BMP Implementation by District Staff indicate the submitted water quantity and quality data may not provide reasonable assurance that annual water discharge and total phosphorus load are accurately documented, the permittee submitted data shall not be considered in evaluation of ~~may not be eligible for a deferral of~~ remedial action requirements for the water year during which the Quality Assurance Audit or on-site verification of BMP Implementation was performed.

If not required due to specific permit conditions, a permittee may elect at any time to discontinue participation in the Permit Basin Discharge Monitoring Program by submitting an application to modify their permit as outlined in Rule 40E-63.439~~2~~. If the permittee elects to discontinue participation in the Permit Basin Discharge Monitoring Program for a period of time and then elects to resume participation, any monitoring data which may have been collected by the permittee in the interim period will not be considered in evaluation ~~allowed to be included for potential deferral~~ of remedial action

requirements. The first opportunity for permit basin level evaluation ~~requesting deferral~~ of remedial action requirements will be after submittal of all data for the first complete water year following resumption of participation in the Permit Basin Discharge Monitoring Program.

Table B-4: C-139 Basin and Sub-basin Monitoring Stations

Flow Station		Water Quality Station Name
Name	**DBKEY**	
G136	15195	G136
G342A	J6406	G342A
G342B	J6398	G342B
G342C	J6407	G342C
G342D	J6405	G342D
G406	JU789	G406
G150	15520	G150
DFNBV	TP376	DF02.1TW
SMSBV	TP378	SM00.2TW
C139S1	US184	C139S1
C139S2	US185	C139S2
C139S3	US186	C139S3
C139S4	VC276	C139S4
C139S6	VN389	C139S6

* Note: The information within this table may be adjusted in the future to account for supplemental or optimized monitoring for the sub-basins.

Table B-5: Sub-basin Arithmetic Load Calculation

Name	Load Calculation (Flow Structure Name)
Primary Sub-Basins	
L1	G136 - G150
L3	G406 + G150 + G342A + G342B + G342C + G342D
Secondary Sub-Basins	
L2	C139S2 + G150
DF	DFNBV
SM	SMSBV
Tertiary Sub-Basins	
L2W	C139S4
L2E	C139S3 - C139S4 + G150
L2S	C139S2 - C139S3
DFW	C139S1
DFE	DFNBV - C139S1
SMW	C139S6
SME	SMSBV - C139S6

* Note: The information within this table may be adjusted in the future to account for supplemental or optimized monitoring for the sub-basins.

~~A permittee may elect at any time to discontinue participation in the Optional On-Farm Discharge Monitoring Program by submitting an application to modify their permit as outlined in Rule 40E-63.432. If the permittee elects to discontinue participation in the Optional On-Farm Discharge Monitoring Program for a period of time and then elects to resume participation, any monitoring data which may have been collected by the permittee in the interim period will not be allowed to be included for potential Release of Additional BMP Implementation Requirements. The first opportunity for requesting a Release will be after submittal of all data for the first complete water year following resumption of participation in the Optional On-Farm Discharge Monitoring Program. Only data submitted by deadlines specified in the permit will be considered when reviewing the request. If the results of a Quality Assurance Audit conducted under Rule 40E-63.458(1)(b)(8) or an on-site verification of BMP Implementation by District Staff conducted under Appendix B2 indicate the submitted water quantity and quality data may not provide "reasonable assurance that annual water discharge and total~~

~~phosphorus load are accurately documented", the permittee may not be eligible for a Release of Additional BMP Implementation Requirements for the water year during which the Quality Assurance Audit or on-site verification of BMP Implementation was performed.~~

Criteria for Required Phosphorus Reductions

Intent

Since 2002, landowners in the C-139 Basin have implemented a mandatory program of BMPs for reduction of total phosphorus in discharges. BMPs for the C-139 Basin were developed using best professional judgment based on consultation with qualified stakeholder participants and academic resources on in-field studies, available pertinent literature in support of non-point source pollutant reduction potential, existing BMP manuals, and relevant models. This process is considered to be the initial verification that BMPs were reasonably expected to be effective and was the basis for adoption of these BMPs in Part IV of Chapter 40E-63, ~~Florida Administrative Code~~ F.A.C.

When water quality problems are demonstrated, despite the appropriate implementation, operation, and maintenance of BMPs and other measures according to the adopted rules, the District shall reevaluate the BMPs and other measures and revise the rules to require implementation of modified practices or water quality improvement measures within a reasonable time period.

Requirement for the Improvement to BMP Plans

The water quality improvement strategy under this Part is to require that any additional required improvements to the BMP Plan or water quality improvement activities shall be based on their ability to achieve the percentage total phosphorus reduction levels specified by the District (Required Total Phosphorus Reductions), as necessary to affect C-139 Basin discharges to meet performance measures.

Permittees will propose additional improvements to the BMP Plan and expected reductions. These reductions may be estimated based on the most current applicable technical references or based on a monitoring program that confirms estimated total phosphorus reductions (verification plan).

Availability of Technical Information for Estimating Total Phosphorus Reductions

The Everglades Forever Act under Section 373.4592(4)(f)2 of the Florida Statutes mandates “a comprehensive program of research, testing, and implementation of BMPs that will address all water quality standards”. Under this provision, “BMPs shall be field-tested in a sufficient number of representative sites in the EAA to reflect soil and crop types and other factors that influence BMP design and effectiveness.” Section 373.4592(4)(f)6 of the Everglades Forever Act states that provision 373.4592(4)(f)2 concerning BMP research shall apply to the landowners within the C-139 Basin.

There is an ongoing and coordinated effort with the Florida Department of Environmental Protection (FDEP) and the Florida Department of Agriculture and Consumer Services (FDACS), to expand the body of knowledge regarding BMP effectiveness and total phosphorus removal efficiency of BMPs. Further, the District has

established under Rule 40E-63.437(3), F.A.C., criteria by which BMP demonstration projects can serve permittees to meet BMP equivalent point credits. Also, if the C-139 Basin is found out of compliance with water quality performance measures in the future, BMP demonstration projects with a verification plan to determine BMP effectiveness ~~will provide deferral from~~ serve as additional water quality improvement activities under Rules 40E-63.446 and 40E-63.461, F.A.C.

For the purpose of estimating total phosphorus reduction levels for proposed BMP improvements to meet the requirements of 40E-63.461(3), F.A.C., the District will provide permittees, on an annual basis, with an update on applicable research, testing, modeling, and technical source information on the implementation of BMPs by the District to improve total phosphorus removal efficiency. This Part provides for a regulatory framework, schedule, and collaborative approach towards the development of this technical information to meet total phosphorus reductions requirements.

Calculation of the Required Total Phosphorus Reduction

The District will determine C-139 Basin compliance with total phosphorus load performance measures annually in accordance with Appendix B2, which is incorporated by reference in subsection 40E-63.446(1), F.A.C. If the C-139 Basin is deemed out of compliance with the water quality requirements of this Part, the District will calculate the required total phosphorus reduction level corresponding to each permit basin, as defined under subsection 40E-63.402(10), F.A.C., except for the situations indicated in ~~that is not deferred from improvements to the BMP Plan or water quality improvement activities based on~~ 40E-63.446(2~~3~~)~~.~~,The method to estimate the percent required total phosphorus reduction level is indicated below:

1. The total phosphorus reduction levels will be based on the Limit Unit Area Load (UAL), the Target UAL, the Proportional Share UAL and the Assigned UAL derived for each permit basin pursuant to Appendices B2 and B3.1, which are incorporated by reference in subsections 40E-63.446(1) and (2), F.A.C.

2. If the C-139 Basin is out of compliance as a result of exceeding the Target three years in a row (as described in Appendix B2, "Annual Performance Determination", paragraph number 3, incorporated by reference in subsection 40E-63.446(1), F.A.C.), the required total phosphorus reduction for each permit basin will be calculated as the percent difference between the arithmetic average of the Assigned UAL values calculated on the year that non-compliance occurs and the two previous years and the Proportional Share UAL (excluding any suspension due to rainfall as described in Appendix B2, which is incorporated by reference in subsection 40E-63.446(1), F.A.C.).

   Required total phosphorus reduction level (%) = 100% x (Average (Assigned UAL $_{Year\ 1, 2, 3}$) – Proportional Share UAL) / Average (Assigned UAL $_{Year\ 1, 2, 3}$))

3. If the C-139 Basin is out of compliance as a result of exceeding the Limit in the current year (as described in Appendix B2, "Annual Performance Determination",

paragraph 4, which is incorporated by reference in subsection 40E-63.446(1), F.A.C.), the required percentage total phosphorus reduction will be calculated for each permit basin as the percent difference between its Assigned UAL and its Proportional Share UAL on the year that non-compliance occurs.

Required total phosphorus reduction level (%) = 100% x (Assigned UAL – Proportional Share UAL) /Assigned UAL

4. If the C-139 Basin is out of compliance exceeding both the Target for three years in a row and the Limit the current year (e.g. Target, Target, Limit), the required total phosphorus reduction shall be the greater of those calculated from (2) and (3) above.

Criteria for Approval of Improvements to BMP Plans or Water Quality Improvement Activities

Under a C-139 Basin-wide out of compliance scenario, the level of effort required for improvements to the BMP Plan may vary across permit basins based on the required total phosphorus reduction level for each one as defined under "water quality improvement activities" in subsection 40E-63.402(16), F.A.C. The total phosphorus removal efficiency of the activities described within the proposal shall aim to meet the required total phosphorus reduction for each permit basin.

Form 1045, incorporated by reference in Rule 40E-63.430(2)~~04~~, F.A.C.
November 2010 ~~January 2002~~

PART I. GENERAL INFORMATION

Please use the booklet titled Guidebook for Preparing an Application for a C-139 Basin "~~Works of the District~~ Pollutant Source Control" Permit Pursuant to Chapter 40E-63, F.A.C., to complete the applicable sections of this application. Please discuss any questions you may have with District staff prior to application submittal.

GOVERNING BOARD ACTIONS

~~Applications for new, renewed, or modified C-139 Basin Works of the District Individual Permits will require final action by the District Governing Board. Any application for an Individual or General Permit that is recommended for denial by staff will require final action by the District Governing Board. Transfers of existing Individual Permits will not require Governing Board action, unless processed simultaneously with modifications~~. Applications for new, renewed, or modified General Permits or transfers of existing General Permits will not require District Governing Board action.
All recommendations for denial of applications will require final action by the District Governing Board.

SECTION 1. PERMIT INFORMATION

TYPE OF PERMIT APPLICATION

This is an application for (Please check one box):

Permit Type	New	Renewal	Modification	Letter Modification	Transfer
General Permit	☐ *$250.00*	☐ *$250.00*	☐ *$100.00*	☐ *No Charge*	☐ *$100.00*
~~Individual Permit*~~	~~☐ *$1,880.00*~~	~~☐ *$1,880.00*~~	~~☐ *$500.00*~~		~~☐ *$100.00*~~

*~~For an *Individual* Permit,~~ Please check if application is for any of the following ~~at least one~~:

- ~~☐ Implementation of an optional Discharge Monitoring Plan~~
- ☐ Alternate BMP Plan (See Part IV Section 2)
- ☐ Discharge Monitoring Plan (See Part V)
- ☐ Optional Activities for Incentives (See Part VI)
- ☐ Water Quality Improvement Activities (See Part VII)
- ☐ Impracticability (See Part VIII)
- ~~☐ Alternate BMP Implementation Schedule~~
- ☐ ~~Co-permittees~~

OTHER PERMITS FROM THIS DISTRICT

If the Best Management Practices Plan submitted as part of this application proposes activities that require a new District permit or a modification to an existing District permit, applications for the other permits shall be submitted concurrently with the Pollutant Source Control Permit application.

The following permit applications are being submitted concurrently (please check any appropriate boxes):

☐ Surface Water Management / ERP ☐ Water Use ☐ Right-of-Way ☐ Well Construction

~~Application/Permit Numbers:~~

If you already applied for or obtained District permits covering any or all of the lands or activities in this present application, please list the District application or permit numbers below.

FOR DISTRICT USE ONLY

Application Number _____ Fee Code _____ Fee Paid _____ Receipt Number ____

SECTION 2. APPLICANT INFORMATION

Applicant (Responsible Entity)		Authorized agent (requires letter of authorization)	
Name and Title		Name and Title	
Company Name		Company Name	
Address		Address	
City, state, zip		City, state, zip	
Telephone	Fax	Telephone	Fax
e-mail		e-mail	

Co-Applicant (if applicable)		Authorized agent (requires letter of authorization)	
Name and Title		Name and Title	
Company Name		Company Name	
Address		Address	
City, state, zip		City, state, zip	
Telephone	Fax	Telephone	Fax
e-mail		e-mail	

SECTION 3. DRAINAGE INFORMATION

Please list proposed permit basins (as defined in Rule 40E-63.402(10), F.A.C. ~~farm names,~~ types of discharges*, and drainage acreage. Attach documentation identifying ownership or controlling entity.

Permit Basin ~~Farm Name~~	Discharge Type	Acreage Drained	Permit Basin ~~Farm Name~~	Discharge Type	Acreage Drained

*Examples: Single/multiple pump structure, open culvert, weired culvert, open channel connection, overland flow, etc.

SECTION 4. ADDITIONAL REQUIRED INFORMATION (SEE GUIDEBOOK FOR DETAILS)

For each proposed permit basin submit and ~~Please~~ check that the following applicable items are attached ~~(copies are acceptable)~~:

- ☐ Description and documentation of legally responsible entities for site operations and permit compliance
- ☐ Documentation verifying ownership of the parcels and/or structures
- ☐ Written contracts, leases, or agreements with landowners, lessees or other entities, where applicable
- ☐ Written contracts, agreements, or equivalent regarding BMP implementation, and use or operation of the parcels and/or structures. This includes copies of leases for lessees that are applicants or co-applicants.
- ☐ Tax assessor's parcel identification numbers for all included parcels ~~(see page 3)~~
- ☐ A clear delineation of the property boundaries, drainage area, general direction of flow, inflow points and off site discharge points/locations. Also, ~~and~~ acreage contained in the permit application, including a map which is correlated with the list of parcel owners and lessees
- ☐ Proposed Best Management Practices (BMP) Plan ~~for each condition level I, II, III and IV~~
- ☐ For shared water management systems, an executed legally binding agreement or contract regarding construction, use, maintenance and operational criteria, and BMP implementation requirements.
- ☐ ~~Discharge monitoring plan (OPTIONAL)~~
- ☐ Permit Application Fee Check paid to the South Florida Water Management District

SECTION 5. CERTIFICATION BY APPLICANT (RESPONSIBLE ENTITY)

I hereby certify that, to the best of my knowledge, the structures and project acreages listed in this application are owned or controlled by the applicant or participants, as applicable, and encompass the area referenced in this permit application. I also certify that, where applicable, the applicant or participants agree to participate in this permit application and to abide by the terms and conditions of the issued permit. In addition, I agree to provide entry at any time to the area which is included in this permit application, for South Florida Water Management District staff or their duly authorized agents, as provided for in Rules ~~Chapter~~ 40E-63.444(d), F.A.C., or as otherwise provided by the issued permit.

Type or print owner name ~~and title~~	Type or print lessee name ~~Signature of applicant~~
Signature of owner of parcel/farm (if not the owner verify below) ~~Company Name~~	Signature of lessee of parcel/farm (if applicable)~~Date~~ (if not the lessee, certify below)
I hereby certify that I am the authorized agent of the owner.	I hereby certify that I am the authorized agent of the lessee.
Type or print name and title	Type or print name and title
Signature _____	Signature _____
Date _____	Date _____

PART II. PROPERTY INFORMATION (To be completed for *each* parcel or proposed Permit Basin ~~Parcel/Farm~~)

☐ New Participant ☐ Change in Controlled Acreage

SECTION 1. OWNER/LESSEE INFORMATION

Owner of Parcel/Permit Basin ~~Farm~~		Lessee of Parcel/Permit Basin ~~Farm~~	
Name and Title		Name and Title	
Company Name		Company Name	
Address		Address	
City, state, zip		City, state, zip	
Telephone	Fax	Telephone	Fax
e-mail		e-mail	

SECTION 2. INDIVIDUAL PARCEL/PERMIT BASIN ~~FARM~~ INFORMATION (To be completed for *each* Parcel or proposed Permit Basin ~~/Farm~~)

Name of Parcel/Farm	Land Use

*Tax Assessor's parcel identification number	Acres	Township		Range		Section(s)	County
			S		E		
			S		E		
			S		E		
			S		E		
			S		E		
			S		E		

Total Acreage _____

**Please use additional sheets if necessary*

SECTION 3. CERTIFICATE OF PARTICIPATION
(Complete Part II for the applicant and/or each participant, as applicable)

I hereby certify that, to the best of my knowledge, the total acreage listed above is owned or controlled by me ~~and encompasses the area referenced in this permit application~~. I also certify that I will abide by the terms and conditions of the issued permit. In addition, I agree to provide entry at any time to the area ~~owned or controlled by me,~~ which is described above and included in this permit application, for South Florida Water Management District ~~inspector's~~ staff or their duly authorized agents, as provided for in Rule ~~Chapter~~ 40E-63.444(d), F.A.C., or as otherwise provided by the issued permit. ~~If not the owner or lessee, I hereby certify that I am the authorized agent and have included an original letter of authorization from the owner or lessee.~~

Type or print owner name ~~and title~~	Type or print lessee name ~~and title~~
Signature of owner of parcel/Permit Basin ~~farm~~ (If not the owner ~~authorized agent,~~ verify ~~certify~~ below)	Signature of lessee of parcel/Permit Basin ~~farm~~ (If not the owner, ~~authorized agent,~~ verify ~~certify~~ below)
I hereby certify that I am the authorized agent of the owner.	I hereby certify that I am the authorized agent of the lessee.
Type of print name and title ~~Date~~	Type or print name and title ~~of authorized agent (if applicable)~~
Signature	Signature ~~of authorized agent (if applicable)~~

PART III. REQUEST FOR C-139 BASIN PERMIT TRANSFER

To qualify for a permit transfer, an action must be limited to changes in administrative information about a permittee. Any other changes or additions will require a permit modification.

SECTION 1. PERMITTEE SECTION

Existing Permit Number: _____

It is requested that the Permit identified above be transferred:

FROM		TO	
	Name and Title		Name and Title
	Company Name		Company Name
	Address		Address
	Address		Address
	City, state, zip		City, state, zip
	Telephone ( )		Telephone ( )

The reason for this permit transfer:

☐ A copy of the instrument effectuating the transfer of ownership, lease, interest, or control of the property is attached.

Type or print name and title _____ Signature of permittee _____ Date _____

SECTION 2. TRANSFEREE SECTION (Entity receiving the permit)

☐ An application fee of one hundred dollars ($100.00) is attached.

☐ A copy of the instrument establishing the applicant, corporation, agency, etc. as a legal entity, if applicable, is attached.

I hereby certify that I understand and accept all terms and conditions of the permit and any subsequent modifications to date. I also certify that the land practices remain the same, and all conditions of the permit have been satisfied. I understand that all conditions of the permit, including the legal, financial, and institutional capability to carry out all acts necessary to comply with the terms and conditions of the permit are applicable to me as the new permittee. I agree that any proposed modifications shall be applied for and approval obtained prior to such modifications.

Type or print owner name ~~and title~~ _____

Type or print lessee name ~~and title~~ _____

Signature of new owner of property (If not the new owner, I hereby certify that I am an authorized agent of the new owner, original authorization letter attached) _____

Signature of new lessee of parcel/~~farm~~ Permit Basin ~~property~~ (if applicable) (If not the new lessee, I hereby certify that I am an authorized agent of the new lessee, original authorization letter attached) _____

Date _____ Telephone _____

Date _____ Telephone _____

Address _____

Address _____

PART IV. C-139 BASIN BMP PLAN
SECTION 1: COMPREHENSIVE BMP PLAN (Shaded cells indicate a BMP not applicable for a specific land use.)

BMP PLAN IMPLEMENTATION – 35 POINTS REQUIRED (Minimum 10 points Nutrient Control Practices, minimum 5 points in Particulate Matter and Sediment Controls, and minimum 5 points in Water Management Practices)
~~LEVEL I and LEVEL II BMP IMPLEMENTATION – 15 POINTS REQUIRED~~

BMP	*POINTS*	*SAND CANE*	*PASTURE*	*VEG.*	*SOD*	*CITRUS*	*OTHER* _____
NUTRIENT CONTROL PRACTICES							
Nutrient Application Control*	$2^1/_2$						
Nutrient Spill Prevention*	$2^1/_2$						
Manage Successive Vegetable Planting	$2^1/_2$						
Plant Tissue Analysis	5 ~~$2^1/_2$~~						
~~Plant Tissue Analysis **Citrus Only**~~	5						
Soil Testing*	5						
Split Nutrient Application	5						
Slow Release Phosphorus Fertilizer	5						
Reduce P Fertilization	5						
No Nutrients Imported via Direct Land Application	20 ~~15~~						
No Nutrients Imported Indirectly through Cattle Feed	15						
Nutrient Management Plan ~~For Pasture (Level I &II)~~	5-25 ~~15~~						
PARTICULATE MATTER AND SEDIMENT CONTROLS							
Any 2	$2^1/_2$						
Any 4	5						
Any 6	10						
Any 8	15						
WATER MANAGEMENT PRACTICES							
Water Detention ½ inch	5						
1 inch	10						
Improvements to Water Management System Infrastructure to Further Increase Water Quality Treatment by Delayed or Minimized Discharge	5						
Low Volume Irrigation	5						
~~Reduced Flow through Water Table Management~~	~~5~~						
Approved & Operational Surface Water Reservoir (certified) ~~(5.2.1)~~	10-35						
~~Approved & Operational Surface Water Reservoir (6.2)~~	~~10~~						
~~Approved & Operational Surface Water Reservoir (6.3)~~	~~15~~						
Temporary Holding Pond (40E-400, F.A.C.)	15						
Overland Sheet Flow Over Entire Property	15						
No Point Discharge of Surface Water	15						
Tailwater Recovery System	10						
Precision Irrigation Scheduling	10						
Water Resources for Pastures	5						
~~No Direct Discharge~~	~~15~~						
PASTURE MANAGEMENT							
Restricted Placement of Feeders ~~to Reduce "Hot Spots"~~	2 ½						
Restricted Placement of Cowpens ~~to Reduce "Hot Spots"~~	2 ½						
Restricted Placement of ~~Feed and~~ Water ~~to Reduce "Hot Spots"~~	2 ½						
Provide Shade Structures away from Drainage	2 ½						
Low Cattle Density (1 head/2 acres)	5						
~~Reduced P in Feed (20% min)~~	~~5~~						
Restrict Cattle through Fencing of Canals	10						
Totals (35 points) ~~**Level I and Level II (15 Points)**~~							

~~***Indicates a BMP that is required when there is land application of nutrients and no permitted and properly operated surface water detention system.***~~

~~PART IV. C-139 BASIN BMP PLAN~~ ~~(Shaded cells indicate a BMP not applicable for a specific land use.)~~

~~LEVEL III BMP IMPLEMENTATION – 25 POINTS REQUIRED (Level II BMPs and 10 additional points)~~

~~BMP~~	~~POINTS~~	~~SAND CANE~~	~~PASTURE~~	~~VEG.~~	~~SOD~~	~~CITRUS~~	~~OTHER~~ _____
~~NUTRIENT CONTROL PRACTICES~~							
~~Nutrient Application Control*~~	~~2½~~						
~~Nutrient Spill Prevention*~~	~~2½~~						
~~Manage Successive Vegetable Planting~~	~~2½~~						
~~Plant Tissue Analysis~~	~~2½~~						
~~Plant Tissue Analysis **Citrus Only**~~	~~5~~						
~~Soil Testing*~~	~~5~~						
~~Split Nutrient Application~~	~~5~~						
~~Slow Release P Fertilizer~~	~~5~~						
~~Reduce P Fertilization~~	~~5~~						
~~No Nutrients Imported via Direct Land Application~~	~~15~~						
~~No Nutrients Imported Indirectly through Cattle Feed~~	~~15~~						
~~Nutrient Management Plan for Pasture (Level III)~~	~~25~~						
~~PARTICULATE MATTER AND SEDIMENT CONTROLS~~							
~~Any 2~~	~~2½~~						
~~Any 4~~	~~5~~						
~~Any 6~~	~~10~~						
~~Any 8~~	~~15~~						
~~WATER MANAGEMENT PRACTICES~~							
~~Water Detention ½ inch~~	~~5~~						
~~1 inch~~	~~10~~						
~~Improvements to Water Management System Infrastructure to Further Increase Water Quality Treatment~~	~~5~~						
~~Reduced Flow through Water Table Management~~	~~5~~						
~~Approved & Operational Surface Water Reservoir (5.2.1)~~	~~10~~						
~~Approved & Operational Surface Water Reservoir (6.2)~~	~~10~~						
~~Approved & Operational Surface Water Reservoir (6.3)~~	~~15~~						
~~Temporary Holding Pond (40E-400, F.A.C.)~~	~~15~~						
~~No Direct Discharge~~	~~15~~						
~~PASTURE MANAGEMENT~~							
~~Restricted Placement of Feeders to Reduce "Hot Spots"~~	~~2 ½~~						
~~Restricted Placement of Cowpens to Reduce "Hot Spots"~~	~~2 ½~~						
~~Restricted Placement of Feed and Water to Reduce "Hot Spots"~~	~~2 ½~~						
~~Provide Shade Structures away from Drainage~~	~~2 ½~~						
~~Low Cattle Density (1 head/2 acres)~~	~~5~~						
~~Reduced P in Feed (20% min)~~	~~5~~						
~~Restrict Cattle through Fencing of Canals~~	~~10~~						
~~Totals - Level III (25 Points)~~							

~~*Indicates a BMP that is required when there is land application of nutrients and no permitted and properly operated surface water detention system.~~

~~PART IV. C-139 BASIN BMP PLAN~~ ~~(Shaded cells indicate a BMP not applicable for a specific land use.)~~

~~LEVEL IV BMP IMPLEMENTATION – 35 POINTS REQUIRED (Level III BMPs and 10 additional points)~~

~~BMP~~	~~POINTS~~	~~SAND CANE~~	~~PASTURE~~	~~VEG.~~	~~SOD~~	~~CITRUS~~	~~OTHER~~
~~NUTRIENT CONTROL PRACTICES~~							
~~Nutrient Application Control*~~	~~2½~~						
~~Nutrient Spill Prevention*~~	~~2½~~						
~~Manage Successive Vegetable Planting~~	~~2½~~						
~~Plant Tissue Analysis~~	~~2½~~						
~~Plant Tissue Analysis **Citrus Only**~~	~~5~~						
~~Soil Testing*~~	~~5~~						
~~Split Nutrient Application~~	~~5~~						
~~Slow Release P Fertilizer~~	~~5~~						
~~Reduce P Fertilization~~	~~5~~						
~~No Nutrients Imported via Direct Land Application~~	~~15~~						
~~No Nutrients Imported Indirectly through Cattle Feed~~	~~15~~						
~~Nutrient Management Plan for Pasture (Level IV)~~	~~35~~						
~~PARTICULATE MATTER AND SEDIMENT CONTROLS~~							
~~Any 2~~	~~2½~~						
~~Any 4~~	~~5~~						
~~Any 6~~	~~10~~						
~~Any 8~~	~~15~~						
~~WATER MANAGEMENT PRACTICES~~							
~~Water Detention ½ inch~~	~~5~~						
~~1 inch~~	~~10~~						
~~Improvements to Water Management System Infrastructure to Further Increase Water Quality Treatment~~	~~5~~						
~~Reduced Flow through Water Table Management~~	~~5~~						
~~Approved & Operational Surface Water Reservoir (5.2.1)~~	~~10~~						
~~Approved & Operational Surface Water Reservoir (6.2)~~	~~10~~						
~~Approved & Operational Surface Water Reservoir (6.3)~~	~~15~~						
~~Temporary Holding Pond (40E-400, F.A.C.)~~	~~15~~						
~~No Direct Discharge~~	~~15~~						
~~PASTURE MANAGEMENT~~							
~~Restricted Placement of Feeders to Reduce "Hot Spots"~~	~~2 ½~~						
~~Restricted Placement of Cowpens to Reduce "Hot Spots"~~	~~2 ½~~						
~~Restricted Placement of Feed and Water to Reduce "Hot Spots"~~	~~2 ½~~						
~~Provide Shade Structures away from Drainage~~	~~2 ½~~						
~~Low Cattle Density (1 head/2 acres)~~	~~5~~						
~~Reduced P in Feed (20% min)~~	~~5~~						
~~Restrict Cattle through Fencing of Canals~~	~~10~~						
~~**Totals - Level IV (35 Points)**~~							

~~***Indicates a BMP that is required when there is land application of nutrients and no permitted and properly operated surface water detention system.***~~

SECTION 2. ALTERNATIVE BMP PLAN
~~PART IV. C-139 BASIN BMP PLAN - ALTERNATE BMP (only allowed for individual permits)~~

I. ALTERNATIVE TYPE BMP
~~PROPOSED BMP DESCRIPTION AND IMPLEMENTATION~~

☐ ~~Change in operational practices~~ ☐ ~~Change in procedures~~

DESCRIPTION OF BMP RATIONALE AND PROPOSED EFFECTIVENESS OF THE BMP

DETAILED EXPLANATION OF PROPOSED BMP
~~ANTICIPATED EFFECTS ON PHOSPHOROUS LOADS AND BASIS~~

SCHEDULE FOR IMPLEMENTATION OF BMP

PROPOSED VERIFICATION METHOD AND ASSOCIATED DOCUMENTATION
~~DESCRIPTION OF DOCUMENTATION AND RECORDS OF IMPLEMENTATION~~

- ☐ Work Orders
- ☐ Receipts
- ☐ Logs
- ☐ Maps
- ☐ Manufacturer Specifications
- ☐ Test Records
- ☐ Photographs
- ☐ Technical documentation
- ☐ Other (explain below)

Please describe the method and how documentation will be used:

TRAINING REQUIREMENTS/PROGRAM DESCRIPTION

SECTION 2. ALTERNATIVE BMP PLAN (continuation)

II. ALTERNATIVE BMP POINTS PER CATEGORY

SITE ASSESSMENT (*assurance shall be provided that the alternative BMP Plan provides equivalent or greater reduction effectiveness than the standard approach*)

III. ALTERNATIVE BMP DEMONSTRATION PROJECT

SCOPE OF WORK (*at a minimum, the proposal shall contain the demonstration or research hypothesis, implementation, technical basis and scientific methods employed, performance indicators, reporting and schedule*)

REMAINING BMP EQUIVALENT POINTS (*at a minimum, 10 points in the nutrient control practices category and 5 points in the water management practices category*)

PART V. ~~C-139 BASIN OPTIONAL~~ DISCHARGE MONITORING PLAN

MONITORING INFORMATION	❑ Optional	❑ Required (see Part VIII)

Control Structure Operator		Sample Collector	
Name and Title		Name and Title	
Company Name		Company Name	
Address		QA Plan Holder (Name) & Field Sampling QA Plan Number	
Address		Address	
City, state, zip		City, state, zip	
Telephone	Fax	Telephone	Fax
e-mail		e-mail	

STRUCTURE IDENTIFICATION

Please indicate the permit basin ~~farm~~ name, type of discharge structure* and structure designation
*(i.e. Single/multiple pump structure, open culvert, weired culvert, open channel connection, etc.)
Check type of automatic sampler: Time Proportional/Time Weighted (TPTW) or Flow Proportional/Flow Weighted (FPFW)

Permit Basin ~~Farm~~ Name	Structure Type/Description	Structure Designation (for example, Station ID)	Sampling Method	
			TPTW	FPFW

SAMPLING REQUIREMENTS

Please check that the following items have been installed or are included:

- ❑ Description of Rainfall Collection Equipment
- ❑ Location of Rainfall Collection Equipment
- ❑ Autosamplers
- ❑ Flow Calibrations
- ❑ Description of Field Data
- ❑ Description of Staff Gauge Locations
- ❑ Sample Field Data Logs
- ❑ Description of Backup Methodology, as applicable
- ❑ Description of Flow Calculation Methodology

SAMPLING LABORATORY INFORMATION

Company Name		Contact
Address		HRS Certification Number
City, state, zip		Additional Lab/Sampler Information
Telephone	Fax	
e-mail		

PART VI. OPTIONAL ACTIVITIES FOR INCENTIVES

❑ Early Implementation of BMPs (Early BMPs)

❑ Demonstration Project with a Verification Plan

Please check and attach the following applicable items to the application:

For Early BMPs:

- ❑ Description of the BMP or group of BMPs that will be implemented in addition to those required
- ❑ Specific methods for implementation and maintenance
- ❑ Proposed loading reduction levels with technical justification
- ❑ Implementation Schedule

For Demonstration Project w/ Verification Plan

- ❑ Proposed Scope of Work (SOW) according to 40E-63.437(3)(a), F.A.C. requirements
- ❑ Assumed loading reduction levels with technical justification
- ❑ Verification Plan according to 40E-63.461(4), F.A.C.

PART VII. WATER QUALITY IMPROVEMENT ACTIVITIES (WQIA)

If the C-139 Basin is determined to be out of compliance and WQIAs are required ~~no deferral conditions apply~~, please check one of the following options:

❑ WQIA with technical documentation supporting proposed ~~TP~~ total phosphorus removal efficiency	____% Required ~~TP~~ total phosphorus removal efficiency	____% Proposed ~~TP~~ total phosphorus removal efficiency	
❑ WQIA with Verification Plan	____% Required ~~TP~~ total phosphorus removal efficiency	____% Proposed ~~TP~~ total phosphorus removal efficiency	____% ~~TP~~ total phosphorus removal for Verification Plan
❑ WQIA with ~~TP~~ total phosphorus removal efficiency based on District criteria (see Guidebook for Preparing an Application for a C-139 Basin Pollutant Source Control Permit)	____% Required ~~TP~~ total phosphorus removal efficiency	____% Proposed ~~TP~~ total phosphorus removal efficiency	

DETAILED DESCRIPTION OF THE PROPOSED IMPROVEMENTS TO THE BMP PLAN (*based on the selected option. Add pages, as needed)*

PART VIII. IMPRACTICABILITY	❑ New	❑ Renewal

GENERAL INFORMATION

Please indicate the permit basin, acreage and land use for which additional water quality improvement activities are proposed to be impracticable*:

Permit Basin Name*	Acreage	Land use

**Please use additional sheets if necessary*

ACTIVITIES IMPLEMENTED IN THE PERMIT BASIN(S)

Provide a detailed description of all previously implemented and current activities, and evidence that no additional BMPs or refinements to the implementation methods can be reasonably accomplished*.

PROPOSED PERFORMANCE LEVELS

The proposed expected amount of phosphorus discharge from the permit basin(s) is:

Permit Basin*	Annual Unit Area Loading Levels*	Basis for proposed levels*

**Please add pages, as needed.*

MONITORING PLAN AND HISTORIC WATER QUALITY DATA

Please check that the following items are attached:

- ❑ Part V – C-139 Basin Discharge Monitoring Plan of this application form
- ❑ Installation and implementation schedule
- ❑ Description of the monitoring program and monitoring sites
- ❑ Description of proposed sample collection methods and schedule
- ❑ Description of backup plan
- ❑ Description of proposed sample handling and laboratory analyses
- ❑ Description of data review procedures
- ❑ Analysis of representative water quality data for the lands requesting impracticability (minimum of five years if renewal.)

Guidebook
for Preparing an Application
for a
C-139 Basin
Pollutant Source Control
~~Works of the District~~ Permit

November 2010
~~October 2001~~

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~~***C. Post Permit Compliance***~~

~~C.1 Post Permit Compliance~~ ~~C.1~~
~~C.2 Annual Report - Certification of BMP Implementation~~ ~~C.2~~

~~*FEE SCHEDULE*~~

	~~*General Permit*~~	~~*Individual Permit*~~
~~*new*~~	~~$250.00~~	~~$1,880.00~~
~~*renewal*~~	~~$250.00~~	~~$1,880.00~~
~~*modification*~~	~~$100.00~~	~~$500.00~~
~~*transfer*~~	~~$100.00~~	~~$100.00~~

INTRODUCTION

What is the first step in the permit renewal ~~initial application~~ process?

The first step is to submit a Best Management Practices (BMP) Plan for pre-approval ~~(see pages 5-7 of the Permit Application Form 1045)~~. You must complete and submit to the District the form presented in Appendix A of this Guidebook. The BMP Plans are due no later than 30 days after the effective date of the revised Part IV of Chapter 40E-63, F.A.C. (Rule). District staff will respond no later than 30 days after ~~within 10 days of~~ receiving the BMP Plan. This enables the applicant to implement ~~begin initiating~~ the BMP Plan while the new permit or permit renewal application is being ~~prepared or~~ processed, thereby reducing any potential delay of BMP implementation pending administrative processing of the application.

When are applications due under the revised rule and what shall be submitted?

Applications for new General Permits and General Permit Renewals shall be submitted to the District within 45 days of the effective date of the revised Rule. Applicants shall use Permit Application Form 1045, entitled "Application for a C-139 Basin General Permit" (application form), which is incorporated by reference in subsection 40E-63.404(2), F.A.C., or the equivalent electronic permitting application tool (www.epermitting.gov), with all required supporting documentation.

A General Permit ~~may~~ will be issued to any operating entity or entities, owners, or lessees of the parcels identified in the permit that are singly or collectively responsible for implementing the BMP Plan for the lands specified within the permit, as applicable. Each participant to which a General Permit is issued is a co-permittee and jointly and severely liable for implementing the requirements of the General Permit.

~~*TYPES OF PERMITS*~~

~~General Permit~~

~~For a General Permit, the applicant must be a single controlling entity responsible for implementing all conditions and terms of the permit. A single entity may be a single landowner or operator with multiple landowners/lessees, where the single entity is responsible for ensuring permit compliance.~~

~~A General Permit is issued to the controlling entity as a single permittee. This authority must be demonstrated through documentation of the applicant's legal authority.~~

~~An applicant may be a single landowner or operator/lessee responsible for all compliance requirements, including implementation and operation of the Best Management Practices (BMP) Plans, maintaining adequate documentation of BMP implementation, and satisfying all reporting requirements for all lands in the permit boundaries. If the operator is not the landowner, the operator shall have the authority and the ability to implement BMPs and manage compliance with all conditions of the permit. In addition, the operator shall provide any written contracts or agreements demonstrating this authorization.~~

~~An applicant may be the single controlling entity for a permit boundary that includes multiple landowners and/or lessees as long as the applicant accepts responsibility for compliance with all conditions of the permit. The applicant shall have legally binding agreements with parcel operators to allow access to District personnel, when applicable, and to provide copies of records documenting BMP implementation. The South Florida Water Management District (SFWMD) shall contact the permittee to arrange site visits and review of documentation for all lands in the permit boundaries.~~

~~To qualify for a General Permit, the BMP Plan must be fully implemented within 90 calendar days. The 90-day implementation period may be exceeded only if the following conditions (Rule 40E-63.442(5), F.A.C.) are met:~~
~~A new SWM/ERP Permit or a modification of an existing SWM/ERP Permit is required to construct the BMP, and~~

1. ~~The SWM/ERP Permit application has been submitted to the District, and~~
2. ~~Interim BMPs are selected and implemented until construction is complete and the new BMP is in place.~~

~~Individual Permit~~

~~An Individual Permit is required for the following:~~

1. ~~*Multiple landowners/lessees (co-permittees).* The applicant may be a single entity or multiple entities (co-applicants). For the purpose of reporting to SFWMD, if there are co-applicants, there shall be a single representative for all of the participants. Upon issuance of the permit, each participant will be considered a co-permittee and shall submit a certificate of participation with the application. Although all reporting requirements are made to SFWMD by the single representative, all participants shall be legally responsible for permit compliance with respect to the acreage under each participant's operation; and/or~~

2. ~~*Applicants wishing to implement an on-site discharge monitoring plan;* and/or~~

3. ~~*Applicants wishing to implement BMP's not listed in the BMP Equivalent Points Tables;* and/or~~

4. ~~*Applicants requiring more than 90 days to fully implement the proposed BMP Plan,* unless they meet the requirements set forth in Rule 40E-63.442(5) F.A.C.~~

~~Permit Modifications~~

~~Permit modifications of an existing permit are required for significant changes to the permit, including, but not limited to adding/subtracting acreage, alterations to the approved BMP plan, changes to the discharge monitoring plan, addition/deletion of discharge structures, merging of basins, changing basin boundaries, modifications that result in a change in the conditions of an Individual Permit, or modifications that change the land use.~~

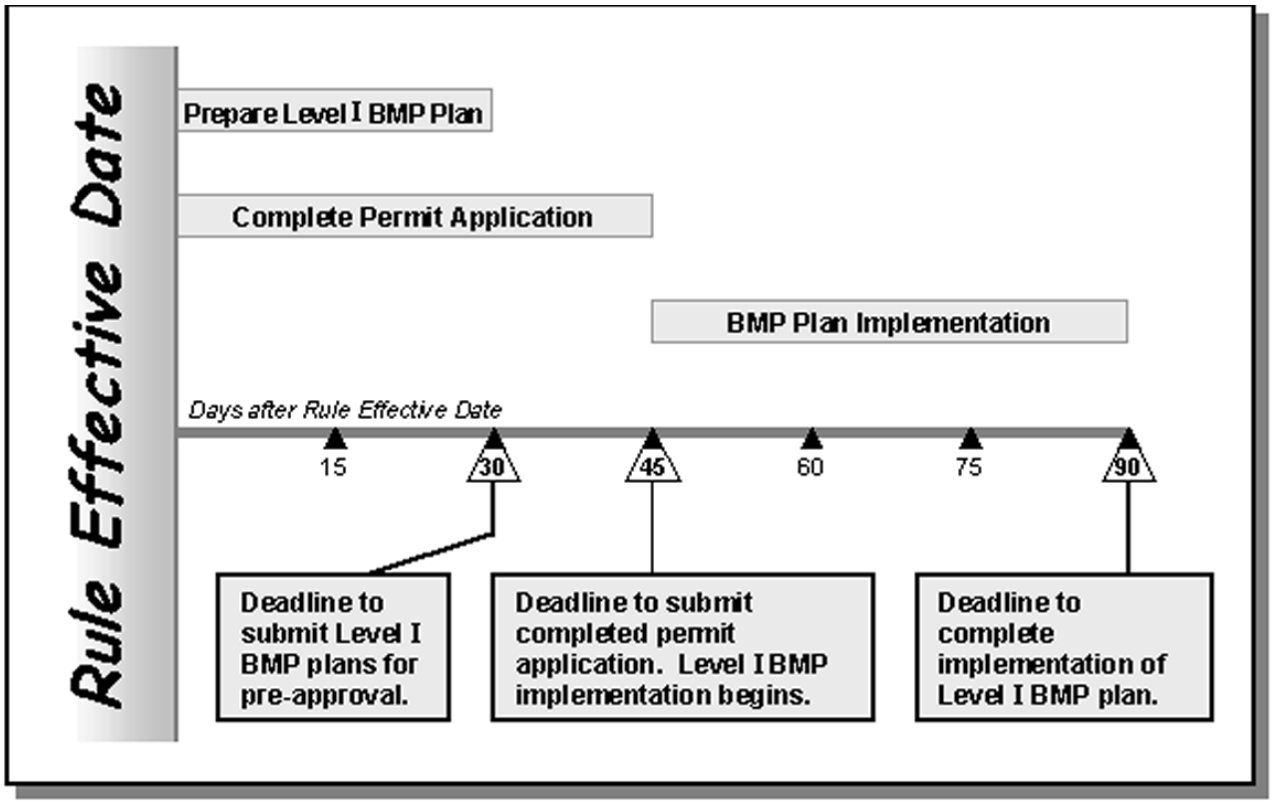
~~Permit Transfers~~

~~A request for transfer of an existing permit must be initiated within 30 days of any transfer, sale or conveyance of property. To qualify for a permit transfer, an action must be limited to changes in administrative information about the permittee, for example, name, address, title (see page 4 of the Permit Application Form 1045).~~

~~Permit Renewals~~

~~Permit renewals must be applied for **prior** to the expiration of an existing permit. Permits are generally valid for approximately a 5-year term. If a permittee allows a permit to expire prior to submitting an application for renewal, the expired permit will no longer be valid and a new permit must be obtained.~~

~~TIMELINE~~



APPLICATION CHECKLIST

Complete applications for new General Permits and General Permit Renewals shall include the items below. The items indicated with an asterisk are required to consider the application filed (received). ~~The completed application must include the following:~~

- ❑ 2 signed originals of the completed permit form ~~Application Form 1045~~*
- ❑ Copies of written recorded deeds, leases, certificate of participation, or agreements to demonstrate that the applicant or applicants possess the legal and financial authority and ability to carry out all acts as necessary to implement all the terms and conditions of the permit
- ❑ Correct application fee in the form of a cashier's check or money order made payable to "South Florida Water Management District"*

2 copies of all items listed in the guidebook including:

- ❑ A map with clear delineation of the boundaries and acreage contained in the application. The maps shall be correlated with a list of all parcel owners and corresponding county tax identification numbers, and operators or lessees associated with the acreage at the time of application.

- ☐ A map, aerial photograph, sketch, or drawings that shows the drainage features of the land in the application (e.g., direction of overland flow, inflow points, and off-site discharge points) for delineation of permit basins (consistent with Section 3 of the application form)

- ☐ A list of existing and pending District permits for the application area and their status

- ☐ A BMP Plan in accordance with Rule 40E-63.435 or 40E-63.437, F.A.C., as applicable (see Part IV of the application form)

- ☐ For shared water management systems, an executed legally binding agreement or contract regarding construction, use, maintenance and operational criteria, and BMP implementation requirements.

- ~~❑ A map that correlates all parcel owners, operators, and lessees, with the county tax identification numbers (see page 3 of the Permit Application Form 1045, Section 2)~~

- ~~❑ Completed Best Management Practices Plan for each level of implementation (see pages 5-8 of the Permit Application Form 1045)~~

- ~~❑ Copies of any written contracts, leases, or agreements where applicable~~

- ~~❑ Maps: either aerial photographs, sketches, or drawings that show, at a minimum, the property boundaries, location of the discharges, structures, primary and secondary canals and ditches, drainage flow patterns, the names of individual landowners and their associated parcels, land use, and BMPs.~~

~~* Items required for the application to be considered filed~~

*** In the case of permit application renewals and modifications, there may be information that has not changed in comparison to the current permit or that is not applicable to the modification request. You can note "No change" or "Not applicable" for those items in the application form. If any additional information or clarification is required, the District will follow-up with you within 30 days of the day that your application was received***

Fee Schedule

	General Permit
New	$250.00
Renewal	$250.00
Modification	$100.00
letter modification	$0.00

Transfer	$100.00

How do I modify my permit?

Indicated below are the conditions under which a permit would need to be modified and the type of application that would be required:

Letter Modifications

Applications for Letter Modifications are applicable for requesting approval for:

1. Demonstration or verification projects,
2. Early implementation of water quality improvement activities,
3. Implementing or modifying a voluntary discharge monitoring program ~~plan~~, or
4. Water quality improvement activities in accordance with subsections 40E-63.461(3) or (4), F.A.C., if the C-139 Basin is out of compliance with the water quality performance measures.

Modifications

Permit modifications are applicable to any changes not covered under a Letter Modification. These include but are not limited to:

1. Adding acreage to a permit,
2. Adding permit basins to a permit,
3. Changes in permit basin boundaries,
4. Merging of permit basins,
5. Changes in Land Practice,
6. Revisions to the BMP Plan,
7. Changes in water management that ~~may~~ affect the sub-basin monitoring program, and/or
8. Other modifications that result in a change in the conditions of the Permit.

Transfers

A request for transfer of an existing permit must be initiated no later than 90 days after any transfer, sale or conveyance of property. To qualify for a permit transfer, an action must be limited to changes in administrative information about the permittee, for example, name, address, title, etc. (Complete Part III of the Permit Application Form 1045.)

When will I need to renew my permit again?

Your permit will indicate its expiration date. Permits are generally valid for approximately a 5-year term and are all set to expire on the same date (permit renewal cycle expiration date). Permit renewals must be applied for **prior** to the expiration of an existing permit. If the permittee allows the permit to expire prior to applying for a permit renewal, an application for a new permit shall be required.

APPLICATION INSTRUCTIONS

*** You may reproduce individual pages of the application form or add pages if required to submit additional information***

November 2010

Guidebook for Preparing an Application for a C-139 Basin Pollutant Source Control Permit

PART I. GENERAL INFORMATION

Section 1. Permit Information

Identify the type of permit application. Most applications will require that the General Information, Property Information, and BMP Plan parts are completed (Parts I, II, and Section 1 of Part IV of the application form.) However, specific parts and sections need to be completed if the application includes an alternative BMP Plan, a discharge monitoring program (or plan), optional activities for incentives, water quality improvement activities, or a request for impracticability.

~~What is the difference between a General Permit and an Individual Permit?~~

~~A *General Permit* is valid when a single entity (Rule 40E-63.440, F.A.C.) is responsible as the permittee for satisfying all terms and conditions of the permit.~~

~~An *Individual Permit* is valid for multiple entities applying collectively as co-permittees, each accepting responsibility for satisfying terms and conditions of the permit.~~

~~An *Individual Permit* is also required under any one or more of the following four conditions:~~

1. ~~The applicant intends to implement an optional discharge monitoring program, or~~
2. ~~The applicant proposes using a BMP not listed in the BMP Equivalent Points Table, or~~
3. ~~The applicant's BMP implementation schedule exceeds 90 days (see Rule 40E-63.442(5), F.A.C. for the exception).~~

What other Permits might be needed?

If the proposed ~~Best Management Practices (~~BMP~~)~~ Plan requires any changes to the existing water management system, it may be necessary to modify an existing consumptive water use, environmental resource program, surface water, right-of-way, and/or well-construction permit or apply for a new permit, where applicable. Questions about these permits or the need for one can be addressed by contacting the District at 561-686-8800 or visiting the website at www.sfwmd.gov.

Section 2. Applicant Information

The applicant or applicants are ~~is~~ usually the responsible entity or entities that will become the permittee or the co-permittees' ~~representative~~ once the permit is issued. Also, an ~~An~~ agent can be designated through an original letter of authorization from the responsible entity or entities. ~~In any case.~~ The name, title, company name, address, and phone number of both the applicant (and any co-applicants, if applicable) and agent are required.

Section 3. Drainage Information

Propose permit basins, as defined in Rule 40E-63.402(10), F.A.C., that discharge offsite by names and locations (section, township, range). If there is no permit basin name, it may be identified by section/township/range, landowner name, or another naming convention.

~~Identify farms that discharge offsite by names and locations (section, township, range). If there is no farm name, it may be identified by section/township/range, landowner name, or similar naming convention.~~

- List the type of each off-site discharge for each permit basin ~~farm~~. If there is no point source discharge, note this by saying "non-point" or overland flow off-site.
- Provide the total acreage drained for each permit basin. The sum of all of the permit basins ~~farm~~ acreage should equal the total permitted acreage.
- If a controlling discharge structure exists, please provide proof of ownership or authority to operate.

Section 4. Additional Required Information

Additional documentation needed to consider the application complete includes, but is not limited to the following (copies are acceptable):

- Description of the entity legally responsible for implementation of BMPs. This may be the landowner and/or the ~~a~~ lessee. To qualify as a co-applicant ~~an applicant~~, a lessee shall provide documentation to show authority to operate, including a copy of the applicable lease agreement. The lease must be effective for the duration of the permit. The lessee shall formally accept responsibility for ensuring that all conditions of the permit are met, including BMP implementation, record keeping, reporting requirements, and field verifications, when applicable.
- Documents that verify ownership of the parcels and/or structures. A recorded deed, affidavit of ownership, or executed contract for purchase will satisfy this requirement.
- Written contracts or agreements with landowners, lessees or other entities, as applicable, describing authority and responsibility.
- Written contracts or agreements or equivalent regarding use or operation of the parcels and/or structures, such as lease agreements, as applicable.
- A clear delineation of the area and acreage contained in the permit application, including maps correlated to the list of parcel owners and lessees. Maps can be aerial photographs, sketches or drawings that show the property boundaries, locations of discharge structures, primary and secondary canals and ditches, drainage flow patterns, names of individual landowners, land use, and BMP implementation.
- The BMP ~~Best Management Practices~~ Plan selected from the BMP Equivalent Points Tables or alternative BMP Plan section, specific to crop or land use for each hydrologic drainage area (farm) described in the permit.
  ~~1. Level I and Level II: a total of 15 points for initial implementation;~~
  ~~2. Level III: the previous BMPs and an additional 10 BMP points (25 points total); and~~
  ~~3. Level IV: the previous level BMPs and an additional 10 BMP points (35 points total).~~

Section 5. Certification by Applicant

Each co-applicant or authorized agent must sign and date this section.

Information required after permit issuance: Certification by Landuser

Each lessee or operator whose lease was executed after the effective date of the amendments to this Part IV of Chapter 40E-63, F.A.C. and is not a co-applicant must provide within 30 days after issuance of the permit a copy of the lease or sign and date a certification indicating its agreement to implement the BMP Plan and be bound by the terms and conditions of the permit, including any amendments thereto. This is not a Certificate of Participation in the permit. However, it provides assurance that the applicant possesses the legal authority to carry out all acts necessary to implement the terms and conditions of the permit, in accordance with subsection 40E-63.430(4), F.A.C. A template certification is included in Appendix F.

PART II. PROPERTY INFORMATION

The purpose of this section is to identify ~~all~~ owners, lessees, properties, acreage, and associated property tax identification numbers. The Property Information section shall be submitted for all the properties within the boundaries of the General Permit Application ~~Part II must be completed for the applicant and *each participant*, as applicable.~~

In the case of properties served by a Central Drainage System, Certificates of Participation in the permit shall be submitted by the entity responsible for operation of the drainage system and by individual landowners (or qualifying lessees in lieu of those landowners), except for:

1. Properties determined as inactive, or properties that are less than 40 acres in size, and
2. Properties where the following BMPs are implemented by the landowner and the property must be made available for inspection by District staff or other delegated agents within 14 days after written notice:
   - Phosphorus is only applied to correct deficiencies based on soil testing or tissue testing, or for turf and landscape areas, phosphorus is only applied to meet initial establishment and growth needs (fertilizer composition less than 2% for an application rate not to exceed 0.25 lbs P_2O_5/1000 ft^2 per application nor exceed 0.50 lbs P_2O_5/1,000 ft^2 per year, or to correct phosphorus deficiencies based on soil or tissue testing).
   - Fertilizer or other soil amendments containing phosphorus are not applied within 10 feet of any pond, stream, lake, water course, or any designated wetland.
   - Spill prevention practices for nutrients are implemented, and
   - Runoff is managed in accordance with surface water or environmental resource permits, if applicable.

Part II is required for a new application as well as a modification to a permit, as applicable. Check the applicable box as to whether this is a new participant or a participant in an existing permit (existing permit modification).

Section 1. Owner/Lessee Information

Provide the name, address, electronic mail address, and phone number of the participant, i.e. parcel owner and the lessee, if applicable.

Section 2. Individual Parcel/Farm Information

- A separate sheet must be completed for each farm. The information in this section must correlate with the information provided in Sections 1 and 3.
- Provide some way of identifying the farm. This can be done using the owner name, identification numbers, section/township/range, or some other designation (examples: Smith Farm 31, Smith North Farm, Farm Section 31).
- Briefly describe the current land use (examples: all cane, cane with vegetable rotation, sod, cane with rice rotation, pasture).
- List tax identification numbers for all parcels that make up the farm. Use additional sheets if necessary. One farm boundary may include one or more tax identification numbers. The total acreage of the parcels should match the total farm acreage.

Section 3. Certificate of Participation

The certification statement, indicating that the applicant/co-applicant will abide by the conditions of the permit, must be signed and dated by each participant whether it is the owner or lessee that is applying as an applicant or co-applicant, as applicable.

PART III. REQUEST FOR C-139 BASIN PERMIT TRANSFER

To qualify for a permit transfer, the changes must be limited to administrative information about the permittee. Section 1 and Section 2 shall ~~may~~ be completed and submitted separately, although both sections are required prior to approving the application for transfer.

All other changes or additions will require a permit modification.

Section 1. Permittee Information

This section is to be completed by the current permit holder. It requires:

- Name, address, and phone number of the current permit holder and the proposed transferee.
- Reason for the permit transfer with supporting documentation, for example: copy of a deed, lease, or contract.
- Original signature of the current permit holder and date.

Section 2. Transferee Information

This section is to be completed by the proposed transferee. It requires:

- Applicable transfer application fee and documentation.
- Original signature of the transferee and date.

PART IV. C-139 BASIN BMP PLAN

What is a BMP Plan?

A BMP Plan combines the use of various operational programs and/or physical enhancements to minimize the levels of phosphorous leaving a permit basin. For purposes of this Rule, a BMP Plan means a combination of BMPs that meets, but is not limited to, the requirements of Rules 40E-63.435 and 40E-63.437, F.A.C. and any additional requirements pursuant to Rule 40E-63.461, F.A.C.

In order to obtain a General Permit, applicants shall submit a BMP Plan for each crop or land use within each permit basin. A BMP Plan shall take into account site-specific conditions, potential phosphorus sources, primary phosphorus species, and transport mechanisms; and demonstrate that a thorough approach to implementation and maintenance will be implemented. If a water management system is shared by multiple operating entities, each entity shall submit a separate BMP Plan for their land but the water management operational plan shall be consistent (e.g., consistent detention or retention levels provided by structures controlled by upstream entities and the downstream discharge structure operated by the central drainage system.)

The BMP Plan is created by completing Part IV of the application form. Each BMP is assigned a certain number of "BMP equivalent points" for each crop type or land use. These "BMP equivalent points" give the landowner and/or lessee the flexibility to develop a BMP Plan best suited for site-specific geographic and crop conditions and ensures an equivalent level of BMPs between farms. The BMP Plan must identify a minimum number of BMP equivalent points for each category as follows:

Of the 35-point BMP Plan, a minimum of 20 BMP equivalent points shall meet the following criteria:

(a) A minimum of 10 BMP equivalent points in nutrient control practices,
(b) A minimum of 5 BMP equivalent points in water management practices,
(c) A minimum of 5 BMP equivalent points in particulate matter and sediment control practices. Pasture management BMPs can provide equivalent points towards this category, if applicable.

Additionally, approved and operational surface water reservoirs (certified) can provide 5 BMP equivalent points toward the particulate matter and sediment control practices category, based upon maintenance and operation of the reservoir and of a sediment canal cleaning and aquatic weed control at the canals connecting the reservoir discharge and the offsite discharge locations.

When completing the BMP Plan form, please note the following:

1. The shaded cells in the table indicate the BMP is likely not applicable to the specific land use. Technical justification shall be provided if this selection is made.
2. A BMP Plan must be completed for each crop or land use within the permitted acreage.
3. The total points for each column must be the minimum required for that crop or landuse.
4. The total points for each BMP category must equal or exceed the minimum required unless an alternative BMP with justification is being submitted.
5. If a proposed BMP is not described on the BMP Equivalent Points Table, Section 2 of Part IV, must be completed for an alternate BMP Plan.

6. For permit modifications or renewals after 2010, please note that the BMP Plan shall propose continuation of the approved BMP Plan and water quality improvement activities; or seek approval for an equivalent alternative through the District permit process in accordance with 40E-63.435(3), F.A.C.

Alternative BMP Plan

Please provide the information described below for the selected alternative:

1. Alternative Type BMP (if the selected BMPs are not listed in Appendix B1, incorporated by reference in subsection 40E-63.435(1), F.A.C.)
   - ☐ A description of the best management practices rationale;
   - ☐ A detailed explanation of the proposed BMP;
   - ☐ A schedule for implementation of the BMP;
   - ☐ Sample documentation of the proposed BMP(s) for on-site verification; and
   - ☐ Technical basis for the reduction effectiveness of the proposed BMP (through scientific data or monitoring program)

2. Alternative BMP points per Category (if the minimum number of equivalent points per BMP category as required in 40E-63.435(2) are not met by the alternative BMP Plan)
   - ☐ A site assessment demonstrating that the alternative BMP Plan will provide an equivalent or greater reduction effectiveness using the standard approach.

3. Alternative BMP Demonstration Project.
   - ☐ The proposed Scope of Work (SOW) as described in 40E-63.437(3)(a), F.A.C.;
   - ☐ The BMP Plan for the remaining 15 points (demonstration project shall account for no more than 20 BMP equivalent points). This includes 10 BMP equivalent points in the nutrient control practices category and 5 BMP equivalent points in the water management practices category.

All BMP Plans shall include the following:

1. A description of the best management practice rationale;
2. An education and training program, arranged by the permittee or other educational resource, for the management and staff responsible for implementing, documenting, and monitoring the approved BMP Plan;
3. A description of records and documentation to be maintained on-site to verify BMP implementation. Examples of documentation are described on the checklist entitled “C-139 Basin Annual Report”, found in the Guidebook under the Post Permit Compliance Section, Appendix B; and
4. A proposed implementation schedule. Except for BMP Plans required immediately upon revision of Part IV of Chapter 40E-63, F.A.C., implementation of new BMPs shall be completed within 90 days after the date of District approval.

~~What is a BMP Plan?~~

~~A Best Management Practices (BMP) Plan combines the use of various operational programs and/or physical enhancements to minimize the levels of phosphorous leaving a farm. The BMP Plan is created by completing pages 5-7 of the application form. Each BMP is assigned a certain number of "equivalent points" for each crop type or land use. These "equivalent points" give the landowner the flexibility to develop a BMP plan best suited for site-specific geographic and crop conditions and ensures an equivalent level of BMPs between farms. The BMP Plan identifies a minimum number of BMP equivalent points for each level of implementation.~~

~~When completing the BMP Plan Form, please note the following:~~

7. ~~The shaded cells in the table indicate the BMP is not applicable to the specific land use;~~
8. ~~A BMP Plan must be completed for each land use within the permitted acreage;~~
9. ~~The total points for each column must be the minimum required for that level;~~
10. ~~If a proposed BMP is not described on the BMP Equivalent Points Table, Page 8 must be completed for an Alternate BMP. Alternate BMPs are only allowed under Individual Permits.~~

~~BMP Implementation must include the following:~~

5. ~~A description of the Best Management Practice rationale, where appropriate;~~
6. ~~An education and training program, arranged by the permittee or other educational resource, for management and staff responsible for implementing, documenting, and monitoring the approved BMP Plan;~~
7. ~~A schedule for implementing the BMP Plan that includes, at a minimum, the initial BMPs to be fully implemented within 90 days of the effective date of Part IV of this Chapter 40E-63, F.A.C.; and~~
8. ~~A description of the records and documentation to be maintained on-site to verify BMP implementation. Examples of documentation are described on the checklist entitled "C-139 Basin Annual Report", found in the Guidebook under the Post Permit Compliance Section, Appendix C.~~

PART V. C-139 BASIN ~~OPTIONAL~~ DISCHARGE MONITORING PLAN

What is the Discharge Monitoring Plan?

Water discharged from the C-139 Basin is monitored by SFWMD for phosphorous load (quality and quantity). The implementation of a discharge monitoring plan upstream of District monitoring sites on permit basins is optional, except when required to confirm proposed total phosphorus reductions under a verification plan if the C-139 Basin is out of compliance; or when a determination of impracticability has been approved by the District. In the latter, the discharge monitoring ~~program~~ plan will serve to determine compliance with permit basin specific target and limits, as approved by the District, and that there are no increasing trends.

The discharge monitoring plan shall meet specified criteria and have the plan approved by the District. These permit basin-level monitoring plans consist of daily flow measurements achieved by maintaining operation logs during discharge events, collecting and compositing permit basin discharge water samples, analyzing those samples for ~~TP~~ total phosphorus, and submitting data to the District. Additionally, a permittee may elect to collect rainfall data to represent site-specific conditions. The District will ~~may~~ consider these data along with daily flow and ~~TP~~ total phosphorus data for the site. Any data collection method shall be pre-approved by the District as part of the discharge monitoring plan, or data will not be considered.

The permit basin data will be evaluated for individual compliance if the C-139 Basin is determined to be out of compliance (see Appendix B3.1, incorporated by reference in subsection 40E-63.446(2)(a), F.A.C.) and the permit basin is within a sub-basin that has exceeded its proportional share of the ~~TP~~ total phosphorus load. A permittee implementing a permitted discharge monitoring program is not required to ~~may obtain deferral from~~ implementat~~ion~~ ~~of~~ water quality improvement activities if data from the optional Discharge Monitoring Plan demonstrates that the permit basin did not exceed its proportional share of the load.

~~What is the Optional Discharge Monitoring Plan?~~

~~Water discharged from the C-139 Basin is monitored by SFWMD for phosphorous load (quality and quantity). The implementation of a discharge monitoring plan upstream of District monitoring sites on individual lands is optional. A landowner opting to monitor and record the discharges from the property must apply for an Individual Permit, submit a discharge monitoring plan that meets specified criteria and have the plan approved by the District. These farm-level monitoring plans consist of daily flow measurements achieved by maintaining operation logs during discharge events, collecting and compositing farm discharge water samples, analyzing those samples for total phosphorous, and submitting data to the District. The on-farm data will be evaluated for individual basin compliance if the C-139 Basin is determined to be out of compliance (see Appendix B3 of Chapter 40E-63, F.A.C.). A permittee implementing a permitted Discharge Monitoring Program may be released from Level III and IV BMP implementation only after their written request for release is approved by the District. Under no circumstance will a release from Level I and II requirements be considered.~~

PART VI. INCENTIVES

Applicants who opt to voluntarily implement additional BMPs (early BMPs) or a BMP demonstration project that includes a BMP performance verification plan, are not required to implement ~~may qualify for deferral from~~ water quality improvement activities (WQIA) if the C-139 Basin is determined out of compliance ~~in the future~~. Either proposal shall be submitted with an application for a new permit, permit renewal, or as a Letter Modification. The following applicable items need to be included in the application:

Early BMPs

- ☐ Description of the BMP or group of BMPs that will be implemented in addition to those required by Rule at the time of the application (Section 40E-63.435 or 40E-63.461(3), F.A.C.).
- ☐ The specific methods for implementation and maintenance
- ☐ Technical documentation supporting the proposed loading reduction levels. The proposed loading reduction levels shall be in accordance with 40E-63.438(1)(a)2, F.A.C.
- ☐ The implementation schedule

Demonstration Plan with the Verification Plan

- ☐ Proposed Scope of Work (SOW) (as required in Section 40E-63.437(3)(a), F.A.C.)
- ☐ Projected phosphorus removal efficiencies (include technical supporting documentation)
- ☐ Verification Plan (shall meet the criteria described in 40E-63.461(4), F.A.C.).The proposal shall include (but is not limited to):
  - Please complete Part V of Form 1045 – Discharge Monitoring Plan;
  - Installation and implementation schedule;
  - Description of the monitoring program;
  - Description of the monitoring sites;
  - Description of proposed sample collection methods and schedule;
  - Description of proposed sample handling and laboratory analyses;
  - Description of data review procedures;
  - Description of backup plan if there is equipment malfunction.

PART VII. WATER QUALITY IMPROVEMENT ACTIVITIES (WQIA)

If the C-139 Basin is determined to be out of compliance and no exceptions ~~deferral conditions~~ apply, the permittee shall submit an application for a letter modification within 120 days from the District's transmittal of the notice that the C-139 Basin is not in compliance. The letter modification application shall propose WQIAs along with the proposed ~~TP~~ total phosphorus reductions to be achieved. Three options are available to estimate the proposed ~~TP~~ total phosphorus reductions:

1. Most current representative technical references such as peer reviewed or published BMP research and demonstration projects,
2. A verification plan,
3. District criteria based on most current representative technical references (see Appendix D)

Once the selection has been made, the following information needs to be provided (if applicable):

- ☐ A detailed description of the proposed improvements to the BMP Plan in comparison to the current implementation practices
- ☐ The expected range of percentage ~~TP~~ total phosphorus removal efficiency
- ☐ A detailed description of the technical basis
- ☐ Indicate the technical references used (if selected option 1 above)
- ☐ A verification plan according to the requirements specified in Rule 40E-63.461(4), F.A.C. (if selected option 2 above). The proposal shall include (but is not limited to):

- Part V of the application form – Discharge Monitoring Plan
- Installation and implementation schedule;
- Description of the monitoring program;
- Description of the monitoring sites;
- Description of proposed sample collection methods and schedule;
- Description of proposed sample handling and laboratory analyses;
- Description of data review procedures;
- Description of backup plan.

PART VIII. DETERMINATION OF IMPRACTICABILITY

Permittees may submit a permit modification to request review determination of impracticability for District final action. Any such request shall include:

- ☐ Permit basin name(s), acreage, and landuse(s) for which further activities are impracticable;
- ☐ A detailed description of previously implemented activities and BMPs, evidence demonstrating that no additional activities or refinements can be accomplished;
- ☐ The proposed expected ~~TP~~ total phosphorus in discharges from the permit basin(s) in comparison to the C-139 Basin's phosphorus load targets and limits;
- ☐ A discharge monitoring plan in accordance with Rule 40E-63.462, F.A.C. (to verify no increasing trends from the permit basin and compliance with proposed phosphorus load targets and limits.) The proposal shall include Part V the application form and supplementary documentation.

APPENDIX A
BMP PRE-APPROVAL APPLICATION FORM

November 2010

Guidebook for Preparing an Application for a C-139 Basin Pollutant Source Control Permit

PERMIT NO: _____ PERMITTEE/LANDOWNER: _____ LESSEE: _____

COMPLETE ONE BMP IMPLEMENTATION REPORT FOR EACH CROP GROWN. Check "√" the applicable boxes in column 1. Sign the certification statement below.

INDICATE CROP/LANDUSE FOR THIS REPORT:

LIST THE FARMS/PERMIT BASIN IDs FOR WHICH THIS REPORT APPLIES:

NUTRIENT CONTROL BEST MANAGEMENT PRACTICES (BMP'S)

Points	"√"	Nutrient Control Practice	Nutrient Control Practice Description
2 ½		Nutrient application control	Uniform and controlled boundary application of nutrients with a minimum 4' setback from canals with no overlapping application for each application method (e.g. banding at the root zone or side-dressing, pneumatic controlled-edge application such as AIRMAX); fertilization through low volume irrigation system applied at root zone (fertigation); controlled placement by fertilization under plastic near root.
2 ½		Nutrient spill prevention	Formal spill prevention protocols (storage, handling, transfer, education/instruction). Pasture – Also includes restricted placement of stored feed and housekeeping to prevent spillage near storage and transfer areas (feed and molasses).
2 ½		Manage successive vegetable Planting to minimize ₱ phosphorus	Avoid successive Planting of vegetables or other crops having high phosphorus needs to avoid ₱ phosphorus build up in soils. Includes successive planting with no successive ₱ phosphorus application.
2 ½ 2 ½ 5		Recommended nutrient application based on plant tissue analysis	Avoid excess application of ₱ phosphorus by determining plant nutrient requirements for adjustments during next growing season (crop specific). Pastures with Bahia grass – plant tissue analysis along with soil test is required to make nutrient application recommendation. Citrus – Results are applied to the current season P requirements
5		Recommended nutrient application based on soil testing	Avoid excess nutrient application by determining ₱ phosphorus requirements of soil and follow standard recommendation for application rates (crop specific), or recommendations based on the analysis of optimum economic crop response to added ₱ phosphorus specific to the soil and crop. The disposal or application of waste water residual (biosolids), animal manure, or other materials containing phosphorus shall not exceed the ₱ phosphorus requirements of the crop.
5		Split nutrient application	More efficient plant uptake of ₱ phosphorus by applying small portions of total recommended ₱ phosphorus at various times during the growing season. Not to exceed total recommendation based on soil test.
5		Slow release ₱ phosphorus fertilizer	Avoid flushing excess ₱ phosphorus from soil by using specially treated fertilizer that releases ₱ phosphorus to the plant over time.
5		Reduce ₱ phosphorus fertilization	Reduce the ₱ phosphorus application rate by 30% below standard recommendations based on soil tests and development of site-specific (reduced) recommendations or application methods. Provide basis for reduction credit.
20		No nutrients imported via direct land application	No application of ₱ phosphorus, in any form, to the soil for amendments or plant nutrients. (Pastures can claim this BMP and still apply fertilizer if done at maintenance or less than optimum production levels no more frequently than once every 6 years. Not applicable to new plantings.)
15		No nutrients imported indirectly through cattle feed	No ₱ phosphorus import to the basin through cattle feed (Pastures where no nutrients are imported via direct land application can claim this BMP if the only feed additives are mineral supplements or molasses.)
5-25		Nutrient Management Plan	A plan to manage the amount, source, placement, form, and timing of nutrient application to optimize yields and minimize the movement of phosphorus nutrients to surface and ground waters that ultimately discharge off-site. A site management plan and budget for tracking phosphorus shall be developed.

I certify that the indicated BMPs have been selected in accordance with the permit requirements and that the appropriate staff will be instructed on the BMPs and the conditions of the permit. Farm records showing specific details of the implementation of each BMP as described herein will be provided during the on-site inspection.

_____ Print or Type Name and Title of Signature

_____ Permittee/Landowner/Lessee Signature

November 2010

Guidebook for Preparing an Application for a C-139 Basin Pollutant Source Control Permit

PERMIT NO: _____ PERMITTEE/LANDOWNER: _____ LESSEE: _____

COMPLETE ONE BMP IMPLEMENTATION REPORT FOR EACH CROP GROWN. Check "√" the applicable boxes in column 1. Sign the certification statement below.

INDICATE CROP/LANDUSE FOR THIS REPORT:

LIST THE FARMS/PERMIT BASIN IDs FOR WHICH THIS REPORT APPLIES:

WATER MANAGEMENT PRACTICES BEST MANAGEMENT PRACTICES (BMP'S)

Points	"√"	*Water Management Practice*	Water Management Practice Description
5 10		½ inch water detention 1 inch water detention	Delayed discharge (based on measuring daily rain events using a rain gage)
5		Improvements to water management system infrastructure to further increase water quality treatment by delayed or minimize discharge	Recirculation of water inside farm boundaries to improve water quality prior to off-site discharge; includes: fallow field flood water with no direct discharge (instead dispose of via evapotranspiration, seepage, use as irrigation water); or increasing water detention using properly constructed canal berms.
5		Low volume irrigation	Use of low volume irrigation methods, e.g., drip irrigation, microjet irrigation.
10		Approved and operational surface water reservoir (certified)[1]	Properly permitted, constructed and maintained storage system meeting specified Environmental Resource Permit (ERP) Basis of Review criteria (version in effect at the time of permitting or in effect at the time of permit modification for modified systems): System meets Section 5.2.1 Water Quality Criteria – Volumetric Requirements
10			System meets Section 6.2 Water Quantity Criteria – Discharge Rate
15			System meets Section 6.3 Water Quantity Criteria – Design Storm (must have a valid SFWMD construction and operation permit for the surface water system)
15		Temporary holding pond	Temporary agricultural activities (as described in Chapter 40E-400 F.A.C.) with a properly constructed and permitted temporary holding pond
15		Overland sheet flow over the entire property	No drainage improvements made to a land area so that it drains through overland sheet flow, or drainage improvements such as ditches have been removed to restore overland sheet flow drainage to the land area.
15		No point discharge of surface water	Voluntarily disabling of off-site discharge structures or other permanent means to prevent point discharge from a land area.
10		Tailwater recovery system	A planned irrigation system in which facilities have been installed and the system is operated to collect, store, and transport irrigation tailwater and/or rainfall runoff that would have been discharge off-site without the system.
10		Precision irrigation scheduling	Combination of low volume irrigation and soil-moisture measuring equipment, specialized irrigation decision tools (e.g. computer software), and/or remote sensing tools to ascertain real-time crop needs to maximize irrigation system performance and to develop precise irrigation scheduling (time, location and amount).
5		Water resources management for pasture	Combination of water conservation and management practices considering the requirements of the primary forage grasses and supplemental cattle watering. Managing surface water to hold water onsite, as much as possible including use of wetlands to hold water onsite (minimum of ¼-inch detention), or providing retention in canals, ditches and soils via pump or controlled gravity structures.

[1] Surface water reservoir certification refers to a construction completion certification by a Florida licensed Professional Engineer as required in Chapter 40E-4, F.A.C., using Form 0881A for projects permitted after October 3, 1995, and Form 0881B for projects permitted prior to October 3, 1995, or the current certification requirements of Chapter 40E-4, F.A.C.

I certify that the indicated BMPs have been selected in accordance with the permit requirements and that the appropriate staff will be instructed on the BMPs and the conditions of the permit. Farm records showing specific details of the implementation of each BMP as described herein will be provided during the on-site inspection.

_____

_____ Print or Type Name and Title of Signature

_____ Permittee/Landowner/Lessee Signature

November 2010

Guidebook for Preparing an Application for a C-139 Basin Pollutant Source Control Permit

PERMIT NO: _____ PERMITTEE/LANDOWNER: _____ LESSEE: _____

COMPLETE ONE BMP IMPLEMENTATION REPORT FOR EACH CROP GROWN. Check "√" the applicable boxes in column 1. Sign the certification statement below.

INDICATE CROP/LANDUSE FOR THIS REPORT:

LIST THE FARMS/PERMIT BASIN IDs FOR WHICH THIS REPORT APPLIES:

PARTICULATE MATTER AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES (BMP'S)

Points	"√"	Check at least the Minimum Number of Required Particulate Matter and Sediment Controls
2 ½ points for any 2 5 points for any 4 10 points for any 6 15 points for any 8		Erosion control by leveling fields
		Reduce soil erosion using grassed swales and field ditch connections to laterals
		Minimize sediment transport with slow velocity in main canal near discharge structure
		Minimize sediment transport into canals by constructing ditch bank berms
		Minimize sediment build-up by implementing a canal cleaning program
		Reduce sediments transported offsite by maintaining field ditch drainage sumps
		Minimize sediment transport with slow field ditch drainage near discharge pumps/structure
		Reduce sediments transported offsite by maintaining a sump/trap upstream of drainage structure
		Reduce sediment transport through the use of grassed waterways
		Reduce sediment transport through the use of filter strips or riparian conservation buffers adjacent to waterways. No ~~P~~ phosphorus is applied to these areas.
		Reduce sediments transported offsite by raising culvert bottoms above all ditch bottoms to minimize sediment transport
		Reduce sediments transported offsite by stabilizing soil through infrastructure improvements at canal/ditch intersections (e.g. flexible plastic pipe, polymer treatment)
		Maintain sustainable forage growth on pasture to reduce erosion/range seedings
		Reduce soil erosion with constructed ditch bank stabilization
		Reduce soil erosion with cover crops (not fertilized)
		Maintain vegetative cover in upland areas to reduce soil erosion
		Reduce soil erosion with vegetation on ditch banks
		Minimize P from plants by aquatic weed control (~~P~~ phosphorus source) at main discharge locations
		Reduce debris and aquatic plants (~~P~~ phosphorus source) leaving the site by using barriers at discharge locations

I certify that the indicated BMPs have been selected in accordance with the permit requirements and that the appropriate staff will be instructed on the BMPs and the conditions of the permit. Farm records showing specific details of the implementation of each BMP as described herein will be provided during the on-site inspection.

_____ Print or Type Name and Title of Signature

_____ Permittee/Landowner/Lessee Signature

November 2010

Guidebook for Preparing an Application for a C-139 Basin Pollutant Source Control Permit

PERMIT NO: _____ PERMITTEE/LANDOWNER: _____ LESSEE: _____

COMPLETE ONE BMP IMPLEMENTATION REPORT FOR EACH CROP GROWN. Check "√" the applicable boxes in column 1. Sign the certification statement below.

INDICATE CROP/LANDUSE FOR THIS REPORT:

LIST THE FARMS/PERMIT BASIN IDs FOR WHICH THIS REPORT APPLIES:

PASTURE MANAGEMENT BEST MANAGEMENT PRACTICES (BMP'S)

Points	"√"	Pasture Management Practice Description
2 ½		Restricted placement of stored feed, feeders, mineral, and molasses stations to reduce concentrated areas near drainage ditches, when applicable
2 ½		Provide restricted placement of cowpens to reduce concentrated areas near drainage ditches
2 ½		Provide shade structures to prevent cattle in waterways
2 ½		Alternative cattle water sources: restricted placement of water to reduce concentrated areas near drainage ditches
5		Low cattle density (1 head/2 acres, non-irrigated pasture) by providing comprehensive prescribed grazing
10		Restrict cattle from waterways through fencing of canals in a manner that protects water quality

I certify that the indicated BMPs have been selected in accordance with the permit requirements and that the appropriate staff will be instructed on the BMPs and the conditions of the permit. Farm records showing specific details of the implementation of each BMP as described herein will be provided during the on-site inspection.

_____ _____

Print or Type Name and Title of Signature

Permittee/Landowner/Lessee Signature

APPENDIX B
REQUIREMENTS FOR DISCHARGE MONITORING PLAN

The form and requirements for the optional Discharge Monitoring Plan are listed in Part V of the application.

WATER QUALITY

Monitoring Requirements

All off-site discharges must be monitored for phosphorous concentrations and water quantities. During periods of off-site discharge, water quality information is obtained through use of an automatic sampler. Samples are collected and preserved, to be delivered to the laboratory no later than 21 days from the time the first sample was drawn. Composite samples are multiple samples that are mixed together to give a mean concentration during a given time period. Sample preservation is conducted by using acid in the composite sample jar prior to the collection of the first sample. Digestion of the phosphorous samples must occur within 28 days from when the first sample was drawn. If the automatic sampling equipment becomes inoperable for any reason, grab samples must be taken twice daily during flow events until the automatic sampling equipment becomes operable. Sampling methods most commonly used are as follows:

Flow-Proportional/Flow Weighted Water Samples (FPFW) – This method is best suited for gradually varying flows that can be approximated by a time function. As flow increases, the number of samples increases.

Time-Proportional/Time Weighted Water Samples (TPTW) – This method is best suited for steady flow discharge in the flow period. When a flow event is triggered, the samples are drawn based on elapsed time. For example, the sampler could be set to draw a sample of a predetermined volume at the beginning of each flow event and every two hours thereafter.

WATER QUANTITY

Monitoring Requirements

Offsite discharges must be monitored to calculate the water quantity and the total phosphorous load. To determine quantity through any structure (a structural device or hydrologic feature), the discharge system is analyzed and a method of calculation is presented to the District in a calibration methodology report for approval. A Florida-registered Professional Engineer ("P.E.") must prepare the calibration methodology report.

Monitoring requirements for structural devices generally include, but are not limited to, recording upstream and downstream water level readings twice daily during pump discharge events, flow duration (time), pump speeds as applicable (or engine speeds including verified drive ratios), daily rainfall, weir elevations as applicable, continuous monitoring of culvert water elevations as applicable, and backup monitoring equipment. Monitoring requirements for hydrologic features (e.g., overland flow) ~~may~~ include water table levels and rainfall, at a minimum.

REPORTING REQUIREMENTS

Water quality and quantity data shall be submitted to the District in accordance with permit conditions in an approved electronic format. The permittee is responsible for calculating daily flow according to the permitted methodology.

Calibrations

A structural device calibration includes the data collection procedure performed in the field (methodology) and the development of the calibration equation. Water flow and canal water elevation data are collected to predict the amount of water moving through the structure. The mathematical calibration equation is then developed to predict flow for the structure under its full range of operating conditions. This equation is used to calculate flow quantity during discharge events. Accurate operation logs (see sample log next page) must be kept for inputs to calculate flows.

Various methods (theoretical calculations, models) exist to estimate flow when structural devices do not exist or are not sufficient for an actual measure of total runoff from a permit basin. Selection of the most adequate methods for each site shall be proposed by a Florida-registered P.E. This Guidebook provides an example of runoff calculation based on the use of Soil Conservation Service (SCS) Runoff Curve Number method described in the SCS technical release 55 (TR-55.)

Structural Device - Calibration Report Checklist

A Florida-registered P.E. shall submit a proposed calibration report including:

- ❑ Certification of the calibration and its applicable operating range
- ❑ Calibration field data collection methodology
- ❑ Calibration data evaluation methodology
- ❑ Description of primary and back-up instrumentation necessary to determine flow

Other information ~~that may be~~ required for a calibration report includes, but is not limited to, the following:

- Structure identification (name/number)
- Pump ID (orientation/number)
- Date and reason the calibration was performed
- Date the new calibration equation becomes effective
- Type of structure/pump
- Size of pump, as applicable
- Structure configuration
- Full operating range of the structure or pump, as applicable
- Full range of static lift
- Verification of relativity of upstream and downstream water elevation instruments
- Structure elevations (i.e. pump centerlines, discharge pipe centerlines, weir elevations)
- Drive ratios, as applicable
- Actual raw field data with a minimum of 5 valid test points collected in the full operating range
- Calibration equation and basis for determination
- Sample log (must record upstream and downstream water elevations at approximately the same time each day, pump/engine speeds, start/stop times, daily rainfall, operators initials)
- Signed and sealed engineer's certification statement

For both pumps and culverts, upstream and downstream water level elevations must be recorded during discharge events. If the discharge structure is a culvert or a weired culvert, water elevations must be continuously recorded and the weir elevation must be documented with all changes in elevation (i.e. adding/removing boards) noted and dated. If the structure is a pump, the start and stop time, upstream and downstream staff gage readings (at least twice daily at approximately the same time each day), and pump speed must be recorded. A sample pump log is included in Appendix B. Changing an engine or a drive ratio will affect calculated

flows and must therefore be reported at the time the change is made. Modifications to a structure that ~~may~~ affect the previously approved calibration ~~and~~ must be reported to the District. The District's "Flow Calibration Guidelines Developed in Support of Chapter 40E-63, F.A.C., Everglades BMP Permit Program" (incorporated by reference in subsection 40E-63.462(2)(d), F.A.C."), shall be used for review criteria.

Calculations

Daily flows can be determined by calculating the flow at the first daily reading and at the second daily reading. Each of these readings can then be multiplied by half of the total daily hours of operation and summed for daily flow. Other flow calculation techniques may be acceptable. The District must approve the calculation methodology in the discharge monitoring plan.

Hydrologic Features - Calibration Report Checklist

A Florida-registered P.E. shall submit a proposed calibration report including:

- ❑ Certification of the flow estimation method and its applicable operating range (e.g., sheet flow or runoff computations~~.~~)
- ❑ Field Data Collection
- ❑ Theoretical Calibration Equations
- ❑ Independent Variables (e.g., soils, coverage, slope, water table levels, rainfall)
- ❑ Description of Primary and Back-up Instrumentation necessary to determine flow

Other information that ~~may be~~ required for a calibration report includes, but is not limited to, the following:

- Rainfall gage specifications and location
- Staff gage specifications and location
- Actual raw field data to verify theoretical equations
- Basis for selection of the Theoretical Calibration Equations
- Sample log (must record daily water elevations at approximately the same time each day, daily rainfall, operators initials)
- Signed and sealed engineer's certification statement

Example

Derive an equation for the estimation of daily runoff for a small permit basin where there are no ditches or canals and runoff occurs through overland sheet flow only. Please note that other methods may be proposed by the Florida-registered P.E. with technical justification.

Permit basin A is comprised of 100 acres of pasture. All runoff from the pasture flows overland to a low land area from which it discharges offsite to a canal.

A Florida-registered P.E., on behalf of the permittee, has proposed to meet this requirement via use of the SCS theoretical equation to estimate runoff based on the empirical Initial Abstraction (Ia) coefficient for small agricultural watersheds, and site-specific hydrologic soil group curves and conditions, as indicated below:

$Q = (P - I_a)^2/((P-I_a) + S)$, if $P > - I_a$
$Q = 0$, if $P \leq I_a$ (Equation 1)

Where:
Q = runoff (in)

I_a = initial abstraction (in) = 0.2S for typical small agricultural watersheds unless otherwise justified
P = daily rainfall (in)
S = Soil storage capability or potential maximum retention after runoff begins (in). S is related to the soil cover conditions of the basin and can be calculated using the following formula:

S = 1000/CN – 10 (Equation 2)
CN = Runoff curve number
Based on the acreage-weighted soil and cover conditions and equations (1) and (2) above, a runoff equation for the property can be defined as:

$Q = (P - 0.2S)^2/(P+0.8S)$, if $P > 0.2S$
$Q = 0$, if $P \leq 0.2S$

CN = 75 (acreage-weighed based on soil and cover conditions)

S = 1000/CN – 10 = 1000/75 – 10 = 3.33

Q (inches/day) = $(P - 0.67)^2/(P + 2.7)$

Q (MGD) = $[(P - 0.67)^2/(P + 2.7)] * 2.7$ (Flow equation)

For this example, 2 inches of rainfall in one day would result in a runoff volume of 0.381 inches (runoff coefficient of approximately 0.19).

Limitations:

This example is provided for illustration purposes only. Curve numbers define average conditions that are useful for design purposes. However, as indicated in the TR-55 caution needs to be exercised to recreate specific features of an actual storm. This is responsibility of the Florida P.E. certifying the proposed calibration equation. For instance, the initial abstraction coefficient may need to be adjusted, on the basis of continued rainfall levels that may saturate the soils, reducing initial infiltration, and surface depression storage. Use of the S value based on the Basis for Review for Environmental Resource Permits within the South Florida Water Management District under Section 8.4.2 Ground Storage capability may also be considered. Also, on-site verification of the applicability of theoretical equations may be required, if the areas with predominant overland sheet flow are affected by the management conditions of neighboring lands or operation of the regional system. Parameters such as water table levels, soil saturation, and accumulated rainfall may need to be considered in addition to rainfall.

SAMPLE PUMP LOG

DAY	START / CONTINUE				STOP				RAIN	INIT.	COMMENTS
	TIME	RPM	INSIDE GAUGE	OUTSIDE GAUGE	TIME	RPM	INSIDE GAUGE	OUTSIDE GAUGE			
1											
2											
3											
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APPENDIX C
POST-PERMIT COMPLIANCE

As part of permit compliance, the permittee is required to certify annually that the permitted BMPs are being implemented for the previous calendar year. The report must be submitted to the SFWMD Water Resource Regulation Department by February 1 of each calendar year. The "C-139 Annual Report – Certification of BMP Implementation" Form (hereinafter referred to as "BMP Annual Report"). The form shall be completed for each land use or farm. The permittee shall indicate on the form the BMPs that were implemented on the associated parcels for the previous calendar year.

BMP implementation includes record keeping and documents available for review by the District to demonstrate the implementation of BMPs. Examples and details are listed on the BMP Annual Report Form.

A second function of permit compliance is on-site BMP verifications by District staff. This component is only initiated by the District if the C-139 Basin is determined to be out of compliance. The documentation described in the BMP Annual report form and any specific information indicated in the permit shall be available to District staff for review during these site visits.

Finally, for the Permit Basin Discharge Monitoring Program, permit compliance activities include the monthly submittal of data to the District (see Appendix B), Quality Control Audits of data, verification of calculated flow, and compliance with conditions as specified in the permit.

Comprehensive BMP Annual Report

If the C-139 Annual Report Form is not submitted by February 1 of each year, the permittee shall submit a comprehensive BMP Annual Report. The Comprehensive BMP Annual Report is a more detailed version of the BMP implementation form that follows. It includes the form and the required supporting documentation to verify the implementation of each BMP. This documentation includes all maps, copies of sample receipts, laboratory reports, etc. Examples of other acceptable documentation are listed on the form.

November 2010

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INDICATE CROP/LANDUSE FOR THIS REPORT: ☐ Check here if there is a change to your permitted BMP Plan

LIST THE FARMS/PERMIT BASIN IDs FOR WHICH THIS REPORT APPLIES:

NUTRIENT CONTROL BEST MANAGEMENT PRACTICES (BMP'S)

Points	**"√"**	**Nutrient Control Practice**	**Nutrient Control Practice Description**	**BMP Implementation Documentation**
2 ½		Nutrient application control	Uniform and controlled boundary application of nutrients with a minimum 4' setback from canals with no overlapping application for each application method (e.g. banding at the root zone or side-dressing, pneumatic controlled-edge application such as AIRMAX); fertilization through low volume irrigation system applied at root zone (fertigation); controlled placement by fertilization under plastic near root.	Documentation demonstrating required BMP implementation shall be maintained on site for District review, as applicable. Examples of documentation are: • Fertilizer application work orders • Training protocols/ company guidelines • Attendance sheets for training • Maps indicating crop types/locations • Maps indicating fertilizer application rates and areas • Fertilizer delivery receipts • Soil test results • Plant tissue analysis results • Crop specific fertilizer recommendations *Field Verification*, when applicable, can include observation of: • Fertilizer banding equipment • Fertilizer loading areas • No on-site fertilizer storage
2 ½		Nutrient spill prevention	Formal spill prevention protocols (storage, handling, transfer, education/instruction). Pasture – Also includes restricted placement of stored feed and housekeeping to prevent spillage near storage and transfer areas (feed and molasses).	
2 ½		Manage successive vegetable planting to minimize ₱ phosphorus	Avoid successive planting of vegetables or other crops having high ₱ phosphorus needs to avoid ₱ phosphorus build up in soils. Includes successive planting with no successive ₱ phosphorus application.	
2 ½ 2 ½ 5		Recommended nutrient application based on plant tissue analysis	Avoid excess application of ₱ phosphorus by determining plant nutrient requirements for adjustments during next growing season (crop specific). Pastures with Bahia grass – plant tissue analysis along with soil test is required to make nutrient application recommendation. Citrus – Results are applied to the current season ₱ phosphorus requirements	
5		Recommended nutrient application based on soil testing	Avoid excess nutrient application by determining ₱ phosphorus requirements of soil and follow standard recommendation for application rates (crop specific), or recommendations based on the analysis of optimum economic crop response to added ₱ phosphorus specific to the soil and crop. The disposal or application of waste water residual (biosolids), animal manure, or other materials containing phosphorus shall not exceed the ₱ phosphorus requirements of the crop.	
5		Split nutrient application	More efficient plant uptake of ₱ phosphorus by applying small portions of total recommended ₱ phosphorus at various times during the growing season. Not to exceed total recommendation based on soil test.	
5		Slow release ₱ phosphorus fertilizer	Avoid flushing excess ₱ phosphorus from soil by using specially treated fertilizer that releases ₱ phosphorus to the plant over time.	
5		Reduce ₱ phosphorus fertilization	Reduce the ₱ phosphorus application rate by 30% below standard recommendations based on soil tests and development of site-specific (reduced) recommendations or application methods. Provide basis for reduction credit.	
20		No nutrients imported via direct land application	No application of ₱ phosphorus, in any form, to the soil for amendments or plant nutrients. (Pastures can claim this BMP and still apply fertilizer if done at maintenance or less than optimum production levels no more frequently than once every 6 years. Not applicable to new plantings.)	
15		No nutrients imported indirectly through cattle feed	No ₱ phosphorus import to the basin through cattle feed (Pastures where no nutrients are imported via direct land application can claim this BMP if the only feed additives are mineral supplements or molasses.)	
5-25		Nutrient Management Plan	A plan to manage the amount, source, placement, form, and timing of nutrient application to optimize yields and minimize the movement of phosphorus nutrients to surface and ground waters that ultimately discharge off-site. A site management plan and budget for tracking phosphorus shall be developed.	

*Indicates a BMP required for direct land application of phosphorous

I certify that the indicated BMPs have been implemented in accordance with the permit requirements and that the appropriate staff have been instructed on the BMPs and the conditions of the permit. Farm records showing specific details of the implementation of each BMP as described herein will be provided during the on-site inspection.

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INDICATE CROP/LANDUSE FOR THIS REPORT:

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LIST THE FARMS/PERMIT BASIN IDs FOR WHICH THIS REPORT APPLIES:

WATER MANAGEMENT PRACTICES BEST MANAGEMENT PRACTICES (BMP'S)

Points	**"√"**	***Water Management Practice***	**Water Management Practice Description**	**BMP Implementation Documentation**
5 10		½ inch water detention 1 inch water detention	Delayed discharge (based on measuring daily rain events using a rain gage)	Documentation demonstrating required BMP implementation shall be maintained on site for District review, as applicable. Examples of documentation are: • Pump logs/staff gage readings • Pump calibration records • Rain gage readings • Work orders for reservoir construction • Permits for reservoir construction • Photographs • Maps *Field Verification*, when applicable, can include observation of: • Visual inspection of rain gages • Visual inspection of pump stations • Visual inspection of holding reservoirs • Observation of flooded fallow fields • Internal booster pumps • Internal culverts for rerouting of water
5		Improvements to water management system infrastructure to further increase water quality treatment	Recirculation of water internal to the drainage of the farm to improve water quality prior to off-site discharge (particularly discharge from rice and vegetables), includes: fallow field flood water with no direct discharge (instead allow to "drain" via evapotranspiration, seepage, use as irrigation water)	
5		Low volume irrigation	Use of low volume irrigation methods, e.g., drip irrigation, microjet irrigation.	
10		Approved and operational surface water reservoir (certified)[1]	Properly permitted, constructed and maintained storage system meeting specified ERP Basis of Review criteria (version in effect at the time of permitting or in effect at the time of permit modification for modified systems): System meets Section 5.2.1 Water Quality Criteria – Volumetric Requirements	
10			System meets Section 6.2 Water Quantity Criteria – Discharge Rates	
15			System meets Section 6.3 Water Quantity Criteria – Design Storm	
15		Temporary holding pond	Temporary agricultural activities (as described in Chapter 40E-400 F.A.C.) with a properly constructed and permitted temporary holding pond	
15		Overland sheet flow over the entire property	No drainage improvements made to a land area so that it drains through overland sheet flow, or drainage improvements such as ditches have been removed to restore overland sheet flow drainage to the land area.	
15		No point discharge of surface water	Voluntarily disabling of off-site discharge structures or other permanent means to prevent point discharge from a land area.	
10		Tailwater recovery system	A planned irrigation system in which facilities have been installed and the system is operated to collect, store, and transport irrigation tailwater and/or rainfall runoff that would have been discharge off-site without the system.	
10		Precision irrigation scheduling	Combination of low volume irrigation and soil-moisture measuring equipment, specialized irrigation decision tools (e.g. computer software), and/or remote sensing tools to ascertain real-time crop needs to maximize irrigation system performance and to develop precise irrigation scheduling (time, location and amount).	
15		No direct discharge	Overland sheet flow over entire property, no direct discharge	

[1] Surface water reservoir certification refers to a construction completion certification by a Florida licensed Professional Engineer as required in Chapter 40E-4, F.A.C., using Form 0881A for projects permitted after October 3, 1995, and Form 0881B for projects permitted prior to October 3, 1995, or the current certification requirements of Chapter 40E-4, F.A.C.

I certify that the indicated BMPs have been implemented in accordance with the permit requirements and that the appropriate staff have been instructed on the BMPs and the conditions of the permit. Farm records showing specific details of the implementation of each BMP as described herein will be provided during the on-site inspection.

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INDICATE CROP/LANDUSE FOR THIS REPORT:

☐ Check here if there is a change to your permitted BMP Plan

LIST THE FARMS/PERMIT BASIN IDs FOR WHICH THIS REPORT APPLIES:

PARTICULATE MATTER AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES (BMP'S)

Points	"√"	Check at least the Minimum Number of Required Particulate Matter and Sediment Controls	BMP Implementation Documentation
2 ½ points for any 2 **5 points for any 4** **10 points for any 6** **15 points for any 8**		Erosion control by leveling fields	Documentation demonstrating required BMP implementation shall be maintained on site for District review, as applicable. Examples of documentation are: • Work orders • Maps • Material delivery tickets • Laser leveling work orders • Sump Maintenance records • Dredging/Canal cleaning records • Culvert installation work orders • Photographs • As-built records • Aquatic weed spraying records • Grass mowing work orders *Field Verification,* when applicable, can include observation of: • Vegetation growth in fields/on berms • Cover crops • Fallow fields • Dredged material stockpiles • Culverts with risers at connections • Canal widening indicating sump areas • Floating debris barriers
		Reduce soil erosion using grassed swales and field ditch connections to laterals	
		Minimize sediment transport with slow velocity in main canal near discharge structure	
		Minimize sediment transport into canals by constructing ditch bank berms	
		Minimize sediment build-up by implementing a canal cleaning program	
		Reduce sediments transported offsite by maintaining field ditch drainage sumps	
		Minimize sediment transport with slow field ditch drainage near discharge pumps/structure	
		Reduce sediments transported offsite by maintaining a sump/trap upstream of drainage structure	
		Reduce sediment transport through the use of grassed waterways	
		Reduce sediment transport through the use of filter strips or riparian conservation buffers adjacent to waterways. No ~~P~~ phosphorus is applied to these areas.	
		Reduce sediments transported offsite by raising culvert bottoms above all ditch bottoms to minimize sediment transport	
		Reduce sediments transported offsite by stabilizing soil through infrastructure improvements at canal/ditch intersections (e.g. flexible plastic pipe, polymer treatment)	
		Maintain sustainable forage growth on pasture to reduce erosion/range seedings	
		Reduce soil erosion with constructed ditch bank stabilization	
		Reduce soil erosion with cover crops (not fertilized)	
		Maintain vegetative cover in upland areas to reduce soil erosion	
		Reduce soil erosion with vegetation on ditch banks	
		Minimize P from plants by aquatic weed control (~~P~~ phosphorus source) at main discharge locations	
		Reduce debris and aquatic plants (~~P~~ phosphorus source) leaving the site by using barriers at discharge locations	

I certify that the indicated BMPs have been implemented in accordance with the permit requirements and that the appropriate staff have been instructed on the BMPs and the conditions of the permit. Farm records showing specific details of the implementation of each BMP as described herein will be provided during the on-site inspection.

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INDICATE CROP/LANDUSE FOR THIS REPORT:	☐ Check here if there is a change to your permitted BMP Plan
LIST THE FARMS/PERMIT BASIN IDs FOR WHICH THIS REPORT APPLIES:	

PASTURE MANAGEMENT BEST MANAGEMENT PRACTICES (BMP'S)

Points	"√"	Pasture Management Practice Description	BMP Implementation Documentation
2 ½		Restricted placement of stored feed, feeders, mineral, and molasses stations to reduce concentrated areas near drainage ditches, when applicable	Documentation demonstrating required BMP implementation shall be maintained on site for District review, as applicable. Examples of documentation are: • Fencing installation work orders • Maps indicating location of feeders, cowpens, watering holes, shade structures, etc. • Cattle counts • Feed/supplement manufacturer's content labels • Rotation schedules • Photographs *Field Verification,* when applicable, can include observation of: • Visual inspection of fencing • Visual inspection of adjacent canals • Visual inspection of the location of feeders, cowpens, watering holes, shade structures, etc. • Visual inspection of discharge structures
2 ½		Provide restricted placement of cowpens to reduce concentrated areas near drainage ditches	
2 ½		Provide shade structures to prevent cattle in waterways	
2 ½		Alternative cattle water sources: restricted placement of water to reduce concentrated areas near drainage ditches	
5		Low cattle density (1 head/2 acres, non-irrigated pasture) by providing comprehensive prescribed grazing	
10		Restrict cattle from waterways through fencing of canals in a manner that protects water quality	

I certify that the indicated BMPs have been implemented in accordance with the permit requirements and that the appropriate staff have been instructed on the BMPs and the conditions of the permit. Farm records showing specific details of the implementation of each BMP as described herein will be provided during the on-site inspection.

_____ Print or Type Name and Title of Signature

_____ Permittee/Landowner/Lessee Signature

APPENDIX D
DISTRICT CRITERIA FOR THE CALCULATION OF ~~TP~~ TOTAL PHOSPHORUS REDUCTIONS

1. INTRODUCTION

Water quality improvement activities (WQIA) are a combination of modifications to a BMP Plan to meet required reduction requirements if the C-139 Basin is found out of compliance~~, and conditions for deferral do not apply~~. WQIAs include revising implementation methods to increase the effectiveness of existing BMPs or implement additional BMPs. The proposed effectiveness of the improvement activities shall be based on the most current applicable technical references or on a monitoring program to verify the expected effectiveness (verification plan.)

This appendix provides District criteria for the estimation of ~~TP~~ total phosphorus removal ~~efficiency~~. These criteria are based on best professional judgment and technical references available at the time of issuance of the amended C-139 Basin Rule. It is expected that these criteria will ~~may need to~~ be revised in the future, upon new technical information on BMP performance efficiency becoming available.

2. BMP REMOVAL EFFICIENCY CRITERIA

Table D.1 describes ~~proposed~~ criteria to determine the anticipated percent reduction of ~~TP~~ total phosphorus ~~removal efficiency~~ for those BMPs ~~anticipated to be~~ proposed as WQIAs based on the base level of BMP implementation required by the amended rule, and current practices based on BMP verification.

BMPs are grouped into categories for which the same criterion for determination of ~~TP~~ total phosphorus removal efficiency applies. The ~~TP~~ total phosphorus removal efficiency high-end range reflects a typical potential maximum removal from the implementation of one or more of the BMPs in each category based on C-139 Basin conditions. It does not reflect the effectiveness of any individual BMP in the category and is not additive across the category. ~~TP~~ Total phosphorus removal efficiencies above the high-end of the range for the category will ~~may~~ be approved if supported by technical justification that is provided.

Please refer to section 3 of this appendix for guidance on how ~~TP~~ total phosphorus removal efficiency for a permit basin should be calculated. The District criteria are an initial attempt to provide a simplified method to determine ~~TP~~ total phosphorus removal efficiency in response to C-139 Basin stakeholder concerns during rule development. However, it is ~~may~~ not be applicable under all situations or outside the C-139 Basin regulatory boundaries. The District has the discretion to require that applicants submit technical sources to substantiate ~~TP~~ total phosphorus removal efficiency estimates or to base efficiencies on a water quality verification plan, if the site specific conditions deem the assumptions on which the criteria are based not applicable.

Also, note that these criteria do not replace the need for determining the actual performance of BMP implementation. Confirmatory verification can only result from actual water quality monitoring by the District or through District-approved discharge monitoring plans.

Table D.1: TP Removal Efficiency Criteria

BMPs[1]	Typical High-end ~~TP~~ Total Phosphorus Removal Efficiency (percentage)[2]	Criteria for Determination of ~~TP~~ Total Phosphorus Removal Efficiency[3]
Nutrient Management		
Row crops		
Manage Successive Vegetable Planting to Minimize ~~P~~ phosphorus	25%	For higher application rates: ~~TP~~ Total phosphorus removal efficiency is assumed 1:1 proportional to proposed reductions in phosphorus application rates (e.g., a reduction of 25% in phosphorus application recommendations is equivalent to a ~~TP~~ total phosphorus removal efficiency of 25%) For lower rates apply the ratio indicated for sugarcane.
Recommend Nutrient Application Based on Plant Tissue Analysis		
Split Nutrient Application		
Slow Release Fertilizer		
Reduced ~~P~~ phosphorus Fertilization		
Sugarcane		
Recommend Nutrient Application Based on Plant Tissue Analysis	15%	9:5 proportional to proposed reductions in phosphorus application rates (e.g., a reduction of 9% in phosphorus application recommendations is equivalent to a ~~TP~~ total phosphorus removal efficiency of 5%)
Split Nutrient Application		
Slow Release Fertilizer		
Reduced ~~P~~ phosphorus Fertilization		
Improved Pastures		
Recommend Nutrient Application Based on Plant Tissue Analysis	15%	3:2 proportional to proposed reductions in phosphorus application rates (e.g., a reduction of 15% in phosphorus application recommendations is equivalent to a ~~TP~~ total phosphorus removal efficiency of 10%)[4]
Split Nutrient Application		
Slow Release Fertilizer		
Reduced ~~P~~ phosphorus Fertilization		
No Nutrients Imported Indirectly Through Cattle Feed		
Citrus		
Recommend Nutrient Application Based on Plant Tissue Analysis	15%	5:1 proportional to proposed reductions in phosphorus application rates (e.g., a reduction of 15% in phosphorus application recommendations is equivalent to a ~~TP~~ total phosphorus removal efficiency of 3%)[5]
Split Nutrient Application		
Slow Release Fertilizer		
Reduced ~~P~~ phosphorus Fertilization		

Table D.1: TP Removal Efficiency Criteria (continued)

BMPs[1]	Typical High-end ~~TP~~ Total Phosphorus Removal Efficiency (percentage)[2]	Criteria for Determination of ~~TP~~ Total Phosphorus Removal Efficiency[3]
Water Management Practices		
Improvements to existing water management systems by delayed or minimized discharge	40%	1:2 proportional to increased detention time or retention volume[6] (e.g., an increase of 50% in retention volume or detention time, is equivalent to a ~~TP~~ removal efficiency of 25%)
Tailwater Recovery System		
Precision Irrigation Scheduling		
Particulate Matter and Sediment Controls		
Any combination of four (or more) additional sediment controls	20%	10%[7] (e.g., implementation of four or more particulate matter and sediment controls is equivalent to a ~~TP~~ total phosphorus removal efficiency of 5%)
Pasture Management		
Restricted placement of feeders, minerals, and water sources	30%	A typical reduction of 3% is assumed.
Provide shade structures to prevent cattle in waterways	10%	A typical reduction of 2% is assumed.
Alternative cattle watering sources	20%	A typical reduction of 10% is assumed.
Critical area fencing	20%	A typical reduction of 5% is assumed.
Other		
Improvements to existing water management systems to further increase water quality treatment	90%	1:1 Proportional to the proposed reductions in comparison to the water year or years that the C-139 Basin was out of compliance (e.g., a reduction of 80% of ~~TP~~ total phosphorus in runoff because of edge-of-farm chemical precipitation shall be equivalent to a ~~TP~~ total phosphorus removal efficiency of 80%)

[1]Based on best professional judgment upon review of the C-139 Basin conditions.~~TP~~ Total phosphorus Removal Efficiencies above the typical high-end of the range require the applicant to submit technical justification.

[2]Efficiencies are based on the proposed BMP being implemented for the first time. The District has the discretion to require submittal of technical justification. The proposed criteria are ~~may~~ not ~~be~~ applicable under all conditions.

[3]Proposed reductions in application rates shall consider any concurrent increases in feed or supplements.

[4]Proposed reductions in application rates shall consider any concurrent increases in foliar application.

3. CALCULATION OF ~~TP~~ TOTAL PHOSPHORUS REMOVAL EFFICIENCY FOR A PERMIT BASIN

Table D.1 described how ~~TP~~ total phosphorus removal efficiencies could be estimated for individual BMPs when they are proposed as part of a WQIA proposal. This section explains how ~~TP~~ total phosphorus removal efficiencies of various BMPs could be combined to determine the TP removal of the WQIA proposal when more than one BMP is proposed. Indicated below are three concepts that need to be considered when estimating the ~~TP~~ total phosphorus Removal Efficiency:

1. The performance of BMPs that occur in sequence (a treatment train) shall consider the reductions achieved by preceding BMPs,
2. The performance of BMPs that occur in parallel are additive, and
3. When different BMPs are proposed for individual areas within the permit basin, the permittee shall consider the contribution of each area and acreage for achieving the required ~~TP~~ total phosphorus reductions (or proportional share of the load.)

Indicated below is an example describing how the default ~~TP~~ total phosphorus removal efficiencies could be applied in an area where different BMPs are proposed to meet the required ~~TP~~ total phosphorus reductions.

Example:
Permit basin A is comprised of 60 acres of row crops (Area 1), 20 acres of improved pastures (Area 2) and an above ground impoundment (AGI). All runoff is conveyed to the AGI. Feed is provided. Permit basin A does not participate in the optional individual monitoring. The C-139 Basin compliance monitoring results indicate that the C-139 Basin is out of compliance and sub-basin monitoring for the permit basin where permit basin A is located indicate that the sub-basin is exceeding its proportional share of the load by 25%. ~~No conditions for deferral apply to permit basin A.~~ The permittee is required to submit a WQIA proposal with an expected ~~TP~~ Total Phosphorus reduction efficiency that is no less than 25%. The permittee proposal to meet this requirement is as follows:

BMPs Area 1	**~~TP~~ Total Phosphorus Reduction Efficiency per BMP**	**BMPs Area 2**	**~~TP~~ Total Phosphorus Reduction Efficiency per BMP**
Row crops (60 acres or 75% of contributing acreage)		Pastures (20 acres or 25% of contributing acreage)	
Reduced ~~TP~~ Total Phosphorus fertilization in row crop areas by 20%	20%	Alternative water cattle sources	10%
		Critical area fencing	5%
Acreage weighed total phosphorus reduction efficiency per area[1]	15%		4%
~~TP~~ Total Phosphorus Reduction Efficiency both Areas			19%
Improvements to existing water management systems by 20%			10%
Permit Basin Reduction Efficiency [19% + 10% x (1 - 0.19)]			**27%**

Note that no considerations regarding the potential difference in contributions between the row crop and the pasture areas are made in this example. However, they may be reasonable based on how the specifics of each operation, e.g., if pastures are managed substantially less intensively than row

crop areas such as nutrients not being land applied or feed not being provided. This can be done at the District's discretion.

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APPENDIX E (NEW)
DETERMINATION OF IMPRACTICABILITY CHECKLIST

Part VIII of the Permit Application Form can be used by applicants to request approval of a Determination of Impracticability. Among the information required in this part, applicants shall provide a detailed description of all previously implemented and current activities, and evidence that no additional BMPs or refinements to their implementation methods can be reasonably accomplished. This appendix describes the types of information, at a minimum, that the applicant shall submit as evidence. The applicant shall provide detailed descriptions for each type of information based on site-specific conditions, for District determination.

For each land use or crop, and parcels for which an application for Determination of Impracticability is submitted, the District shall consider:

1. The required and voluntary best management practices (BMPs) from Appendix B-1, which is incorporated by reference in subsection 40E-63.~~404(3~~435(1), F.A.C., that are being implemented as part of the applicant's C-139 Basin Pollutant Source Control Permit. This includes any early implementation BMPs. The District will review the status of compliance and ongoing monitoring/reporting requirements for Works of the District permit. Any areas for improvement based on prior District inspection reports will be noted.
2. The specific implementation methods of each BMP (e.g., frequency, maintenance, buffers) and how they might be optimized to improve water quality; the technical basis (documentation) for the methods utilized; and an estimation of the relative difference in water quality benefits between methods considered. Additional reporting, inspections and monitoring requirements will ~~may~~ be required to verify and document implementation.
3. The status of compliance and ongoing monitoring/reporting requirements with District Surface Water and Environmental Resource Permits. The District review will ensure that the permittee has consistently met the requirements of the Surface Water and Environmental Resource Permits.
4. The status of compliance and ongoing monitoring/reporting requirements with other agencies permits or licenses for activities that can affect phosphorus in runoff.
5. A site assessment report provided by the applicant, as described in 40E-63.437(2)[1].
6. How recently changes in the land use, crop type, surface water management system, operation, lessee, and other factors have occurred and their potential impact to the current level of optimization of BMPs and water quality improvement activities.
7. Impracticability eligibility only in cases where the applicant has:
   a. participated in BMP implementation and demonstration projects, (funding may be provided by the District or other agencies, such as FDACS, 319 Grants, NRCS, etc. Recommendations based on the findings from the demonstration projects have been fully implemented.

[1] The site assessment shall evaluate phosphorus imports and transport in discharges; current BMPs and implementation methods; other practices not covered under BMPs (e.g., grazing, irrigation, nutrient water management); and representative water quality and soil data. Water quality data that can be used for the assessment include those available from the District sub-basin or synoptic (grab) monitoring programs, or properly collected grab samples or using field kits of adequate precision by the applicant.

b. A NRCS conservation plan or FDACS Notice of Intent to implement BMPs that has been fully implemented.

APPENDIX F (NEW)
CERTIFICATION OF LANDUSER (LESSEE OR OPERATOR)

CERTIFICATION BY LANDUSER (LESSEE OR OPERATOR)

I hereby certify that, I have received a copy of Permit No. _____ with application No._____ , dated _____. I agree to comply with the permit and implement the terms and conditions of the permit as it is indicated in lease. In addition, I agree to provide entry at any time to the area for South Florida Water Management District staff or their duly authorized agents, as provided for in Chapter 40E-63.444(d), F.A.C., or as otherwise provided by the issued permit.

_____
Type or print lessee name

_____
Signature of lessee of parcel/farm (if not the lessee, certify below)

I hereby certify that I am the authorized agent of the lessee.

_____
Type or print name and title

Signature _____

Date _____

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~~BMP Equivalent Points Table~~

~~BMP~~	~~PTS~~	~~DESCRIPTION~~
~~NUTRIENT CONTROL PRACTICES~~		~~MINIMIZES THE MOVEMENT OF NUTRIENTS OFF-SITE BY EFFICIENT AND CONTROLLED APPLICATION~~
~~Nutrient Application Control*~~	~~2 ½~~	~~Uniform and controlled boundary application of nutrient with a minimum 4' setback from canals with no overlapping application for each application method (e.g. banding at the root zone or side-dressing, pneumatic controlled-edge application such as AIRMAX); fertilization through low volume irrigation system applied at root zone (fertigation); controlled placement by fertilization under plastic near root.~~
~~Nutrient Spill Prevention*~~	~~2 ½~~	~~Formal spill prevention protocols (storage, handling, transfer, and education/instruction).~~
~~Manage Successive Vegetable Planting to Minimize P~~	~~2 ½~~	~~Avoid successive planting of vegetables or other crops having high P needs to avoid P build up in soils. Includes successive planting with no successive P application.~~
~~Recommended Nutrient Application based on Plant Tissue Analysis~~	~~2 ½~~ ~~5~~	~~Avoid excess application of P by determining plant nutrient requirements for adjustments during next growing season (crop specific).~~ ~~Citrus only – Additional points allowed for citrus because it provides information on current season P requirements.~~
~~Recommended Nutrient Application based on Soil Testing*~~	~~5~~	~~Avoid excess nutrient application by determining P requirements of soil and follow standard recommendations for application rates (crop specific).~~
~~Split Nutrient Application~~	~~5~~	~~More efficient plant uptake of P by applying small portions of total recommended P at various times during the growing season. Not to exceed total recommendation based on soil test.~~
~~Slow Release P Fertilizer~~	~~5~~	~~Avoid flushing excess P from soil by using specially treated fertilizer that releases P to the plant over time.~~
~~Reduce P Fertilization~~	~~5~~	~~Reduce the P application rate by at least 30% below the recommendation based on soil tests. Provide basis for reduction credit.~~
~~No Nutrients Imported Via Direct Land Application~~	~~15~~	~~No Application of P, in any form, to the soil for amendments or plant nutrients. (Native and Semi-improved Range can claim this BMP and still apply fertilizer at maintenance or less than optimum production levels as a grass supplement every 6-8 years.)~~
~~No Nutrients Imported Indirectly Through Cattle Feed~~	~~15~~	~~No P import to the basin through cattle feed (note: native range is not excluded by use of mineral supplements or molasses)~~
~~Nutrient Management Plan (Level I & II/III/ IV)~~	~~15/25/35~~	~~Managing the amount, source, placement, form, and timing of the application of nutrients on lands with cattle operation.~~

~~A BMP Plan is required for each land use or crop. BMP Plans shall be implemented across the entire farm acreage (drainage area) with individual BMPs consistently implemented across each land use (crop) area.~~

~~*See notes at end of Appendix.~~

~~BMP Equivalent Points Table~~

~~BMP~~	~~PTS~~	~~DESCRIPTION~~
~~**WATER MANAGEMENT PRACTICES**~~		~~MINIMIZES THE QUANTITY OF OFF-SITE DISCHARGES WHICH CARRY NUTRIENTS DOWNSTREAM~~
~~½ Inch Detained~~ ~~1 Inch Detained~~	~~5~~ ~~10~~	~~Delayed discharge (based on measuring daily rain events using a rain gage).~~
~~Improvements to Water Management System Infrastructure to Further Increase Water Quality Treatment~~	~~5~~	~~Recirculation of water internal to the drainage of the farm to improve WQ prior to off-site discharge (Particularly applicable to discharge from rice and vegetables), includes: fallow field flood water with no direct discharge (instead allow to "drain" via evapotranspiration, seepage, use as irrigation water); or~~ ~~Increasing water detention using properly constructed canal berms.~~
~~Reduced Flow through Water Table Management~~	~~5~~	~~Decreasing discharge by optimizing drainage and irrigation schedules and/or by using low volume irrigation methods, e.g. drip irrigation~~
~~Approved and Operational Surface Water Reservoir~~	~~10~~ ~~10~~ ~~15~~	~~Properly permitted, constructed and maintained storage system meeting specified ERP Basis of Review criteria (version in effect at the time of permitting or in effect at the time of permit modification for modified systems):~~ ~~System meets Section 5.2.1 Water Quality Criteria-Volumetric Requirements~~ ~~System meets Section 6.2 Water Quantity Criteria-Discharge Rate~~ ~~System meets Section 6.3 Water Quantity Criteria-Design Storm (must have a valid construction and operating permit)~~
~~Temporary Holding Pond~~	~~15~~	~~Temporary agricultural activities (as described in Chapter 40E-400, FAC.) with a properly constructed and permitted temporary holding pond.~~
~~No Direct Discharge~~	~~15~~	~~Overland Sheet Flow over entire property, no direct discharge.~~

~~A BMP Plan is required for each land use or crop. BMP Plans shall be implemented across the entire farm acreage (drainage area) with individual BMPs consistently implemented across each land use (crop) area.~~

~~*See notes at end of Appendix.~~

~~BMP Equivalent Points Table~~

~~BMP~~	~~PTS~~	~~DESCRIPTION~~
~~PARTICULATE MATTER AND SEDIMENT CONTROLS~~		~~MINIMIZES THE MOVEMENT OF P, IN PARTICULATE MATTER AND SEDIMENTS, OFF-SITE BY CONTROLLING THE AMOUNT OF ERODED SOIL AND PLANT MATTER IN DISCHARGE~~
~~Any 2~~ ~~Any 4~~ ~~Any 6~~ ~~Any 8~~	~~2 ½~~ ~~5~~ ~~10~~ ~~15~~	• ~~control erosion by leveling fields~~ • ~~minimize sediment transport with slow velocity in main canal near discharge structure~~ • ~~reduce soil erosion using grassed swales and field ditch connections to laterals~~ • ~~minimize sediment transport into canals by constructing ditch bank berms~~ • ~~minimize sediment build-up through a canal cleaning program~~ • ~~minimize P from plants by aquatic weed control (P source) at main discharge locations~~ • ~~reduce sediments transported offsite by using field ditch drainage sumps~~ • ~~reduce debris (P source) leaving the site by using barriers at discharge locations~~ • ~~reduce soil erosion with constructed ditch bank stabilization~~ • ~~minimize sediment transport with slow field ditch drainage near pumps/structure~~ • ~~reduce sediments transported offsite by maintaining a sediment sump/trap upstream of drainage structure~~ • ~~maintain sustainable forage growth on pasture to reduce soil erosion/range seedings~~ • ~~reduce sediments transported offsite by stabilizing soil through infrastructure improvements at canal/ditch intersections (e.g. flexible plastic pipe, polymer treatment)~~ • ~~reduce soil erosion with cover crops~~ • ~~reduce sediments transported offsite by raising culvert bottoms above all ditch bottoms to minimize sediment transport~~ • ~~reduce soil erosion with vegetation on ditch banks~~

~~A BMP Plan is required for each land use or crop. BMP Plans shall be implemented across the entire farm acreage (drainage area) with individual BMPs consistently implemented across each land use (crop) area.~~

~~*See notes at end of Appendix.~~

A.1-3

~~BMP Equivalent Points Table~~

~~BMP~~	~~PTS~~	~~DESCRIPTION~~
~~PASTURE MANAGEMENT~~		~~MINIMIZES NUTRIENTS IN DISCHARGES THROUGH ON SITE OPERATION AND MANAGEMENT PRACTICES~~
	~~2 1/2~~	~~• restricted placement of feeders to reduce "hot spots" near drainage ditches~~
	~~2 1/2~~	~~• restricted placement of cowpens to reduce "hot spots" near drainage ditches~~
	~~2 1/2~~	~~• restricted placement of feed and water to reduce "hot spots" near drainage ditches~~
	~~2 1/2~~	~~• provide shade structures to prevent cattle in waterways~~
	~~5~~	~~• low cattle density (1 head/2 acres, nonirrigated pasture)~~
	~~5~~	~~• reduced P in feed (by a minimum of 20%)~~
	~~10~~	~~• restrict cattle from waterways through fencing of canals in a manner that protects the discharge water quality~~

~~A BMP Plan is required for each land use or crop. BMP Plans shall be implemented across the entire farm acreage (drainage area) with individual BMPs consistently implemented across each land use (crop) area.~~

~~*See notes at end of Appendix.~~

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~~NOTES~~

~~A BMP Plan is required for each land use and crop. BMP Plans shall be implemented across the entire farm acreage (drainage area) with individual BMPs consistently implemented across each land use (crop) area.~~

~~Minimum required points for each BMP Plan:~~

- ~~Level I: Initial 15 points for each BMP Plan.~~
- ~~Level II: First "out of compliance", no additional BMPs; however, onsite verification of BMPs begin. Frequency of visits based on compliance record.~~
- ~~Level III: Second "out of compliance", 10 additional BMP points for each BMP Plan (25 points total). Onsite verification of BMPs continue.~~
- ~~Level IV: Third "out of compliance", 10 additional BMP points for each BMP Plan (35 points total). Onsite verification of BMPs continue.~~

~~An asterisk (*) indicates a BMP that is required when there is land application of nutrients and no permitted and properly operated surface water detention system.~~

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~~*NUTRIENT MANAGEMENT PLAN FOR PHOSPHORUS REDUCTION*~~

~~This type of BMP plan is only applicable to cattle operations. The written plan for managing the **amount**, **source**, **placement**, **form**, and **timing** of the application of nutrients and soil amendments containing phosphorus shall address all of the following, including descriptions of records management for each. In order to qualify for the complete nutrient management plan (35 points), all three levels outlined below must be implemented in their entirety. An approved BMP Plan may consist of a Nutrient Management Plan or selection of a combination of BMPs from the BMP Equivalent Points Table, but not both. The Nutrient Management Plan shall address training, implementation and documentation for all elements of the Plan.~~

~~*Level I – 15 points*~~

~~AMOUNT~~

~~Determine field conditions and recommendations for each tract or field.~~

- ~~Current and/or planned plant production sequence, crop rotation or pasture plan~~
- ~~Calibration of application equipment to ensure nutrient application rates~~
- ~~Soil sampling and laboratory analyses (may include plant tissue testing)~~
- ~~Recommended nutrient/amendment rates based on soil test results~~
- ~~Application rate consistent with pre-determined nutrient budget~~

~~SOURCE~~

~~Determine all phosphorus sources and develop a phosphorus budget for each tract or field. Examples of sources to consider:~~

- ~~Irrigation water, manure residuals, soil residuals, atmospheric deposition, or other sources of phosphorus~~
- ~~Content of phosphorus in fertilizers or soil amendments~~
- ~~Feed or other mineral supplements~~
- ~~Manure or other organic material (i.e. crop residuals, hay, mortality)~~

~~PLACEMENT~~

~~Control and management of nutrient storage, transport and deployment. The plan shall address training, implementation and documentation for each of the following:~~

- ~~Storage control measures to protect phosphorus fertilizer and organic by-products containing phosphorus from weather and leakage~~
- ~~Spill prevention protocols for storage, handling and transport of fertilizer and organic materials~~
- ~~Calibration of application equipment to ensure uniform distribution of material at planned rates~~
- ~~Identification of sensitive areas or resources and the associated nutrient management restrictions~~
- ~~Identification of setbacks required for nutrient applications adjacent to waterbodies, drainage-ways, and other sensitive areas~~

- ~~Description of protocols for clean up of spills and residual materials from equipment and proper collection, replacement, usage, and/or disposal~~

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~~Form~~

~~Analysis and recommendation for type of nutrient supplement and associated application rates and methods for each tract or field. Address, at minimum:~~

- ~~Accountability for starter fertilizers in recommendations and nutrient budget analyses~~
- ~~Nutrient value determination and accountability for manure and organic by-products~~
- ~~Controlled application of phosphorus fertilizer to prevent overlapping and to ensure efficiency in uptake, or slow release fertilization methods~~
- ~~Fertigation (or chemigation) less than the soil intake/infiltration rate and the total field capacities of the soil~~

~~Timing~~

~~Describe methodology used to ensure timely application of fertilizer or other nutrients to each tract or field to maximize uptake and minimize the amount of phosphorus transported offsite.~~

- ~~Use a water budget to guide timing of nutrient applications~~
- ~~Conduct nutrient applications corresponding with plant nutrient uptake characteristics and requirements~~
- ~~Avoidance of nutrient applications to saturated soils~~
- ~~Consideration of weather and climactic conditions (i.e. no application prior to rainfall, high winds)~~
- ~~Use split applications when possible for greater efficiency and avoidance of potential runoff~~

~~*LEVELS II AND III*~~

~~Option A or Option B may be chosen for Level II implementation and the remaining option chosen for Level III.~~

~~Option A: 10 points~~

~~In conjunction with the previous levels of the Nutrient Management Plan, permittee is required to select and implement a combination of any *six* of the following:~~

1. ~~particulate matter and sediment controls listed in the BMP Equivalent Points Table~~
2. ~~the first four pasture management controls listed in the BMP Equivalent Points Table~~
3. ~~additional conservation practices (refer to NRCS Conservation Practice Standards):~~
   - ~~Conservation Cover (replaces cover crop in table)~~
   - ~~Grassed Waterway (replaces grassed swales and field ditch connections to laterals in table)~~
   - ~~Filter Strips or Field Border~~
   - ~~Irrigation Water Management~~
   - ~~Conservation Crop Rotation~~
   - ~~Cover and Green Manure~~
   - ~~Residue Management~~
   - ~~Herbaceous Wind Barriers~~

~~Option B: 10 points~~

~~In conjunction with the previous levels of the Nutrient Management Plan, permittee elects to implement a Mass-Balance component to eliminate a net export of phosphorus.~~

~~*Step 1:* All "***IN***" sources of phosphorus must be identified, quantified and catalogued in the nutrient budget. Examples of these sources are identified below:~~

- ~~*Fertilizer applied* – phosphorus content is known~~
- ~~*Manure or other organic by-product applied* – phosphorus content must be determined by testing or through estimation and the basis for such~~
- ~~*Irrigation water* – phosphorus content can be determined through water samples or historical background levels~~
- ~~*Residual manure or organic materials* – phosphorus content must be determined through plant tissue analysis, manure testing or estimation with standard guidelines~~
- ~~*Feed and mineral supplements* – animal feed phosphorus content is known~~
- ~~*Cow/calf import* – phosphorus determination for each cow/calf brought onto the farm~~
- ~~*Mortality* – when disposal is on-farm, phosphorus content of cow/calf~~
- ~~*Other sources* – phosphorus content from atmospheric deposition, rainfall or other sources may be considered if they can be accurately quantified~~

~~*Step 2:* All "**OUT**" sources of phosphorus must be identified, quantified and catalogued in the nutrient budget. Examples of these sources are identified below:~~

- ~~*Discharges* – all surface water runoff through sheet flow or by pumping or other means must be tested for phosphorus levels by way of a discharge monitoring plan~~
- ~~*Crop yields* – phosphorus content in crop yields can be determined through plant tissue analysis or estimation with standard guidelines~~
- ~~*Cow/calf export* – phosphorus determination for each cow/calf removed from the farm~~
- ~~*Other organic removal* – phosphorus content from other organics removed from the farm (such as aquatic vegetation, hay, mortalities, etc.) should be considered with accurate quantification methods~~

~~*Step 3:* The difference between the summation of all quantified "IN" sources *(Step 1)* and all quantified "OUT" sources (Step 2) will yield the mass balance.~~

~~***IN – OUT = BALANCE***~~

~~If the BALANCE is positive, then the net import of phosphorus is greater than the net export and the tract, field or basin is meeting the plan. If the BALANCE is negative, then the net export of phosphorus is greater then the net import and the tract, field or basin is NOT meeting the plan and will require re-evaluation or additional BMPs. Regardless of the balance, if the water quality of the discharge shows excessive P load compared to the C-139 Basin limitations, additional measures may be required.~~

~~*REQUIREMENTS FOR OPTIONAL DISCHARGE MONITORING PLAN*~~

~~The form and requirements for the optional discharge monitoring plan are listed on page 9 of the application.~~

~~*WATER QUALITY*~~

~~Monitoring Requirements~~

~~All off-site discharges must be monitored for phosphorous concentrations and water quantities. During periods of off-site discharge, water quality information is obtained through use of an automatic sampler. Samples are collected and preserved, to be delivered to the laboratory no later than 21 days from the time the first sample was drawn. Composite samples are multiple samples that are mixed together to give a mean concentration during a given time period. Sample preservation is conducted by using acid in the composite sample jar prior to the collection of the first sample. Digestion of the phosphorous samples must occur within 28 days from when the first sample was drawn. If the automatic sampling equipment becomes inoperable for any reason, grab samples must be taken twice daily during flow events until the automatic sampling equipment becomes operable. Sampling methods most commonly used are as follows:~~

~~*Flow-Proportional/Flow Weighted Water Samples (FPFW)* – This method is best suited for gradually varying flows that can be approximated by a time function. As flow increases, the number of samples increases.~~

~~*Time-Proportional/Time Weighted Water Samples (TPTW)* – This method is best suited for steady flow discharge in the flow period. When a flow event is triggered, the samples are drawn based on elapsed time. For example, the sampler could be set to draw a sample of a predetermined volume at the beginning of each flow event and every two hours thereafter.~~

~~*WATER QUANTITY*~~

~~Monitoring Requirements~~

~~Offsite discharges must be monitored to calculate the water quantity and the total phosphorous load. To determine quantity through a control structure, the discharge system is analyzed and a method of calculation is presented to the District in a calibration methodology report for approval. A Florida-registered Professional Engineer ("P.E.") must prepare the calibration methodology report. Monitoring requirements include, but are not limited to, recording upstream and downstream water level readings twice daily during pump discharge events, flow duration (time), pump speeds as applicable (or engine speeds including verified drive ratios), daily rainfall, weir elevations as applicable, continuous monitoring of culvert water elevations as applicable, and backup monitoring equipment.~~

~~*REPORTING REQUIREMENTS*~~

~~Water Quality and Quantity Data shall be submitted to the District in accordance with permit conditions in an approved electronic format. The permittee is responsible for calculating daily flow according to the permitted methodology.~~

~~Calibrations~~

~~A water control structure calibration includes the data collection procedure performed in the field (methodology) and the development of the calibration equation. Water flow and canal water elevation data are collected to predict the amount of water moving through the structure. The mathematical calibration equation is then developed to predict flow for the structure under its full range of operating conditions. This equation is used to calculate flow quantity during discharge events. Accurate operation logs (see sample log next page) must be kept for inputs to calculate flows.~~

~~Calibration Report Checklist~~

- ~~Certification of the calibration and its applicable operating range by a Florida-registered P.E.~~
- ~~Calibration Field Data Collection Methodology~~
- ~~Calibration Data Evaluation Methodology~~
- ~~Description of Primary and Back-up Instrumentation necessary to determine flow~~

~~Other information required for a calibration report includes, but is not limited to, the following:~~

- ~~Structure identification (name/number)~~
- ~~Pump ID (orientation/number)~~
- ~~Date and reason the calibration was performed~~
- ~~Date the new calibration equation becomes effective~~
- ~~Type of structure/pump~~
- ~~Size of pump, as applicable~~
- ~~Structure configuration~~
- ~~Full operating range of the structure or pump, as applicable~~
- ~~Full range of static lift~~
- ~~Verification of relativity of upstream and downstream water elevation instruments~~
- ~~Structure elevations (i.e. pump centerlines, discharge pipe centerlines, weir elevations)~~
- ~~Drive ratios, as applicable~~
- ~~Actual raw field data with a minimum of 5 valid test points collected in the full operating range~~
- ~~Calibration equation and basis for determination~~
- ~~Sample log (must record upstream and downstream water elevations at approximately the same time each day, pump/engine speeds, start/stop times, daily rainfall, operators initials)~~
- ~~Signed and sealed engineer's certification statement~~

~~For both pumps and culverts, upstream and downstream water level elevations must be recorded during discharge events. If the discharge structure is a culvert or a weired culvert, water elevations must be continuously recorded and the weir elevation must be documented with all changes in elevation (i.e. adding/removing boards) noted and dated. If the structure is a pump, the start and stop time, upstream and downstream staff gage readings (at least twice daily at approximately the same time each day), and pump speed must be recorded. A sample pump log is included in Appendix B.3. Changing an engine or a drive ratio will affect calculated flows and must therefore be reported at the time the change is made. Modifications to a structure may affect the previously approved calibration and must be reported to the District. The District's "Flow Calibration Guidelines" shall be used for review criteria.~~

~~Calculations~~

~~Daily flows can be determined by calculating the flow at the first daily reading and at the second daily reading. Each of these readings can then be multiplied by half of the total daily hours of operation and summed for daily flow. Other flow calculation techniques may be acceptable. The District must approve the calculation methodology in the Discharge Monitoring Plan.~~

Oct 2010
~~Aug 2001~~

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SAMPLE PUMP LOG

~~DAY~~	~~START / CONTINUE~~				~~STOP~~				~~RAIN~~	~~INIT.~~	~~COMMENTS~~
	~~TIME~~	~~RPM~~	~~INSIDE GAUGE~~	~~OUTSIDE GAUGE~~	~~TIME~~	~~RPM~~	~~INSIDE GAUGE~~	~~OUTSIDE GAUGE~~			
~~1~~											
~~2~~											
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~~*POST-PERMIT COMPLIANCE*~~

~~As part of permit compliance, the permittee is required to certify annually that the permitted BMPs are being implemented for the previous calendar year. The report must be submitted to the SFWMD Regulation Department by February 1 of each calendar year. The "C-139 Annual Report – Certification of BMP Implementation" Form (hereinafter referred to as "BMP Annual Report") is included as Appendix C.2 of this guidebook to meet this reporting requirement. The form shall be completed for each land use or farm. The permittee shall indicate on the form the BMPs that were implemented on the associated parcels for the previous calendar year.~~

~~BMP implementation includes record keeping and documents available for review by District staff that demonstrate the implementation of BMPs. Examples and details are listed on the BMP Annual Report Form.~~

~~A second function of permit compliance is on-site BMP Verifications by District staff. This component is only initiated by the District if the C-139 Basin is determined to be out of compliance. The documentation described above shall be available to District staff for review during these site visits.~~

~~Finally, for the optional Water Quality Monitoring Program, the permit compliance activities include the monthly submittal of data to the District (see Appendix B.1 of this guidebook for details of this plan), Quality Control Audits of data, verification of calculated flow, and compliance with conditions as specified in the permit.~~

~~Comprehensive BMP Annual Report~~

~~If the C-139 Annual Report Form is not submitted by February 1 of each year, the permittee shall submit a comprehensive BMP Annual Report. The Comprehensive BMP Annual Report is a more detailed version of the BMP implementation form that follows. It includes the form and the required supporting documentation to verify the implementation of each BMP. This documentation includes all maps, copies of sample receipts, laboratory reports, etc. Examples of other acceptable documentation are listed on the form.~~

Vol. 13

FLOW CALIBRATION GUIDELINES

DEVELOPED IN SUPPORT OF
CHAPTER 40E-63, F.A.C.

EVERGLADES BMP PERMIT PROGRAM

OCTOBER 1, 1996
(AMENDED JUNE 10, 1997)
(AMENDED JULY 24, 1997)

PREPARED BY:
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FOREWORD

All calibrations, re-calibrations and flow verifications submitted in compliance of the Everglades BMP Permit Program (Chapter 40E-63) shall include at a minimum:

(1) Which pre-approved Calibration Field Data Collection Methodology was utilized
   a. Instrumentation
   b. Procedure

(2) Which pre-approved calibration Data Evaluation Methodology was utilized
   a. Flow Equation Development
      - Parabolic
      - Cubic
      - Linear

   b. Alternative Mean Flow Rate Determination

   c. Theoretical Equation

   d. Flow Verification of previously accepted equation

(3) Operating ranges of speeds (if applicable) and head differentials

(4) Actual data collected

(5) Final Calculations to be applied to determine flow
   a. Flow Equation
   b. Mean Flow Rate
   c. Theoretical Equation
   d. Previously Accepted Equation

(6) Primary operational instrumentation in place (e.g. RPM sensor, RPM tachometer, water level sensor, staff gauge, data logger, log book) necessary to determine flow

(7) Back-up instrumentation in place (e.g. RPM tachometer, staff gauge, log book) necessary to determine flow in the event the primary equipment fails

(8) Certification or verification Statement

CALIBRATION GUIDELINES

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CALIBRATION GUIDELINES

INTRODUCTION

Chapter 40E-63 (Everglades BMP Program), F.A.C., requires permittees to submit and implement an acceptable water quality monitoring plan which provides "reasonable assurance" that annual water discharge and phosphorus load are accurately documented. Permittees within the Everglades Agricultural Area (EAA) under the Everglades BMP Program are currently required to calibrate off-site discharges from 300+ locations. Calibration information is being compiled for two purposes:

1) provide guidelines to permittees prior to permit renewal (January 1, 1997) for consistent application of calibration requirements, and

2) implement a simplified alternative calibrated flow calculation method.

Flow rates are currently being calculated using a variety of discharge equations. In response to requests by permittees, a method is being investigated that would utilize a single flow rate thereby decreasing the type of field readings and simplifying the calculations. The SFWMD assembled a group of professionals with specialized expertise in flow calibrations to further discuss and develop the feasibility of these concepts. This Flow Calibration Work Group has been acting in a peer review fashion and consists of the following individuals:

Steve Dobbs, P.E., United States Sugar Corporation
James Endres, P.E. Moving Water Industries
Richard Hall, P.E., Farmers Manufacturing Co., Inc.
Mark Howell, United States Sugar Corporation
Dean Mades, P.E., HydroScience Water Resource Consultants, Ltd.
Art Schmidt, P.E., HydroScience Water Resource Consultants, Ltd.
Pamela Smith, P.E., SFWMD
Benita Whalen, P.E., SFWMD
Andrew Wiley, Farmers Manufacturing Co., Inc.

This calibration guideline document addresses issues such as standardized methodologies for field data collection and data evaluation to produce a flow equation, changes that necessitate a re-calibration, frequency of re-calibrations, etc. This document is not intended to be a how-to-manual and therefore is not a substitute for technical knowledge required by any individual conducting a flow calibration.

~~**NOTE:** The criteria contained in this flow calibration guideline document is effective on October 1, 1996. Therefore, all proposed flow calibration methods (including those discussed in this document) and entities performing these methods will require approval from the SFWMD prior to performing calibrations after October 1, 1996. The District's calibration confirmation process is discussed in more detail under Section VII.~~

1. FLOW CALIBRATION DATA COLLECTION METHODS

The following section identifies and describes the type of data collection methods which have been used to satisfy the flow calibration requirements of chapter 40E-63. Also listed are special concerns that need to be considered when selecting a data collection method for a particular location. It should be noted that with each data collection method strict field practices, quality workmanship, equipment maintenance, and accurate record keeping are needed to ensure data reliability.

PIPE VELOCITY

1. Pitot Tube/Manometer

The rate of flow in pipelines under pressure may be computed from the conduit cross-sectional area and velocity observations made by a pitot tube. The tube consists of a right-angle bend which, when partly immersed with the bent part under water and pointed directly into the flow, indicates the velocity head of flow by the distance that the water rises in the vertical stem. Common differential pressure measuring devices for the pitot tube are the pitot-static pressure probe and the inverted U-tube manometer. The pitot-static pressure probe consists of two separate, essentially parallel parts, one for indicating the sum of the pressure and velocity heads (total Head) and the other for indicating the pressure head. Similarly, the manometer is an instrument that consists of two vertical tubes, (each part a leg of the U), one for indicating total head and the other for indicating only the pressure head. The velocity head is obtained by subtracting the static head from the total head or by measuring the vertical difference between the two (manometer). For a constant rate of flow, the velocity varies from point to point across the pipe flow area hence the need to take readings across the pipe diameter. The mean velocity is obtained by dividing the cross-sectional area of the pipe into a number of concentric, equal area rings and a central circle, measuring/calculating the velocity of each section then averaging the values. A standard ten-point system (four equal area rings and central circle) is commonly used.

KEY POINTS FOR METHOD-CONSIDERATION:

(a) Flow should be uniform.
(b) High flow velocities make positioning and securing the instrument difficult. Dynamic instability may also occur, causing the tube to vibrate and produce erroneous readings.
(c) Partial pipe flow needs to be identified (measure air gap height) and flow area calculated appropriately. If the pipe is not flowing full, the change in velocity distribution must also be considered to accurately determine the average.
(d) Low flow velocities give small head differentials and reading errors may occur which greatly affect results.
(e) Sediment and trash may plug the small openings in the tubes.
(f) Pitot tube data are not valid when the magnitude of manometer fluctuations is greater than 25 percent of the differential pressure which translates into a velocity variability of 10 percent.
(g) The U.S. Geological Survey (USGS) standard 40-second minimum observation time shall be used.

(FLOW CALIBRATION DATA COLLECTION METHODS CONTINUED)

PIPE VELOCITY

2. Doppler

The Doppler Ultrasonic Flowmeter is a flow-monitoring device that utilizes the frequency shift (Doppler effect) of an ultrasonic signal to measure flow velocities. A generating crystal in the transducing sensor transmits a high frequency signal through the pipe wall into the water. This signal is reflected by suspended particles or gas bubbles in the moving fluid and is then detected by a receiving crystal located in the sensor. The difference between transmitted and detected frequencies is directly proportional to the flow velocity.

KEY POINTS FOR METHOD CONSIDERATION

(a) Flow should be uniform
(b) Transducers should be attached (1) at a location where the pipe is flowing full, (2) positioned near the end of a straight length of pipe that is at least 5 pipe diameters in length and (3) positioned at angles that are in accordance with the manufacturer's recommendations.
(c) Age and condition (rust) of pipe material must be considered so that readings are not adversely affected. Some models may not have adequate signal strength for older (corroded) pipe.
(d) Interference from vibration or noise from the pump must be considered in selecting equipment.
(e) In general, data collected using the Doppler Ultrasonic Flowmeter become much less reliable when velocities decrease below 0.05 ft/s.
(f) Meter must be maintained and calibrated according to manufacturer's recommendations.

3. Dye Fluoromety – Tracer Dilution and Tracer Velocity

The two types of dye-fluorometry measurements, tracer dilution and tracer velocity, could be included within the APPROACH VELOCITY section but are included under PIPE VELOCITY for they would more likely be used to measure pipe velocities. Tracer dilution methods are used for higher-velocity sections (pump lines) where mixing can be assured. Tracer velocity methods are used in low velocity sections with known geometries (culverts).

Tracer Dilution

Tracer dilution methods are based on the principle of mass balance. A tracer is introduced into the upstream channel (or pump intake) at a measurable rate and concentration, tracer concentrations are continuously measured downstream (or in the pump outfall for a period of time, and the time series of concentrations are evaluated to determine discharge. Fluorescent tracers such as Rhodamine-WT are typically measured using a fluorometer. The amount that the added tracer solution is diluted by flowing water determined.

Dye Fluorometry – Tracer Dilution continued

KEY POINTS FOR METHOD CONSIDERATION:

(a) Determine whether slug or continuous injection of tracer should be used and develop appropriate tracer-measurement plan.
(b) Ensure that the tracer uniformly mixed within the sampling section. Injection manifolds may be needed to help achieve mixing.
(c) Instrumentation must be maintained and calibrated according to manufacturer's recommendations. Care must be taken to ensure that dye-water samples are within the linear range of a fluorometer and that background fluorescence is accounted for.

Dye Fluorometry – Tracer Velocity

Tracer velocity methods depend on measuring the time it takes a conservative tracer to pass through a channel (or pipe) having a uniform and measurable geometry. The tracer is introduced to the channel at some upstream location using the slug-injection method and continuously measured at a downstream location for a period of time. Discharge is determined by dividing the volume of water located between the injection and measurement sections by the lapsed time between the centroids of time-concentration curves for each section.

KEY POINTS FOR METHOD CONSIDERATION:

(a) A static volume of water located between the injection and measurement sections must be accurately known.
(b) Tracer sampling must continue for a long enough period of time to accurately determine the centroid of a time concentration curve.

(FLOW CALIBRATION DATA COLLECTION METHODS CONTINUED)

APPROACH VELOCITY

4. Stream Gauging (current and electromagnetic meters)

Stream gauging is a method which measures velocities in the channel, upstream of the pump station. Two basic types of meters are generally used for stream gauging, (1) vertical-axis or vane-type current meter (Price AA) and (2) electromagnetic meter (Marsh-McBirney).

(1) A vertical axis meter consists of a wheel which rotates when immersed in flowing water and a device for determining the number of revolutions of the wheel. Water velocity is determined by counting the number of revolutions of the wheel over a given period of time. The relations between the velocity of the water and the number of revolutions of the wheel per unit of time for various velocities are determined for each instrument by U.S. Bureau of Standards and are supplied in the form of an equation from which a rating table is compiled.

(2) An electromagnetic meter operates on the principle that a voltage is induced in an electrical conductor moving through a magnetic field. For a given field strength, the magnitude of the induced voltage is proportional to the velocity of the conductor (flowing water). The sensor is equipped with an electromagnetic coil that produces the magnetic field and a pair of electrodes that measure the voltage produced by the velocity of the flowing water. The measured voltage is then processed by electronics and output as a linear measurement of velocity.

Three other types of current meters are also appropriate for measuring water velocity even though they have not yet been used to calibrate pumps for the Everglades BMP Program. These include the (1) acoustic Doppler current Profiler – ADCP, (2) Point acoustic Doppler Velocity Meter – PADVM and (3) Smart Acoustic Current Meter – SACM.

(1) & (2) The acoustic doppler current profiler (ADCP) and point acoustic doppler velocity meter (PADVM) operate on the principle of the doppler effect of sound in moving water. The meters emit a series of phase-encoded acoustic pulses at a fixed frequency along each of the narrow acoustic beams and measures the frequency shift (Doppler effect) of the return echo. The ADCP is suspended in a fixed position within the water column and continuously measures velocities at user prescribed intervals from near the channel bottom to near the water surface as the meter is moved across the channel. The PADVM measures a discrete velocity near the transducer heads and must be moved laterally and vertically within the measurement section (like a Price AA) to determine mean channel velocity. Velocities as low as 0.03 ft/s can be measured using ADCP and PADVM.

(FLOW CALIBRATION DATA COLLECTION METHODS CONTINUED

Stream Gauging (continued)

(3) The SACM is a vector-averaging current meter. The SACM is based on the time of travel of acoustic signals sent between two pairs of transducers oriented at ninety degrees from each other. A small reflector located about an inch below the acoustic transducers reflects an acoustic pulse from one transducer to the opposite transducer. Components of the velocity vector are resolved using the velocities measured along the two acoustic paths and an internal, magnetic compass. The SACM can measure point velocities as low as 0.03 ft/s.

Please note that in addition to the constraints listed below, stream gauging will only be accepted as a calibration data collection method in situations where 100% of the flow to the pump is through the single canal being measure. Low velocities, non-uniform channels, interference from side channels, fluctuating water levels during data collection are some of the conditions that exist at the majority of sites within the EAA which make this method more difficult to perform. Gauging at a downstream control section (e.g. culvert) will not be acceptable because the majority of pump stations have a much greater capacity than the control section and therefore an amount of storage is occurring in the forebay area. Stream gauging may be considered with the following constraints but only in situation where 100% of the flow to the pump is through the single canal being measured.

(a) Metering equipment must be used within the manufacturer's guidelines; In general, data collected using vane-type meters (such as Price AA) and the electromagnetic meters (such as Marsh-McBirney) become much less reliable when velocities decrease below 0.15 ft/s. Acoustic meters such as the ADCP, PADVM and SACM can be used to reliably measure velocities approaching 0.03 ft/s.

(b) Eighty percent (80%) of the point velocities measured must be above the manufacturer's minimum velocity.

(c) The two-point method and six-tenths-depth method of determining mean velocity in a vertical line shall be used. Meter measurements shall be taken at 2- and 8-tents depth if the depth of flow equals or exceeds 2 feet, otherwise at the 6-tenths depth.

(d) No velocity measurement section shall carry more than ten percent (10%) of the flow.

(e) The U.S. Geological Survey (U.S.G.S.) standard 40-second minimum observation time shall be used.

(f) Approach velocity measurement sections must be taken near the pump but no closer than a main canal width from the pump station and at least a main canal width downstream from side canals in a reach characterized by uniform flow and no turbulence. Artificial and/or temporary blocking of side or tributary canals are not representative of actual field conditions and therefore will not be allowed.

(g) Meter shall be formally calibrated according to manufacturer's criteria, annually at a minimum. Records should be kept to verify meter calibrations.

(FLOW CALIBRATION DATA COLLECTION METHODS CONTINUED)

THEORETICAL EQUATIONS

5. The use of theoretical equations to estimate gravity control structure flow does not in its self constitute a data collection method. However, some type of data collection, i.e. a field investigation and data history search of the range of water surface elevations, must be conducted to assist in the determination of which type of flow conditions (e.g. submerged weir flow, partial culvert tranquil flow throughout, etc.) exist so the appropriate theoretical equations are selected. Geometric configurations and measurements must also be know such as culvert invert elevation, length, material, diameter, gate opening, and flash board elevation if applicable.
   Weir equations and the U.S.G.S. source for culvert flow equations can be found within Section III. DATA EVALUATION METHODS AND FLOW EQUATION DEVELOPMENT CRITERIA.

OTHER

6. The use of any other data collection method not identified within this document will require prior approval from the SFWMD. The District's calibration confirmation process is discussed in more detail under Section VII.

II. FIELD DATA COLLECTION CRITERIA

A. Types of Flow Configurations

The various configurations of pumping stations or water control cross-sections can be classified into four different types.

Type 1 Well defined pump and pipe configuration. Well-defined pipe configurations are accessible and have a straight length of pipe at least ten times its diameter. The straight length of pipe can be on either side of the pump. Refer to **Figure 1** for a sketch of this situation. Type 1 configurations require measurement of headwater stage, tall water stage, pump speed, and average flow velocity.

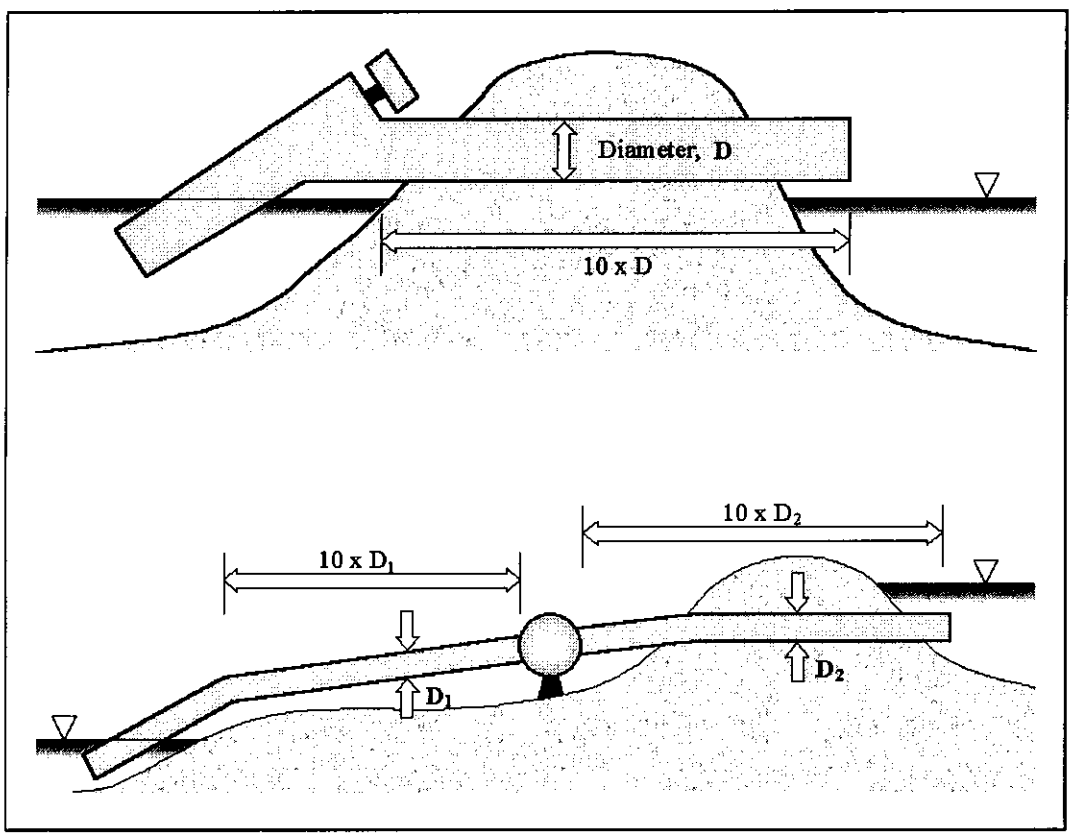


Figure 1. Examples of Type 1

(Types of Flow Configurations continued)

The two recommended methods for data point collection under Type 1 conditions are measuring pipe flow velocities and performing a mass balance by tracer-dilution methods. Stream gauging is listed as a method but note that its use is conditional (only in situations where 100% of the flow to the pump is through the single canal being measured).

(a) Pipe Velocity. Three ways to determine the pipe flow velocity are suggested as follows. 1. Measure pipe water velocity head or static and total head (pitot tube/manometer). 2. Use an acoustic (Doppler) pipe flow velocity-measuring device. 3. Use tracer-dilution method to perform a mass balance.

(b) Stream Gauging (current or electromagnetic meter) **CONDITIONAL** Only if 100% of the flow to the pump through the single canal being measured.

The measurements for Type 1 configurations are headwater stage, tail water stage, and pump speed at the start and end of each flow period and any other parameters necessary to calculate flow.

Type 2 Poorly defined pump This type consists of pump configurations that do not meet Type 1 criteria (not accessible and do not have a straight length of pipe at least ten times its diameter). Figure 2 shows examples of this configuration.

A recommended method for data point collection under Type 2 conditions is performing a mass balance by tracer-dilution. Other pipe velocity measurement methods such as the pitot tube or acoustic device may be used for this type of pump configuration if proper insertion of the pitot tube or attachment of the acoustic device is possible and an appropriate number of velocity measurements are made to accurately define the entire velocity profile. Stream gauging is listed as a method but note that its use is conditional (only in situations where 100% of the flow to the pump is through the single canal being measured).

(a) Dye Fluorometry use tracer-dilution method to perform a mass balance.

(b) Other Pipe Velocity Methods measure pipe water velocity head or static and total head (pitot tube/manometer) or use an acoustic (Doppler) pipe flow velocity-measuring device. Note that these methods are appropriate if proper insertion or attachment of the instrumentation can be accomplished and sufficient data is collected to accurately define the entire velocity profile.

(c) Stream Gauging (current or electromagnetic meter) **CONDITIONAL** Only in situations where 100% of the flow to the pump is through the single canal being.

The measurements for Type 2 configurations are headwater stage, tail water stage, and pump speed at the start and end of each flow period and any other parameters necessary to calculate flow.

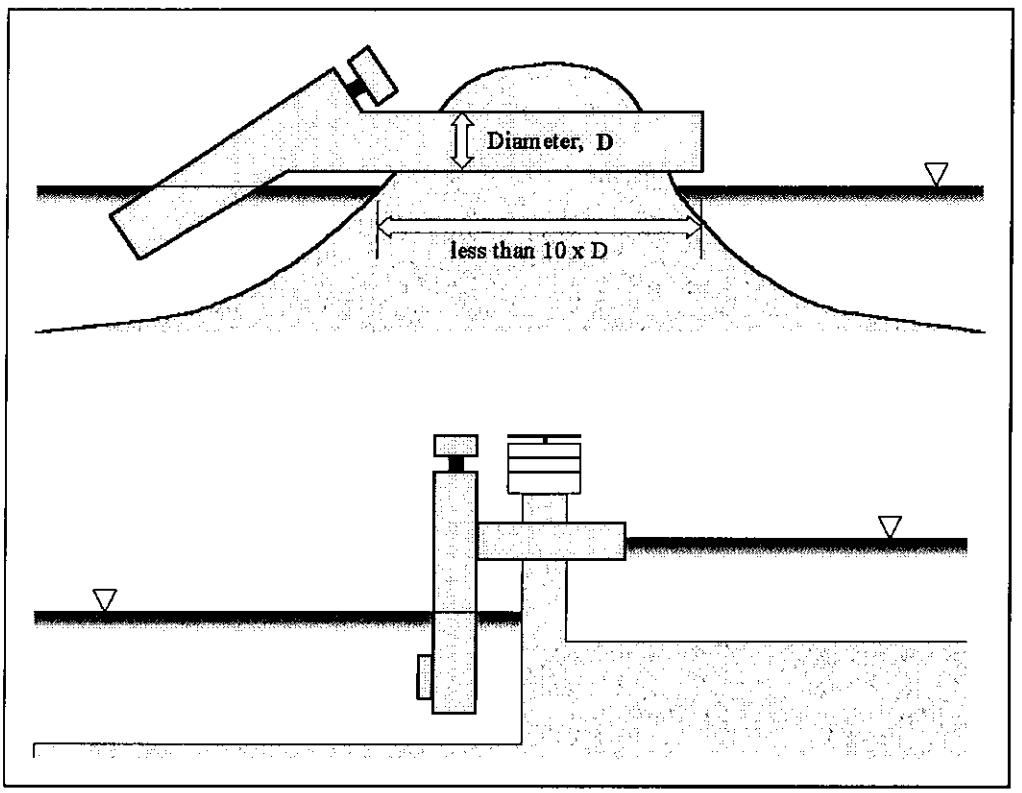


Figure 2. Examples of Type 2 – Poorly defined Pumps 9pipe length less than 10 x pipe diameter)

Type 3 Vertical lift box pump

The two recommended methods for data point collection for vertical lift box pumps are performing a mass balance by tracer-dilution methods and not collecting data points but instead using a theoretical weir discharge formula. Stream gauging is listed as a method but note that its use is conditional (only in situations where 100% of the flow to the pump is through the single canal being measured).

(a) Dye Fluorometry Use tracer-dilution method to perform a mass balance.

(b) Theoretical Equation Use applicable weir equations.

(c) **Stream Gauging** (current or electromagnetic meter) **CONDITIONAL** Only in situations where 100% of the flow to the pump is through the single canal being measured.

The measurements for Type 3 configurations using the methods described in section (a) and (c) above are head water stage, tail water stage, and pump speed at the start and end of each flow period and any other parameters necessary to calculate flow.

(Types of Flow Configurations continued)

Type 4 Gravity control sections. This type includes gravity flow through structures such as gates, weirs, and culverts. **Figure 3** displays some examples. The U.S.G.S. is an authority of streamflow measurement. Theoretical equations outlined by U.S.G.S. in their technical document titled "Measurement of Peak Discharge at Culverts by Indirect Methods" by G. L. Bodhaine (1968) are acceptable for flow computations for culvert structures. Theoretical equations for weir flow and submerged weir flow are also acceptable as outlined on Page C-IV-24 of the SFWMD's Permit Information Manual Volume IV, Part C surface Water Management System Design Aids.

The permittee also has the option of conducting field measurements to calibrate these theoretical equation. The key points and criteria previously identified under the appropriate data collection method shall be followed when taking flow measurements to calibrate theoretical equations.

(a) Theoretical Equations For culverts: U.S.G.S. "Measurement of Peak Discharge at Culverts by Indirect Methods" by G. L. Bodhaine (1968). For weirs: Page C-IV-24 of the SFWMD's Permit Information Manual Volume IV, Part C surface Water Management System Design Aids.

(b) Use tracer velocity method to calibrate the theoretical equation.

(c) Stream Gauging (PADVM or SACM) to calibrate the theoretical equation.

Some geometric configurations and measurements must be known for use of theoretical equations such as culvert invert elevation, diameter, length, material, gate opening, and flash board elevation if applicable.

If the theoretical flow equation is calibrated, recorded measurements for Type 3 configurations are head and tail water stages across the control cross-section for each flow period. The length of each culvert must be at least ten times the diameter when measuring culvert flow. To use a culvert of less than ten pipe diameters in length for discharge calculation there should be sufficient justification and assurance of uniform flow.

(Types of Flow configurations Continued)

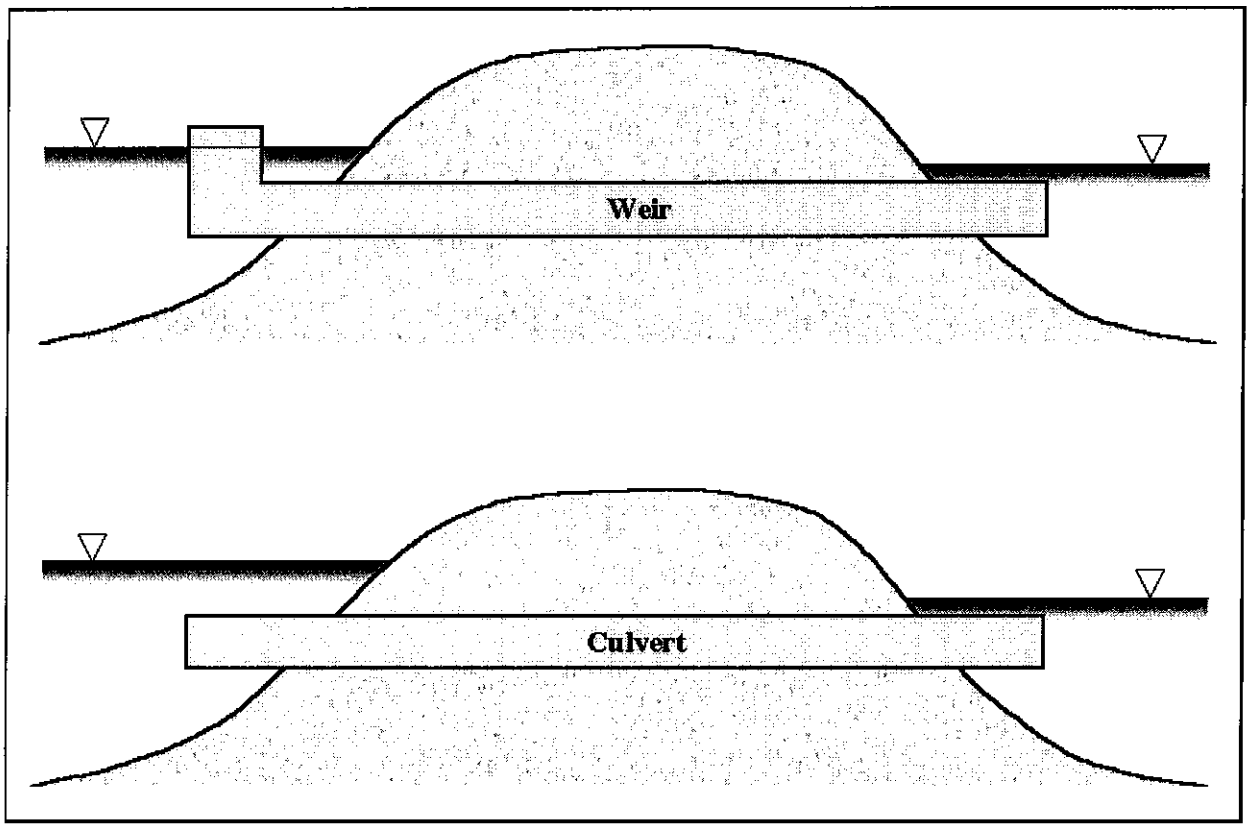


Figure 3. Examples of type 4 – Gravity Control Structures

A decision matrix worksheet is presented as Table 1. This worksheet will be used as the guide to determine if a flow calibration method is appropriate for given flow configurations.

TABLE 1 DECISION MATRIX OF APPROPRIATE DATA COLLECTION METHODS BASED ON FLOW CONFIGURATIONS

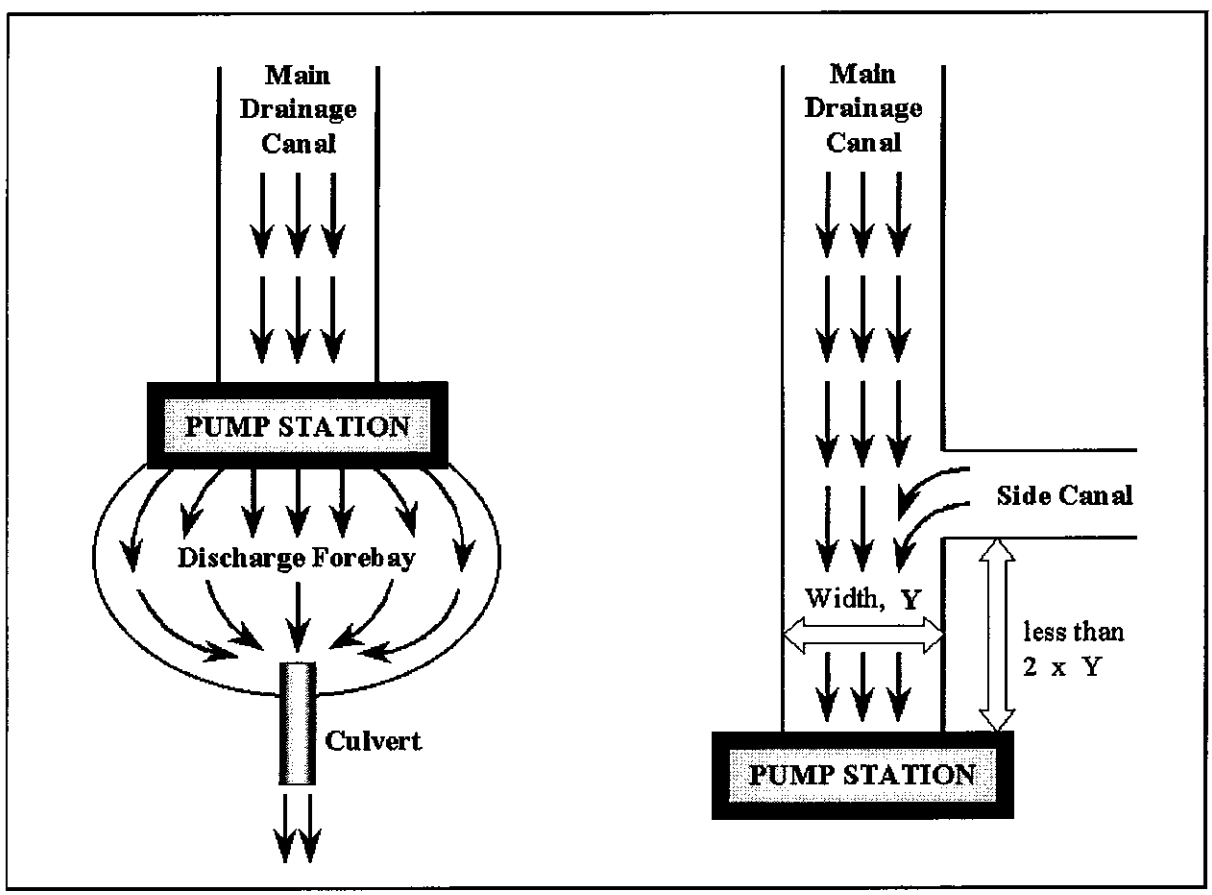
FLOW CONFIGURATIONS	PITOT	DOPPLER	TRACER-DILUTION	TRACER-VELOCITY	STREAM GAUGING	THEORETICAL EQUATION
TYPE 1 WELL DEFINED PUMP				n/a	conditional on Section 1.4 and Table 2	n/a
TYPE 2 POOR DEFINED PUMP	refer to type 2 page 9	refer to type 2 page 9		n/a	conditional on Section 1.4 and Table 2	n/a
TYPE 3 VERTICAL LIFT BOX PUMP	n/a	n/a		n/a	conditional on Section 1.4 and Table 2	
TYPE 4 GRAVITY CONTROL CROSS-SECTION	n/a	n/a	n/a		conditional on Section 1.4 and Table 2 and limited to PADVM or SACM	

Shading indicates method is not appropriate (n/a) or use of method is conditional on other criteria.

B. Types of Canal Configurations

The various configurations of canals can be classified into four different types. Breakdown of canal configurations is for the stream gauging data collection method only. All other methods used are located at the pump or control structure. Approach velocity measurement sections should be located far enough upstream (typically a main canal width) from the pump to avoid turbulence effects, at least a main canal width downstream from side canals, and close enough to the pump so that the lag time to achieve equal pump and canal discharges when pumping conditions (lift and/or speed) change are minimal.

Type 1 Uniform main canal cross-section and no side canals within two main canal widths of pump station.
Type 2 Non-uniform main canal cross-section (varying depth or width) and no side canals within two main canal widths of pump station. Note that stream gauging may be performed at a non-uniform section but greater care must be taken when measuring depths and subdividing the measurement section.
Type 3 side or tributary canals within two main canal widths of pump station (refer to Figure 4).
Type 4 Pump discharge forebay with increasing stages/storage occurring (refer to Figure).



TYPE 4 TYPE 3

Figure 4. Examples of Canal Configurations which are **NOT** appropriate for stream gauging

A decision matrix worksheet is presented as Table 2. this worksheet will be used as the guide to determine if stream gauging is appropriate for given canal configurations.

TABLE 2 DECISION MATRIX FOR ACCEPTABLE CANAL CONFIGURATIONS TO STREAM GAUGE

CANAL CONFIGURATIONS	**ALLOWABLE (conditional on Section 1.4)**
TYPE 1 UNIFORM CROSS-SECTION AND NO SIDE CANALS WITHIN TWO MAIN CANAL WIDTHS OF PUMP STATION	
TYPE 2 NON-UNIFORM CROSS-SECTION	
TYPE 3 SIDE CANALS WITHIN TWO MAIN CANAL WIDTHS OF PUMP STATION	n/a
TYPE 4 PUMP DISCHARGE FOREBAY WITH CONTROL SECTION	n/a

Shading indicates method is not appropriate (n/a)

(DATA COLLECTION CRITERIA CONTINUED)

C. Minimum Data Collection Criteria

For all types of data collection methods, the head water stage, tail water stage (centerline of pipe if outlet is unsubmerged), pump speed, and elapsed speeds remain the same during the measurement. Water surface elevations at a minimum must be recorded at the start and the end of each measurement (measurements should verify that flow is stable). the rotational speed of the pump may be measured by a tachometer mounted on the pump or engine. If a tachometer is mounted on the engine, the ratio of the engine speed to the pump speed must be known. The engine speed will typically be greater than the pump speed. All structures should be rated for the range of water stages and pump speeds expected during operation.

1. Operation Range
   If the structure is existing, data history research shall be done to determine actual operating conditions (head differentials and pump speeds) for the structure.

2. Minimum number of data points required for calibration.

   FOR PUMPS:

   Minimum of 5 data points which cover 2' of change in head differential or 25% of operating head differential range. Test speeds shall fully cover the operating speeds <u>expected based upon documented observation.</u>

   Note that greater than 2' of head differential or greater than 25% of the operating head differential range may be necessary in situations where there is less certainty of pump performance. In order to obtain 25% or more of the operating head differential range, a discharge valve or other mechanism may need to be installed to artificially create the necessary head conditions in the field for collection of data points.

   FOR GRAVITY CONTROL STRUCTURES:

   If a permittee elects to calibrate a theoretical equation, at a minimum, two data points are required with a minimum head differential equal to or exceeding 0.1 foot of head differential.

3. At a minimum, water stages shall be collected at the beginning and end of each measurement.

III. DATA EVALUATION METHODS AND FLOW EQUATIONS DEVELOPMENT CRITERIA

Once the calibration field data points have been obtained, an analysis is performed to develop a flow equation. In the case of gravity control structures using uncalibrated theoretical equations to calculate flow, a field investigation is conducted to determine which type of flow conditions exist so the appropriate theoretical equations are selected.

PUMP FLOW EQUATIONS

Static head and pump speed (if a variable speed power unit is used) are the variables in the flow equation. Various types of flow equations which were previously submitted are graphically presented in **Figure 5** and discussed in more detail below. These equation forms have been used in the past to adequately describe the data points collected and will be the only types accepted in the future unless approval can be obtained from the SFWMD.

A. Types of Flow Equations

1. Parabolic (equation type that describes a typical axial flow pump curve)
   $Q = [A*(\text{FIELD RPM}/\text{RPM}) - B*HD^{C}(\text{RPM}/\text{FIELD RPM})^{2C-1}] * 1000$

2. Cubic (equation type that describes an axial flow pump operated at speed less than 75% of design)
   $Q=B*(\text{FIELD RPM}/\text{RPM})[A-((\text{RPM}/\text{FIELD RPM})^{2}*HD-C)/|((\text{RPM}/\text{FIELD RPM})^{2}*HD-C)|(|(\text{RPM}/\text{FIELD RPM})^{2}*HD-C|)^{.333}]$

3. Linear (slope from the manufacturer's curve, transposed over the calibration data points)
   $Q = ((A*(\text{FIELD RPM}/\text{RPM})^{2}-HD)/C)+(B*\text{FIELD RPM}/\text{RPM})$

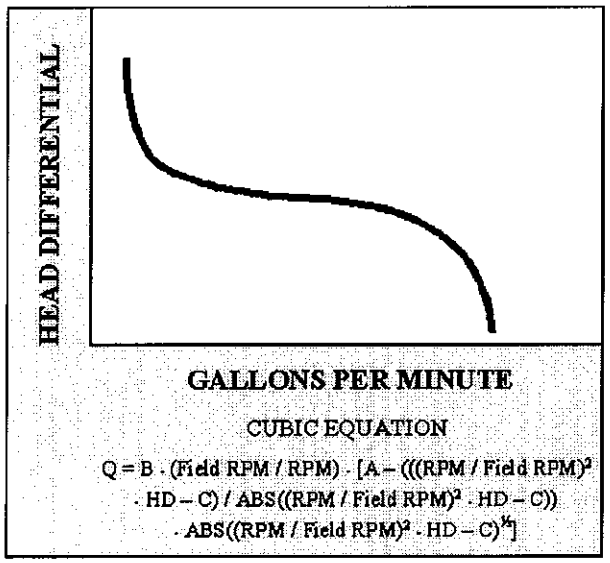
where A,B,C are coefficients

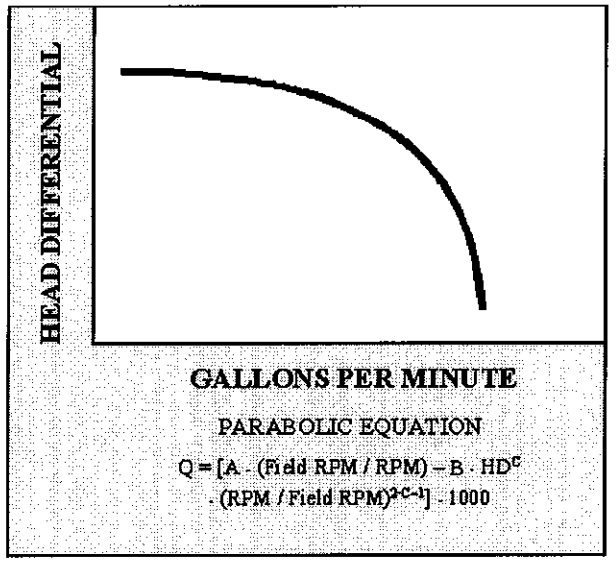
Q = flow, gpm	FIELD RPM = actual pump or engine speed
HD = static head differential	RPM = calibration pump or engine speed

B. Minimum Equation Development Criteria

All developed pump flow equations must meet the following criteria and all calibration submittals shall provide documentation which indicate this criteria has been met.

1. Flow equations should exhibit standard axial flow pump principles (e.g. increasing head differential – decreasing flow rate; increasing pump speed – increasing flow rate).
2. Application of Affinity Laws: Head differentials must also be converted when using the Affinity Laws to convert multiple speed data points to a single speed.
3. Predicted flow from discharge equation shall be within ± 10% of tested flows.
4. R^2 should be > 0.85
5. For linear equations, slope from the portion of the manufacturer's curve through normal head differential range can be used only if it is the actual pump curve (not similar pump curve) and no alterations have been made to the pump.
6. For parabolic equations, "A" coefficient (zero head differential must be positive); "B" coefficient must be positive so as head differential increases, flow decreases and "C" coefficient for axial flow pumps should be between 1.5 and 3.0.





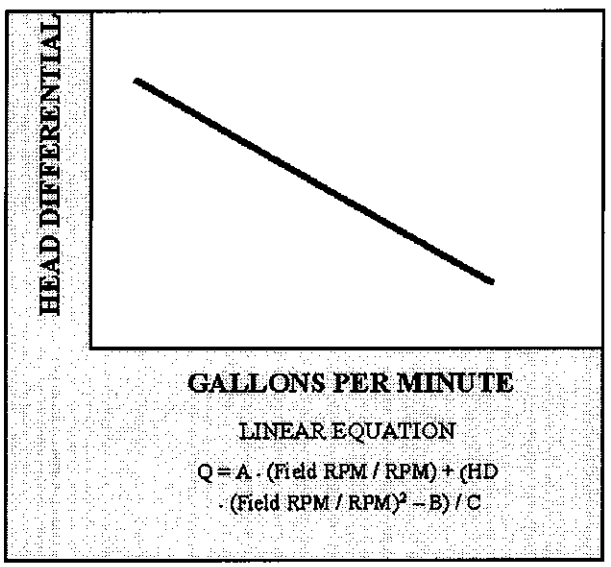


Figure 5. Types of Flow Equations

(DATA EVALUATION METHODS AND FLOW EQUATIONS DEVELOPMENT CRITERIA)

GRAVITY FLOW THEORETICAL EQUATIONS

Selection of the appropriate theoretical equations for uncalibrated flow estimation relies on accurate data collection. Peak upstream and downstream water surface elevations, structure geometry and canal geometry are some of the information obtained in the field survey. Weir equations that may be appropriate are listed below. Appropriate culvert flow equations can be found in the USGS document identified below.

Weir Flow (submerged & unsubmerged)

(a) For Vertical lift box pumps and flashboard risers, a rectangular sharp-created weir discharge equation (Page C-IV-24 of the SFWMD's Permit Information Manual Volume IV, Part C Surface Water Management System Design Aids) may be appropriate.

$Q_F = 3.13LH_1^{1.5}$ — Rectangular sharp-crested weir – unsubmerged
Q_F = free flow, cfs
L = weir length, feet
H_1 = upstream head above crest, feet

$Q_S = Q_F[1-(H_2/H_1)^{1.5}]^{0.385}$ — Rectangular sharp-crested weir – submerged
Q_S = submerged flow, cfs
H_2 = downstream head above crest, feet

(b) The head H_1 should be measured at least $2.5H_1$

Culvert Flow (full & partial)

(a) The U.S. Geological Survey (U.S.G.S.) an authority of steamflow measurement. empirical equations outlined by U.S.G.S. in their technical document titled "Measurement of Peak Discharge at Culverts by Indirect Methods" by G.L. Bodhaine (1968) shall be used for culvert flow. Culvert flow has been classified into six types on the basis of the location of the control section and the relative height of the headwater and tailwater elevations. Justification of which type(s) of flow regime exist is required.

GRAVITY FLOW CALIBRATED THEORETICAL EQUATIONS

(a) If the permittee elects to obtain field measurements to calibrate the theoretical discharge equation (flow data will be collected to determine a coefficient of discharge for the culvert structure), the tested flows shall be within ± 10% of the flows predicted by using the appropriate theoretical discharge equation.

IV. FIELD INSTRUMENTATION AND RECORD KEEPING

The minimum field instrumentation required for both pump and gravity control structures is identified below. the environmental conditions existing in the EAA coupled with the use of electronic water level sensors necessitates that a strong maintenance program be implemented to ensure that accurate head differentials are being measured. Therefore, a sensor maintenance and calibration program is required to be included with any flow calibration using electronic water level sensors. the maintenance and calibration program for the sensors will document that the sensors will be formally calibrated quarterly (minimum) and informally checked and verified bi-weekly on the regularly scheduled sampling trip.

A. Pumps

Continuous stage and speed recording devices or manual readings of staff gages and pump speed recorded in a logbook is required. Manual readings are required at a minimum of twice per day during discharge.

B. Gravity Connections

Gravity connections with multiple control structures (culverts, weir, etc.) and culverts greater than 36 inches in diameter shall have continuous stage recording devices with readings taken at least every 15 minutes (readings may be averaged over a period of one hour). Backup instrumentation shall consist of additional continuous stage recording device or manual readings taken at least twice daily.

Gravity connections with a single control structure (culvert, weir, etc.) and culvert diameter less than or equal to 36 inches are required, at a minimum, to record manual readings twice per day during discharge.

V. RE-CALIBRATION OR FLOW VERIFICATION

It is acknowledged that discharge from the pumps located in the Everglades Agricultural Area will normally decrease over time. the amount of change in discharge will vary with pump type, size, normal maintenance and frequency of operation. Because Chapter 40E-63 requires that discharge be accurately measured, pumps will be required to periodically verify flow measurement accuracy or be re-calibrated. In an effort to recognize that the change in discharge is correlated with frequency of operation, the period for flow verification or re-calibration will be based upon days of structure operation (days of structure operation versus pump operation since discharge values are submitted to the District by structure). Re-calibrations or flow verifications will be required after approximately one and one-half years of pump operation/use (550 days of pump operation). Re-calibrations have the opportunity to be somewhat simplified if the new data collected indicates that previously certified flow equation or flow value is still valid (flow verification).

Calibrations of new pumps and re-calibrations of repaired or relocated pumps shall be performed by Florida registered Professional Engineers. Flow verifications of pumps that one and one-half years of pump operation since the last calibration may be performed by a registered Professional Engineer or other qualified entity that have received District confirmation (described in Section VII). Re-calibrations shall follow the calibration criteria previously outlined. Flow verification shall follow the data collection criteria previously outlined. If the data collected for a flow verification is not within ± 10% of the predicted flow from the previously accepted discharge equation, a re-calibration to develop a new discharge equation is required.

A. Required Frequency – After approximately one and one-half years of pump operation (550 days of pump operation) ~~not to exceed eight (8) nine (9) calendar years~~, based on data submitted to the District.

B. Circumstances Warranting More Frequent Calibration

1. If the bowl area and/or impeller of the pump is modified, a re-calibration is required.
2. If a pump is relocated, a re-calibration is required.
3. A replacement pump for the primary pump under repair will require calibration if it is at that location for a period greater than 4 weeks.

VI. ALTERNATIVE DETERMINATION

A. Introduction

Various permittees requested that the District investigate alternative calibration methods based on their observations that there was very little change in flow rate over normal operating conditions. In response to requests by permittees, an alternative flow determination method has been investigated that would utilize a single mean flow rate.

A brief description of the SFWMD's investigation of the feasibility or appropriateness of a mean flow rate calibration follows. Data from several pumps were reviewed. For a comprehensive analysis, the pumps chosen currently use either a linear, cubic or parabolic discharge equation. Median head differentials were calculated from all of the actual historical field data for that particular pump. Days of discharge were randomly chosen and flows were calculated using the median head condition. The total flow using the median head condition was compared to the total flow calculated using the actual head conditions for the same event. Of the pumps chosen, the pumps currently using a linear or parabolic equation showed the best correlation for using a median flow rate (< 7% difference in total flow). The pumps currently using the cubic equation resulted in greater than 25% difference in total flow.

Based on the correlations noted above, it appears that the use of a mean flow rate may be suitable for some pumps but each pump will have to be reviewed for its appropriateness of using this method. Therefore it has been determined that the mean flow rate calibration will be an option to the permittees.

B. Description of Procedure and Criteria

The following procedures and criteria must be followed and met for the Alternative Flow Determination Method to be accepted.

1. Criteria for selection of data collection method still apply.
2. Calibration entity and pump operator evaluate previous flow calculations to determine if structure currently exhibits small changes in flow rates over normal operating head differentials.
3. Calibration entity and pump operator evaluates median head differential from previous head differential conditions experienced.
4. Pump operator indicates the high and low operation speed (if diesel engine, single speed if electric) that will only be used.
5. Entity obtains two data points at the median head condition for each speed (high and low).
   - If the 2 data points are within 10% of each other, then an average of the data points is calculated.
   - If the 2 data points are not within 10% of each other, then a check measurement shall be taken to confirm the 10% criteria has not been met. If the 10% criteria can not be met, this alternative method will not be accepted.
6. Flow rate(s) are certified as the mean flow rates(s) for the pump.

(ALTERNATIVE FLOW DETERMINATION CONTINUED)

C. Benefits

- No stage readings are required for flow calculations therefore less instrumentation is needed.
- Daily flow calculations are simplified by using a flow rate and time of operation 9no equation).
- Fewer field data points are required and only at normal conditions.
- Verifying flow for BMP field inspections would be simplified.
- Obtaining results of calibrations should take less time (no equation to be developed).

Note: One potential drawback of the use of a median flow rate is the overestimation of discharge if the actual static head differentials encountered during operation are consistently greater than the calculated median head differential.

VII. ADVANCE CALIBRATION OR FLOW VERIFICATION METHODOLOGY CONFIRMATION/APPROVAL

Any entity ~~after October 1, 1996~~, proposing to perform a calibration, re-calibration or flow verification for the requirements of Chapter 40E-63, F.A.C., is required to receive advance District Confirmation/Approval. Confirmation will consist of two processes; (1) submittal of a detailed proposed calibration or flow verification methodology for District staff's review and approval and (2) field observation of the entities data collection procedures and data manipulation. The District will provide a conceptual review within 7 business days of receipt of a calibration, re-calibration or flow verification submittal.

VIII. CERTIFICATION

All calibrations or re-calibrations performed by a Florida registered Professional engineer shall contain the following **Pump Calibration Certification Statement**:

Assuming that no alterations are made to the system and the system is operated within the normal range identified, in my professional judgment, the calibration methodology, instrumentation, procedure, data collection and interpretation, and final flow equation or flow value will be sufficient to quantify the discharge as described in Chapter 40E-63, Florida Administrative Code (F.A.C.).

All flow verifications shall contain the following **Flow Verification Statement**:

Assuming that no alterations are made to the system and the system is operated within the normal range identified, in my technical opinion, the data collected verifies that discharges are continuing to be sufficiently quantified by the previously developed flow equation as described in Chapter 40E-63, Florida Administrative Code (F.A.C.).

Added 06/10/97

Appendix A

Implementation of the 550 Day Pump Re-Calibration Tracking Process

Background

The intent was to develop a method to track the amount of pump operation that would not require permit individuals to invest more time, effort, and money to track and record this information. Data is currently submitted to the district which provides the million of gallons pumped per day. Days with no pumping are reported as zero.

Tracking the hours of pump operation would be too costly and require:

- purchase, installation, and maintenance of hours meters installed on each pump (meters on each pump not on each engine – it is common to move and remove engines)
- additional record keeping by the permittee;
- additional submittal of information to the SFWMD.

SFWMD staff did not select the 550-day time period lightly or in a vacuum. the SFWMD has the unique benefit of having a database containing over 278,000 daily flow records from all the 40E-63 permit structures within the EAA. Given the approach of minimizing the impact to permittees as described above, the SFWMD discussed with a group of technical professionals who have advanced knowledge on pump calibrations, flow measurements, and flow conditions in the EAA, the appropriate frequency for re-calibration. As an advance to these discussions, District staff discussed "normal" operating conditions, times, and years with several growers as well as pump manufacture and repair specialists. The result of these discussions was that pumps operating under the conditions in the EAA would decline 10-15% from their calibration after less than 4 to 5 years of normal operation (recommended ranges included 1 to 8 years for calibration). District staff conducted a frequency analysis of EAA submitted pump data. The District opted to error on the side of the growers and examined the re-calibration return frequency of 5 to 6 years based upon normal operating conditions. The frequency analysis revealed that approximately 500 days of pump operation (based upon daily records submitted to the District) indicated that 75% of the single pump discharge stations in the EAA would fall into the 5 to 6 year pump re-calibration frequency. Again, in an interest to error on the side of the permittee, the return frequency of 550 days was selected. The 550-day counter DOES NOT represent 13,200 hours of pumping (550 days x 24 hours/day)

As of April 1997, the 40E-63 program has been operating for over 4 calendar years. Only four out of over 300 structures have reached the 550-day count. Keep in mind that this includes two extremely wet years with pumping well above normal frequency and duration.

Added 06/10/97

Implementation

The SFWMD will conduct a simple count each month based upon the daily flow data submitted by the permittees. the owners/operators of any structure which are identified as approaching the 550 days of operation will be notified. If the discharge structure has multiple pumps, only the pump(s) which have reached the 550-day count would be required for re-calibration. Below are two examples.

Example 1. A four-pump station is identified as reaching the 550-day count. The owner identifies the station as operating as follows:

Pump A	Pump B	Pump C	Pump D
567 days	320 days	200 days	2 days

Only Pump A would be required to be re-calibrated. The District would reset the counter to begin counting from 320 days since that was the next highest level of operation.

Example 2. A four-pump station is identified as reaching the 550-day count. the owner identifies the station as operating as follows:

Pump A	Pump B	Pump C	Pump D
200 days	220 days	150 days	0 days

No pumps would require re-calibration at that time. the District would reset the counter to begin counting from 220 days since that was the next highest level of operation.

Added 06/10/97

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May 23, 2010

Ms. Ximena Pernett
Engineering Specialist 4
Environmental Resource Regulation Department
SOUTH FLORIDA WATER MANAGEMENT DISTRICT
3301 Gun Club Road
West Palm Beach, Florida 33406

Statement of Estimated Regulatory Costs
for Revisions to C-139 Basin Rule –
DRAFT PO4500046362

Dear Ms. Pernett:

We are pleased to submit the Statement of Estimated Regulatory Costs for revisions to the C-139 Basin Rule. As required by Section 120.541, Florida Statutes (2009), "A statement of estimated regulatory costs shall include:

(a) A good faith estimate of the number of individuals and entities likely to be required to comply with the rule, together with a general description of the types of individuals likely to be affected by the rule.

(b) A good faith estimate of the cost to the agency, and to any other state and local government entities, of implementing and enforcing the proposed rule, and any anticipated effect on state or local revenues.

(c) A good faith estimate of the transactional costs likely to be incurred by individuals and entities, including local government entities, required to comply with the requirements of the rule. As used in this paragraph, "transactional costs" are direct costs that are readily ascertainable based upon standard business practices, and include filing fees, the cost of obtaining a license, the cost of equipment required to be installed or used or procedures required to be employed in complying with the rule, additional operating costs incurred, and the cost of monitoring and reporting.

(d) An analysis of the impact on small businesses as defined by s. 288.703, and an analysis of the impact on small counties and small cities as defined by s. 120.52.

(e) Any additional information that the agency determines may be useful.

This SERC addresses these legal requirements using the best available information. The project team members were Grace Johns, Ph.D. as project manager and economist; and Del Bottcher, Ph.D., P.E., Agricultural Engineer and President of Soil and Water Engineering Technology, Inc. We thank Ximena Pernett and Carmela Bedregal of the District for assisting Hazen and Sawyer in preparing this SERC by providing relevant data and information and providing review comments and edits.

Very truly yours,

HAZEN AND SAWYER, P.C.

Grace M. Johns, Ph.D.
Senior Associate and Economist

Enclosure

c: File No. 44305-000

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Executive Summary

This Statement of Estimated Regulatory Costs (SERC) follows the requirements of Section 120.541, Florida Statutes (2009) regarding proposed revisions to Chapter 40E-63, Part IV, "Everglades Regulatory Program: Pollutant Source Controls, C-139 Basin", F.A.C. These revisions are referred to in this SERC as the "proposed rule".

1.0 Summary of Current Rule

The current rule implements requirements of the Everglades Forever Act (EFA), Sections 373.4592(4)(f)5. and 6., F.S., for the C-139 Basin, and also provides a regulatory process for landowners whose water management systems connect with and make use of the canals, structures and other Works of the District within the C-139 Basin, in accordance with Section 373.085, F.S. Under the EFA requirements, landowners within the C-139 Basin shall not collectively exceed an annual average loading of phosphorus based proportionately on the historical rainfall for the C-139 Basin over the period of October 1, 1978, to September 30, 1988. The C-139 Basin is located in northeast Hendry County, just southwest of Clewiston, Florida and Lake Okeechobee.

The primary rule requirement is that qualifying landowners, lessees or operators shall obtain District approval of a BMP (Best Management Practices) Plan as described in Part IV and its Appendix B. Once the permit is approved, the permittee must implement this BMP Plan and submit to the District an annual report certifying that the BMPs were implemented. Permittees are subject to on-site verification of BMPs and review of detailed documentation of implementation as deemed appropriate by the District. The BMP Plan must include a description of records and documentation to be maintained on-site or at a suitable location that is readily available for District review. These documents must be sufficient to verify BMP implementation, maintenance, and training.

The current rule provides four levels of BMP implementation based on C-139 Basin compliance with phosphorus loading targets in three consecutive years and annual limits developed in accordance with the EFA. Therefore, the requirement for additional BMP implementation levels can occur on an annual basis if limits are exceeded. The current rule provides for a voluntary individual discharge monitoring program at the Permit Basin level. Permittees who elect to implement this voluntary program can require that compliance with their proportional share of the targets and limits be determined based on these data.

The first level of BMP implementation was required when the current rule was adopted in January 2002. Each successive level requires that permittees and applicants implement

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additional BMPs each time the District determines that the C-139 Basin is out-of-compliance with the EFA. As of August 2005, all four BMP implementation levels were triggered such that each permittee must implement BMPs that equate to 35 BMP equivalent points as described in Appendix B1 of Chapter 40E-63, F.A.C.

In August 2006, the following provision under the current rule was triggered.

> "If the C-139 Basin is determined to be "Out-of-compliance" a fourth time the District will notify all permittees via certified mail and initiate a rulemaking effort pursuant to Chapter 120, F.S. to establish a program to bring the C-139 Basin back into compliance. All Permit conditions will remain in effect and compliance monitoring will continue until the modified rule is adopted unless an administrative process under Chapter 120, F.S. indicates otherwise."

2.0 Summary of Proposed Rule

The proposed changes to the current rule require that of the required 35 BMP equivalent points, a minimum of 20 BMP equivalent points shall meet the following criteria:

(a) A minimum of 10 BMP equivalent points in nutrient control practices.

(b) A minimum of 5 BMP equivalent points in water management practices.

(c) A minimum of 5 BMP equivalent points in particulate matter and sediment control practices. Pasture management BMPs, as described in the Rule's Appendix B1, can provide equivalent points towards this category, if applicable.

Permittees may propose Alternative BMP Plans that do not meet the above criteria. The Alternative BMP Plan provides an option when the minimum requirement of BMP points per category, as described above, may not be feasible. Alternative Plans shall demonstrate that the level of phosphorus reduction is, at a minimum, equivalent to the level provided by a plan meeting the above criteria. This is consistent with the Rule's definition of BMPs which is defined as "a practice or combination of practices determined by the District, in cooperation with the Department of Environmental Protection (Department) and FDACS, based on research, field testing, and expert review, to be the most effective and practicable on-location means, including economical and technological considerations, of improving water quality in agricultural and urban discharges to a level that balances water quality improvements, and agricultural productivity".

As a result, landowners, lessees or operators required to obtain a General Permit will need to submit to the District permit applications including BMP Plans consistent with the new requirements. The approved BMP Plan must be fully implemented within 90 days

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from the effective date of this proposed rule except under certain circumstances as described in the rule.

Each water year upon rule adoption, the District will determine if the C-139 Basin was in compliance with the EFA phosphorus loading requirements during the previous year using the proposed revised Appendix B2 titled “C-139 Basin Performance Measure Methodology”. The revised Appendix B2 is similar to the current Appendix B2 except that it incorporates improved methods for estimating targets and limits based on rainfall intensity and monthly distribution. The method included in the current rule does not consider rainfall distribution for estimating targets and limits.

If the District determines that the C-139 Basin is not in compliance, the District will review whether conditions for deferral apply for each permit basin. A permit basin is “a parcel or group of parcels served by one or more discharge structures that collectively represent all of the discharge from that area of land. A permit may have one or more permit basins. The boundaries of a permit basin are determined by the District based on available hydrologic data to define, to the extent practicable, the land area discharging to each sub-basin.” A condition for deferral applies if the permit basin is located in a sub-basin that does not exceed its proportional share of the basin-wide loading based on District-collected data for the sub-basin or, if applicable, based on data collected from the Permit Basin Discharge Monitoring Program. The method for this evaluation is described in the proposed new Appendix B3.1 titled “Permittee Annual Phosphorus Load Determination Based on Sub-basin and Permit Basin Discharge Monitoring”.

For sub-basins that exceed their proportional share of the phosphorus load, the District will determine the assigned unit area load. The assigned unit area load can be the sub-basin unit area load or the measured unit load at the permit basin if the permittee volunteered or has been required to implement a discharge monitoring program. The District has established criteria to determine the assigned unit area load under different scenarios. The required Total Phosphorus reduction requirements for each of the permit basins is the difference between the assigned unit area load and the proportional share unit area load based on the required basin-wide levels.

In order to achieve the required total phosphorus reduction requirements, permittees will need to implement “Water Quality Improvement Activities”, which is defined in the proposed rule as “a combination of modifications to a BMP Plan proposed by a permittee to meet the required total phosphorus reduction requirements of Appendix B3.2. (incorporated by reference in subsection 40E-63.404(8), F.A.C.) Improvement activities may include revising implementation methods to increase the effectiveness of existing BMPs or implementing additional BMPs.”

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The first year that can result in additional activities after an out-of-compliance determination is water year 2013. Additional water quality improvement activities after 2013 can be required no more frequently than every three years. The requirements posed upon each permit basin will depend on the C-139 Basin-wide compliance with the phosphorus loading requirements and the deferral conditions applicable to the permit basin.

The propose rule provides deferral if water quality improvement activities or BMPs were implemented voluntarily prior of these being required (Early BMPs), based on a District approved BMP Plan. The proposed rule also provides incentives for voluntary permittee participation in research and demonstration projects which may account for no more than 20 BMP equivalent points as approved by the District. This provision is called the "Alternative BMP Demonstration Project" and is not included in the current rule. Implementation of a District-approved demonstration project including water quality monitoring to determine the effectiveness of the BMPs to reduce phosphorus loading in discharges provides deferral from additional water quality improvement activities.

The use of deferral conditions such as the use of performance measures at the sub-basin level, the implementation of demonstration projects, the implementation of Early BMPs, and the provision for a minimum of three years between compliance results that would require additional water quality improvement activities, are a departure from the current rule.

3.0 Other Proposed Changes to the Rule

The following are additional proposed changes to the current rule that were considered for this SERC.

- Under the current rule, there are three permit types: No Notice General, General, and Individual. Under the proposed rule, there are two permit types: No Notice General and General. The Individual permit type would be repealed. Activities that would require an Individual permit can be conducted under a General Permit under the proposed rule. Permit application fees for General permits are lower than those for Individual Permits. According to the District, there are no Individual Permits in the C-139 Basin.

- The current rule provides No Notice General Permits to owners of land parcels that are not subject to the Agricultural Privilege Tax pursuant to the EFA, Section 373.4592(7)(a), F.S. provided that the land is served by a properly permitted and operated surface water management system. Under the proposed rule, No Notice General Permits are provided to owners of land parcels that are not part of

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the common facilities of a central drainage system, are inactive[1], or are less than 40 acres under common ownership; and basic BMPs are implemented. All other land parcels would be required to apply for and maintain a General Permit. As a result of this proposed rule change, it is anticipated that three entities will need to apply for a General Permit under the proposed rule while others would no longer be required to obtain a General Permit. No Notice Permittees would need to implement basic BMPs.

- Some additional information from applicants and permittees will be required to be submitted to the District under the proposed rule.

- Under the proposed rule, permittees may elect to demonstrate that water quality improvement activities are impracticable. This option is not provided under current rule.

- New under the proposed rule, applicants may qualify for deferral from water quality improvement activities if the C-139 Basin is determined out-of-compliance in the future, as described earlier.

All estimated impacts described in this SERC are those anticipated to occur where the proposed rule requires additional activities by individual and entities that are not required under the current rule or under other existing laws and rules.

4.0 Number of Individuals and Entities Required to Comply

Owners and operators of land whose water management systems connect with and make use of the canals, structures and other Works of the District within the C-139 Basin are required to comply with Chapter 40E-63, Part IV, "Everglades Regulatory Program: Pollutant Source Controls, C-139 Basin" per Rule 40E-63.400(1), F.A.C. Permits granted by the District under this rule are called "C-139 Basin Pollutant Source Control Permits".

A summary of the estimated number of individuals and entities required to comply with the current rule and the proposed rule are provided in Table ES.1. Most of the General permittees are farmers and ranchers. Most of the No Notice Permittees are homeowners or owners of vacant residential land.

[1] "Inactive" means "land parcels that are not used for agriculture, urban, commercial, industrial or other development, as determined by the District. It also includes lands in their undeveloped native state (unless used as pastures). Lands may be determined by the District as temporarily inactive if they are not operated or are vacant due to changes in ownership or land use. The District's determination applies only to the requirement of this part of Chapter 40E-63, F.A.C."

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Table ES.1
Estimated Number of Individuals and Entities Required to Comply With the Current and Proposed C-139 Basin Works of the District Rule

Permit Type	Current Rule		Proposed Rule	
	Number of Permits	Number of Landowners and Operators	Number of Permits	Number of Landowners and Operators
General Permits Required	39	70	29	58
No Notice General Permits	4,809	6,477	4,820	6,490
Total General and No Notice General Permits	4,848	6,547	4,849	6,548

General Permits. Under the current rule, about 70 landowners and operators associated with 39 permits are required to apply for and maintain General Permits in compliance with Chapter 40E-63, Part IV, "Everglades Regulatory Program: Pollutant Source Controls, C-139 Basin". Under the proposed rule, about 58 landowners and operators associated with 29 permits would be required to apply for and maintain General Permits.

No Notice General Permits. Under the current rule, about 6,477 landowners and operators associated with 4,809 permits are currently No Notice General Permits in compliance with Chapter 40E-63, F.A.C., Part IV, "Everglades Regulatory Program: Pollutant Source Controls, C-139 Basin". Under the proposed rule, about 6,490 landowners and operators associated with 4,820 permits would be granted No Notice General Permits.

5.0 Cost to the District and to Any Other State or Local Government Entity

The cost to the District includes any additional staff hours that would need to be spent to implement and enforce the proposed rule relative to the current rule. The annual cost increases the more frequently the C-139 Basin is determined by the District to be out-of-compliance. Under an out-of-compliance scenario, additional staff would be required to review applications for water quality improvement activities and verify implementation of those activities. The annual costs were estimated based on the assumption that this additional staff would be comprised of new employees. However, the District may redirect existing staff to provide the additional support needed. Assumptions were made to define a low- to high- cost scenario, as indicated below. The average annual cost presented includes employee salaries, the cost of employee benefits and District overhead.

1. If the C-139 Basin is never out-of-compliance, then the average annual cost is estimated to be $73,000 associated with 0.29 full-time-equivalent staff.

2. If the C-139 Basin is determined by the District to be out-of-compliance once every 10 years, the average annual cost to the District is estimated to be $88,000 associated with 0.34 full-time-equivalent staff.

3. If the C-139 Basin is determined by the District to be out-of-compliance three years out of ten, the highest out-of-compliance frequency possible, then the average annual cost is estimated to be $116,600 associated with 0.46 full-time-equivalent staff.

The Central County Water Control District (CCWCD) and the State of Florida were identified as local and state entities that will be required to implement the proposed rule. The CCWCD will be required to obtain a General Permit for operation of the water management system serving Montura Ranches Estates. The State of Florida owns land within the C-139 Basin. In this case, if the lands are in conservation, a No Notice Permit may apply to those areas. If the lands are leased for agricultural operation, a General permit from the State or the lessee or operator may be required. Costs to the State and local government entities as applicants and permitees are addressed as transaction costs in Section 4.0 of this SERC. The proposed rule is not expected to affect State or local government revenues.

6.0 Transactional Costs

The information regarding Transactional Costs in this SERC incorporates the best available information to assess how the rule will impact the C-139 Basin Pollutant Source Control permittees and applicants. The estimated transactional costs associated with each proposed rule revision are provided and many were normalized to cost per acre averaged over the entire property. Applicants and permittees are encouraged to use their own situation and the information and unit costs provided in this SERC to obtain an understanding of how the proposed rule will impact their own operations.

Permittees who have judiciously implemented effective best management practices (BMPs) will be least impacted by the proposed rule in terms of transactional costs. In addition, many of the BMPs that permittees will be required to implement as a result of the proposed rule may already be required under other rules or fully or partially implemented as standard operating procedure for the agricultural operation.

The types of costs that may be incurred by the individuals and entities as a result of the proposed rule and the estimated Transactional Costs are as follows.

1. Costs by No Notice General Permittees to implement basic BMPs. These BMPs are not expected to incur significant costs to No Notice General permittees. Costs are likely to be zero or nominal.

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2. Three entities who are currently No Notice General permittees will be required to apply for a General permit due to the change in requirements under the proposed rule. The permit application processing fee for a new permit is $250. These entities may incur costs to prepare the permit application and to implement BMPs. The magnitude of these costs is not known but is expected to be similar to that incurred by other General Permittees. The estimated costs to implement BMPs are provided in Section 4.0 of this SERC, called Transactional Costs.

3. General Permittees may be required to submit additional information to the District. The costs incurred and the magnitude of these costs will depend on the specific conditions of each permittee. These costs are based on the time it may take to gather and submit the required information and are described as follows.

    a. There is an estimated one time transactional cost ranging from $0 to $380 per applicant to submit a delineation of drainage features if these have changed from those currently in the permit, and a $0 to $190 per applicant transactional cost to submit to the District certifications that lessees have been notified of the requirements of the BMP Plan.

    b. If the permittee applies phosphorus containing materials such as biosolids, the permittee may be required to implement a water quality monitoring program and submit water quality monitoring data. The estimated cost of instrumenting a water quality monitoring station for flow and concentration, and conducting monitoring in accordance with the standard requirements of the proposed rule is $13,150 per monitoring station per year, including annualized capital and O&M cost. At a minimum, there would be one water quality monitoring station per permit basin.

4. Costs to General Permittees to revise their BMP Plan so that it complies with the allocation of 20 of the 35 BMP points to nutrient control practices (10 BMP points), water management practices (5 BMP points), and particulate matter and sediment control practices and/or pasture management BMPs, as applicable (5 BMP points). The District reviewed the currently permitted BMP Plans in the C-139 Basin and BMP inspection reports and data to determine the BMPs that are likely implemented but not claimed for BMP credit under the current permit. The District concluded that some of these BMPs may already be implemented in some of the permit basins but not documented, and that some BMPs may be partially implemented. Examples of partial implementation are described below:

    - Control discharge structures exist to provide water management detention. However, there is no assurance that water table levels are followed to optimize runoff storage and reduce total phosphorus loading in discharges.

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- Soil tests are being conducted to determine the phosphorus nutrients in the soil. However, there is no assurance that standard phosphorus application recommendations are used or that there is technical documentation to justify that any deviations from those recommendations do not result in excess application of phosphorus fertilizers.

The District determined certain assumptions establishing a low- to a conservative high-cost range scenario based on best professional judgment and the post permit compliance data described above. These estimated costs per acre, the additional BMPs, and the acres associated with these additional BMPs are provided in Table ES.2.

The total estimated cost across the entire C-139 Basin to implement the additional BMPs, as required under the proposed rule, ranges from $69,000 per year to $576,000 per year. The actual cost is expected to be within this range and will depend on the extent to which the farms and ranches in the C-139 Basin are already implementing the additional required BMPs either to comply with other rules or as standard operating procedure. Basin-wide, the average additional cost per acre per year ranges from $0.57 to $4.77.

Table ES.2
Estimated Costs to Implement Additional BMPs That May Be Required By General Permittees At Permit Renewal After Proposed Rule Adopted

Land Use	Additional BMPs Identified	Cost per Acre	Acres in Land Use - Current General Permits	Acres Affected by Additional Cost		Total Cost Range	
				Low End	High End	Low End	High End
Pasture	Water Resources Management for Pasture	$1.17	72,944	0	24,072	$0	$28,050
	Sub-total Pasture					**$0**	**$28,050**
Sugarcane	Nutrient Application Control	$0.00	4,152	0	0	$0	$0
	Nutrient Spill Prevention	$0.00				$0	$0
	Nutrient Application Based on Soil Testing	$0.00				$0	$0
	Sub-total Sugarcane					**$0**	**$0**
Citrus Groves	Nutrient Application Control	$6.11	15,559	0	7,780	$0	$47,494
	Nutrient Spill Prevention	$0.55				$0	$4,279
	Nutrient Application Based on Soil Testing	$0.00				$0	$0
	Particulate Matter and Sediment Controls	$8.48				$0	$65,970
	Sub-total Citrus Groves					**$0**	**$117,743**
Vegetables	Nutrient Application Control	$6.11	28,169	5,634	22,535	$34,423	$137,690
	Nutrient Spill Prevention	$0.55				$3,099	$12,394
	Nutrient Application Based on Soil Testing	$5.50				$30,986	$123,944
	Particulate Matter and Sediment Controls	$6.92				$0	$155,944
	Sub-total Vegetables					**$68,507**	**$429,972**
TOTAL			120,824	5,634	54,386	**$68,507**	**$575,764**
Average Cost per Acre						**$0.57**	**$4.77**

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5. In the event that the District determines that the C-139 Basin is out-of-compliance, permittees may incur costs to develop a plan of proposed water quality improvement activities and implement these activities. The magnitude of cost will depend on the percent total phosphorus reduction, if any, required from each permit basin. The first year when a compliance assessment can trigger water quality improvement activities is water year 2013. Additional water quality improvement activities after 2013 would be required no more frequently than every three years. The estimated costs of BMPs that might be included as an Activity are provided in Section 4.0 of this SERC, called Transactional Costs.

6. The cost to develop and implement a verification plan that is "a water quality monitoring program to verify the expected effectiveness of a BMP Plan or proposed water quality improvement activities in accordance with Rule 40E-63.460(4), F.A.C." This verification plan would be required if the permittee is unable to demonstrate that the required total phosphorus reductions can be achieved based on data from the most current representative technical references including peer reviewed or published BMP research and demonstration projects, with consideration of permit basin specific conditions such as when a site-assessment is completed pursuant to 40E-63.437(2). The verification plan will need to be implemented for a period not to exceed three water years. The estimated cost to prepare and implement a verification plan is approximately $11,000 of capital costs and $10,000 of annual operating costs for one discharge monitoring station. This cost includes plan development and discharge water quality sampling and quantity monitoring and reporting consistent with Appendix B of the District's Guidebook for Preparing an Application for a C-139 Basin Pollutant Source Control Permit.

7. Cost to develop and implement a Permit Basin Discharge Monitoring Program if required by the District pursuant to 40E-63.437, 40E-63.438, and 40E-63.444(1)(r). The associated cost is estimated to be similar to the cost described in the previous paragraph under a verification plan.

8. Cost to demonstrate that water quality improvement activities are impracticable, including the cost of a discharge monitoring plan, to those individuals and entities who elect to utilize this option. This option is a potential cost-saving benefit to permittees and applicants.

The requirement that all General permittees in the C-139 Basin renew their permits within 30 days of the effective date of this proposed rule will not incur costs to these permittees relative to the current rule. This is because they were automatically granted permit

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extensions in 2007 in order to postpone permit renewal until this proposed rule is adopted.

7.0 Impacts to Small Businesses, Small Cities and Small Counties

The proposed rule is not expected to incur costs to small businesses, small cities and small counties unless the business, city or county owns, leases or operates on properties where water management systems connect to and make use of the canals, structures, and other Works of the District within the C-139 Basin. There are no small cities which are required to comply with the proposed rule. While Hendry County is a small county, it does not own or operate property that would require a General Permit. It is not known how many of the General and No Notice General permittees are small businesses because publicly available information regarding the size of businesses in this small geographic area could not be located. The estimated transactional costs associated with the proposed rule are provided in Section 4.0 of this SERC.

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Section 1.0
Summary of Proposed Rule Revision

This Section summarizes the proposed revisions to Chapter 40E-63, Part IV, "Everglades Regulatory Program: Pollutant Source Controls, C-139 Basin". This summary reflects the April 14, 2010 version of the proposed rule revisions, including Appendix B, the application Form 1045 and the associated Guidebook. The difference in this proposed rule versus the current rule is the basis for addressing the requirements of the SERC.

1.1 Current Rule Regarding Implementation of Best Management Practices (BMPs)

Part IV of Chapter 40E-63, F.A.C. (Part IV) implements requirements of the Everglades Forever Act (EFA), Sections 373.4592(4)(f)5. and 6., F.S., for the C-139 Basin, and also provides a regulatory process for landowners whose water management systems connect with and make use of the canals, structures[1] and other Works of the District within the C-139 Basin, in accordance with Section 373.085, F.S.

According to the Everglades Forever Act (EFA), sec. 373.4592(4)(f)5 and 6, F.S.:

> "5. Effective immediately, landowners within the C-139 Basin shall not collectively exceed an annual average loading of phosphorus based proportionately on the historical rainfall for the C-139 Basin over the period of October 1, 1978, to September 30, 1988. New surface inflows shall not increase the annual average loading of phosphorus stated above. Provided that the C-139 Basin does not exceed this annual average loading, all landowners within the Basin shall be in compliance for that year. Compliance determinations for individual landowners within the C-139 Basin for remedial action, if the Basin is determined by the district to be out-of-compliance for that year, shall be based on the landowners' proportional share of the total phosphorus loading. The total phosphorus discharge load shall be determined as set forth in Appendix B2 of Rule 40E-63, Everglades Program, Florida Administrative Code.

[1] "Structure" means "a structural device or hydrologic feature (e.g. pump, culvert, open connection, land surface grading, ditch) that water flows through or across and is ultimately discharged/directed from a Permit Basin to a receiving water body".

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> 6. The district, in cooperation with the department, shall develop and implement a water quality monitoring program to evaluate the quality of the discharge from the C-139 Basin. Upon determination by the department or the district that the C-139 Basin is exceeding any presently existing water quality standards, the district shall require landowners within the C-139 Basin to implement BMPs appropriate to the land uses within the C-139 Basin consistent with subparagraph 2. Thereafter, the provisions of subparagraphs 2.-4. shall apply to the landowners within the C-139 Basin."

According to current rule, all lands within the C-139 Basin are users of the Works of the District within the C-139 Basin, unless expressly exempted, and must be granted a No Notice General Permit or must obtain a General or Individual Permit. The rule applies to existing and new water discharges within the C-139 Basin.

Since water quality monitoring data from the C-139 Basin demonstrates that the landowners within the C-139 Basin have collectively exceeded historical annual phosphorus loading levels, landowners are required to implement a best management practices (BMP) program for reduction of phosphorus in discharges that is consistent with the land uses within the Basin.

The primary rule requirement is that qualifying landowners, lessees or operators shall obtain District approval of a BMP (Best Management Practices) Plan as described in Part IV and its Appendix B. Once the permit is approved, the permittee must implement this BMP Plan and submit to the District an annual report certifying that the BMPs were implemented. Permittees are subject to on-site verification of BMPs and review of detailed documentation of implementation as deemed appropriate by the District. The BMP Plan must include a description of records and documentation to be maintained on-site or at a suitable location that is readily available for District review. These documents must be sufficient to verify BMP implementation, maintenance, and training.

The current rule provides four levels of BMP implementation based on C-139 Basin compliance with phosphorus loading targets in three consecutive years and annual limits developed in accordance with the EFA. Therefore, the requirement for additional BMP implementation levels can occur on an annual basis if limits are exceeded. The current rule provides for a voluntary individual discharge monitoring program at the Permit Basin. Permittees who elect to implement this voluntary program can require that their compliance with their proportional share of the targets and limits be determined from the data collected through this discharge monitoring program.

The first level of BMP implementation was required when the current rule was adopted in January 2002. Each successive level requires that permittees and applicants implement

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additional BMPs each time the District determines that the C-139 Basin is out-of-compliance with the EFA. As of August 2005, all four BMP implementation levels were triggered such that each permittee must implement BMPs that equate to 35 BMP equivalent points as described in Appendix B1 of Chapter 40E-63, F.A.C.

In August 2006, the following provision under the current rule was triggered.

> "If the C-139 Basin is determined to be "Out-of-compliance" a fourth time the District will notify all permittees via certified mail and initiate a rulemaking effort pursuant to Chapter 120, F.S. to establish a program to bring the C-139 Basin back into compliance. All Permit conditions will remain in effect and compliance monitoring will continue until the modified rule is adopted unless an administrative process under Chapter 120, F.S. indicates otherwise."

1.2 Proposed Changes to Current Rule Regarding BMP Implementation

According to the proposed rule, the "C-139 Basin" means "those lands described in the EFA, Section 373.4592(16), F.S. or lands outside those boundaries which discharge to the C-139 Basin or to the canals or structures described in Rule 40E-63.401(1), F.A.C." The addition of "lands outside those boundaries" as used in the sentence above is a proposed change to current rule.

The proposed changes to current rule require that existing permittees in the C-139 Basin renew their permits within 30 days from the effective date of this proposed rule and, at that time, modify their BMP Plan such that the following requirement is met.

Of the 35 BMP equivalent points, a minimum of 20 BMP equivalent points shall meet the following criteria:

(a) A minimum of 10 BMP equivalent points in Nutrient Control Practices[2].

(b) A minimum of 5 BMP equivalent points in Water Management Practices[3], unless the lands are native or do not have drainage improvements. If lands are native or do not

[2] "Nutrient Control Practices" means "a category of BMPs that minimizes nutrient input and the movement of nutrients off-site by efficient and controlled application of nutrients (e.g., organic and chemical fertilizers, soil amendments, and residuals.)"

[3] "Water Management Practices" means "a category of BMPs that minimizes the quantity and improves the quality of off-site discharges which carry nutrients downstream. BMPs for water management include discharge and irrigation management practices to reduce runoff".

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have drainage improvements, BMPs other than Water Management Practices can provide equivalent points towards meeting this criterion.

(c) A minimum of 5 BMP equivalent points in Particulate Matter and Sediment Control Practices[4]. Pasture management BMPs, as described in the Rule's Appendix B1, incorporated by reference in subsection 40E-63.404(2), F.A.C., can provide equivalent points towards this category, if applicable.

A "Best Management Practice (BMP)" means "a practice or combination of practices determined by the District, in cooperation with the Department of Environmental Protection (Department) and FDACS, based on research, field testing, and expert review, to be the most effective and practicable on-location means, including economic and technological considerations, of improving water quality in agricultural and urban discharges to a level that balances water quality improvements and agricultural productivity." A "BMP Plan" means a combination of BMPs that meets, but is not limited to, the requirements of Rule 40E-63.435 and Rule 40E-63.437, F.A.C., as determined by the District.

A "BMP Equivalent Point" means the numerical value assigned to a BMP as provided in Appendix B1, incorporated by reference in subsection 40E-63.404(3), F.A.C. The points are used for regulatory permit review to ensure a comparable level of effort in BMP implementation among permittees. The points are an indication of relative BMP effectiveness. The points are based on expert review, technical publications, best professional judgment, and cooperative workshops with stakeholders.

Requirements of each BMP and BMP equivalent points are provided in Appendix B1 titled "BMP Description and Equivalent Points Reference Table". The BMPs and point system described in Appendix B1 are unchanged from current rule except that eight BMP descriptions were added and the point score for "No Nutrients Imported Via Direct Land Application" was increased from 15 to 20. The new BMP descriptions provide clarification on practices that can be implemented which were included under other BMPs in the current rule, or rewording of the BMP for clarity. The additions are five Water Management Practices BMPs.

The revisions to the Water Management Practices BMPs are:

[4] "Particulate Matter and Sediment Control Practices" means a category of BMPs that minimizes the movement off-site of nutrients in particulate matter and sediments by controlling the amount of eroded soil and plant matter in discharges.

(1) The original "No direct discharge" (15 BMP points), which required overland sheet flow over the entire property and no direct point discharge, was separated into two BMPs under the proposed amendments: "Overland sheet flow over entire property" (15 BMP Points), and "No Point Discharge of Surface Water" (15 points),

(2) The original "Reduced Flow through Water Table Management" (5 points), which required decreasing discharge by optimizing drainage and irrigation schedules and/or by using low volume irrigation methods, was separated into three BMPs under the proposed amendments:

- "Low Volume Irrigation" (5 points),
- "Precision Irrigation Scheduling" (10 points), requiring "Low Volume Irrigation", and use of soil moisture measuring equipment and irrigation decision tools, and
- "Tail water recovery system" (10 points), as part of a planned irrigation system in which facilities are installed and operated to collect and transport irrigation tailwater and/or runoff that would have been discharged offsite without the system,

(3) The original detention BMPs (1/2-inch or 1-inch level) were supplemented with the proposed "Water resources management for pastures" to clarify implementation methods in pasture areas where water control structures may not be used.

The approved BMP Plan must be fully implemented with 90 days from the effective date of this proposed rule except under certain circumstances as described in the rule.

Each water year upon rule adoption, the District will determine if the C-139 Basin was in compliance with the EFA phosphorus loading requirements during the previous year using the proposed revised Appendix B2 titled "C-139 Basin Performance Measure Methodology". The revised Appendix B2 is similar to the current Appendix B2 except that it incorporates improved methods for estimating targets and limits based on rainfall intensity and monthly distribution. The method included in the current rule does not consider rainfall distribution for estimating targets and limits.

If the District determines that the C-139 Basin is not in compliance, the District will review whether conditions for deferral apply for each permit basin. A permit basin is "a parcel or group of parcels served by one or more discharge structures that collectively represent all of the discharge from that area of land. A permit may have one or more permit basins. The boundaries of a permit basin are determined by the District based on available hydrologic data to define, to the extent practicable, the land area discharging to

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each sub-basin." A condition for deferral applies if the permit basin is located in a sub-basin that does not exceed its proportional share of the basin-wide loading based on District-collected data for the sub-basin or, if applicable, based on data collected from the Permit Basin Discharge Monitoring Program. The method for this evaluation is described in the proposed new Appendix B3.1 titled "Permittee Annual Phosphorus Load Determination Based on Sub-basin and Permit Basin Discharge Monitoring".

For sub-basins that exceed their proportional share of the phosphorus load, the District will determine the assigned unit area load. The assigned unit area load can be the sub-basin unit area load or the measured unit load at the permit basin if the permittee volunteered or has been required to implement a discharge monitoring program. The District has established criteria to determine the assigned unit area load under different scenarios. The required Total Phosphorus reduction requirements for each of the permit basins is the difference between the assigned unit area load and the proportional share unit area load based on the required basin-wide levels.

In order to achieve the required total phosphorus reduction requirements, permittees will need to implement "Water Quality Improvement Activities", which is defined in the proposed rule as "a combination of modifications to a BMP Plan proposed by a permittee to meet the required total phosphorus reduction requirements of Appendix B3.2. (incorporated by reference in subsection 40E-63.404(8), F.A.C.) Improvement activities may include revising implementation methods to increase the effectiveness of existing BMPs or implementing additional BMPs."

The first year that can result in additional activities after an out-of-compliance determination is water year 2013. Additional water quality improvement activities after 2013 can be required no more frequently than every three years. The requirements posed upon each permit basin will depend on the C-139 Basin-wide compliance with the phosphorus loading requirements and the deferral conditions applicable to the permit basin.

The use of deferral conditions such as the use of performance measures at the sub-basin level and the provision for a minimum of three years between compliance results that would require additional water quality improvement activities are a departure from the current rule.

The District will provide written notice to permittees regarding the C-139 Basin compliance results. These results will be obtained from the District's implementation of the:

(1) C-139 Basin procedures described in Appendix B2, and;

(2) Sub-basin and Permit Basin performance procedures described in Appendix B3.1.

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Notice will also include whether water quality improvement activities are required of the permittee. The District shall transmit the written notices no later than August of each year. The notices shall describe permittees' required actions for proposing water quality improvement activities based on these assessments.

If the C-139 Basin is determined to be out-of-compliance with the water quality requirements of Part IV pursuant to 40E-63.460, the permittee shall propose water quality improvement activities as follows.

(a) The permittee shall submit a letter modification application for the District's consideration, within 120 days of the District's transmittal of the notice that the C-139 Basin is not in compliance. The submittal shall include the section entitled "Water Quality Improvement Activities" of Form 1045.

(b) The submittal shall include a proposal for water quality improvement activities along with the estimated phosphorus reductions to be achieved in accordance with 40E-63.460(3), F.A.C., or a verification plan in accordance with 40E-63.460(4), F.A.C. The phosphorus reductions shall be the minimum levels necessary to meet the permit basin's proportional share of required total phosphorus reductions as determined by the District (Appendices B3.1 and B3.2, incorporated by reference in subsection 40E-63.404(7) and (8), F.A.C.)

The proposal shall include a schedule to ensure that full implementation of an approved BMP Plan incorporating any proposed water quality improvement activities is in effect as soon as feasible and no later than April 30 following the District's transmittal of the notice that the C-139 Basin is not in compliance, unless otherwise approved by the District. An alternate implementation schedule may be approved by the District with based on the scope of the proposed activities. A permittee shall be required to implement intermediate water quality improvement activities or BMPs, as applicable, if an alternate implementation schedule is approved.

1.3 Determination of C-139 Basin Compliance and Required TP Reduction Level for Permit Basins

The proposed Appendix B2 "C-139 Basin Performance Measure Methodology" sets forth the method for determining whether the C-139 Basin is in compliance with the EFA by assessing whether phosphorus discharges from the C-139 Basin are maintained at or below a certain threshold. This threshold is the collective average annual phosphorus load based proportionally on the historical rainfall during the baseline period of October 1, 1978 through September 30, 1988. The determination requires annual calculation of the phosphorus load leaving the outfall structures from the C-139 Basin.

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Load is the amount of phosphorus carried past a monitoring point by the movement of water. The average annual base period phosphorus load was 38.2 metric tons. The "Target" load is the predicted total phosphorus load that represents the baseline period using rainfall conditions in the year when compliance is being evaluated. The "Limit" load is the upper 90 percent confidence limit for the 'Target" load. Evaluation of the C-139 Basin for phosphorus load performance will be based upon the following:

1. If the actual measured phosphorus load from the C-139 Basin in a post-baseline May 1 through April 30 period is less than the model phosphorus load estimate (Target), then the C-139 Basin will be determined to meet its performance measure, that is, it did not exceed the collective average annual phosphorus loading that would have occurred during the baseline period adjusted for hydrologic variability.

2. The performance determination will be suspended if the rainfall for the May 1 through April 30 Water Year is outside the range of 27.97 inches to 66.21 inches and the actual measured phosphorus loading exceeds the Target in any May 1 through April 30 period. Any period(s) for which the performance determination is suspended will be excluded from the calculation of the three-year average annual phosphorus load, and will be excluded from the determination of whether the Target has been exceeded in three or more consecutive May 1 through April 30 periods.

3. If the actual measured phosphorus loading from the C-139 Basin exceeds the model phosphorus load estimate (Target) in three or more May 1 through April 30 period and is not suspended due to rainfall, then the C-139 Basin will be determined to exceed its performance measure, that is, it will have exceeded the collective average annual phosphorus loading that would have occurred during the baseline period adjusted for hydrologic variability. .

4. If the actual measure phosphorus loading from the C-139 Basin exceeds the upper 90% confidence level of the Target (herein after referred to as the Limit), in any May 1 through April 30 period and if not suspended due to rainfall, the C-139 Basin will be determined to exceed the collective average annual phosphorus loading that would have occurred during the baseline period adjusted for hydrologic variability.

5. The Target, Limit and adjusted rainfall will be calculated according to the following equations and explanation:

   Target = exp (-17.0124 + 4.5995 X + 3.9111 C – 1.0055 S)

   Explained Variance = 74.2%, Standard Error of Estimate = 0.5440

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Predictors (X, C, S) are calculated from the first three moments (m_1,m_2,m_3) of the 12 monthly rainfall totals (r_i, i=1 to 12, inches) for the current year:

m_1 = Sum [r_i] / 12

m_2 = Sum [r_i - m_1]^2 / 12

m_3 = Sum [r_i - m_1]^3 / 12

X = ln (12 m_1)

C = [(12/11) m_2]$^{0.5}$/m_1

S = (12/11) m_3 / m_2 $^{1.5}$

Limit = Target exp (1.440 SE)

SE = standard error of predicted ln(L) for May-April interval

SE = 0.5440 [1 + 1/10 + 4.8500 $(X-X_m)^2$ + 8.1932 $(C–C_m)^2$ + 0.9247 $(S-S_m)^2$ + 4.5950 $(X-X_m)$ $(C–C_m)$ – 0.3624 $(X-X_m)$ $(S-S_m)$ – 4.0048 $(C-C_m)$ $(S-S_m)$] $^{0.5}$

Adjusted Rainfall = exp [X + 0.8503 (C - C_m) – 0.2186 (S - S_m)]

Where :

Target = predicted load for future rainfall conditions (metric tons/yr)

Limit = upper 90% confidence limit for Target (metric tons/yr)

Adjusted Rainfall = equivalent rainfall for mean C and S variables (inches)

X = the natural logarithm of the 12-month total rainfall (inches)

C = coefficient of variation calculated from 12 monthly rainfall totals

S = skewness coefficient calculated from 12 monthly rainfall totals

X_m = average value of the predictor in calibration period = 3.8434

C_m = average value of the predictor in calibration period = 0.9087

S_m = average value of the predictor in calibration period = 0.8200

The first predictor (X) indicates that load increases exponentially with total annual rainfall. The second and third predictors (C & S) indicate that the load resulting from a given annual rainfall is higher when the distribution of monthly rainfall has higher variance or lower skewness. For a given annual rainfall, the lowest load occurs when rainfall is evenly distributed across months and the highest load occurs when all of the rain falls in one month. Real cases fall in between. This process is illustrated in the flow chart provided in Figure B-3 of Appendix B2 and is reproduced on the next page.

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In the event that the C-139 Basin is out-of-compliance, the requirements for permittees to implement water quality improvement activities will be based on the permittee's proportional share of phosphorus loading. This proportional share is calculated using the method described in the proposed Appendix B3.1, "Permittee Annual Phosphorus Load Determination Based on Sub-basin and Permit Basin Discharge Monitoring". This Appendix establishes the procedures for calculating the actual phosphorus unit area load (Actual UAL) for sub-basins and monitored permit basins and their corresponding proportional share of phosphorus unit area load (Proportional share UAL). These measures will be calculated each Water Year as follows.

"Assigned Unit Area Load (UAL)" is the phosphorus load per unit are (lbs/acre) assigned to a sub-basin or permit basin for the water year evaluation of exceedance of the Proportional Share UAL. The Assigned UAL incorporates all adjustments of the observed load representing the sub-basin or permit basin described within this appendix.

"Target Unit Area Load (Target UAL)" in pounds per acre is the C-139 Basin Compliance model phosphorus load estimate (Target) calculated in accordance with Appendix B2, which is incorporated by reference in subsection 40E-63.404(4), F.A.C., and divided by the C-139 Basin Acres.

"Limit Unit Area Load (Limit UAL)" in pounds per acre is the upper 90%confidence limit of the C-139 Basin Compliance model phosphorus load estimate (also known as the Limit) calculated in accordance with Appendix B2, which is incorporated by reference in subsection 40E-63.404(4), F.A.C., and divided by the C-139 Basin Acres.

"Proportional Share Unit Area Load" in pounds per acre is the calculated maximum allowable phosphorus load in proportion to land area. The Proportional Share UAL shall be based on the Target UAL if C-139 Basin non-compliance is based on exceedance of the Target, and/or on the Limit UAL if the C-139 Basin non-compliance is based on exceedance of the Limit.

"C-139 Basin Acres" is the total acreage within the C-139 Basin Boundaries described in the Everglades Forever Act, section 373.4592(16), F.S. adjusted for any identified changes to the hydrologic drainage area.

The calculation of the Proportional Share UAL is provided as follows.

(A) If the C-139 Basin is out-of-compliance as a result of exceeding the Target three years in a row (as described in Appendix B2, which is incorporated by reference in subsection 40E-63.404(4), F.A.C., "Evaluation of the C-139 Basin for compliance…", paragraph 4):

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1. the Proportional Share UAL is the arithmetic average of the three Target UAL values calculated for the three water years (excluding any suspension due to rainfall), and

2. a sub-basin or permit basin will be deemed to have not exceeded its proportional share of the loading if the average of the three annual assigned UAL values corresponding to the three water years causing the out-of-compliance condition is less than or equal to the Proportional Share UAL.

(B) If the C-139 Basin is out-of-compliance as a result of exceeding the Limit in a single year (as described in Appendix B2, which is incorporated by reference in subsection 40E-63.404(4), F.A.C, "Evaluation of the C-139 Basin for compliance…", paragraph 5):

1. the Proportional Share UAL is the same as the Limit UAL calculated for that water year, and

2. a sub-basin or permit basin will be deemed to have not exceeded its proportional share of the loading if the Assigned UAL for the water year in question is less than or equal to the Proportional Share UAL.

(C) If the C-139 Basin is out-of-compliance exceeding both the Target for three years and Limit the current year (e.g. Target, Target, Limit):

1. both the current water year Limit UAL and the average of the three Target UAL values (excluding any suspension due to rainfall) are utilized for assessment of a Proportional Share UAL, and

2. a sub-basin or permit basin will be deemed to have not exceeded its proportional share of the loading if both the average of the three annual Assigned UAL is less than or equal to the average of the three Target UAL values and the current water year Assigned UAL is less than or equal to the Limit UAL.

Permit basins will be evaluated from the largest to smallest sub-basin that they belong to, and then based on their individually monitored permit basin data, if applicable. If a single sub-basin level to which a permit basin belongs is determined to meet the Proportional Share UAL, a deferral of water quality improvement activities will be determined by the District based on subsection 40E-63.450(3), F.A.C., regardless of additional sub-basin level or permit basin monitoring results. Three tiers of sub-basins have been defined for the C-139 Basin as indicated in Table B-3, which relates each initial primary, secondary and tertiary sub-basin to its larger or smaller units.

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Table B-3: Primary, Secondary and Tertiary Sub-basin Levels

Primary Sub-basins	Secondary Sub-basins	Tertiary Sub-basins
L1		
L3	L2	L2W
		L2E
		L2S
	DF	DFW
		DFE
	SM	SMW
		SME

Appendix B3.2 "Criteria for Required Phosphorus Reductions" describes the method for determining the percent reduction in TP required for those permittees whose permit basin(s) is out-of-compliance. The water quality improvement strategy is to require that any additional required improvements to the permittee's BMP Plan or water quality improvement activities be based on their ability to achieve the percentage TP reduction levels specified by the District (Required TP Reductions). Permittees will propose additional improvements to the BMP Plan and expected reductions. These reductions may be estimated based on the most current applicable technical references or based on a monitoring program that confirms estimated TP reductions (Verification Plan).

The method to estimate the percent Required TP Reduction level is indicated below:

1. The TP reduction levels will be based on the Limit Unit Area Load (UAL), the Target UAL, the Proportional Share UAL and the Assigned UAL derived for each Permit Basin pursuant to Appendices B2 and B3.1, which are incorporated by reference in subsection 40E-63.404(4) and (7), F.A.C.

2. If the C-139 Basin is out-of-compliance as a result of exceeding the Target three years in a row (as described in Appendix B2, "Annual Performance Determination", paragraph number 3, incorporated by reference in subsection 40E-63.404(4), F.A.C.), the Required TP Reduction for each Permit Basin will be calculated as the percent difference between the arithmetic average of the Assigned UAL values calculated on the year that non-compliance occurs and the two previous years and the Proportional Share UAL (excluding any suspension due to rainfall as described in

Appendix B2, which is incorporated by reference in subsection 40E-63.404(4), F.A.C.)

Required TP reduction level (%) =

(Average of (Assigned UAL in $_{\text{Years 1, 2, 3}}$) - Proportional Share UAL) / Average of (Assigned UAL in $_{\text{Years 1, 2, 3}}$) and converted to a % (x 100)

3. If the C-139 Basin is out-of-compliance as a result of exceeding the Limit in the current year (as described in Appendix B2, "Annual Performance Determination", paragraph 4, which is incorporated by reference in subsection 40E-63.404(4), F.A.C.), the required percentage TP reduction will be calculated for each Permit Basin as the percent difference between its Assigned UAL and its Proportional Share UAL on the year that non-compliance occurs.

   Required TP reduction level (%) =

   100% x (Assigned UAL – Proportional Share UAL) / Assigned UAL

4. If the C-139 Basin is out-of-compliance exceeding both the Target for three years in a row and the Limit the current year (e.g. Target, Target, Limit), the Required TP Reduction shall be the greater of those calculated from (2) and (3) above.

The criteria for District approval of BMP Plan improvements or water quality improvement activities is as follows. Under a C-139 Basin-wide out-of-compliance scenario, the level of effort required for improvements to the BMP Plan may vary across Permit Basins based on the required TP Reduction Level for each one. As defined under "Water Quality Improvement Activities" in subsection 40E-63.402(19), F.A.C., the TP Removal Efficiency of the activities described within the proposal shall aim to meet the Required TP Reduction for each Permit Basin.

As defined in subsection 40E-63.402(19), "Water quality improvement activities" means a combination of modifications to a BMP Plan proposed by a permittee to meet the required total phosphorus reduction requirements of Appendix B3.2.(incorporated by reference in subsection 40E-63.404(8), F.A.C.). Improvement activities may include revising implementation methods to increase the effectiveness of existing BMPs or implementing additional BMPs.

Applicants may qualify for deferral from water quality improvement activities if the C-139 Basin is determined out-of-compliance in the future. To this end, an applicant may request approval for Early Implementation by opting to submit a proposal for voluntary implementation of additional BMPs (Early BMPs), or a voluntary BMP Demonstration Project that includes a BMP performance verification plan, for District review.

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1.4 Alternative BMP Demonstration Project

The proposed rule provides the option for voluntary permittee participation in research and demonstration projects which may account for no more than 20 BMP equivalent points as approved by the District. This provision is not included in the current rule. An additional objective of Part IV is added to Section 40E-63.400 "Purpose and Policy" as follows: "(3) (d) to develop and conduct research and demonstration projects to improve and confirm the effectiveness of BMPs for reducing phosphorus and other constituents that are not being significantly improved by either Stormwater Treatment Areas (STAs) or BMPs"..

A permittee may propose an "Alternative BMP Demonstration Project" using the following criteria. If a demonstration project is proposed to meet the BMP implementation requirements of subsection 40E-63.437 (3), F.A.C., a proposed project scope of work shall be submitted for District review and approval based on the following criteria.

(a) The scope of eligible projects shall include, at a minimum, the demonstration or research hypothesis, a description of implementation, the technical basis and scientific methods that will be employed, the performance indicators that will be measured such as water quality, water quantity, soil testing, or as applicable, the progress and final reports that will be produced to verify progress and results, and a schedule that details the beginning date, critical milestones and ending date of the project.

(b) The 35 BMP equivalent point requirement shall be met in the permit basin where the project is proposed. The proposed demonstration shall account for no more than 20 BMP equivalent points as approved by the District. The remaining 15 BMP equivalent points shall include 10 BMP equivalent points in the nutrient control practices category and 5 BMP Equivalent Points in the water management practices category.

(c) The proposed BMP equivalent points for the demonstration project will only be considered for the period of project implementation, the permit basin where the project is located, and for the crops or land uses to which the project applies.

(d) BMP equivalent points shall be initially determined by the District prior to issuance of a permit based on the BMP equivalent points established in Appendix B1 (incorporated by reference in subsection 40E-63.404(3), F.A.C.). Additional BMP equivalent points may be approved by the District if the applicant provides reasonable assurance through plans, test results, water quality data or other information, that the BMP project will demonstrate improvement in phosphorus removal efficiency in comparison to standard BMP implementation methods.

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(e) Once the demonstration project is complete and a final report is submitted in accordance with the approved scope, the permittee shall submit a Letter Modification application requesting that the approved BMP Plan be modified to incorporate the BMP or water quality improvement activity if the District determines that the BMP was successfully developed under the project. The application shall include the information described under Rules 40E-63.430, 40E-63.435, and 40E-63.437, F.A.C., as applicable, and shall describe how the report recommendations for BMP implementation will apply to the applicable crops or land uses for District review. The District shall review the BMP equivalent points initially assigned and may adjust them based on the reported phosphorus reduction levels and approved methods for implementation of the proposed BMP or water quality improvement activity. If the permittee decides that the BMP resulting from the demonstration project is not to be proposed for continued implementation, the permittee is required to submit a permit modification proposing a BMP Plan, as described in Rules 40E-63.435 or 40E-63.437, F.A.C., as applicable. The application for modification of the approved BMP Plan shall be submitted no later than 30 days after the project completion date pursuant to the District-approved scope.

1.5 Alternative BMP Plans

The proposed rule provides the option for permittees to implement alternative BMP Plans. Applicants may propose to satisfy the water quality requirements of the proposed rule by employing a BMP Plan or water quality improvement activities other than those described in 40E-63.435(1) and (2), F.A.C. The applicant shall provide reasonable assurance, through the information required below and the requirements indicated in 40E-63.435(4), (5), and (6), F.A.C.[5], that the alternative contains the equivalent or greater

[7] Section 40E-63.435 (3), (4) and (5.), F.A.C. state:
"(3) If, at the time a BMP Plan is proposed for approval, the District has previously determined the C-139 Basin to be out-of- compliance, and the permit basin has an approved BMP Plan including water quality improvement activities, the proposed BMP Plan shall include continuation of the approved BMP Plan and water quality improvement activities; or propose an equivalent alternative for District consideration. The applicant shall provide reasonable assurance that the alternative contains the equivalent or greater phosphorus reduction effectiveness of the approved BMP Plan and water quality improvement activities. The proposal must provide the basis that the BMP Plan and water quality improvement activities would have met the criteria indicated in subsection 40E-63.460(3), and (4), F.A.C., as applicable, for the years when the C-139 Basin was determined by the District to be out-of-compliance and water quality improvement activities were required.
(4) An education and training program for the management and operation staff responsible for implementing and monitoring the approved BMP Plan. The training may be provided in-house or arranged by the permittee or other educational resources.
(5) A description of records and documentation to be maintained on-site or at a suitable location that is readily available for District review. The records and documentation shall be sufficient to verify BMP

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phosphorus reduction effectiveness of a 35-point BMP plan. A BMP Plan shall take into account site-specific conditions, potential phosphorus sources, primary phosphorus species, and transport mechanisms; and ensure that a thorough approach to implementation and maintenance will be implemented. In order to seek approval of an alternative BMP Plan, applicants must submit the information specified for the applicable alternative as part of the permit application process.

(1) Alternative Type BMP. If an application proposes BMPs not listed in Appendix B1 (incorporated by reference in subsection 40E-63.404(3), F.A.C.), as required in subsection 40E-63.435(1), F.A.C., the application shall also include the following information for District approval:

(a) A description of the Best Management Practice rationale for the BMP selected;

(b) a detailed explanation of the proposed BMP;

(c) a schedule for implementation of the BMP;

(d) sample documentation of the BMP implementation, how the BMP will be verified;

(e) technical basis for the reduction effectiveness of the proposed BMP. The applicant may be required to demonstrate effectiveness through a proposed monitoring program or through representative technical references. If approved, the District will determine the appropriate BMP equivalent point credit consistent with Appendix B1 (incorporated by reference in subsection 40E-63.404(3), F.A.C.)

(2) Alternative BMP Points per Category. If the BMP Plan does not meet the minimum number of equivalent points per BMP category as required in subsection 40E63.435(2), F.A.C., the application shall include a site assessment demonstrating that an alternative BMP Plan will provide an equivalent or greater reduction effectiveness than using the standard approach.

The site assessment shall evaluate phosphorus imports and transport in discharges; current BMPs and implementation methods; other practices not covered under BMPs (e.g., grazing, irrigation, nutrient and water management); and representative water quality and soil data. Water quality data that can be used for the assessment include

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implementation, maintenance, and training, as described in the post-permit compliance section, Appendix C of the Guidebook (incorporated by reference in subsection 40E-63.404(2), F.A.C.) on the form entitled "C-139 Basin Annual Report – Certification of BMP Implementation"."

those available from the District sub-basin or synoptic (grab) monitoring programs, or properly collected grab samples or using field kits of adequate precision by the applicant.

(3) Alternative BMP Demonstration Project. This option was described in Section 4.0 above.

1.6 Changes in Permit Types and Application Requirements

This section describes the proposed changes to Permit Types and the proposed changes to application requirements.

Individual Permit Repealed

Under current rule, there are three permit types: No Notice General, General, and Individual. Under the proposed rule, there are two permit types: No Notice General and General. The Individual permit type would be repealed. According to the District, there are no Individual Permits in the C-139 Basin.

Under current rule, an applicant shall apply for an Individual Permit if the applicant is proposing:

(a) A discharge monitoring program, pursuant to Rule 40E-63.456, F.A.C.;

(b) A BMP not described in Appendix B1 of Chapter 40E-63, F.A.C.; or

(c) A BMP implementation schedule that exceeds 90 days, unless the situation qualifies for an exception as described in Rule 40E-63.442(5), F.A.C.

An Individual Permit may be issued to any operating entity or entities, owners, or lessees of all parcels identified in the permit that are individually or collectively responsible for implementing the BMP Plan for all lands specified within the permit, as applicable.

Changes to No Notice General Permit Eligibility

Under current rule, No Notice General Permits for Use of Works of the District within the C-139 Basin are granted to permittees for the surface water system operating permit for parcels of land that connect to or make use of the Works of the District within the C-139 Basin, subject to the requirements of Part IV, including Rule 40E-63.444(1)(e), (f), (g), and (i), F.A.C., and the conditions specified below:

(a) The land is not subject to the agricultural privilege tax, pursuant to the EFA, Section 373.4592(7)(a), F.S.; and

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(b) The land is served by a properly permitted and operated surface water management system (Environmental Resource Program, ERP, or Surface Water Management Permit, SWM).

Under the proposed rule, No Notice General Permits within the C-139 Basin are hereby granted to the landowners of parcels of land that connect to or make use of the Works of the District within the C-139 Basin, subject to the requirements of this part of Chapter 40E-63. F.A.C., including paragraphs 40E-63.444(1)(d), (g),(h), (i), (j), (l), (m), (r), (s), (t) and (u), F.A.C., and the conditions specified below.

(a) The parcel is not part of the common facilities of a water management system as defined in 40E-63.402(15), F.A.C., of water control districts or drainage districts pursuant to Chapter 298, F.S., or any other entity operating a central drainage system already permitted under Chapter 737, F.S.; and,

(b) The parcels are inactive, or add up to less than 40 acres in size under the same ownership. “Inactive” means land parcels that are not used for agriculture, urban, commercial, industrial or other development, as determined by the District. It also includes lands in their undeveloped native state (unless used as pastures). Lands may be determined by the District as temporarily inactive if they are not operated or are vacant due to changes in ownership or land use. The District’s determination applies only to the requirements of this part of Chapter 40E-63, F.A.C.

(c) The following BMPs are implemented by the landowner, lessees and operators, if applicable, and the property must be made available for inspection by District staff or other delegated agents within 14 days after written notice.

1. Phosphorus is only applied to correct phosphorus deficiencies based on soil testing or tissue testing, or for turf and landscape areas, phosphorus is only applied to meet initial establishment and growth needs (fertilizer composition less than 2% for an application rate not to exceed 0.25 lbs P2O5 per 1000 square feet per application nor exceed 0.50 lbs P2O5 per 1,000 square feet per year, or to correct phosphorus deficiencies based on soil or tissue testing).

2. Fertilizer or other soil amendments containing phosphorus are not applied within 10 feet of any pond, stream, lake, water course, or any designated wetland.

3. Spill prevention practices for nutrients are implemented.

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4. Runoff is managed in accordance with surface water or environmental resource permits, if applicable.

These conditions are new relative to the current rule.

District Notice to Require General Permit Instead of No Notice General Permit

Also new under the proposed rule is that "the District shall require the submission of applications for General Permits from No Notice General Permit holders if the District determines that the property exceeds its proportional share of phosphorus loading based on representative water quality data for the property, as determined in Appendix B3.1 (incorporated by reference in subsection 40E-63.404(7), F.A.C.) Notice of the requirement shall be provided to parcel owners in writing. Applications for new General Permits shall be submitted to the District within 45 days from the date of the notice.

Changes in Application Requirements of General Permits

The following changes to General Permit application requirements are proposed.

1. Applications for General Permits would require that the applicant include a delineation of "drainage features depicting the permit basin, general direction of flow, inflow points, and discharge points off-site for delineation of permit basins, as defined in subsection 40E-63.402(10), F.A.C."

2. Any changes in drainage or operations not identified previously that could affect the surface water management system, must be reported in writing in advance to the District to determine if an Environmental Resource/Surface Water Management Permit is required.

3. If not previously authorized by a District permit under this part of Chapter 40E-63, F.A.C., the permittee shall submit a permit modification application 30 days in advance of conducting any:

    3.1 Changes in BMPs; or

    3.2 Change in land practice affecting the approved BMP Plan; or

    3.3 Changes in water management that may affect the Sub-basin Monitoring Program (e.g., resulting from completing Environmental Resource/Surface Water Management Permit-authorized water management system changes.)

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4. Within 30 days of issuance of the permit, as of the effective date of the amendments to this part of Chapter 40E-63, F.A.C., for lessees that are not co-applicants, the permittee shall provide written certification that the lessees have received a copy of the permit and agree to implement the BMP Plan and be bound by the terms and conditions of the permit, including any amendments thereto.

5. For leases executed after the effective date of the amendments to this part of Chapter 40E-63, F.A.C. (in which the lessee is not a co-applicant), within 30 days of its date of execution, the permittee shall provide written certification by the lessee or a copy of the lease indicating the lessee's agreement to implement the BMP Plan and be bound by the terms and conditions of the permit, including any amendments thereto.

6. Authorizations from other agencies for disposal or application of wastewater residuals (biosolids), animal manure, solid waste, fill material, or other materials containing phosphorus within the C-139 Basin, shall not relieve permittees from complying with the provisions of this Rule. Water quality monitoring data may be required by the District to demonstrate no potential impacts on phosphorus loading.

Changes in Permit Applications Fees

Permit application fees are unchanged from current rule. Because the Individual Permit has been repealed, applicants that would have needed to pay the higher fees associated with this permit type will see a cost reduction.

An additional permit modification called a "Letter Modification" was added to the proposed rule with a fee of $0, or no charge. The need for letter modifications was added to certain permit actions under the proposed rule.

1.7 Impracticability

Under the proposed rule, permittees may elect to demonstrate that water quality improvement activities are impracticable. This option is not provided under current rule. Any such request for determination of impracticability must be submitted to the District under a permit modification application. For the District to consider the application for approval, the submittal shall:

(a) Specify all of the BMPs and activities that were implemented previously and provide evidence to show that no additional BMPs and activities or refinements for the reduction of phosphorus can be reasonably accomplished at the site or sites of operation.

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(b) Propose the expected amount of phosphorus discharge in comparison to the C-139 Basin's phosphorus load targets and limits, calculated in accordance with Appendices B3.1 and B3.2 (incorporated by reference in subsections 40E-63.404 (7) and (8), F.A.C.), for the range of historic rainfall conditions in accordance with Appendix B2 (incorporated by reference in subsection 40E-63.404(4), F.A.C.) No increasing trend in phosphorus from the property, as determined by the District, will be allowed under any scenario. The District will review the proposed performance level in reference to available representative historic data.

(c) Propose a discharge monitoring plan in accordance with rule 40E-63.462, F.A.C., to verify that the proposed performance level is met. In the event that the farm configuration is not conducive to a discharge monitoring program, the District may consider requests for the use of alternate representative locations or monitoring for concentration only. Upon District approval of the monitoring plan, special limiting conditions (such as applicable conditions from rule 40E-63.464, F.A.C.) will be incorporated to the permit.

(d) Such requests shall apply only to the permit basin or portion thereof (e.g., land use, crop or acreage) which demonstrated further activities are impracticable.

(e) The District shall send a copy of each such request to the Department of Environmental Protection.

(f) Determinations of impracticability will be valid until the next permit renewal cycle.

1.8 Verification Plan

Current and proposed rule establishes a BMP compliance verification and enforcement program to ensure that phosphorus discharges from the Basin do not exceed historic levels, based upon water quality monitoring data from the period October 1, 1978 to September 30, 1988.

Under current rule, the permittee may verify the effectiveness of proposed BMPs not listed in Appendix B1 of Chapter 40E-63, F.A.C. through a proposed monitoring program or by reference to applicable research data. No other verification requirements associated with BMP effectiveness are provided in current rule other than the Permit Basin Discharge Monitoring Program which is described later in this Section.

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The proposed rule defines "Verification Plan" as "a water quality monitoring program to verify the expected effectiveness of a BMP Plan or proposed water quality improvement activities in accordance with Rule 40E-63.460(4), F.A.C."

Under the proposed rule, if the C-139 Basin is determined to be out-of-compliance with the water quality requirements of Part IV pursuant to section 40E-63.450, F.A.C., the permittee shall propose water quality improvement activities. The submittal shall include a proposal for water quality improvement activities along with the estimated phosphorus reductions to be achieved in accordance with 40E-63.460(3), F.A.C., or a Verification Plan in accordance with 40E-63.460(4), F.A.C.

The permittee may provide evidence of the percent TP removal efficiency using the available data as described in the proposed rule or submit and implement a verification plan described as follows.

All water quality improvement activities proposals shall indicate the expected range of percent TP removal efficiency resulting from the proposal as follows.

(a) The expected or assumed range of percent total phosphorus removal efficiency shall equal or exceed the percent required total phosphorus reduction applicable to the permit basin.

(b) The expected or assumed total phosphorus removal efficiency shall be based on data from the most current representative technical references including peer reviewed or published BMP research and demonstration projects, with consideration of permit basin specific conditions such as identified when a site-assessment is completed pursuant to 40E-63.437(2).

(c) Each proposal shall include a detailed description of the technical basis and copies of documents as applicable. All proposed total phosphorus reductions shall be based on scientific studies, calibrated models, or data collection representative of the C-139 Basin for District approval.

If the permittee is unable to demonstrate that the required total phosphorus reductions can be achieved in accordance with (b) above, a verification plan shall be required.

If a permittee opts to or is required to conduct a monitoring program to confirm that required total phosphorus reductions will be achieved, a permittee shall propose a verification plan in addition to the proposal for improvements to an approved BMP Plan or water quality improvement activities. All verification plan proposals shall include the following information for District review and approval.

(a) The description of who will be responsible for project implementation.

(b) The proposed reporting procedures during and at completion of the project.

(c) A Final report at completion that describes how the recommendations for BMP implementation will be applicable to the crops or land uses to meet the required total phosphorus reduction, or

(d) The tools that will be used to verify total phosphorus reduction levels such as water quality and quantity monitoring to determine total phosphorus loading pre- and post-BMP improvement and to estimate total phosphorus reduction efficiency. Total phosphorus and phosphorus speciation data collected at the District sub-basin monitoring locations may serve as representative monitoring.

(e) The parameters under which total phosphorus reduction levels will be measured and verified so that findings are repeatable and applicable within the C-139 Basin conditions (climatic conditions, soils, geology, etc.)

(f) A schedule not to exceed three calendar years from the date of District approval of the proposal. Once the confirmatory verification is completed and a final report is submitted in accordance with the approved scope, the permittee shall submit a Letter Modification application in accordance with Rule 40E-63.439, F.A.C., and subsections 40E-63.460(2) and (3), F.A.C, to either:

a. modify the approved BMP Plan to incorporate changes based on the final report recommendations for the District's consideration, or

b. propose other water quality improvement activities consistent with the requirements of this rule.

1.9 Permit Basin Discharge Monitoring Program

The proposed rule regarding the Permit Basin Discharge Monitoring Program is very similar to current rule except for the following.

- It has been edited to be consistent with the other provisions of the proposed rule.
- It provides clarification regarding the requirements of this Program.

- It incorporates by reference the "Flow Calibration Guidelines Developed in Support of Chapter 40E-63, F.A.C., Everglades BMP Permit Program". This document is unchanged from its current version.

- It adds a requirement that: "During periods of off-site discharge, water quality composite samples shall be collected by automatic sampler, preserved, and the composite sample shall be: a) removed from the sample collection site and delivered to the laboratory no later than 21 days from the time the first individual sample was taken and, b) analyzed for total phosphorus no later than 28 days from the time the first individual sample was taken".

- It adds the option that permittees may be required to implement a Permit Discharge Monitoring Program.

This Section describes the Permit Basin Discharge Monitoring Program as provided in the proposed rule.

(1) In addition to implementing an approved BMP Plan, permittees may elect or be required to participate in a discharge monitoring program pursuant to Rules 40E-63.437, 40E-63.438, paragraph 40E-63.449(1)(r), subsection 40E-63.460(4) or 40E-63.460(6), F.A.C., an be subject to:

(a) <u>For permittees electing a discharge monitoring program or permittees required to implement a monitoring program pursuant to subsection 40E-63.460(6), F.A.C.:</u> alternative, site-specific evaluations of compliance with phosphorus load targets and limits for the areas represented by the monitoring plan when the C-139 Basin is collectively determined to be out-of-compliance in accordance with Chapter 40E-63, F.A.C., Appendix B2 (incorporated by reference in subsection 40E-63.404(4), F.A.C.); and

(b) Compliance with permit conditions in accordance with Rule 40E-63.444, F.A.C

(2) To implement a discharge monitoring program, permittees must provide a permit application with the following information.

(a) An acceptable discharge (quantity and quality) monitoring plan that provides reasonable assurance that annual water discharge and total phosphorus load are accurately documented.

(b) All flow quantity discharge from the property shall be calculated using a proposed method by a Florida-registered Professional Engineer in a flow calibration report

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approved by the District. A calibration report shall be required for each pump, culvert or other discharge structure. Uncontrolled off-site discharges, such as overland sheet flow, shall also be quantified in the report. Each calibration report shall contain, at a minimum: data collection methodology, instrumentation and procedures; the actual field data collected; the basis for the full operating range represented by the data; the methodology for development of the calibration equation; operational information needed to calculate flow with a temporary backup methodology to be used if the primary equipment becomes inoperable; and the final calibration equation and primary method for calculating the flow.

This portion is new under the proposed rule: "A plan that includes the items specified in the "Flow Calibration Guidelines Developed in Support of Chapter 40E-63, F.A.C. Everglades BMP Permit Program" (incorporated by reference in subsection 40E-63.404(9), F.A.C.), generally provides reasonable assurance that methods to measure water quantity will be reasonably accurate, however, other alternatives may be proposed by the applicant and authorized by the District".

(c) A schedule to install equipment and implement the monitoring plan no later than 30 days after issuance of the permit; and

(d) Other site specific information required by Appendix B3.1 (incorporated by reference in subsection 40E-63.404(7) F.A.C.)

For those applicants proposing to implement the permit basin discharge monitoring program, the District-approved monitoring plan will be incorporated into an amended General Permit and the following limiting conditions shall be met. These limiting conditions will be attached to the General Permit.

(1) The discharge (quantity and quality) monitoring plan shall provide reasonable assurance that the annual water discharge and total phosphorus load are accurately documented.

(2) The approved discharge monitoring plan shall be incorporated by reference and made part of this permit.

(3) The equipment shall be installed and the monitoring shall start no later than 30 days after the permit issuance date. Within 60 days after the permit issuance date, the permittee shall contact the District to verify that installation of the monitoring equipment is complete and to schedule an inspection;

(4) The permittee shall implement the discharge monitoring plan in accordance with the permit and shall submit to the District any proposed modification of the plan by

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submitting an application to modify the permit for review and approval prior to implementation.

(5) The location of sample collection shall be such that water sampled is representative of all water from the monitored area that discharges off-site.

(6) All water quality sample collection, preservation, handling, transport, and chain-of-custody documentation shall be conducted in accordance with an approved Comprehensive Quality Assurance Plan as specified in the approved discharge monitoring plan. All laboratory analyses shall be conducted by a laboratory with proper certification for the specified parameter (e.g. phosphorus);

(7) In the event that water quality automatic sampling equipment becomes inoperable for any reason, grab samples shall be temporarily taken on a daily basis during flow events and composited for a maximum of 14 days for total phosphorus analysis. Reasonable effort must be made to render the automatic sampling equipment operable within 14 days;

(8) Monitoring conditions may be reduced or adjusted upon submission of data and/or studies that provide the basis for such, reasonably demonstrating that equivalent data will be obtained with the reduction or adjustment in monitoring;

(9) The District will provide at least one week notice to the permittee of the intent to conduct a quality assurance field audit of the sampling collection procedures;

(10) The water quantity and quality data shall be submitted to the District no later than 60 days from the last day of the sampling period being reported. Water quantity and quality data shall be submitted to the District in an approved electronic format on a monthly basis.

(11) All flow quantity discharged from the property shall be calculated using a method proposed by a Florida-registered Professional Engineer in a Calibration Report approved by the District. A Calibration Report shall be required for each pump, culvert or other discharge structure. The report shall also quantified uncontrolled off-site discharges, such as overland sheet flow. Each Calibration Report shall contain, at a minimum: data collection methodology, instrumentation and procedures; the actual field data collected; the basis for the full operating range represented by the data; the methodology for development of the calibration equation; operational information needed to calculate flow with a temporary backup methodology to be used if the primary equipment becomes inoperable; and the final calibration equation and primary method for calculating the flow. Any modification

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to the approved calibration shall require an application to modify the existing permit.

(12) During periods of off-site discharge, water quality composite samples shall be collected by automatic sampler, preserved, and the composite sample shall be: a) removed from the sample collection site and delivered to the laboratory no later than 21 days from the time the first individual sample was taken and, b) analyzed for total phosphorus no later than 28 days from the time the first individual sample was taken.

1.10 Early Implementation of Water Quality Improvement Activities

The proposed rule provides the option for permittees to qualify for deferral from future requirements for additional water quality improvement activities. New under the proposed rule, "Applicants may qualify for deferral from water quality improvement activities if the C-139 Basin is determined out-of-compliance in the future." An applicant may request approval for early implementation by opting to submit a proposal for voluntary implementation of additional BMPs (early BMPs), or a voluntary demonstration project that includes a BMP performance verification plan, for District review as follows.

(1) Either proposal shall be submitted together with an application for a new permit, permit renewal, or as a Letter Modification.

(a) For Optional Early BMPs the application shall provide information for meeting the criteria below.

1. A description of the BMP or group of BMPs (early BMPs) that are proposed in addition to those required by rule at the time of application (Rule 40E-63.435 or subsection 40-63E.460(3), F.A.C., as applicable.) The proposal shall include the specific methods for implementation and maintenance of the early BMPs.

2. The proposal shall provide reasonable assurance through technical documentation, and the requirements indicated in sections 40E-63.435(4) and (5), F.A.C., that the combined effect of the optional early BMPs and rule-required BMPs will ensure a phosphorus loading reduction for the identified permit basin or parcels sufficient for the C-139 Basin to consistently achieve compliance with the Target, as described in Appendix B2 (incorporated by reference in subsection 40E-63.404(4), F.A.C.) The District will review whether the proposed loading reduction levels would be conducive to meeting the Target Unit Area Load (UAL) based on the most recent five years of water quality data.

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3. The proposal shall include an implementation schedule. To qualify for deferral, District-approved early BMPs shall be fully implemented during the water year for which the deferral can be applied.

(b) For voluntary demonstration projects, the application shall propose a BMP or water quality improvement measure demonstration project that meets the following conditions.

1. Complies with the criteria described under section 40E-63.437(3)(a), F.A.C.

2. Projects estimated phosphorus reductions based on available technical references, and

3. Proposes a verification plan through a Discharge Monitoring Program to confirm and quantify the estimated phosphorus reductions. The verification plan shall meet the criteria described in subsection 40E-63.460(4), F.A.C.

(2) Upon District approval of the voluntary early BMP implementation project or demonstration project with a verification plan, the permittee will be subject to the BMP reporting and verification requirements of this Chapter for those voluntary initiatives, as described in permit conditions. Permittees cannot be deemed out-of-compliance for failure to implement the early initiatives, however, the District will deem the permittee unable to claim a deferral if:

(a) Reporting and verification requirements for the voluntary early implementation projects are not met, as determined by the District.

(b) The permittee is not in compliance with the BMP Plan required by the permit.

(3) Early implementation plans that are approved to provide deferral from additional water quality improvement activities for a water year shall become permit requirements and lose their optional status."

Section 2.0
Number of Individuals and Entities Likely Required to Comply

2.1 General

Under current rule, owners of land whose water management systems connect with and make use of the canals, structures and other Works of the District within the C-139 Basin are required to comply with Chapter 40E-63, Part IV, "Everglades Regulatory Program: Pollutant Source Controls, C-139 Basin" per Rule 40E-63.400(1), F.A.C. Permits granted by the District under this rule are called "C-139 Basin Pollutant Source Control Permits".

Under the proposed rule, the individuals and entities required to comply with Rule 40E-63.400(1), F.A.C. as summarized above, are the same. However, the definition of the C-139 Basin was clarified to account for any new surface inflow in accordance with the Everglades Forever Act (statutory) definition of the C-139 Basin by adding the statement: "or lands outside those boundaries which discharge to the C-139 Basin or to the canals or structures described in Rule 40E-63.401(1)". This revision does not change the current number of persons and entities required to comply with the proposed rule. However, there is the potential that future changes in drainage patterns in lands surrounding the C-139 Basin may require additional persons and entities outside of the C-139 Basin to comply with the proposed rule. The number of these future persons and entities is not known.

2.2 No Notice General Permits and General Permits

The current rule allows for No Notice General Permits for owners of parcels of land that connect to or make use of the Works of the District within the C-139 Basin that are not subject to the Agricultural Privilege Tax pursuant to the Everglades Forever Act, Section 373.4592(7)(a), F.S., and that the land is served by a properly permitted and operated surface water management system (Environmental Resource Program, ERP, or Surface Water Management Permit, SWM). Owners of all other land parcels within the C-139 Basin are required to apply for either an Individual permit or a General permit.

Under the proposed rule, No Notice General Permits are provided to owners of land parcels meeting the conditions listed below:

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(1) The parcel is not part of the common facilities of a water management system operated by a water control district, drainage district, or central drainage system (e.g., an above ground impoundment and structures and canals serving that impoundment);

(2) The parcels are "Inactive"[1] or are less than 40 acres total under single ownership; and,

(3) Basic BMPs are implemented.

All other land parcels would be required to apply for and maintain a General Permit.

2.3 Individual Permits

Under the proposed rule, the Individual permit type would be repealed. Activities previously permitted under an Individual permit could be implemented under a General Permit in the proposed rule. There are no Individual Permits in the C-139 Basin.

2.4 Methodology

C-139 Basin Works of the District permit data from the South Florida Water Management District and the property database maintained by the Hendry County Property Appraiser's office were used to identify the sizes and uses of parcels located in the C-139 Basin and those parcels whose owners pay the Agricultural Privilege Tax.[2]

Some of the properties in the C-139 Basin are owned by the same person, persons or entities. For the purposes of this SERC, all properties under common ownership or served by the common facilities of a surface water management system are counted as one permit. Also, there may be more than one person listed as the owner of a property, so the number of individuals and entities affected by the proposed rule is larger than the number of permits.

For discussion purposes, the C-139 Basin is segregated into the larger agricultural and conservation area comprising about 158,811 acres and the smaller generally non-agricultural area comprised of Montura Ranches Estates, Flaghole Estates and Eckerd

[1] Inactive means land parcels that are not used for agriculture, urban, commercial, industrial or other development, as determined by the District. It also includes lands in their undeveloped native state (unless used as pastures). Lands may be determined by the District as temporarily inactive if they are not operated or are vacant due to changes in ownership or land use. The District's determination applies only to the requirements of this part of Chapter 40E-63, F.A.C.

[2] The Hendry County Property Appraiser's property database was found at www.hendryprop.com.

Family Youth Alternatives which totals about 9,569 acres. The total land area in the C-139 Basin is the sum of these two land areas, or 168,450 acres. Each of these two areas is described below.

2.5 Agricultural and Conservation Area

The numbers of required General Permits in the agricultural and conservation area under the current rule and the proposed rule were evaluated. Under the current rule, there are 27 C-139 Basin Pollutant Source Control General Permits[3] in agricultural land uses and four General Permits covering lands that were converted from agriculture to conservation. The land areas associated with these permits range from 121 acres to 53,000 acres. These 31 General Permits represent about 60 landowners and operators.

Under the current and proposed rules, the 27 General Permits issued to the agricultural operations would need to be renewed. Under the current rule, the five owners of the four conservation areas General Permits would need to renew their General Permits because these properties do not have a properly permitted and operated surface water management system. Under the proposed rule the owners of the four conservation areas would qualify for a No Notice General Permit rather than a General Permit. These lands would likely meet the conditions of No Notice General Permits under 40E-63.415, F.A.C.: they are not part of the common facilities of a water management system, they are inactive (land use), and they would implement the basic BMPs.

2.6 Non-Agricultural Area

Eckerd Family Youth Alternatives, Inc., Central County Water Control District, Montura Ranches Estates, and Flaghole Estates[4] are the main non-agricultural areas in the C-139 Basin. A description of permitting requirements for the property owners in these areas under the current and proposed rules is as follows.

1. Eckerd Family Youth Alternatives, Inc. is classified as a Non-Profit entity that owns 269 acres of non-agricultural land (a youth camping ground) in the C-139 Basin. The land is served by a properly permitted and operated surface water management system. Under the current rule this land qualifies for a No Notice General Permit. Under the proposed rule, the property would require a General Permit because it is greater than 40 acres.

2. The Central County Water Control District is classified by the property appraiser's office as a Water Management District. Central County's purposes are to reclaim,

[3] Herein referred to as General Permits.
[4] This is the portion of Flaghole that is located within the C-139 Basin.

drain, and irrigate the land within its boundaries and to construct, acquire by donation, or purchase recreational facilities and areas for the benefit of its residents.[5] The Central County Water Control District operates a surface water management system permitted by the South Florida Water Management District. The Central County Water Control District's service area is the Montura Ranches Estates, which is located in the northern C-139 Basin.[6] The Central County Water Control District has many land parcels located inside and outside the Montura Ranches Estates. This District was created in 1970 under Chapter 70-702 by a special Act of the Florida Legislature. Under current rule, this entity has a No Notice General Permit because it has a properly permitted and operating surface water management system. Under the proposed rule, this entity would be required to have a General Permit because it is part of the common facilities of a water management system operated by a water control district, drainage district, or central drainage system.

3. Montura Ranches Estates is primarily a residential area located in the northwest portion of the C-139 Basin. It represents about 8,660 acres or about 5 percent of the C-139 Basin acreage. Under the current rule, the properties in Montura Ranches Estates are granted No Notice General Permits because none of the properties is assessed an Agricultural Privilege Tax and because these lands are served by the Central County Water Control District. Review of the Hendry County Property Appraisers Office records indicates that 21 properties in Montura Ranches are in agricultural use. However, none of the landowners of these properties pays the Agricultural Privilege Tax. For purposes of this SERC it is considered that under the current rule properties paying the Agricultural Privilege Tax would be required to obtain a General Permit, or become co-applicants of a General Permit if served by common surface water management systems (e.g., agricultural properties in Montura Ranches Estates.)

Under the proposed rule, properties in Montura Ranches Estates would be granted No Notice General Permits if the land area under single ownership is inactive or is less than 40 acres. Data review indicates that, except for the property owned by Weekly Brothers Leasing, LTD., all other parcels would qualify for No Notice General Permits. The numbers of properties in Montura Ranches Estates associated with each land use classification are provided in Table 2.1.

[5] Central County Water Control District, Hendry County, Florida, "Financial Report for the Fiscal Year Ended September 30, 2008 obtained from www.myflorida.com, page 12.

[6] From map of Districts in Collier, Glades and Hendry counties obtained from: http://www.sfwmd.gov/portal/page/portal/xrepository/sfwmd_repository_pdf/collier_glades_hendry_09.pdf

4. Weekly Brothers Leasing, LTD owns about 300 acres of nature pastureland that drain into the Central County Water Control District within Montura Ranches Estates. An Agricultural Privilege Tax is not paid on this property. Therefore, a No Notice General Permit is granted to this landowner under the current rule. Under the proposed rule, this landowner would be required to be a co-permittee with the Central County Water Control District because the land is greater than 40 acres in size and is part of a water control district.

5. A portion of Flaghole Estates (640 acres) is located within the C-139 Basin. This area consists of land parcels from one to 30 acres. The smaller parcels have single-family residences or mobile homes. The larger parcels are pastureland. Review of the Hendry County Property Appraisers Office records indicates that 18 properties are in agricultural use and that 12 of these properties (owned by eight persons/entities) pay the Agricultural Privilege Tax. For purposes of this SERC, the criteria to determine which properties would require a General Permit under the current rule is the same as for Montura Ranches Estates. Therefore, the 12 properties paying the Agricultural Privilege Tax account for 8 permits and 10 landowners and operators and are required to have a General Permit under the current rule. Under the proposed rule, these properties would be granted No Notice General Permits because they are smaller than 40 acres under common ownership. The numbers of properties in Flaghole Estates associated with each land use classification are provided in Table 2.1.

6. Counting all commonly owned properties in Montura Ranches Estates and Flaghole Estates, there are 4,807 No Notice General Permits under the current rule associated with 6,474 individual persons and entities. These permits account for the 27 agricultural properties that do not pay the Agricultural Privilege Tax and the 6,282 non-agricultural properties presented in Table 2.1. The combined acreage of properties with the same owner for all but seven of these owners is less than 40 acres. These seven owners have more than 40 acres of land but the land use of the properties is Vacant Residential according to the property database. It is assumed that these properties are inactive.

Table 2.1
Number of Properties in Montura Ranches Estates and Flaghole Estates From the Hendry County Property Appraiser's Office (a)

Land Use	Flaghole Estates (b)	Montura Ranches Estates	Total
NON-AGRICULTURAL			
Vacant Residential	15	5,022	5,037
Mobile Home	25	978	1,003
Single Family Home	14	210	224
Vacant Commercial	0	5	5
Government	2	2	4
Commercial	0	9	9
Total	**56**	**6,226**	**6,282**
AGRICULTURAL THAT DOES NOT PAY AGRICULTURAL PRIVILEGE TAX			
Pasture	1	9	10
Semi-Improved Pasture	3	2	5
Native Pasture	2	2	4
Poultry/Bees/Fish	0	5	5
Ornamentals/ Misc Agriculture	0	3	3
Total	**6**	**21**	**27**
AGRICULTURAL THAT PAYS AGRICULTURAL PRIVILEGE TAX			
Pasture	7	0	**7**
Semi-Improved Pasture	4	0	**4**
Native Pasture	1	0	**1**
Total	**12**	**0**	**12**

(a) Some of the properties counted in this table are under the same ownership. The number of properties where properties owned by the same persons or entities is counted only once is less than the number of properties presented in this table. Also, a property can have more than one owner. For example, combining properties with common owners of the 12 agricultural properties in Flaghole Estates that pay the Agricultural Privilege Tax results in 8 permits associated with 10 individual persons and entities.

(b) The portion of Flaghole within the C-139 Basin.

Source: Hendry County Property Appraiser's Office Property Database, www.hendryprop.com.

2.7 Summary of Results

A summary of the estimated number of individuals and entities required to comply with the current rule and the proposed rule are provided in Table 2.2.

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Table 2.2
Estimated Number of Persons and Entities Required to Comply
With the Current and Proposed C-139 Basin Works of the District Rule (a)

Property / Owner Description	Current Rule		Proposed Rule	
	Number of Permits	Number of Landowners and Operators	Number of Permits	Number of Landowners and Operators
A. General Permits Required				
In Agricultural and Conservation Area -				
Landowner Pays Agricultural Privilege Tax (b)	27	55	27	55
Land in Conservation, Owner does not have permitted & operating Surface Water Management System	4	5	0	0
Landowner Pays Ag Privilege Tax in Flaghole (c)	8	10	0	0
Government (Central County Water Control District) (d)	0	0	1	2
Commercial (Eckerd Family Youth Alternatives, Inc.)	0	0	1	1
Total General Permits Required	**39**	**70**	**29**	**58**
B. No Notice General Permits				
Properties Located in Montura Ranches and Flaghole (e)	4,807	6,474	4,815	6,484
Land in Conservation, Owner does not have permitted & operating Surface Water Management System	0	0	4	5
Government (Central County Water Control District)	1	2	0	0
Commercial (Eckerd Family Youth Alternatives, Inc.)	1	1	0	0
Land in SE Corner of C-139 Basin that was in Aquaculture and now is Inactive (f)	0	0	1	1
Total No Notice General Permits	**4,809**	**6,477**	**4,820**	**6,490**
Total General and No Notice General	4,848	6,547	4,849	6,548

(a) Given the currently known land uses, parcel sizes and Agricultural Privilege Tax payments as of March 2010. There is one land parcel in the SE Corner of the C-139 Basin owned by the District which is exempt from permitting and is not included in this table. It is Inactive.

(b) Land uses include pasture, vegetables, citrus groves and sugarcane. Based on General Permit data provided by the South Florida Water Management District in April 2010 and includes information to determine number of permits, number of landowners and number of operators.

(c) Number of permits and number of landowners based on individual property tax records of the agricultural properties in Montura Ranches and Flaghole Estates and on a list of properties whose owners pay the Agricultural Privilege Tax. This list was obtained from the Hendry County Property Appraiser's Office property database. The number of permits assumes that all parcels under the same ownership are included in one permit. Does not include operators because such data were not readily available from public information sources.

(d) Number of Landowners and Operators under Proposed Rule includes the Central County Water Control District and Weekly Brothers Leasing LTD.

(e) Based on property data from the Hendry County Property Appraiser's Office property database. To estimate the numbers of permits and persons and entities who would qualify as a No Notice General Permittee under the proposed rule, the number of General Permittees who pay the Agricultural Privilege Tax and who are less than 40 acres is added to the number of permits and landowners under current rule (4,815 = 4,807 + 8 and 6,484 = 6,474 + 10).

(f) This land was exempt from C-139 Basin permitting because it was in aquaculture and subject to an alternative rule. Currently, the land use is Inactive.

General Permits. Under current rule, about 70 landowners and operators associated with 39 permits are required to apply for and maintain General Permits in compliance with Chapter 40E-63, Part IV, "Everglades Regulatory Program: Pollutant Source Controls, C-139 Basin". Under the proposed rule, about 58 landowners and operators associated with 29 permits would be required to apply for and maintain General Permits.

No Notice General Permits. Under current rule, about 6,477 landowners and operators associated with 4,809 permits are currently No Notice General Permits in compliance with Chapter 40E-63, Part IV, "Everglades Regulatory Program: Pollutant Source Controls, C-139 Basin". Under the proposed rule, about 6,490 landowners and operators associated with 4,820 permits would be granted No Notice General Permits.

Section 3.0
Cost to the District and Any Other State and Local Government Entity

3.1 Cost to the District to Implement and Enforce the Proposed Rules

The cost to the District includes any additional staff hours to implement and enforce the proposed rule relative to the current rule. The activities that would need to be conducted by the District under the current rule and the proposed rule and the frequency that these activities must take place are provided in Table 3.1. Some of these activities take place at permit renewal while others only take place if the C-139 Basin is out-of-compliance. Many of these activities already take place under the current rule. Other activities are only required under the proposed rule.

Table 3.1
District Activities and Frequency Required Under the Current Rule and the Proposed Rule

Activity	Current Rule	Proposed Rule
BMP Permit Application and Issuance (every 5 years)		
1. BMP Plan Approvals to meet proposed rule - Year 1	No	Yes
2. Permit Application Review and Issuance – Year 1 & renewals on five year periods	Yes	Yes
BMP Permit Compliance (annual)		
3. BMP Plan Field Verification – Years 1 through 10	Yes	Yes
4. BMP Annual Report Review – Years 1 through 10	Yes	Yes
5. Permit Basin Discharge Monitoring Plan Processing – Years 1 through 10	Yes	Yes
Water Quality Compliance		
6. Model development in accordance with proposed rule – Year 1 only	No	Yes
7. Performance Measure Determination at the Basin wide level – Years 1 through 10	Yes	Yes
8. Performance Measure Determination at the Sub-basin and Permit Basin level		
8a. In Years when C-139 Basin is in compliance	No	Yes
8b. In Years when C-139 Basin is out-of-compliance	Yes, permit basin level only	Yes
Other Permit Modification Applications – In Years when C-139 Basin is out-of-compliance		
9. Review of Proposed Water Quality Improvement Activities (WQIA) and Implementation	No	Yes
10. Review of Impracticability Requests	No	Yes
11. Review of Demonstration Projects with Verification Plans	No	Yes

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The additional hours needed for District staff to complete these activities are based on a comparison of whether or not each activity is required under the current rule and under the proposed rule.

The estimated number of hours needed to complete each activity in a given year was based on the nature of the activity, whether or not General Permits are up for renewal (every 5 years), and the frequency in which the C-139 Basin is determined by the District to be out-of-compliance. The estimated number of hours and District cost associated with three different out-of-compliance frequencies is provided in this Section. Estimated costs to the District are provided when the C-139 Basin is out-of-compliance: (1) once every ten years; (2) never; and (3) three times every ten years. The first frequency represents an "average" anticipated out-of-compliance frequency, the second frequency represents a "minimum" and the third represents a "maximum".

The District calculated the average hourly cost of engineer and scientist classifications that would most likely provide the services needed for implementation and enforcement. The average hourly cost is $138.36 and includes salary, employee benefits and overhead.

The estimated difference in needed staff hours between the activities required by the proposed rule and those of the current rule were multiplied by this hourly cost to obtain an estimate of the cost to the District associated with the proposed rule. The results are provided in Table 3.2 under "Average" out-of-compliance frequency, Table 3.3 under "Minimum" out-of-compliance frequency and Table 3.4 under "Maximum" out-of-compliance frequency. The hours and costs are estimated each year of a 10 year period in order to demonstrate the variability of labor hours needed from year to year under the proposed rule.

Under the "Average" out-of-compliance frequency provided in Table 3.2, the one out-of-compliance year was hypothetically placed in Year 4. In reality, an out-of-compliance determination could occur in any year. The additional staff hours needed per year as a result of the proposed rule ranges from 483 to 1533 (out-of-compliance year). For seven of the 10 years, the additional staff hours is estimated to be 483. The number of full-time-equivalent staff needed to implement and enforce the proposed rule ranges from 0.26 to 0.83. The District's annual cost of these additional staff hours ranges from $66,800 to $212,100. Actual costs will depend on the frequency in which the C-139 Basin is out-of-compliance. Under the "Average" out-of-compliance frequency scenario, the average annual cost is estimated to be $88,000 associated with 0.34 full-time-equivalent staff.

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Under the “Minimum” out-of-compliance frequency provided in Table 3.3, there are no years when the C-139 Basin is out-of-compliance. The additional staff hours needed as a result of the proposed rule ranges from 483 to 808. For eight of the 10 years, the additional staff hours is estimated to be 483. The number of full-time-equivalent staff needed to implement and enforce the proposed rule ranges from 0.26 to 0.44. The District’s annual cost of these additional staff hours ranges from $66,800 to $111,800. Under the “Minimum” out-of-compliance frequency scenario, the average annual cost is estimated to be $73,000 associated with 0.29 full-time-equivalent staff.

Under the “Maximum” out-of-compliance frequency provided in Table 3.4, the C-139 Basin is out-of-compliance three times every ten years. The additional staff hours needed as a result of the proposed rule ranges from 483 to 1533. The latter additional hours is needed during the three out-of-compliance years. For five of the 10 years, the additional staff hours is estimated to be 483. The number of full-time-equivalent staff needed to implement and enforce the proposed rule ranges from 0.26 to 0.83. The District’s annual cost of these additional staff hours ranges from $66,800 to $212,100. Under the proposed rule, additional Water Quality Improvement Activities after 2013 would be required no more frequently than every three years. Thus, this scenario represents the highest out-of-compliance frequency possible. Under the “Maximum” out-of-compliance frequency scenario, the average annual cost is estimated to be $116,600 associated with 0.46 full-time-equivalent staff.

Table 3.2
Estimated Cost of the Proposed Rule to the South Florida Water Management District
If the C-139 Basin is Out-of-Compliance Once Every 10 Years (Average)

Item	Year										Total Every 10 Years	Average Annual
	1	2	3	4	5	6	7	8	9	10		
Out-of-compliance Years/Permit Renewal Years (a)	No/Yes	No/No	No/No	Yes/No	No/No	No/Yes	No/No	No/No	No/No	No/No		
Proposed rule, hours	5,174	3,016	3,016	4,066	3,016	4,974	3,016	3,016	3,016	3,016	35,326	3,533
Baseline, hours	4,366	2,533	2,533	2,533	2,533	4,366	2,533	2,533	2,533	2,533	28,996	2,900
Difference, hours	808	483	483	1,533	483	608	483	483	483	483	6,330	633
Labor Cost including salaries, benefits and overhead	$111,791	$66,825	$66,825	$212,098	$66,825	$84,120	$66,825	$66,825	$66,825	$66,825	$875,787	$87,579
No. of Full Time Equivalent Persons	0.44	0.26	0.26	0.83	0.26	0.33	0.26	0.26	0.26	0.26	3.44	0.34

(a) In this table, the actual year when the C-139 Basin is out-of-compliance is hypothetical

Table 3.3
Estimated Cost of the Proposed Rule to the South Florida Water Management District
If the C-139 Basin is Never Out-of-Compliance in 10 Years (Minimum)

Item	Year										Total Every 10 Years	Average Annual
	1	2	3	4	5	6	7	8	9	10		
Out-of-compliance Years/Permit Renewal Years (a)	No/Yes	No/No	No/No	No/No	No/No	No/Yes	No/No	No/No	No/No	No/No		
Proposed rule, hours	5,174	3,016	3,016	3,016	3,016	4,974	3,016	3,016	3,016	3,016	34276	3427.6
Baseline, hours	4,366	2,533	2,533	2,533	2,533	4,366	2,533	2,533	2,533	2,533	28996	2899.6
Difference, hours	808	483	483	483	483	608	483	483	483	483	5280	528
Labor Cost including salaries, benefits and overhead	$111,791	$66,825	$66,825	$66,825	$66,825	$84,120	$66,825	$66,825	$66,825	$66,825	$730,514	$73,051
No. of Full Time Equivalent Persons	0.44	0.26	0.26	0.26	0.26	0.33	0.26	0.26	0.26	0.26	2.87	0.29

Table 3.4
Estimated Cost of the Proposed Rule to the South Florida Water Management District
If the C-139 Basin is Three Times Out-of-Compliance in 10 Years (Maximum)

Item	Year										Total Every 10 Years	Average Annual
	1	2	3	4	5	6	7	8	9	10		
Out-of-compliance Years/Permit Renewal Years (a)	No/Yes	No/No	No/No	**Yes/No**	No/No	No/Yes	**Yes/No**	No/No	No/No	**Yes/No**		
Proposed rule, hours	5,174	3,016	3,016	4,066	3,016	4,974	4,066	3,016	3,016	4,066	37426	3742.6
Baseline, hours	4,366	2,533	2,533	2,533	2,533	4,366	2,533	2,533	2,533	2,533	28996	2899.6
Difference, hours	808	483	483	1,533	483	608	1,533	483	483	1,533	8430	843
Labor Cost including salaries, benefits and overhead	$111,791	$66,825	$66,825	$212,098	$66,825	$84,120	$212,098	$66,825	$66,825	$212,098	$1,166,333	$116,633
No. of Full Time Equivalent Persons	0.44	0.26	0.26	0.83	0.26	0.33	0.83	0.26	0.26	0.83	4.58	0.46

(a) In this table, the actual year(s) when the C-139 Basin is out-of-compliance is hypothetical

3.2 Cost to Any Other State and Local Government Entities of Implementing and Enforcing the Proposed Rules

Other than entities located in the C-139 Basin that will need to comply with the proposed rule as described in Section 2.0, including the Central County Water Control District and the State of Florida, no other State or local government entity will be required to implement and enforce the proposed rule. Costs to State and local government entities as applicants and permitees are addressed as transaction costs in Section 4.0 of this Statement of Estimated Regulatory Costs.

3.3 Anticipated Effect on State or Local Revenues

The proposed rule is not expected to affect State or local government revenues.

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Section 4.0
Transactional Costs

4.1 General

This Section estimates the transactional costs associated with the proposed revisions to Chapter 40E-63, Part IV, “Everglades Regulatory Program: Pollutant Source Controls, C-139 Basin. According to Chapter 120.541, Florida Statutes (2009), the Statement of Estimated Regulatory Costs shall include:

“A good faith estimate of the transactional costs likely to be incurred by individuals and entities, including local government entities, required to comply with the requirements of the rule. As used in this paragraph, "transactional costs" are direct costs that are readily ascertainable based upon standard business practices, and include filing fees, the cost of obtaining a license, the cost of equipment required to be installed or used or procedures required to be employed in complying with the rule, additional operating costs incurred, and the cost of monitoring and reporting.”

These transactional costs may be incurred by property owners, farm operators and lessees whose water management systems connect to and make use of the canals, structures, and other Works of the District within the C-139 Basin. The C-139 Basin is located in northeast Hendry County, just southwest of Clewiston, Florida and Lake Okeechobee.

The information regarding Transactional Costs in this SERC incorporates the best available information to assess how the rule will impact the C-139 Basin Pollutant Source Control permittees and applicants. The estimated transactional costs associated with each proposed rule revision are provided and many were normalized to cost per acre averaged over the entire property. Applicants and permittees are encouraged to use their own situation and the information and unit costs provided in this SERC to obtain an understanding of how the proposed rule will impact their own operations.

Permittees who have judiciously implemented effective best management practices (BMPs) will be least impacted by the proposed rule in terms of transactional costs. In addition, many of the BMPs that permittees will be required to implement as a result of the proposed rule may already be required under other rules, or fully or partially implemented as standard operating procedure for the agricultural operation.

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4.2 Summary Description of Costs

Types of costs that may be incurred by the individuals and entities, and sections of this document where these costs are discussed are:

1. Costs by No Notice General Permittees to implement basic BMPs as described in the proposed rule. (See Section 4.3)

2. For current No Notice General permittees who would be required to apply for a General permit due to the change in requirements under the proposed rule, the permit application cost and the cost to implement additional BMPs as required under this rule would be incurred. Currently three entities have been identified that will need to apply for a General Permit under the proposed rule. (See Sections 4.4 and 4.5)

3. Costs that may be incurred by applicants for General Permits due to changes in the application requirements. (See Section 4.5)

4. Cost to General Permittees to revise their BMP Plans so that they comply with the allocation of 20 of the 35 BMP points to Nutrient Control Practices (10 BMP points), Water Management Practices (5 BMP points), and Particulate Matter and Sediment Control Practices and/or Pasture Management BMPs, as applicable (5 BMP points). (See Sections 4.6 and 4.7)

5. In the event that the District determines that the C-139 Basin is out-of-compliance, permittees may incur costs to develop a plan of proposed Water Quality Improvement Activities and implement these activities. The magnitude of cost will depend on the percent total phosphorus (TP) reduction, if any, required from each Permit Basin. The first year when a compliance assessment can trigger Water Quality Improvement Activities is Water Year 2013. Additional Water Quality Improvement Activities after 2013 would be required no more frequently than every three years. (See Sections 4.6 and 4.7)

6. Cost to develop and implement a Verification Plan that is “a water quality monitoring program to verify the expected effectiveness of a BMP Plan or proposed Water Quality Improvement Activities in accordance with Rule 40E-63.460(4), F.A.C.” This Verification Plan would be required if the permittee is unable to demonstrate that the Required TP Reductions can be achieved based on data from the most current representative technical references including peer reviewed or published BMP research and demonstration projects, with consideration of Permit Basin specific conditions such as when a site-assessment is completed pursuant to 40E-63.437(2). (See Section 4.8)

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7. Cost to develop and implement a Permit Basin Discharge Monitoring Program if required by the District pursuant to 40E-63.437, 40E-63.438, and 40E-63.444(1)(r). (See Section 4.8)

8. Cost to demonstrate that Water Quality Improvement Activities are impracticable, including the cost of a discharge monitoring plan, to those individuals and entities who elect to utilize this option. This option is a cost-saving benefit to permittees and applicants. (See Section 4.9.2)

The requirement that all General permittees in the C-139 Basin renew their permits within 30 days of the effective date of this proposed rule will not incur costs to these permittees relative to the current rule. This is because they were automatically granted permit extensions in 2007 in order to postpone permit renewal until this proposed rule is adopted.

The estimated transactional costs associated with each of the eight types of costs listed above are provided as follows.

4.3 Estimated BMP Costs to No Notice General Permittees

Landowners, lessees and operators who must comply with the conditions of a C-139 Basin No Notice General Permit will be required to implement the following BMPs. The property must be made available for inspection by District staff or other delegated agents within 14 days after written notice.

1. Phosphorus is only applied to correct phosphorus deficiencies based on soil or tissue testing or, for turf and landscape areas, phosphorus is only applied to meet initial establishment and growth needs (fertilizer composition less than 2% for an application rate not to exceed 0.25 lbs P2O5 per 1000 square feet per application nor exceed 0.50 lbs P2O5 per 1,000 square feet per year).

2. Fertilizer or other soil amendments containing phosphorus are not applied within 10 feet of any pond, stream, lake, water course, or any designated wetland.

3. Spill prevention practices for nutrients are implemented.

4. Runoff is managed in accordance with surface water or environmental resource permits, if applicable.

These BMPs are not expected to incur significant costs to No Notice General permittees. The nutrient management BMPs (1, 2, and 3, above) require minimal application of

phosphorus nutrients and implementation of spill prevention practices and, thus, do not require any particular purchase of materials or additional labor requirements. Regarding water management BMPs (4, above), the requirement consists of maintaining compliance with current surface water or environmental resource permits, so there is no additional cost associated with the proposed rule.

In the event that a soil and/or plant tissue test is needed to correct phosphorus deficiencies, the current cost per standard soil fertility test conducted by the University of Florida, Institute of Food and Agricultural Sciences (IFAS) is $7. This test determines pH, lime requirement, P, K, Ca, and Mg. The plant tissue analysis is also conducted by IFAS and the cost is $10 per test. Plant tissue analysis includes: N, P, K, Ca, and Mg (in percent); and B, Cu, Fe, Mn, and Zn (in ppm) The Hendry County Cooperative Extension Office in LaBelle, Florida will mail the sample or samples to IFAS for testing and will assist in interpreting the results. These costs are applicable to all types of No Notice General Permittees, including agricultural operations and homeowners.

4.4 Current No Notice General Permittees Required to Apply for a General Permit

Owners of land parcels 40 acres or larger under the same ownership that are not inactive will be required to obtain a General permit. Under current rule, land uses not in agriculture are not required to have a General Permit. According to the proposed rule**,** the term inactive means “land parcels that are not used for agriculture, urban, commercial, industrial or other development, as determined by the District. It also includes lands in their undeveloped native state (unless used as pastures)”.

In the event that a No Notice General Permittee under the current rule would be required to obtain a General permit under the proposed rule, the land owner would need to apply for a General Permit and pay the permit application processing fee. The permit application processing fees are $250 for a new permit, $250 for a renewal permit, $100 for a permit modification and $100 for a permit transfer. The applicant will also be required to implement BMPs specified in Appendix B1 of the proposed rule and comply with all requirements of the proposed rule which are described and quantified in this Section. Please refer to section 4.6 regarding a discussion of potential BMP implementation costs for entities covered by No Notice General permits under the current rule that would be required to obtain General permits under the proposed rule.

4.5 Costs Due to Changes in General Permit Application Requirements

Some changes to the requirements for General Permit applications may incur costs to individuals and entities. These costs were estimated and are provided in Table 4.1 for each proposed change. Actual costs may differ from those presented in this table to the

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extent that the hourly wage rate, the multiplier to account for employment benefits and overhead, and/or the hours required for the applicant to address the requirement are different from the values provided. The cost estimates provided in the Table attempt to consider the most common anticipated activities of the applicant.

Table 4.1
Estimated Costs to Comply with Changes in General Permit Application Requirements

Proposed Requirement	Number of Hours		Cost per Hour (a)	Total Cost	
	Low	High		Low	High
Delineation of "drainage features depicting the hydrologic drainage area, general direction of flow, inflow points, and discharge points off-site for delineation of Permit Basins"	0 (b)	8	$47.18	$0	$377
Notification and Certification that lessees have received a copy of the permit and agree to implement the BMP Plan and be bound by the terms and conditions of the permit, including any amendments.	0 (c)	4	$47.18	$0	$189
If the permittee applies materials that contain phosphorus, such as biosolids, water quality monitoring data may be required by the District to demonstrate no potential impacts on phosphorus loading.	See Section 4.8 for an estimated cost to implement a Permit Basin Discharge Monitoring Program. Estimated cost is $5.26 per acre represented by the monitoring site.				

(a) Actual cost per hour will vary depending on the wages or salaries of those who provide the services. An average hourly wage rate of $15.73 is used times a factor of 3.0 to account for employee salary/wages, employee benefits and overhead. The $15.73 per hour wage rate represents the median hourly wage rate of all full-time employees in Florida in 2006 and is from Florida Statistical Abstract, 2008, Table 6.13, Wages: Median Weekly Earnings of Full-time Wage and Salary Workers by Sex in Florida, Other Sunbelt States, and the United States, 2006, page 275, University of Florida, Bureau of Economic and Business Research. The 3.0 factor is from Hazen and Sawyer in-house sources.

(b) The existing delineation as described in the permit or based on post-permit compliance inspections or the hydrologic evaluation conducted by the District may be sufficient or changes may be required as part of an ERP permit. Therefore, the landowner may not be required to submit any additional information as a result of the proposed rule.

(c) The cost would be $0 if the landowner does not have a lessee or the lessee is a co-applicant.

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4.6 General Permittee Revisions to the BMP Plan and Implementation of Water Quality Improvement Activities

There are two situations when General permittees will need to make changes to their BMP Plan and/or implement additional BMPs. The first situation is immediately after adoption of the proposed rule and the second situation is when the District finds that the

C-139 Basin was not in compliance with the Everglades Forever Act during the previous year. Each situation is discussed in turn.

Revise the Permittee's BMP Plan. Upon adoption of the proposed rule, General Permittees will need revise their BMP Plans so that they comply with the allocation of 20 of the 35 BMP points to Nutrient Control Practices (10 BMP points), Water Management Practices (5 BMP points), and Particulate Matter and Sediment Control Practices and/or Pasture Management BMPs, as applicable (5 BMP points).

The approved BMP Plan must be fully implemented with 90 days from the effective date of the proposed rule except under certain circumstances as described in the rule. The cost to these permittees will vary depending on each permittee's current allocation of BMP points among BMP categories in their existing BMP Plans.

The District reviewed the currently permitted BMP Plans in the C-139 Basin and BMP inspection reports and data to determine the BMPs that are likely implemented but not claimed for BMP credit under the current permit. The District concluded that some of these BMPs may already be implemented in some of the permit basins but not documented, and that some BMPs may be partially implemented. Examples of partial implementation are described below:

- Control discharge structures exist to provide water management detention. However, there is no assurance that water table levels are followed to optimize runoff storage and reduce total phosphorus loading in discharges.

- Soil tests are being conducted to determine the phosphorus nutrients in the soil. However, there is no assurance that standard phosphorus application recommendations are used or that there is technical documentation to justify that any deviations from those recommendations do not result in excess application of phosphorus fertilizers.

The District determined certain assumptions establishing a low- to high-cost range scenario based on best professional judgment and the post permit compliance data described above. These estimated costs per acre, the additional BMPs, and the acres associated with these additional BMPs are provided in Table 4.2.

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Table 4.2
Estimated Costs of Additional BMPs That May Need to Be Implemented By General Permittees At Permit Renewal After Proposed Rule Adopted

Land Uses or Crops	Additional BMPs Identified	Cost per Acre	Acres - Current General Permits	Acres Affected by Additional Cost		Total Cost Range	
				Low End	High End	Low End	High End
Pasture	Water Resources Management for Pasture	$1.17	72,944	0	24,072	$0	$28,050
	Sub-total Pasture					**$0**	**$28,050**
Sugarcane	Nutrient Application Control	$0.00	4,152	0	0	$0	$0
	Nutrient Spill Prevention	$0.00				$0	$0
	Nutrient Application Based on Soil Testing	$0.00				$0	$0
	Sub-total Sugarcane					**$0**	**$0**
Citrus Groves	Nutrient Application Control	$6.11	15,559	0	7,780	$0	$47,494
	Nutrient Spill Prevention	$0.55				$0	$4,279
	Nutrient Application Based on Soil Testing	$0.00				$0	$0
	Particulate Matter and Sediment Controls	$8.48				$0	$65,970
	Sub-total Citrus Groves					**$0**	**$117,743**
Vegetables	Nutrient Application Control	$6.11	28,169	5,634	22,535	$34,423	$137,690
	Nutrient Spill Prevention	$0.55				$3,099	$12,394
	Nutrient Application Based on Soil Testing	$5.50				$30,986	$123,944
	Particulate Matter and Sediment Controls	$6.92				$0	$155,944
	Sub-total Vegetables					**$68,507**	**$429,972**
TOTAL			120,824	5,634	54,386	**$68,507**	**$575,764**
Average Cost per Acre						**$0.57**	**$4.77**

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Pasture. In Table 4.2, the additional BMP called "Water Resources Management for Pasture" consists of a combination of water conservation and management practices considering the requirements of the primary forage grasses and supplemental cattle watering and/or managing surface water via pump or controlled gravity structures to detain a minimum of ¼ inch of rain within soils, wetlands, canals and ditches. Under the low

end, it is assumed that all 17 farms and ranches already have sufficient control structure capability to manage water flows. Under the high end, it is assumed that, of the 17 ranches 2/3, or 11 of these ranches, have control discharge structures, and that 1/3, or six of these ranches, have uncontrolled structures (open water connections.) At these six ranches, infrastructure improvements may be required to provide water management detention. The estimated average cost to add a control discharge structure is about $5,000 for each individual farm or ranch. For the 11 farms and ranches that already have these structures, the estimated cost is minimal. In the table, the cost is normalized to cost per farm acre by multiplying $5,000 by the 17 farms and ranches and dividing by the 72,944 acres in pasture.

Sugarcane. Based on a review of BMP implementation on sugarcane farms in the C-139 Basin, the additional BMPs (Nutrient Application Control, Nutrient Spill Prevention, Nutrient Application based on Soil Test) are being implemented consistent with the proposed rule, even though these BMPs may not be included in the existing permitted BMP Plan. The sugarcane farms expected to need revisions to their permitted BMP Plan have above ground impoundments (AGIs), therefore it is expected that these permittees will be able to use these AGIs to qualify for Particulate Matter and Sediment Control BMP Points.

No additional costs to sugarcane operations are anticipated under the low or high end scenarios.

Citrus Groves. Based on a review of BMP implementation on citrus groves in the C-139 Basin, nutrient BMPs (Nutrient Application Control, Nutrient Spill Prevention, Nutrient Application based on Soil Test and/or Plant Tissue Analysis) are expected to be implemented in the majority of groves. Under the low end scenario, no additional costs are anticipated. Under the high end scenario, partial additional costs (50 percent of the Nutrient Application Control Cost reported in Table 4.4 of $12.21 per farm acre) may be required for 50 percent of the groves. As all groves in the C-139 Basin have AGIs, it is expected that these permittees will be able to use these AGIs to qualify for Particulate Matter and Sediment Control BMP Points. However, canal cleaning and aquatic weed control BMPs may be required for 50 percent of these groves with AGIs under the high end scenario assuming that the AGI discharges into an internal canal or ditch prior to off-site discharge.

Vegetables. Based on a review of BMP implementation on vegetable farms in the C-139 Basin, nutrient BMPs appear to be partially implemented. Soil samples may be collected but their frequencies and nutrient recommendation methods may need to be improved. It is assumed that, under the low end scenario, 20 percent of the farms will incur additional costs equal to 50 percent of the cost the Nutrient Application based on Soil Testing BMP and 50 percent of the cost of the Nutrient Application Control BMP. Both

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costs can be found in Table 4.4. For the vegetables farms that have above ground impoundments, it is expected that permittees will qualify for particulate matter and sediment control BMP points for the AGI under the low end scenario. Under the high end scenario, 80 percent of the farms will be required to incur additional costs equal to 50 percent of the Nutrient Application based on Soil Testing BMP and 50 percent of the cost of the Nutrient Application Control BMP.

The total estimated cost across the entire C-139 Basin to implement the additional BMPs to be replaced in the BMP Plan, as required under the proposed rule, ranges from $69,000 per year to $576,000 per year. The actual cost is expected to be within this range and will depend on the extent to which the farms and ranches in the C-139 Basin are already implementing the additional required BMPs either to comply with other rules or as standard operating procedure. Basin-wide, the average additional cost per acre per year ranges from $0.57 to $4.77.

The estimated costs of the BMPs listed in the proposed Appendix B1 are provided in the following section. The transactional costs to permittees as they amend their BMP Plans will vary significantly among permittees based on size of the property, land use, the current level of implementation, and extent to which additional BMPs would need to be implemented in order to comply with the proposed rule.

Other land uses. As indicated in section 4.4, three entities covered under No Notice general permits under the current rule will be required to implement a BMP Plan under a General permit under the proposed rule. There are no significant costs anticipated based on the proposed rule, as described below:

- Eckerd Family Youth Alternatives, Inc. is served by a permitted surface water management system, which should provide BMP credit to meet water management and particulate matter and sediment control requirements. Implementation of a basic level of Nutrient Management BMPs, in accordance with the Turf and Landscape rule, shall be sufficient to meet the nutrient management BMP requirements of the proposed rule.

- The Central County Water Control District and Weekly Brothers Leasing, LTD are served by a permitted surface water management system, thus should be sufficient to meet water management and particulate matter and sediment control requirements. Application of nutrients by the Central County Water Control District, if any, is expected to be incidental to meet a minimal level of landscape in common areas. Lands under Weekly Brothers Leasing, LTD, are classified as native pastures, thus BMP credit due to no land application of nutrients (or minimal on a maintenance level every seven years as provided by this BMP under the current rule) is anticipated.

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Permittee Implementation of Water Quality Improvement Activities. Each water year[1] upon rule adoption, the District will determine if the C-139 Basin was in compliance with the basin wide water quality performance measures established in the rule during the previous year. If the District determines that the C-139 Basin was not in compliance, then the District will identify the extent to which each of the sub-Basins[2] was out-of-compliance using the method described in the proposed rule.

For those sub-Basins that are out-of-compliance, the District will identify the extent to which Permit Basins exceed the proportional share of the phosphorus load. For Permit Basins that are out-of-compliance and for which no conditions for deferral apply, the District will determine the required Total Phosphorus (TP) reduction level for each of these Permit Basins. For these Permit Basins, the permittees will need to implement "Water Quality Improvement Activities" which is defined in the proposed rule as "a combination of modifications to a BMP Plan proposed by a permittee to meet the required total phosphorus reduction requirements. Improvement activities may include revising implementation methods to increase the effectiveness of existing BMPs or implementing additional BMPs.

According to the District's Guidebook for Preparing an Application for a C-139 Basin Pollutant Source Control Permit, incorporated by reference in the proposed rule, Water Quality Improvement Activities (WQIAs) shall be identified as follows,

"If the C-139 Basin is determined to be out of compliance and no deferral conditions apply, the permittee shall submit an application for a letter modification within 120 days from the District's transmittal of the notice that the C-139 Basin is not in compliance. The letter modification application shall propose WQIAs along with the proposed TP reductions to be achieved. Three options are available to estimate the proposed TP reductions:

1. Most current representative technical references such as peer reviewed or published BMP research and demonstration projects,

2. A Verification Plan,

3. District criteria based on most current representative technical references (see Appendix D)." Appendix D is located in the District's Guidebook.

[1] "Water Year (WY)" means the 12-month period beginning on May 1 and ending on the following April 30.

[2] "Sub-basin" is "an area of land determined by the District based upon District to represent all discharges to District monitoring locations, based upon hydrologic mapping and permittee-submitted information".

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Appendix D of the Guidebook includes "Table D.1: TP Removal Efficiency Criteria", which lists the BMPs provided in Appendix B1 and the corresponding TP removal efficiencies and criteria for determination of TP removal efficiency.

The first year that can result in additional activities after an out-of-compliance determination is water year 2013, as specified in the proposed Rule. Additional Water Quality Improvement Activities after 2013 would be required no more frequently than every three years.

There are conditions for deferral on a case-by-case basis. Under the proposed rule, in Section 40E-63.446 C-139 Basin Compliance, F.A.C., the requirement for Water Quality Improvement Activities in a Permit Basin will be deferred for one Water Year if the District determines that one or more of following conditions exist:

(a) The Permit Basin is located in a Sub-basin that is determined to not exceed its proportional share of the basin-wide loading based on District-collected data for the Sub-basin or, if applicable, its Permit Basin Discharge Monitoring Program results are determined not to exceed the proportional share in accordance with Appendix B3.1, incorporated by reference in subsection 40E-63.404(6), F.A.C.

(b) District approved Early BMPs, as described in subsection 40E-63.438(1)(a), F.A.C., were fully implemented in the Permit Basin during a Water Year that was used to deem the C-139 Basin out-of-compliance, providing deferral only to the parcels where the Early BMPs apply,

(c) A District approved BMP Demonstration Project, including a Verification Plan, as described in 40E-63.438(1)(b), F.A.C., was conducted within the Permit Basin during a Water Year that was used to deem the Basin out-of-compliance, providing deferral only to the land uses or crops to which the project applies,

(d) The Permit Basin, or portion thereof, has been issued and meets the conditions of a determination of impracticability as described in subsection 40E-63.460(6), F.A.C. providing deferral to the lands where the determination applies, or

(e) The performance measure determination includes the Permit Basin UAL from either of the two Water Years immediately following a Water Year for which the Permit Basin was required to implement Water Quality Improvement Activities.

The District will provide written notice to permittees regarding the C-139 Basin compliance results. Notice will also include whether Water Quality Improvement Activities are required of the permittee. The District shall transmit the written notices no later than

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August of each year. The notices shall describe permittees' required actions for proposing Water Quality Improvement Activities based on these assessments.

If the C-139 Basin is determined to be out-of-compliance with the water quality requirements of Part IV pursuant to 40E-63.446, F.A.C., the permittee shall propose Water Quality Improvement Activities as follows.

(a) The permittee shall submit a letter modification application for the District's consideration, within 120 days of the District's transmittal of the notice that the C-139 Basin is not in compliance. The submittal shall include the section entitled "Water Quality Improvement Activities" of Form 1045.

(b) The submittal shall include a proposal for Water Quality Improvement Activities along with the estimated phosphorus reductions to be achieved in accordance with 40E-63.460(3), F.A.C. Instead of providing estimates of phosphorus reduction, the permittee may submit a Verification Plan in accordance with 40E-63.460(4), F.A.C. The phosphorus reductions shall be the minimum levels necessary to meet the Permit Basin's proportional share of required TP reductions as determined by the District.

The proposal shall include a schedule to ensure that full implementation of an approved BMP Plan incorporating any proposed Water Quality Improvement Activities is in effect as soon as feasible and no later than April 30 following the District's transmittal of the notice that the C-139 Basin is not in compliance. A permittee's alternate implementation schedule may be approved by the District with justification based on the scope of the proposed activities. A permittee shall be required to implement intermediate water quality improvement activities or BMPs, as applicable, if an alternate implementation schedule is approved.

The actual additional BMPs that are implemented by permittees as a result of non-compliance with the Everglades Forever Act, as described above, would depend on the extent to which phosphorus loads would need to be reduced in each Permit Basin. In the event that no additional BMPs and activities or refinements for the reduction of phosphorus can be reasonably accomplished at the site or sites of operation, the permittee may apply to the District for a determination of impracticability, as described in the proposed rule. If impracticability is approved by the District, the permittee would need to implement a discharge monitoring program as described in the proposed rule.

The estimated costs of the BMPs listed in Appendix B1 of the proposed rule are provided in the following section. As indicated in Section 1 of this SERC, the BMPs listed under the current and the proposed rule are the same with few exceptions where BMP names of definitions where clarified, This list of BMPs provides the basis for identifying Water Quality Improvement Activities. The transactional costs to C-139 Basin Pollutant

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Source Control General permittees as they implement additional Water Quality Improvement Activities will vary significantly among permittees based on the degree to which their Permit Basin is out of compliance as measured by the required total phosphorus reduction level, the size of the property, the hydrologic characteristics of the property, and the land use.

4.7 Estimated Costs of Best Management Practices

The BMPs that may be implemented by General permittees if water quality improvement activities are required include but is not limited to those listed in Appendix B1 of the proposed rule. In many cases it is expected that water quality improvement activities will consist of optimized methods of already permitted BMPs.

The BMPs of Appendix B-1 are organized into five categories:

- Nutrient Control Practices
- Water Management Practices
- Particulate Matter and Sediment Controls
- Pasture Management – These BMPs can provide equivalent points towards the Particulate Matter and Sediment Control Practices category.
- Other – Permittees may seek approval for an equivalent alternative through the District permit process as described in the proposed 40E-63.435 “Alternative BMP Plans”.

For the purposes of this SERC, the estimated costs of all BMPs listed in Appendix B1 of the proposed rule are provided in this Sub-Section for a complete overview. However, not all BMPs may be applicable to the C-139 Basin conditions, or they may have already been implemented under the BMP Plan criteria.

Nutrient Control Practices BMPs. The list of Nutrient Control Practices BMPs included in Appendix B1 of the proposed rule is provided in Table 4.3. The estimated costs to implement these BMPs are provided in Tables 4.4 through 4.6.

Table 4.3
Nutrient Control Practices Listed in Appendix B1 of Proposed Rule

Best Management Practice (BMP)	Description

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Table 4.3
Nutrient Control Practices Listed in Appendix B1 of Proposed Rule

Best Management Practice (BMP)	Description
Nutrient Application Control - 2.5 points	Uniform and controlled boundary application of nutrients with a minimum 4' setback from canals with no overlapping application for each application method (e.g. banding at the root zone or side-dressing, pneumatic controlled-edge application such as AIRMAX);
	Fertilization through low volume irrigation system applied at root zone (fertigation); controlled placement by fertilization under plastic near root.
Nutrient Spill Prevention - 2.5 points	Formal spill prevention protocols (storage, handling, transfer, and education / instruction). For pasture, also includes restricted placement of stored feed and housekeeping to prevent spillage near storage and transfer areas (feed and molasses).
Manage Successive Vegetable Planting to Minimize P - 2.5 points	Avoid successive planting of vegetables or other crops having high phosphorus (P) needs to Avoid P build up in soils. Includes successive planting with no successive P application.
Recommended Nutrient Application based on Plant Tissue Analysis	Avoid excess application of P by determining plant nutrient requirements for adjustments during next growing season (crop specific). 2.5 points
	Pastures with Bahia grass – Plant tissue analysis along with soil test is required to make nutrient application recommendation. 2.5 points
	Citrus – Results are applied to the current season P requirements. 5 points
Recommended Nutrient Application based on Soil Testing – 5 points	Avoid excess nutrient application by determining P requirements of soil and follow standard recommendations for application rates (crop specific), or recommendations based on the analysis of optimum economic crop response to added P specific to the soil and crop. The disposal or application of waste water residuals (biosolids), animal manure, or other materials containing phosphorus shall not exceed the P requirements of the crop.
Split Nutrient Application – 5 points	More efficient plant uptake of P by applying small portions of total recommended P at various times during the growing season. Not to exceed total recommendation based on soil test.
Slow Release P Fertilizer – 5 points	Avoid flushing excess P from soil by using specially treated fertilizer that releases P to the plant over time.

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Table 4.3
Nutrient Control Practices Listed in Appendix B1 of Proposed Rule

Best Management Practice (BMP)	Description
Reduce Phosphorus Fertilization - 5 points	Reduce the P application rate by at least 30% below standard recommendations based on soil tests and development of site – specific (reduced) recommendations or application methods. Provide basis for reduction credit.
No Nutrients Imported Via Direct Land Application – 20 points	No Application of P, in any form, to the soil for amendments or plant nutrients. Pastures can claim this BMP and still apply fertilizer if done at maintenance or less than optimum production levels no more frequently than once every 6 years. Not applicable to new plantings.
No Nutrients Imported Indirectly Through Cattle Feed – 15 points	No P import to the basin through cattle feed (Pastures where no nutrients are imported via direct land application can claim this BMP if the only feed additives are mineral supplements or molasses.) Cost is similar to net income impact of reduced cattle stocking rate.
Nutrient Management Plan – 5 to 25 points	A plan to manage the amount, source, placement, form and timing of nutrient application to optimize yields and minimize the movement of phosphorus nutrients to surface and ground waters that ultimately discharge off-site. (See Text for additional description)

A Nutrient Management Plan is listed in the last row of Table 4.3. According to Appendix B1 of the proposed rule, the Nutrient Management Plan is:

> "a plan to manage the amount, source, placement, form, and timing of nutrient application to optimize yields and minimize the movement of phosphorus nutrients to surface and ground waters that ultimately discharge off-site. A site management plan and budget for tracking phosphorus shall be developed. The plan shall consider all nutrient sources (including but not limited to soil residual, crop residual, animal residual, organic and chemical fertilizer, soil amendments and supplements, irrigation water quantity and timing, animal nutrient supplements) versus the required amounts of nutrients. The plan shall utilize testing, analysis, and agricultural industry standards to determine nutrient needs. At a minimum, the plan shall address the timing, placement and method of nutrient application; optimization of nutrient uptake; prevention of nutrient movement off-

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> site; site descriptions such as aerial photographs, crop maps, and soil maps; implementation plans and schedules; sediment control BMPs; pasture management BMPs; and water quality monitoring for input into the mass balance prepared for the phosphorus budget. These actions shall be developed in accordance with Section IV, Code 590 of the United States Department of Agriculture Natural Resources Conservation Service Conservation Practice Standard, NE-T.G. Notice 600, January 2009, hereby incorporated by reference. The Plan must be approved by NRCS or a qualified technical service provider. However, other alternatives may be considered by the District with technical justification. A Nutrient Management Plan can be a component of a Conservation Plan which includes the objective of reducing phosphorus discharges on lands with cattle operations. The District will assign BMP points to each Nutrient Management Plan based on the relative level of treatment proposed, as evidenced by the applicant through plans, test results or other information submitted with the application."

Section IV, Code 590 of the United States Department of Agriculture Natural Resources Conservation Service Conservation Practice Standard, NE-T.G. Notice 600, January 2009 is provided in Appendix A of this SERC.

The estimated costs provided in Table 4.4 are expressed as annualized installation and O&M costs per farm acre. The total estimated annual cost for a 300 acre farm and a 2,500 acre farm are also provided.[3] The total annual cost is calculated as the annualized cost per acre times the number of acres.

[3] Under the proposed rule, all but two of the General permittees are agricultural operations. The land area of the General permittees located in the C-139 Basin range from 121 acres to 53,024 with a median land size of 2,560 acres.

Table 4.4
Nutrient Control Practices - Estimated Costs of BMPs
To Minimize Phosphorus Loads to C-139 Works of the District, 2010 dollars

BMPs	Annual Cost per Farm Acre	Annual Cost – 300 Acre Permit	Annual Cost – 2,500 Acre Permit
Reduced Phosphorus Fertilization (soil and plant tissue testing, split applications, fertilizer placement and type): (a)			
Improved, Unimproved, Rangeland and Wooded Pasture, Sod / Turf Grass	$2.20	$660	$5,500
Row Crops (vegetables), Ornamentals	$11.00	$3,300	$27,500
Citrus and Sugarcane (b)	$0.00	$0	$0
Nutrient Spill Prevention (c)	$0.55	$166	$1,383
Nutrient Application Control - Fertilization through low volume irrigation system applied at root zone (fertigation); controlled placement by fertilization under plastic near root. (d)	$12.21	$3,662	$30,515
No Nutrients Imported Indirectly Through Cattle Feed – Cost is similar to net income impact of reduced cattle stocking rate. (e)	$66.28	$19,884	$165,698
No Nutrients Imported Via Direct Land Application	No cost, assuming no loss in production		
Nutrient Management Plan	Cost will vary based on contents of plan. See cost of individual measures in these cost tables.		
Manage Successive Vegetable Planting to Minimize Phosphorus Application	Cost will vary depending on vegetable type and net returns.		

(a) From South Florida WMD, St. Lucie River Watershed Protection Plan, Appendix B prepared by Soil and Water Engineering Technology, Inc., January 2009, pages B-5 through B-13. Costs are net of fertilizer cost savings.

(b) Cost associated with reduced phosphorus applications is usually less than the fertilizer cost saving because no negative impacts to the crops are expected.

(c) For each 100 acres, 1 hour per year for farm labor education and implementation at $11.06 per hour and 1 hour per year for farm mgmt planning and education at $22.12 per hour.

(d) See Table 4.5.

(e) See Table 4.6.

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Documentation of the estimated costs for all but two of the Nutrient Control Practices BMPs are provided in Table 4.4. For the two BMPs that are not, the itemized estimated costs of the Nutrient Application Control BMP and the No Nutrients Imported Indirectly Through Cattle Feed BMP are provided in Tables 4.5 and 4.6. The estimated change in net revenue from the BMP called No Nutrients Imported Indirectly Through Cattle Feed will be similar to the effect of reducing cattle stocking rates from about 1.33 head per 2 acres to 1 head to 2 acres.[4] The estimated net income reduction from reducing the cattle stocking rate is provided in Table 4.6. However, based on the reported practices by cattle operations in the C-139 Basin, 100 percent report that they do not provide feed to their cattle or they maintain a low cattle density of about 1 head per two acres, or they implement both practices. Thus, none of the existing cattle operations are expected to incur the net income reduction provided in Table 4.4.

Table 4.5
Estimated Cost to Fertilize Through Low Volume Irrigation System

Item	Units	Cost per Unit	No. of Units	Total Cost
Injection Equipment Purchase and Installation (a)	Farm Acres	$75	300	$22,500
Total Cost amortized over 10 years at 10% interest				$3,662
Annualized Cost per Farm Acre (b)				**$12.21**

(a) Cost per Acre from Del Bottcher, Soil and Water Engineering Technology, Inc., April 23, 2010. Assumes that the low volume irrigation system is already in place.

(b) Annual O&M cost is $0 because it is less expensive to apply fertilizer through the irrigation system than to apply mechanically.

[4] From Dr. Del Bottcher, President, Soil and Water Engineering Technology, Inc., Gainesville, Florida, April 23, 2010.

Table 4.6
Change in Net Revenue from Reduced Stocking Rate
Or No Nutrients Imported Indirectly Through Cattle Feed
NOTE: Existing C-139 Basin Cattle Operations Do Not Import Nutrients Through Cattle Feed or Their Cattle Stocking Rate is Already Consistent with the Cattle Stocking Rate BMP (a)

Item	Baseline (1.33 head per 2 acres)	Cattle Stocking Rate BMP (1 head per 2 acres)
Cow Density (cows / acre)	0.67	0.50
Sale Price per Pound (weighted average calf and cull) (a)	$1.16	$1.16
Pounds Sold Annually Per Acre (b)	260.60	195.94
Marginal Cost per Cow Per Year (c)	$54.36	$54.36
Total Revenue per Acre	$303.28	$228.03
Total Marginal Cost per Acre	$36.15	$27.18
Net Revenue Per Acre Per Year	$267.14	$200.86
Difference in Net Revenue Per Acre		**-$66.28**

(a) From Florida Agricultural Statistics Service, "Livestock, Dairy, Poultry Summary, 2008", page 30, nass-fl@nass.usda.gov

(b) From South Florida Water Management District, LOADSS Update and Verification Project Report, prepared by Soil and Water Engineering Technology, Inc., January 1999, Task 5 - page 11.

(c) Marginal cost is cost of minerals and molasses per cow per year from LOADSS. Amount of minerals and molasses per cow per year from Table 3A, Task 5- page 13, LOADSS Update and Verification Project Report, Contract C-7611, Final Report for the South Florida Water Management District, submitted by Soil and Water Engineering Technology, Inc., January 1999. See also USDA, 2008 Costs per Bred Cow - Supplemental Feed cost is $31 to $54 per bred cow, depending on area of the United States.

Water Management Practices BMPs. The list of Water Management Practices BMPs included in Appendix B1 of the proposed rule that are related to water retention or detention is provided in Table 4.7.

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Table 4.7
Water Management Practices Related to Water Retention and Detention Listed In Appendix B1 of Proposed Rule

Best Management Practice (BMP)	Description
Improvements to Water Management System Infrastructure to Further Increase Water Quality Treatment by Delayed or Minimized Discharge - 5 points	Recirculation of water inside farm boundaries to improve water quality prior to off-site discharge, includes: fallow field flood water with no direct discharge (instead dispose of via evapotranspiration, seepage, use as irrigation water); or Increasing water detention using properly constructed canal berms.
½ Inch Detained – 5 points	Delayed discharge (based on measuring daily rain events using a rain gage).
1 Inch Detained - 10 points	Delayed discharge (based on measuring daily rain events using a rain gage).
Water Resources Management for Pastures – 5 points	Combination of water conservation and management practices considering the requirements of the primary forage grasses and supplemental cattle watering. Managing surface water via pump or controlled gravity structures to detain a minimum of ¼ inch of rain within soils, wetlands, canals and ditches.
Approved and Operational Surface Water Reservoir (Certified) (a) – 35 points	System meets Section 5.2.1 Water Quality Criteria-Volumetric Requirements, Section 6.2 Water Quantity Criteria - Discharge Rate or Section 6.3 Water Quantity Criteria - Design Storm. All reservoirs must have a valid District construction and operation permit for the surface water system.
Temporary Holding Pond – 15 points	Temporary agricultural activities (as described in Chapter 40E-400, FAC.) with a properly constructed and permitted temporary holding pond.
Overland Sheet Flow over Entire Property – 15 points	No drainage improvements made to a land area so that it drains through overland sheet flow, or drainage improvements such as ditches have been removed to restore overland sheet flow drainage to the land area.
No Point Discharge of Surface Water – 15 points	Voluntarily disabling of offsite discharge structures or other permanent means to prevent point discharge from a land area.

The estimated costs to implement these Water Management Practices BMPs related to retention and detention are provided in Table 4.8. The estimated costs are expressed as annualized installation and O&M costs per farm acre. The total estimated annual cost for a 300 acre farm and a 2,500 acre farm are also provided. The total annual cost is calculated as the annualized cost per acre times the number of acres.

Table 4.8
Water Management Practices related to Water Retention and Detention
Estimated Costs of BMPs to Minimize Phosphorus Loads
To C-139 Works of the District, 2010 dollars

BMPs	Annual Cost per Farm Acre	Annual Cost – 300 Acre Permit	Annual Cost – 2,500 Acre Permit
Off-Season In-Field Retention (b)	$3.52	$1,056	$8,800
Wetland Restoration: (b)			
All Pastures, Row Crops, Sod/Turf Grass, Sugarcane	$3.52	$1,056	$8,800
Citrus	$14.08	$4,224	$35,200
Water Management (irrigation and drainage with riser board control for row crops/sod/turf grass/ornamentals and with in-field retention for sugarcane) (b)	$7.04	$2,112	$17,600
Stormwater Retention / Detention: (b)			
Improved Pasture	$14.08	$4,224	$35,200
Unimproved Pasture, Rangeland and Wooded Pasture	$7.04	$2,112	$17,600
Row Crops (vegetables) / Ornamentals	$70.40	$21,120	$176,000
Sugarcane	$35.20	$10,560	$88,000
Citrus	$140.80	$42,240	$352,000
Sod / Turf	$35.20	$10,560	$88,000
Temporary Holding Pond	Cost will vary significantly based on pond size, depth and use and hydrologic characteristics of the property.		
Overland Sheet Flow over Entire Property	Cost will vary significantly based on extent to which drainage improvements would need to be made and amount of land taken out of production. Land may become more wet, more often and less productive. These BMPs would only be implemented if they do not significantly affect land productivity and net income.		
No Point Discharge of Surface Water			

(a) Properly permitted, constructed and maintained storage system meeting specified Environmental Resource Permit (ERP) Basis of Review criteria (version in effect at the time of permitting or in effect at the time of permit modification for modified systems).

(b) From South Florida WMD, St. Lucie River Watershed Protection Plan, Appendix B prepared by Soil and Water Engineering Technology, Inc., January 2009, pages B-5 through B-13.

The list of Water Management Practices BMPs included in Appendix B1 of the proposed rule that are related to irrigation is provided in Table 4.9.

Table 4.9
Water Management Practices Related to Irrigation Listed in Appendix B1 of Proposed Rule

BMPs	Description
Low Volume Irrigation – 5 points	Use of low volume irrigation methods, e.g. drip irrigation, microjet irrigation.
Tailwater Recovery System – 10 points	A planned irrigation system in which facilities have been installed and the system is operated to collect, store, and transport irrigation tailwater and/or rainfall runoff that would have been discharged offsite without the system.
Precision Irrigation Scheduling – 10 points	Combination of low volume irrigation and soil-moisture measuring equipment, specialized irrigation decision tools (e.g. computer software), and/or remote sensing tools to ascertain real-time crop needs to maximize irrigation system performance and to develop precise irrigation scheduling (time, location and amount).

The estimated costs to implement these irrigation-related BMPs are provided in Table 4.10. The itemized estimated costs associated with Tailwater Recovery, including pond construction, presented in Table 4.10, are provided in Table 4.11.

Table 4.10
Water Management Practices Related to Irrigation - Estimated Costs
Of BMPs to Minimize Phosphorus Loads to C-139 Works of the District
2010 dollars

Best Management Practice (BMP)	Annual Cost per Farm Acre	Annual Cost – 300 Acre Permit	Annual Cost – 2,500 Acre Permit
Tailwater Recovery from Retention / Detention Ponds. Existing ponds are used. (b)	$10.56	$3,168	$26,400
Tailwater Recovery System including pond construction (c)	$161	$48,369	$403,078
Low Volume Irrigation (a)	$155	$46,392	$386,599
Precision Irrigation Scheduling - On-Farm Decision Support System, Water Flow Meters and Soil Moisture Monitoring System (d)	$60	$17,898	$149,152

(a) See Table 4.11, Tailwater Recovery.

(b) From South Florida WMD, St. Lucie River Watershed Protection Plan, Appendix B prepared by Soil and Water Engineering Technology, Inc., January 2009, pages B-5 through B-13.

(c) See Table 4.12 and Table 4.13, Low Volume Irrigation.

(d) See Table 4.14, Precision Irrigation System.

Table 4.11
Estimated Cost of a Tailwater Recovery System, Including Pond Excavation

Item	Value
Number of Acres	300
% of Acres That is Tailwater Recovery Pond (a)	0.02
Total Acres of Tailwater Recovery Pond	6.0
Excavation Cost per Cubic Yard (EQIP EXMAT), 2007 dollars (b)	$3.50
Cubic Yards Excavated	82,442
Total Excavation Cost, 2007 dollars	**$288,549**
Shaping Cost per Acre-Foot (Light) (EQIP EXMAT) (b)	$660
Acre-Feet Shaped	51.10
Total Shaping Cost	**$33,726**
Filter, self-cleaning screen (EQIP No. 447) (b)	**$9,285**
Pump with diesel engine, tailwater, horizontal well, about 100 gpm (EQIP 533) (b)	**$21,000**
Aluminum Pipe Cost per Foot, 36 inch, 14 gage (EQIP EXMAT, PIPE) (b)	$49
Feet of pipe for pond water intake	30
Total Pond Intake Cost	**$1,470**
Pipe from well to pond, cost per foot of pipe, 12" PVC (EQIP 430-DD) (b)	$17.70
Feet of pipe from well to pond	1,807
Total Piping Cost	**$31,992**
Total Installation Cost	**$386,023**
Total Cost per Acre	$1,287
Total Annual Cost Per Acre Per Year Amortized at 10% over 20 years, 2007 dollars	$151.14
Total Annual Cost Per Acre Per Year Amortized at 10% over 20 years, 2010 $	***$158.58***
Annual Operations and Maintenance Cost, 2010 dollars	
Management Cost per acre of pond (c)	$132.72
Total Annual O&M Cost	**$796.32**
Total Annual O&M Cost per Farm Acre Per Year, 2008 dollars	***$2.65***
Total Annualized Installation and O&M Cost per Farm Acre per Year	***$161.23***

(a) Size of the tailwater recovery pond is based on site specific parameters such as pond depth, the runoff volume and rate, and the required level of water control where the tailwater is returned to the irrigation system. For this cost estimation, 2 acres of pond with an average depth of 10 feet per 100 acres of irrigated land is assumed. Also, the pond is located at the edge of the property and the water supply well is located at the center of the property.

(b) Source of costs is State of Florida, Area IV Cost Share List for Selected Conservation Practices for EQIP, FY 2007. For Filter, self-cleaning screen, cost is from State of Florida, Area III Cost Share List for Selected Conservation Practices for EQIP, FY 2007, United States Department of Agriculture, Natural Resource Conservation Service, Environmental Quality Incentive Program (EQIP). Area IV represents Hendry County. Area III represents counties west and south of Hendry County.

(c) Management includes cleaning and re-grading collection facilities, inspection and removal of debris and sediment, inspection of pipeline and pump components, and routine maintenance of mechanical components in accordance with manufacturer recommendations. Annual per acre cost estimated as $11.06 per acre labor cost times 12 hours per acre per year of pond.

The itemized estimated costs to convert a vegetable farm from a seepage irrigation system to a low volume irrigation system such as drip and micro-irrigation are provided in Table 4.12. Common vegetable crops produced in the C-139 Basin are tomatoes, peppers and green beans.

Table 4.12
Estimated Cost to Convert Vegetable Farm from Seepage Irrigation System To Low Volume Irrigation (Drip, Micro-Jet, Micro-Sprinkler)

Item	Value Per Acre
Materials and Installation Cost (a)	
Drip System (EQIP No. 441, complete system replacement)	$1,448
Semi-Enclosed Seepage System (EQIP No. 443)	$525
Difference in Cost	$923
Annualized Difference in Cost over 15 years at 10% annual interest	$121
Annual Operations and Maintenance Cost (b)	
Increased cost of energy	$121
Reduced cost of fertilizer, chemicals, labor and tillage operations	-$88
Total Increase in Annual Operations and Maintenance	$33
Total Annual Net Cost	**$155**

(a) Source of costs is State of Florida, Area IV Cost Share List for Selected Conservation Practices for EQIP, FY 2007, United States Department of Agriculture, Natural Resource Conservation Service, Environmental Quality Incentive Program (EQIP). Area IV represents Hendry County. Cost converted from 2007 dollars to 2010 dollars using GDP Chained Price Index factor of 1.049202.

(b) From Irrigation Association Drip-Micro Common Interest Group Market Development Subcommittee, Drip-Micro Irrigation Payback Wizard, www.dripmicrowizard.com. Data based on U.S. and Florida government data sources and multiple assumptions associated with Florida-grown vegetables, pepper and eggplant with a current gravity irrigation system. Farm size is 300 acres.

The itemized estimated costs to convert a sugarcane farm from a seepage irrigation system to a low volume irrigation system such as drip and micro-irrigation are provided in Table 4.13. The likelihood of a sugarcane permittee or applicant choosing this BMP is low because of the crop characteristics and the relatively high cost of conversion to a drip system. The annualized cost per acre for vegetable crops and sugarcane ranges from $122 to $155. The latter value was used in Table 4.10.

Table 4.13
Estimated Cost to Convert Sugarcane Farm from Seepage Irrigation System to Low Volume Irrigation (Drip, Micro-Jet, Micro-Sprinkler)

Item	Value Per Acre
Materials and Installation Cost (a)	
Drip System (EQIP No. 441, complete system replacement)	$1,448
Semi-Enclosed Seepage System (EQIP No. 443)	$525
Difference in Cost	$923
Annualized Difference in Cost over 15 years at 10% annual interest	$121
Annual Operations and Maintenance Cost (b)	
Increased cost of energy	$49
Reduced cost of fertilizer, chemicals, labor and tillage operations	-$48
Total Increase in Annual Operations and Maintenance	$1
Total Annual Net Cost	**$122**

(a) Source of costs is State of Florida, Area IV Cost Share List for Selected Conservation Practices for EQIP, FY 2007, United States Department of Agriculture, Natural Resource Conservation Service, Environmental Quality Incentive Program (EQIP). Area IV represents Hendry County. Cost converted from 2007 dollars to 2010 dollars using GDP Chained Price Index factor of 1.049202.

(b) From Irrigation Association Drip-Micro Common Interest Group Market Development Subcommittee, Drip-Micro Irrigation Payback Wizard, www.dripmicrowizard.com. Data based on U.S. and Florida government data sources and multiple assumptions associated with Florida-grown sugarcane with a current gravity irrigation system. Farm size is 300 acres.

The itemized estimated cost to install and operate a Precision Irrigation Scheduling System is provided in Table 4.14. This system includes an On-Farm Decision Support System, Water Flow Meters and a Soil Moisture Monitoring System. Each component is discussed below in turn.

An on-farm decision support system controller provides the grower with a way to automate irrigation events. The automation input can be as simple as a manually set timer (just like the typical homeowner's lawn irrigation controller) or a sophisticated ET monitor or soil moisture sensor. On-farm decision support systems use a combination of hardware and software to control the operation of actuators, such as motors, and solenoids[5] associated with irrigation zones, pumps and fuel powered machinery and equipment. The cost estimate for the on-farm decision support system includes the items needed to

[5] Solenoids are used as switches and relays. A solenoid is a device consisting of a cylindrical coil of wire surrounding a movable iron core that moves along the length of the coil when an electric current is passed through it.

set up the strategy for controlling the irrigations and the mechanism to control the irrigations based on the strategy and the data being recorded by the sensor.

Water flow meters are used to keep track of the amount of water being used for irrigation and the effectiveness of irrigation strategies in minimizing the amount of irrigation water applied while maximizing crop yield and quality.

Sensors that monitor soil moisture at the root zone and provide this information to the on-farm decision support system controller help reduce irrigation water use because water is applied only when needed by the plant. According to Michael Dukes, Associate Professor, Department of Agricultural and Biological Engineering, University of Florida[6], "An on-demand SMS controller initiates irrigation at a pre-programmed low soil moisture threshold and terminates irrigation at a high threshold. This type of controller is often used where a high level of customization or high level of control is needed such as commercial sites or other types of sites with many irrigation zones. Thus, this controller initiates and terminates irrigation events." The cost of soil moisture sensors is included in the estimated cost of the Precision Irrigation Scheduling System. Other "smart" monitors such as ET controllers can also increase irrigation water use efficiency.

Table 4.14
Estimated Cost of Precision Irrigation System, Includes On-Farm Decision Support System Controller, Water Flow Meters and Soil Moisture Monitoring System

Item	Value
Farm Size in acres	300
1. On-Farm Decision Support System Controller	
Irrigation System Controller (a)	$3,970
Controller Installation (b)	$820
Valve cost (c)	$11,068
Installation of Valves and hydraulic tubing (c)	$4,612
Total Cost	$20,469
Annualized Cost over 10 years at 10% annual interest	$3,331
Annualized Cost per Acre	**$11.10**
2. Water Flow Meters	
Cost of One Water Flow Meter, includes installation (d)	$1,537
Number of Pump Stations	13.00
Total Cost, includes installation	$19,984

[6] Michael Dukes, "Smart Irrigation Controllers: What Makes an Irrigation Controller Smart?", AE 442, Agricultural and Biological Engineering Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, February 2009.

Table 4.14
Estimated Cost of Precision Irrigation System, Includes On-Farm Decision Support System Controller, Water Flow Meters and Soil Moisture Monitoring System

Annualized Cost over 15 years at 10% annual interest	$2,627
Annualized Cost per Acre	**$8.76**
3. Soil Moisture Monitoring System	
Cost of Soil Moisture Sensor - 1-12 inch and 1-24 inch per 10 Acres, includes taxes, shipping and installation (e)	$232
Radio (f)	$2,156
Sub-total Cost	$2,389
Number of Units	30
Total Cost of Soil Moisture Sensors and Radios	$71,656
Test Pump Service Unit and Coring Tool (e) (g)	$293
Radio Receiver (h)	$1,414
Total Cost	$73,364
Annualized Cost over 10 years at 10% annual interest	$11,940
Annualized Cost per Acre	**$40**
Total Annualized Cost per Acre - All 3 Components	**$60**

(a) Cost quote in November 18, 2008 from Contemporary Controls & Communications, Inc. of Labelle, Florida, (CCC) Estimate # 6534, on November 18, 2008. Cost increased from 2008 dollars to 2010 dollars using a factor of 1.024804 based on GDP Chained Price Index from U.S. OMB.

(b) From CCC, November 2008. Cost increased from 2008 dollars to 2010 dollars using a factor of 1.024804 based on GDP Chained Price Index from U.S. OMB.

(c) From Gary Bethune, P.E., Agricultural and Civil Engineer, Palmetto, Florida in November 2008. For 300 acre farm, six 8-inch valves are used where cost is $1,800 per valve and installation cost with tubing is $750 per valve. Cost increased from 2008 dollars to 2010 dollars using a factor of 1.024804 based on GDP Chained Price Index from U.S. OMB.

(d) From Gary Bethune, P.E. Agricultural and Civil Engineer, Palmetto, Florida in November 2008. For 300 acre farm, 13 pump stations are used where cost is $1,500 per flow meter, including installation cost. Cost increased from 2008 dollars to 2010 dollars using a factor of 1.024804 based on GDP Chained Price Index from U.S. OMB.

(e) Irrometer, Inc. is manufacturer. Cost from Forestry-Suppliers .com. Cost in 2008 updated to 2010 dollars.

(f) AquaSpy Radio Node (1,000mW) w/ Solar Panel & Viewer Software/ From B.B. Hobbs, Inc. Cost updated from 2008 dollars to 2010 dollars.

(g) Includes Service Unit. Hand vacuum pump has test gauge for checking exact calibration of irrometer gauge when air evacuated.

(h) AquaSpy Radio Receiver 1000mW, w/ "Rubber Ducky" Antenna, 6 ft., USB cable. Costs updated from 2008 dollars to 2010 dollars.

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Particulate Matter and Sediment Controls BMPs. The list of Particulate Matter and Sediment Controls BMPs included in Appendix B1 of the proposed rule is provided in Table 4.15.

Table 4.15
Particulate Matter and Sediment Controls Listed in Appendix B1 of Proposed Rule

Best Management Practice
Any 2 = 2.5 points; Any 4 = 5 points; Any 6 = 10 points; Any 8 = 15 points
Maintain sustainable forage growth on pasture to reduce soil erosion/range seedings
Maintain vegetative cover in upland areas to reduce soil erosion
Reduce soil erosion with vegetation on ditch banks
Reduce sediment transport through the use of grassed waterways
Reduce sediment transport through the use of filter strips or riparian conservation buffers adjacent to waterways. No P is applied to these areas.
Reduce soil erosion with cover crops (not fertilized)
Reduce soil erosion using grassed swales and field ditch connections to laterals
Erosion control by leveling fields
Reduce sediments transported offsite by maintaining a sediment sump/trap upstream of drainage structure.
Minimize sediment buildup through a canal cleaning program.
Minimize P from plants by aquatic weed control (P source) at main discharge locations
Minimize sediment transport with slow velocity in main canal near discharge structure
Minimize sediment transport with slow field ditch drainage near pumps/structure
Minimize sediment transport into canals by constructing ditch bank berms
Reduce sediments transported offsite by using field ditch drainage sumps
Reduce sediments transported offsite by raising culvert bottoms above all ditch bottoms to minimize sediment transport
Reduce sediments transported offsite by stabilizing soil through infrastructure improvements at canal/ditch intersections (e.g. flexible plastic pipe, polymer treatment)
Reduce soil erosion with constructed ditch bank stabilization
Reduce debris and aquatic plants (P source) leaving the site by using barriers at discharge locations

The estimated costs to implement these BMPs are provided in Table 4.16. The itemized estimated costs for seven of these BMPs are provided in Tables 4.17 through 4.23.

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Table 4.16
Particulate Matter and Sediment Controls - Estimated Costs of BMPs To Minimize Phosphorus Loads to C-139 Works of the District, 2010 dollars

Best Management Practice (BMP)	Annual Cost per Farm Acre	Annual Cost – 300 Acre Permit	Annual Cost – 2,500 Acre Permit
Grass Management to maintain sustainable forage growth to reduce soil erosion (variety, mowing, chopping, burning, irrigation) (a)	$1.76	$528	$4,400
Buffer Strips (a)	$14.08	$4,224	$35,200
Off Season Cover Crop (a)	$17.60	$5,280	$44,000
Grass Management Between Trees - Citrus only (a)	$7.04	$2,112	$17,600
Grassed Waterways - Citrus only (a)	$35.20	$10,560	$88,000
Erosion Control (sediment trap in front of risers) - Row Crops and Ornamentals (a)	$3.52	$1,056	$8,800
Erosion Control (Buffer Strips and Sediment Traps) - Sod / Turf Grass (a)	$17.60	$5,280	$44,000
Canal cleaning & aquatic weed control program (b)	$2.77	$830	$6,913
Laser Leveling - Increased Frequency (c)	$0 to $20.85	$0 to $6,254	$0 to $52,119
Install Flashboard Risers to Slow Water Velocity in Main Canal and Field Ditches Near Discharge Structures (d)	$5.08	$1,524	$12,702
Install Trash Racks in Front of Flashboard Risers to Reduce Debris and Aquatic Plants Leaving Site (e)	$1.11	$332	$2,770
Create Field Ditch Drainage Sumps to Reduce Sediments Transported to Canals or Offsite (f)	$0.44	$132	$1,100
Raise Culvert Bottoms Above all Ditch Bottoms to Reduce Sediments Transported to Canals or Offsite (g)	$0.20	$59	$495
Reduce Sediment Transport Offsite by Stabilizing Soil at Canal/Ditch Intersections (h)	$3.94	$1,183	$9,861
Cover and Stabilize Ditch Bank Berms to Minimize Sediment Transport into Canals (i)	$646	$193,927	$1,616,055

(a) From South Florida WMD, St. Lucie River Watershed Protection Plan, Appendix B prepared by Soil and Water Engineering Technology, Inc., January 2009, pages B-5 through B-13.

(b) Cost estimated using 0.25 hour of farm labor per farm acre per year times $11.06 per hour average U.S. farm wage rate in 2010 from USDA, NASS web site.

(c) Increased frequency from once every 10 years to 3 times every 10 years. See Table 4.17. Currently in the C-139 Basin fields are leveled before planting and the frequency depends on crop type. For vegetables, the land is leveled each year. For sugarcane, the land is leveled every three to four years as new sugarcane is planted. Thus, including this BMP in the BMP Plan is not likely to incur costs to the permittee or applicant.

(d) See Table 4.18.

(e) See Table 4.19.

(f) See Table 4.20.

(g) See Table 4.21.

(h) See Table 4.22.

(i) See Table 4.23.

Table 4.17
Estimated Cost of Laser Leveling
Increased Frequency from Once Every 10 Years
To Three Times Every 10 Years

Item	Value
Farm Size in acres	300
Custom Laser Leveling, Cost per Hour, From Williams Laser Leveling	$128
Hours of Laser Leveling per Acre, includes mobilization	0.5
Total Hours	150
Total Cost to Laser Level, One Year	$19,215
Total Cost in years 3 and 6 of a 10 year cycle (2 times Total cost for one year)	$38,430
Annualized Cost Per Acre over 10 years at 10% annual interest	**$20.85**

Source: Williams Laser Leveling, Okeechobee, Florida, 2008 and updated to 2010 dollars using factor of 1.0248 from GDP Chained Price Index from U.S. OMB.

Table 4.18
Estimated Cost to Install Flashboard Risers to Slow Water Velocity in Main Canal and Field Ditches Near Discharge Structures, 300 Acre Farm

Item	Units	Number of Units	Cost per Unit	Total Cost
Flashboard Riser (Corrugated aluminum and steel with Stub) (EQIP PIPE) (a) (b)				
Main Canal	Riser - 36" diameter	1	$1,626	$1,626
Field Ditches Near Pump	Riser - 18" diameter	10	$997	$9,967
Total Cost				$11,594
Total Cost Amortized Over 15 Years at 10% annual interest				$1,524
Annualized Cost per Farm Acre				**$5.08**

(a) Source of costs is State of Florida, Area IV Cost Share List for Selected Conservation Practices for EQIP, FY 2007, United States Department of Agriculture, Natural Resource Conservation Service, Environmental Quality Incentive Program (EQIP). Area IV represents Hendry County. Cost converted from 2007 dollars to 2010 dollars using GDP Chained Price Index factor of 1.049202.

(b) Includes costs of all materials, equipment use and labor required to install.

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Table 4.19
Estimated Cost to Install Trash Racks in Front of Flashboard Risers to Reduce Debris and Aquatic Plants Leaving Site, 300 Acre Farm

Item	Units	Number of Units	Cost per Unit	Total Cost
Trash Rack (EQIP PIPE) (a) (b)				
Main Canal	36" diameter	1	$367	$367
Field Ditches Near Pump	18" diameter	10	$216	$2,161
Total Cost				$2,529
Total Cost Amortized Over 15 Years at 10% annual interest				$332
Annualized Cost per Farm Acre				**$1.11**

(a) Source of costs is State of Florida, Area IV Cost Share List for Selected Conservation Practices for EQIP, FY 2007, United States Department of Agriculture, Natural Resource Conservation Service, Environmental Quality Incentive Program (EQIP). Area IV represents Hendry County. Cost converted from 2007 dollars to 2010 dollars using GDP Chained Price Index factor of 1.049202.

(b) Includes costs of all materials, equipment use and labor required to install.

Table 4.20
Estimated Cost to Create Field Ditch Drainage Sumps to Reduce Sediments Transported to Canals or Offsite, 300 Acre Farm

Item	Units	Number of Units	Cost per Unit	Total Cost
Excavation (EQIP EXMAT) (a) (b)	cubic yards (d)	100	$3.67	$367
Spoil Spreading (c)	cubic yards (d)	100	$1.33	$133
Total Cost				$500
Total Cost Amortized Over 5 Years at 10% annual interest				$132
Annualized Cost per Farm Acre				**$0.44**

(a) Source of costs is State of Florida, Area IV Cost Share List for Selected Conservation Practices for EQIP, FY 2007, United States Department of Agriculture, Natural Resource Conservation Service, Environmental Quality Incentive Program (EQIP). Area IV represents Hendry County. Cost converted from 2007 dollars to 2010 dollars using GDP Chained Price Index factor of 1.049202. See also R.S. Means costs of $4 to $5 per cubic yard, including labor and machinery.

(b) Includes costs of all materials, equipment use and labor required for excavation.

(c) Cost per cubic yard from R.S. Means 2010 cost data for Lakeland, Florida. Cost of spreading in eight inch layer with small dozer, loosely packed. See also EQIP Item 572 of $0.84 which includes costs of all materials, equipment use and labor required for spreading of surplus or dumped spoil material.

(d) Assumes 10 sumps created and 10 cubic yards of soil per sump are excavated and spread on-farm.

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Table 4.21
Estimated Cost to Raise Culvert Bottoms Above all Ditch Bottoms to Reduce Sediments Transported to Canals or Offsite, 300 Acre Farm

Item	Units	Number of Units	Cost per Unit	Total Cost
Excavation (EQIP EXMAT) (a) (b)	cubic yards (d)	50	$3.67	$184
Shaping (Medium) (EQIP EXMAT) (a) (c)	cubic yards (d)	50	$0.83	$42
Total Cost				$225
Total Cost Amortized Over 5 Years at 10% annual interest				$59
Annualized Cost per Farm Acre				**$0.20**

(a) Source of costs is State of Florida, Area IV Cost Share List for Selected Conservation Practices for EQIP, FY 2007, United States Department of Agriculture, Natural Resource Conservation Service, Environmental Quality Incentive Program (EQIP). Area IV represents Hendry County. Cost converted from 2007 dollars to 2010 dollars using GDP Chained Price Index factor of 1.049202.

(b) Includes costs of all materials, equipment use and labor required for excavation.

(c) Includes shaping irregularities and gullies 1 to 4 feet deep, requires non-farm equipment.

(d) Assumes 10 culverts raised and 5 cubic yards of soil per culvert are excavated and placed around raised culvert.

Table 4.22
Estimated Cost to Reduce Sediment Transport Offsite by Stabilizing Soil at Canal/Ditch Intersections, 300 Acre Farm

Item	Units	Cost per Unit	No. of Units	Total Cost
Outlet Pipe or Armoring Agent Installed at Discharge points of field/farm ditches to larger canals to prevent sediment scouring (a)	Outlet	$150	60	$9,000
Total Cost amortized over 15 years at 10% interest				$1,183
Annualized Cost per Farm Acre				**$3.94**

(a) Cost per Outlet and five acres per outlet from Del Bottcher, Soil and Water Engineering Technology, Inc., April 23, 2010.

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Table 4.23
Cost to Construct, Cover and Stabilize Ditch Bank Berms to Minimize Sediment Transport Into Canals for 300 Acre Farm

Item	Units	Number of Units	Cost per Unit	Total Cost
Cost to Create Ditch Berms with Cover (EQIP Code 580) (a)				
Shaping and Vegetation (b)	Linear Feet (d)	58,080	$31	$1,828,130
Total Cost Amortized Over 30 Years at 10% annual interest - Shaping and Vegetation				$193,927
Annualized Cost per Farm Acre				**$646**
Structural and Vegetation (c)	Linear Feet (d)	58,080	$65	$3,775,200
Total Cost Amortized Over 30 Years at 10% annual interest - Shaping and Vegetation				$400,470
Annualized Cost per Farm Acre				**$1,335**

(a) Source of costs is State of Florida, Area IV Cost Share List for Selected Conservation Practices for EQIP, FY 2007, United States Department of Agriculture, Natural Resource Conservation Service, Environmental Quality Incentive Program (EQIP). Area IV represents Hendry County. Cost converted from 2007 dollars to 2010 dollars using GDP Chained Price Index factor of 1.049202.

(b) From EQIP 580, Streambank and Shoreline Protection, Vegetative Measures with shaping only. Includes cost of all materials, equipment use and labor required to install shaping, earthfill, compaction, seedbed preparation, cultipacking, planting, perennial seed or sprigs, nurse crop, hay mulch, fertilizer and lime for establishment. Cost includes one side of ditch/canal.

(c) From EQIP 580, Streambank and Shoreline Protection, Structural and Vegetative Measures. Includes cost of all materials, equipment use and labor required to install excavation, earthfill, compaction, non-woven geotextile fabric, rock rip rap, seedbed preparation, cultipacking, planting, perennial grass, nurse crop, hay mulch, fertilizer and lime for establishment. Cost includes one side of ditch/canal.

(d) Assumes twelve 25 acre fields and each field is surrounded by one mile of ditch or canal. So, assuming that each side of the field is 1/4 mile, the total linear feet of berm needed is [(14 x 0.25 x 2 sides) + (16 x 0.25 x 1 side)] x 5,280 = 58,080 linear feet.

Pasture Management BMPs. The list of Pasture Management BMPs included in Appendix B1 of the proposed rule is provided in Table 4.24.

Table 4.24
List of Pasture Management BMPs Listed in Appendix B1 of Proposed Rule

Best Management Practice
Includes restricted placement of stored feed, feeders, mineral, and molasses stations to reduce concentrated areas near drainage ditches, when applicable – 2.5 points
Provide restricted placement of cowpens to reduce concentrated areas near drainage ditches - 2.5 points
Provide shade structures to prevent cattle in waterways – 2.5 points
Alternative cattle water sources: restricted placement of water to reduce concentrated areas near drainage ditches – 2.5 points
Restrict cattle from waterways through fencing of canals in a manner that protects water quality – 10 points
Low cattle density (1 head/2 acres, nonirrigated pasture) by providing comprehensive prescribed grazing – 5 points

The estimated costs to implement these BMPs are provided in Table 4.25. The itemized estimated costs for the reduced cattle stocking rate BMP is provided in Table 4.26. The BMP cattle stocking rate of 1 head per 2 acres is the approximate baseline stocking rate of the C-139 Basin so there is not expected to be a significant net revenue reduction associated with this BMP. .

Table 4.25
Pasture Management - Estimated Costs of BMPs
To Minimize Phosphorus Loads to C-139 Works of the District, 2010 dollars

Best Management Practice (BMP)	Annual Cost per Farm Acre	Annual Cost – 300 Acre Permit	Annual Cost – 2,500 Acre Permit
Placement of Feeder / Minerals and Water (a)	$0.70	$211	$1,760
Provide Alternative Shade to move cattle from streams (a)	5.28	$1,584	$13,200
Improved Watering Facilities to move cattle from streams (a)	$3.52	$1,056	$8,800
Critical Area Fencing (a)	$14.08	$4,224	$35,200
Reduced Stocking Rate from 1.33 head per 2 acres to 1 head per 2 acres (b)	$66.28	$19,884	$165,698

(a) From South Florida WMD, St. Lucie River Watershed Protection Plan, Appendix B prepared by Soil and Water Engineering Technology, Inc., January 2009, pages B-5 through B-13.

(b) See Table 4.26.

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Table 4.26
Change in Net Revenue from Reduced Stocking Rate
Or No Nutrients Imported Indirectly Through Cattle Feed (a)

Item	Baseline (1.33 head per 2 acres)	Cattle Stocking Rate BMP (1 head per 2 acres)
Cow Density (cows / acre)	0.67	0.50
Sale Price per Pound (weighted average calf and cull) (a)	$1.16	$1.16
Pounds Sold Annually Per Acre (b)	260.60	195.94
Marginal Cost per Cow Per Year (c)	$54.36	$54.36
Total Revenue per Acre	$303.28	$228.03
Total Marginal Cost per Acre	$36.15	$27.18
Net Revenue Per Acre Per Year	$267.14	$200.86
Difference in Net Revenue Per Acre		**-$66.28**

(a) From Florida Agricultural Statistics Service, "Livestock, Dairy, Poultry Summary, 2008", page 30, nass-fl@nass.usda.gov

(b) From South Florida Water Management District, LOADSS Update and Verification Project Report, prepared by Soil and Water Engineering Technology, Inc., January 1999, Task 5 - page 11.

(c) Marginal cost is cost of minerals and molasses per cow per year from LOADSS. Amount of minerals and molasses per cow per year from Table 3A, Task 5- page 13, LOADSS Update and Verification Project Report, Contract C-7611, Final Report for the South Florida Water Management District, submitted by Soil and Water Engineering Technology, Inc., January 1999. See also USDA, 2008 Costs per Bred Cow - Supplemental Feed cost is $31 to $54 per bred cow, depending on area of the United States.

4.8 Verification Plan and Permit Basin Discharge Monitoring Program

Water discharged from the C-139 Basin is monitored by the District for phosphorous load quality and quantity. In addition, the permittee may implement a Permit Basin Discharge Monitoring Program upstream of District monitoring sites on Permit Basins. In some cases the permittee may be required to implement such a program pursuant to the following proposed sections of Chapter 40E-63, Part IV.

a) 40E-63.437: Permittees may be required to implement a Permit Basin Discharge Monitoring Plan on a case-by-case basis as determined by the conditions indicated below:

   40E-63.437(1): Permit applicants that propose BMPs other than those included in Appendix B1 of the rule may be required to demonstrate the effectiveness of these BMPs through a discharge monitoring program.

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40E-63.437(2): Permit applicants that propose a BMP Plan with fewer BMP points per BMP category than required and where there is no existing water quality monitoring data to justify the alternate approach (e.g., District sub-basin or grab monitoring programs).

40E-63.437(3): Permit applicants that propose demonstration projects for BMP points and the applicant proposes water quality monitoring to request BMP points in addition to those established in Appendix B1.

b) 40E-63.438: Early Implementation of Water Quality Improvement Activities. If a voluntary Demonstration Project is proposed, a Verification Plan (40E-63.460(4)) through a discharge monitoring program shall be implemented to confirm and quantify the estimated phosphorus reductions.

c) 40E-63.444(1)(r): For sites with application of wastewater residuals (biosolids), animal manure, solid waste, fill material, or other materials containing phosphorus a Permit Basin Discharge Monitoring Program is required to demonstrate no potential impacts on phosphorus loading.

d) 40E-63.460(4): If the C-139 Basin is determined to be out of compliance, permittees shall propose water quality improvement activities (WQIA). The WQIA shall include the estimated TP reductions to be achieved (these TP reductions shall be the minimum levels necessary to meet the Permit Basin's proportional share of required TP reductions as determined by the District). if the permittee is unable to demonstrate that the required TP reductions can be achieved, a Verification Plan (or Permit Basin Discharge Monitoring Program) shall be required.

e) 40E-63.460(6): If a permittee submits a request for determination of impracticability, the permittee must propose a discharge monitoring plan in accordance with rule 40E-63.462 to verify that the proposed performance level is met.

A summary of the scale, time frame, data analysis and parameter data collected for each incidence in which a Permit Basin Discharge Monitoring Program is required is provided in Table 4.27.

Table 4.27
Summary of Proposed Water Monitoring Requirements under 40E-63, Part IV, "Everglades Regulatory Program: Pollutant Source Controls, C-139 Basin"

Reason for Monitoring	Scale	Time Frame	Data Analysis	Parameter Data Collected
Voluntary Permit Basin Discharge Monitoring Program	Permit Basin level	Continuous for deferral, or as selected by permittee	Performance measure evaluation by the District	TP concentration and flow
Water Quality Improvement Activity (WQIA) Verification Plan	Permit Basin level or smaller (e.g. land use, crop or acreage)	Up to three years	BMP Plan Performance Effectiveness evaluation by the Permittee	TP concentration and flow, except if permittee or applicant proposes specific reduction related to water phosphorus speciation, soil P, tissue P, site-specific rainfall, etc.
As Required by 40E-63.437, Alternative BMP Points Per Category	Permit Basin level or smaller (e.g. land use, crop or acreage)	At renewal and based on permit modification applications. Up to 3 years for demonstration projects.		
Optional Early Implementation of Water Quality Improvement Activities under 40E-63.438	Permit Basin level or smaller (e.g. land use, crop or acreage)	At renewal and based on permit modification applications		
Application of residuals as required by 40E-63.444(1)(r)	Permit Basin level		Evaluation by the District	TP concentration and flow. May include soil testing.
Determination of Impracticability under 40E-63.460(6)	Permit Basin level or smaller (e.g. land use, crop or acreage)	Continuous and can be renewed on five-year cycles	BMP Plan Performance Effectiveness evaluation by the District and at the permit renewal cycle	TP concentration and flow

The estimated itemized cost to prepare a Verification Plan or a Permit Basin Discharge Monitoring Program and the estimated cost to implement this plan are provided in Table 4.28. The estimated cost does not include the cost associated with evaluating the phosphorus performance of a BMP plan that the permittee may be required to provide under certain conditions as summarized in Table 4.27. This cost will depend on the specific BMP being tested and the hourly labor cost of the person conducting the evaluation. Assuming that each discharge monitoring point is associated with 2,500 acres[7], the estimated cost is $5.26 per acre per year. This cost includes plan development and dis-

[7] which is the median acreage of the existing C-139 General Permits

charge water quality sampling and quantity monitoring and reporting consistent with Appendix B of the District's Guidebook for Preparing an Application for a C-139 Basin Pollutant Source Control Permit.

Table 4.28
Estimated Annual Cost of Water Quality Sampling and Quantity Monitoring Under a Permit Basin Discharge Monitoring Program

Item	Unit	Cost per Unit	Number of Units	Total Cost
Capital Cost				
Prepare Verification Plan or Permit Basin Discharge Monitoring Program	Labor Hours	$130	16	$2,080
Automatic Sampler	1 Sampler	$3,000	1	$3,000
Rainfall Gauge	1 Gauge	$150	1	$150
Water Flow Meter	1 Meter	$1,500	1	$1,500
Equipment Housing	Lump sum	$1,500	1	$1,500
Field Installation	Labor Hours	$47.18	16	$755
Calibration by Professional Engineer (P.E.)	Labor Hours	$130	16	$2,080
Total Capital Cost				***$11,065***
Annualized One Time Cost over 5 Years at 10% annual interest rate				$2,919
Annual O&M Cost				
Laboratory Cost	Per Sample	$20	87	$1,740
Data Collection and Reporting	Labor Hours	$47.18	180	$8,492
Total Annual O&M Cost				***$10,232***
Total Annualized Cost				***$13,150***
Number of Acres per Monitoring Site				2,500
Annualized Cost Per Permit Acre				**$5.26**

Source: Estimates based on Appendix B of District's Guidebook for Preparing an Application for a C-139 Basin Pollutant Source Control Permit and cost per unit estimates from Hazen and Sawyer in-house sources. Water flow meter assumes that water is discharged to canals via a weir and an ultrasonic level transmitter is used. Water samples are collected during each discharge event and delivered to lab. The amount of water discharged is recorded during each discharge event. Rainfall is recorded by hand each day. Water flow calculations are calibrated by a professional engineer (P.E.) after water meter installation and every five years. The number of days when a discharge event occurs is 24% of 365 days based on 1 day per week (14%) of significant rainfall during the 6 winter months and 1 day per 3 days (33%) of significant rainfall during the 6 summer months.

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4.9 Alternatives That May Reduce Transactions Cost

The proposed rule provides alternatives for permittees to reduce transaction costs. Under the proposed rule, permittees may elect to implement an alternative BMP Plan instead of following the standard criteria; they can apply for early implementation of water quality improvement activities to gain deferral from greater requirements later on, can conduct Permit Basin water quality monitoring or apply for a determination of impracticability to obtain deferral from additional Water Quality Improvement Activities.

4.9.1 Early BMPs and Demonstration Plan

According to the Guidebook for Preparing an Application for a C-139 Basin Pollutant Source Control Permit, applicants who opt to voluntarily implement additional BMPs (Early BMPs) or a BMP Demonstration Project that includes a BMP Performance Verification Plan, may qualify for deferral from Water Quality Improvement Activities (WQIA) if the C-139 Basin is determined out of compliance in the future. Either proposal shall be submitted with an application for a new permit, permit renewal, or as a Letter Modification. The following applicable items need to be included in the application:

Early BMPs

- Description of the BMP or group of BMPs that will be implemented in addition to those required by Rule at the time of the application (Section 40E-63.435 or 40E-63.460(3)).
- The specific methods for implementation and maintenance
- Technical documentation supporting the proposed loading reduction levels. The proposed loading reduction levels shall be in accordance with 40E-63.438(1)(a)2.
- The implementation schedule

Demonstration Plan with the Verification Plan

- Proposed Scope of Work (SOW) (as required in Section 40E-63.437(3)(a))
- Projected phosphorus removal efficiencies (include technical supporting documentation)
- Verification Plan (shall meet the criteria described in 40E-63.460(4)).The proposal shall include (but is not limited to):

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- Complete Part V of Form 1045 – C-139 Basin Optional Discharge Monitoring Plan;
- Installation and implementation schedule;
- Description of the monitoring program;
- Description of the monitoring sites;
- Description of proposed sample collection methods and schedule;
- Description of proposed sample handling and laboratory analyses;
- Description of data review procedures;
- Description of backup plan if there is equipment malfunction"

4.9.2 Determination of Impracticability

Under the proposed rule, permittees may elect to demonstrate that Water Quality Improvement Activities are impracticable. This option is not provided under current rule. Impracticability is described in subsection 40E-63.460(6), F.A.C. providing deferral to the lands where the determination applies.

Any such request for determination of impracticability must be submitted to the District under a permit modification application. The permit modification fee is $100. For the District to consider the application for approval, the submittal shall include the following.

(a) Specify all of the BMPs and activities that were implemented previously and provide evidence to show that no additional BMPs and activities or refinements for the reduction of phosphorus can be reasonably accomplished at the site or sites of operation.

(b) Propose the expected amount of phosphorus discharge in comparison to the C-139 Basin's phosphorus load targets and limits, calculated in accordance with Appendices B3.1 and B3.2, incorporated by reference in subsection 40E-63.404(6) and (7), F.A.C., for the range of historic rainfall conditions in accordance with Appendix B2, incorporated by reference in subsection 40E-63.404(3), F.A.C. No increasing trend in phosphorus from the property, as determined by the District, will be allowed under any scenario. The District will review the proposed performance level in reference to available representative historic data.

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(c) Propose a discharge monitoring plan in accordance with rule 40E-63.462, F.A.C. to verify that the proposed performance level is met. In the event that the farm configuration is not conducive to a discharge monitoring program, the District may consider requests for the use of alternate representative locations or monitoring for concentration only. Upon District approval of the monitoring plan, special limiting conditions (such as applicable conditions from rule 40E-63.464, F.A.C.) will be incorporated to the permit.

(d) Such requests shall apply only to the Permit Basin or portion thereof (e.g., land use, crop or acreage) which demonstrated further activities are impracticable.

(e) The District shall send a copy of each such request to the Department of Environmental Protection.

(f) Determinations of impracticability will be valid until the next permit renewal cycle.

The cost to the permittee to complete “Part VIII. Impracticability” of the permit form will vary by permittee depending on the scope of the BMPs and land uses for which impracticability is being sought. The permittee would need to provide evidence to show that no additional BMPs and activities or refinements for the reduction of phosphorus can be reasonably accomplished at the site or sites of operation. In addition, the permittee would need to propose a discharge monitoring program in accordance with rule 40E-63.462, F.A.C. to verify that the proposed performance level is met. The estimated cost associated with developing and implementing a discharge monitoring program was provided in Section 4.8 of this Section.

Section 5.0
Impacts to Small Businesses, Small Cities and Small Counties

In accordance with Section 120.54(3)(b)2.a, Fla. Stat., the District is required to consider the impact of its rules on small businesses, small cities, and small counties. Small business is defined in Section 288.703(1), Fla. Stat., as "an independently owned and operated business concern employing 200 or fewer permanent full-time employees and that, together with its affiliates, has a net worth of not more than $5 million or any firm based in this state which has a Small Business Administration (SBA) 8(a) certification". Small cities is defined in Section 120.52(18), Fla. Stat., as "any municipality that has an unincarcerated population of 10,000 or less according to the most recent decennial census". A small county is defined in Section 120.52(19), Fla. Stat., as "any county that has an unincarcerated population of 75,000 or less according to the most recent decennial census".

The proposed rule is not expected to incur costs to small businesses, small cities and small counties unless the business, city or county owns, leases or operates on properties where water management systems connect to and make use of the canals, structures, and other Works of the District within the C-139 Basin. The C-139 Basin is located in northeast Hendry County, just southwest of Clewiston, Florida and Lake Okeechobee.

There are no small cities which are required to comply with the proposed rule. Hendry County's population in 2000 was 36,210 according to the U.S. Census. The 2007 population estimate for Hendry County is 39,651.[1] While Hendry County is a small county, it does not own or operate property that would require a General Permit. A search of the Hendry County Property Appraiser database available at www.hendryprop.com, did not locate any property in the C-139 Basin owned by Hendry County.

It is not known how many of the General and No Notice General permittees are small businesses because publicly available information regarding businesses in this small geographic area could not be located. The estimated transactional costs associated with the proposed rule are provided in Section 4.0 of this SERC.

[1] The Hendry County 2000 and 2007 populations are from Florida Statistical Abstract, 2008, published by the University of Florida, Bureau of Economic and Business Research, Warrington College of Business Administration, Gainesville, Florida, pages 8 and 13.

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In the event that a small business, small city or small county must comply with the proposed rule, the potential transactional costs are provided in Section 4.0 of this document.

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