

BASIS OF REVIEW FOR
SURFACE WATER MANAGEMENT PERMIT APPLICATIONS
WITHIN THE SOUTH FLORIDA WATER MANAGEMENT DISTRICT
-APRIL, 1987



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1.0 INTRODUCTION

1.1 Objectives - Under Part IV of Chapter 373, Florida Statutes, and Rules Chapter 40E-4, and 40E-40, Florida Administrative Code, the District is responsible for the permitting of construction and operation of surface water management systems within its jurisdictional boundaries. In addition the District has been delegated storm water quality responsibility by the Florida Department of Environmental Regulation under Chapter 17-25 Florida Administrative Code. The objective of this document is to identify the procedures and information used by the District staff in permit application review, when either no more restrictive local criteria or conflicting information is available. The objective of the review is to insure that the permit will authorize activities or situations which are not harmful to the water resources of the District or inconsistent with the public interest.

1.2 Application Review Process - The District has established two types of construction or operation permits: individual (40E-4) and general (40E-40). A schematic diagram of the review process for individual permit applications is presented in Appendix 4 and for general permit notices in Appendix 5. Although the processes differ administratively, District Staff review submitted information in the same manner and using the same basic technical procedures. The primary differences apparent to a Permittee are the absence of a public notice and possible public participation process resulting therefrom and the authorization to commence construction upon completion of staff review rather than upon Board action. The general permit process was established to create a quicker review process for some projects, (generally less than 40 acres or public highways), not to allow lower standards to be met. Potential permittees of either permit type should refer to District rules (40E) or consult with District Staff when in doubt as to the specific process applicable. A reasonable assumption is that unusual projects will normally require individual permits. All Class I and II solid waste disposal sites (landfills) will require individual permits for new construction and/or closure.

1.2.1 Application Form - All applicants for individual permits should fill out the Application (Form RC-1). The application form has been prepared for only the most simple situations (existing agricultural operation permit applications for example) and supplementary information is usually necessary. Engineered systems are required to have plans and calculations signed and sealed by a Florida Professional Engineer in accordance with State law. Since review time is dependent on information sufficiency, it is to the Applicant's benefit to submit information to allow review to proceed without delays. Use of the checklist (Appendix 1) will be helpful to applicants in this regard. District staff are available on request for non-binding pre-application meetings to offer assistance in application preparation.

1.2.2 General Permit Notice - Applicants for general permit authorization should fill out the notice form (Form RP-63) and provide the supplemental information described therein. The comments above concerning information sufficiency and use of the checklist are also applicable to general permits.

1.3 Criteria Flexibility - The criteria contained herein are flexible with the primary goal being to meet District water resource objectives. Performance criteria are used where possible. Other methods of meeting overall objectives will be considered and, depending on the magnitude of impacts, will be addressed by the Staff or presented to the District Board for consideration.

1.4 Simultaneous Reviews - Aside from purely technical aspects, legal and institutional factors must be considered. Because of legal time constraints for processing permits, it is advisable for the Applicant to contact other interested agencies, organizations, and affected citizens prior to submitting a formal Application to the District. Summaries of meetings and copies of responses from appropriate parties should be included in the Application. For Class I and II solid waste disposal projects, simultaneous review will be pursued through the Solid Waste Technical Advisory Committee established by the Memorandum of Understanding with the Department of Environmental Regulation dated November 17, 1983. Landfills must meet the requirements of Chapter 17-7 FAC and be recommended by the Technical Advisory Committee before being considered for a Surface Water Management Permit.

It may be in the Applicant's best interest to seek simultaneous reviews from all agencies with jurisdiction. Thus, this provision is not intended to preclude the submission of an Application to this District prior to receiving other necessary approvals, but, the Application should contain at least a status report on other approvals being sought, with an indication that the surface water management portion of the project will be approved by other pertinent jurisdictions (see also Section 3.1.2).

If a proposed project is required to comply with the Development of Regional Impact review requirements of Section 380.06, F.S., an Applicant may choose to request a conceptual agency review, as provided for in Section 380.06(9)(a)2., F.S., and file the Application for Conceptual Approval concurrently with the DRI Application for Development Approval. In order to facilitate this process, the Applicant is encouraged to advise the District and the appropriate Regional Planning Council at the DRI pre-Application conference, or as soon thereafter as possible, of an intention to request a conceptual agency review. (See also Section 3.1.2 of the Basis of Review and Item IV.F and Note 3 of the Checklist for Permit Applications.)

Issuance of a Surface Water Management Permit by the District does not relieve the applicant of the responsibility of obtaining all necessary federal, state, local or special district permits or authorizations.

1.5 Compliance with Laws - Activities discussed herein must be conducted in accordance with all other applicable laws. Of specific note are those activities covered by laws as follows (including but not limited to):

a. Chapters 403 and 253, F.S., Florida Department of Environmental Regulation - dredge and fill

b. Section 404, FWPCA, Chapter 471 F.S., U.S. Army Corps of Engineers - fill

c. Florida - professional engineer seal and signature on all engineering plans and documents (subject to the exemptions of Chapter 471, Florida Statutes).

1.6 Construction/Operation Criteria Applicability - The District issues construction and operation permits for proposed surface water management activities and operation permits for existing systems. The criteria herein are specifically intended to apply to proposed activities (construction and operation permits). Some of the criteria may be applicable to the permitting of the operation of existing systems, but additional factors may require consideration. Such other factors would include the legal ability or necessity for the system to meet the criteria.

1.7 Implementation of Rule - The standards contained in this Basis will be applied to all new projects which do not have complete applications, as evidenced by a letter of completeness under rule 40E-1.603(6) on the effective date of the rule.

1.8 Conceptual Approvals, issued prior to adoption of this Basis, will expire if at any time two years elapse without either the granting of a permit approval or actual construction activity.

2.0 EXPLANATION OF TERMS

- 2.1 "Conceptual Approval" - letter of approval of a surface water management system in concept, authorized for issuance by the District Board. Although a letter of Conceptual Approval is a permit and is binding on the District and the permittee, no construction is authorized thereby, unless otherwise specifically permitted, and the approval is subject to Florida Administrative Code 40E-4.321.
- 2.2 "Construction Permit" - surface water management permit issued by the District to an applicant, who has the legal ability to perform, for construction of surface water management facilities in accordance with the Application, Staff Report, Permit Conditions, and additional Board requirements.
- 2.3 "Control device" - element of a discharge structure which allows the gradual release of water under controlled conditions. This is sometimes referred to as the bleed-down mechanism, or "bleeder".
- 2.4 "Control elevation" - The lowest elevation at which water can be released through the control device.
- 2.5 "Detention" - The delay of storm runoff prior to discharge into receiving waters.
- 2.6 "Detention volume" - The volume of open surface storage behind the discharge structure between the overflow elevation and control elevation.
- 2.7 "Discharge structure" - structural device, usually of concrete, metal, timber, etc., through which water is discharged from a project to the receiving water.
- 2.8 "Elevation" - height in feet above mean sea level according to National Geodetic Vertical Datum (NGVD).
- 2.9 "Historic discharge" - The peak rate at which runoff leaves a parcel of land by gravity in an undisturbed/natural site condition or the legally allowable discharge at the time of permit application.
- 2.10 "Impervious" - land surfaces which do not allow, or minimally allow, the penetration of water; included as examples are building roofs, normal concrete and asphalt pavements, and some fine grained soils such as clays.
- 2.11 "Operation Permit" - surface water management permit issued by the District to an entity, which has the legal ability to perform, for operation and maintenance of surface water management facilities in accordance with the Application, Staff Report, Permit Conditions, and additional Board requirements.

2.12 "Overflow elevation" - design elevation of a discharge structure at which, or below which, water is contained behind the structure, except for that which leaks out, or bleeds out, through a control device down to the control elevation.

2.13 "Retention" - the prevention of storm runoff from direct discharge into receiving waters; included as examples are systems which discharge through percolation, exfiltration, filtered bleed-down and evaporation processes.

2.14 "Retention/detention area (dry)" - water storage area with bottom elevation at least one foot above the control elevation of the area. Included sumps, mosquito control swales and other minor features may be at a lower elevation.

2.15 "Retention/detention area (wet)" - water storage area with bottom elevation lower than one foot above the control elevation of the area.

2.16 "Staff Report" - written report prepared by the District Staff advising the Board of its conclusions and recommendations based on review of the Application. The description of the project in the Staff Report shall take precedence over application data in the District files, since numerous project changes are often made by applicants during application processing, the results of which may show up only in the staff report. Staff reports are prepared for many General Permits.

2.17 "Water management areas" - areas to be utilized for the conveyance or storage of storm water or environmental preservation.

2.18 "Wetlands" - areas that are inundated by surface or ground water with a frequency sufficient to support, and under normal circumstances do or would support, a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, and similar areas such as sloughs, potholes, wet meadows, river overflows, mud flats, and natural ponds [Ref: Executive Order 11990, 42 Fed. Reg. 26961 (1977)].

3.0 CRITERIA

3.1 Administrative

3.1.1 Phased Projects - projects that are to be developed in phases will normally require the submission of a master plan of the Applicant's contiguous land holdings. The primary interest of the District is to insure continuity between phases, satisfactory completeness of individual phases should the project be incomplete as planned, and preservation of adjacent property owners' rights. This includes adjacent property owners created by the sale of incomplete phases.

An Application for Conceptual Approval of the total master plan must be submitted first. An Application for construction approval of the first phase may also be included as a part of the initial Application provided that the portion for which construction approval is desired has its necessary zoning. As the Permittee desires to construct additional phases, these approvals would be included as modifications to the original Permit.

Applications for individual project phases, where no Conceptual Approval has been obtained, may be considered only when the phases are totally independent of, or make sufficient provisions for, adjacent lands.

3.1.2 Land Use Considerations - Before an Application will be considered for the issuance of a letter of Conceptual Approval, the proposed land use must be compatible with the land use of the affected local government's comprehensive plan, as determined by the local government. Before an Application will be considered for the issuance of a Construction and/or Operation Permit, the proposed land use must be compatible with the local government's comprehensive plan and must have received the appropriate zoning approvals. (Merely making Application to the affected local government for rezoning of the land or any required special exceptions will not suffice; any necessary zoning approvals must be officially obtained prior to the issuance of this District's permit for construction and/or operation).

3.1.2.1 For projects which are or presumptively may be a Development of Regional Impact (DRI) pursuant to Section 380.0651, F.S., a final approval (all appeals resolved or all appeal times expired) Development Order (DO) must have been issued by the affected local government. Exceptions to this requirement may be allowed in the following situations:

a. When the applicant has a signed Preliminary Development Agreement with the Florida Department of Community Affairs which allows a specified portion of the proposed development to proceed prior to the issuance of a DO, pursuant to Section 380.06(8), F.S., or

b. When the applicant has received a Binding Letter of Interpretation Determination from the Florida Department of Community Affairs which finds that the project is not required to comply with the DRI review requirements of Section 380.06, F.S., or

c. When the applicant has applied for conceptual agency review concurrently with the filing of a DRI Application for Development Approval (ADA), pursuant to Section 380.06(9), F.S.

3.1.3 Water and Wastewater Service - Potable water and wastewater facilities must be identified. The Applicant for a Surface Water Management Permit must provide information on how these services are to be provided. If wastewater disposal is accomplished on-site, additional information will normally be requested regarding separation of waste and storm systems.

If on-site consumptive water use withdrawals are proposed for which District water use permits will be required, it is normally necessary that surface water management construction and water use permits be processed simultaneously, depending on specific site water resource limitations. More generalized water use information may be satisfactory for the conceptual approval process. The District can so advise on request or may advise following application receipt.

3.1.4 Water Management Areas - Such areas shall be legally reserved to the operation entity and for that purpose by dedication on the plat, deed restrictions, easements, etc., so that subsequent owners or others may not remove such areas from their intended use. Management areas, including 20 foot minimum wide maintenance easements, shall be connected to a public road or other location from which operation and maintenance access is legally and physically available.

3.1.5 Process for Determining Environmental Impacts - All Surface Water Management Applications will be reviewed by the Staff for purposes of advising the District Governing Board as to anticipated impacts of the proposed work on (a) the water resources of the District and (b) natural upland systems.

The Staff will identify the significant environmental features of the project which are directly related to the water resources of the District, evaluate the impact of the project on these water resource related environmental features and make specific recommendations as to the issuance or denial of the permit based upon the evaluation.

The Staff will separately identify the environmental features of the project which are indirectly or not related to the water resources of the District and evaluate the impacts of the project on the non-water resource related environmental features. No recommendations as to the issuance or denial of the permit will be given based upon non-water resource related environmental impacts.

The following paragraphs give general information concerning the evaluation of environmental impacts.

3.1.5.1 Information utilized in the review will include Application information such as aerial photographs, topographic maps and development plans, as well as relevant information from such other sources as site inspections, studies, meetings with the Applicant, etc.

3.1.5.2 At the request of an Applicant or potential Applicant, the Staff will conduct a site inspection, at a mutually convenient time.

3.1.5.3 If necessary, Staff will independently inspect the site to determine environmental features. Adverse impacts will not be reported or concluded without a site inspection.

3.1.5.4 Pre-application meetings are encouraged, as are submissions of optional explanatory information, which may be useful to the Staff in its review.

3.1.5.5 The following categorization of environmental features will be used by the Staff in evaluating impacts:

a. Environmental features directly related to the water resources of the District, such as:

1. Wetlands habitat except those previously impacted by drainage, land clearing, earthwork, or those which have been invaded by exotic species and are in a state of environmental decay (excluding unauthorized activities conducted by the applicant).

2. Natural waterbodies.

b. Environmental features which may be indirectly related to the water resources of the District, such as:

1. Intermittent ponds.

2. Significant habitat diversity support systems, usually consisting of productive mixed upland and wetland systems with appropriate buffer areas.

c. Environmental features which are not related to the water resources of the District, such as:

1. Unique upland habitats, usually consisting of tropical hardwood tree hammocks and beach dunes.

d. Preferred habitat for rare or endangered species of plants or animals will be identified.

3.1.5.6 The actual impact resulting from changes to the natural site will be predicted by considering the existing natural system as altered by the proposed project. It is recognized that the variety of actions associated with a project may result in both positive and negative environmental impacts. The Staff therefore, will balance both the positive and negative impacts of the project to achieve a reasonable degree of protection for significant environmental features consistent with the overall protection of the water resources of the District.

3.1.6 Legal/Operation Entity Requirements

3.1.6.1 Acceptable Entities - The District considers the following entities acceptable to satisfy limiting condition 40E-4.381(2)(h).

a. Local governmental units including counties or municipalities, or Municipal Service Taxing Units.

b. Active Chapter 298 Florida Statute water control districts or drainage districts, or Chapter 190 Florida Statutes Community Development Districts or Chapter 170 Florida Statute Special Assessment Districts.

c. Non-profit corporations including homeowners associations, property owners associations, condominium owners associations or master associations.

d. The property owner or developer as Permittee is normally not acceptable as a responsible entity especially when the property is to be sold to various third parties. However, the property owner or developer may be acceptable under one of the following circumstances:

1. The property is wholly owned by said Permittee and is intended to be so retained. This would apply to a farm, corporate office or single industrial facility for example.

2. The ownership of the property is retained by the Permittee and is either leased to third parties such as in some shopping centers or rented to third parties such as in some mobile home parks for example.

To satisfy the requirement, the Permittee must provide written documentation. If the entity is a governmental unit, the Permittee must supply written proof in the appropriate form by either letter or resolution, that the governmental entity will accept the operation and maintenance of all of the surface water management system including lakes, easements, etc. prior to staff report approval. For Class I and II solid waste sites the entity will be responsible for perpetual maintenance of the surface water management system after closure of the facility.

3.1.6.2 Association Requirements

3.1.6.2.1 If a Homeowners or Property Owners Association or Master Association is proposed, the Permittee must submit the Articles of Incorporation for the Association, and Declaration of Protective Covenants or Deed Restrictions, as well as a reference map if referred to in documents. After these are approved, the Permittee must furnish the Certificate of Incorporation and the recording information (Official Book and page number) for the Declaration.

3.1.6.2.2 If a condominium association is proposed, the Permittee must supply the Articles of Incorporation for the Condominium Association, and Declaration of Condominium. After the documents are approved, it will be necessary for the Permittee to forward a copy of the letter from the Department of Business Regulation, Bureau of Condominiums stating that the documents are proper for filing.

The Association, be it either a non-profit association or a condominium association, must comply with the applicable provisions of Florida laws, specifically Chapters 617 or 718, Florida Statutes.

3.1.6.2.3 The Association must have the following general powers which are reflected in the Articles of Incorporation:

- a. Own and convey property.
- b. Operate and maintain common property specifically the surface water management system as permitted by the South Florida Water Management District including all lakes, retention areas, culverts and related appurtenances.
- c. Establish rules and regulations.
- d. Assess members and enforce said assessments.

- e. Sue and be sued.
- f. Contract for services (if the Association contemplates employing a maintenance company) to provide the services for operation and maintenance.
- g. The Association must have as members all the homeowners, lot owners, property owners or unit owners.
- h. The Association shall exist in perpetuity; however, if the Association is dissolved, the Articles of Incorporation must provide that the property consisting of the surface water management system shall be conveyed to an appropriate agency of local government. If it is not accepted, then the surface water management system must be dedicated to a similar non-profit corporation.
- i. All other powers necessary for the purposes for which the Association is organized.

3.1.6.2.4 The Declaration of Protective Covenants, Deed Restrictions or Declaration of Condominium must set forth the following:

- a. That it is the responsibility of the Association to operate and maintain the surface water management system.
- b. The surface water management system is owned by the Association or described therein as common property.
- c. That there be a method of assessing and collecting the assessment for operation and maintenance of the surface water management system.
- d. That any amendment which would affect the surface water management system, including the water management portions of the common areas, must have the prior approval of the South Florida Water Management District.
- e. That the Declaration of Covenants be in effect for at least 25 years with automatic renewal periods thereafter.

3.1.6.2.5 If the documents are not submitted with the original application, they must be submitted and approved prior to construction. It is advised that the documents be submitted prior to recording to allow comment by the District's Office of Counsel. Modification of these requirements can only be based upon

- a. Intervening local government requirements of a more stringent nature such as the requirement of a maintenance agreement and posting of bond by the developer.
- b. The uniqueness of the project requiring an alternative entity. Such alternative entity must be evaluated upon an individual basis with any and all necessary agreements or easements in effect before approval will be given.

3.1.6.2.6 Phased Projects

- a. If a property owner's association is proposed for a project which will be constructed in phases, and subsequent phases will utilize the surface water

management system for the initial phase or phases, the association should be created with the ability to accept future phases into the association.

b. If the development scheme contemplates independent associations for different phases, a master association should be formed to include all of the various associations with the master association having the responsibility to operate and maintain the surface water management system for the entire project.

c. If the sub associations have primary responsibility for operating the portion of the surface water management system within their associations, the master association must have ultimate authority to enter and maintain the surface water management system should any sub association fail to do so.

d. If no master association is proposed, each entity which will operate and maintain a portion of an integrated surface water management system must have cross easements for drainage and the ability to enter and maintain the various portions, should any sub association fail to maintain the portion of surface water management system within the association.

3.1.7 Construction completion certification - Upon completion of the construction of a surface water management system permitted by the District, it is a requirement of the issuance of the operation permit, and hence transfer of operation and maintenance responsibility, that a Florida registered professional engineer certify that the surface water management system was indeed constructed as permitted. Suggested wording for this is as follows:

I HEREBY CERTIFY THAT ALL SURFACE WATER MANAGEMENT FACILITIES FOR THE ABOVE REFERENCED PROJECT HAVE BEEN CONSTRUCTED IN SUBSTANTIAL ACCORDANCE WITH THE DESIGN APPROVED BY THE DISTRICT, AND HEREBY AFFIX MY SEAL THIS _____ DAY OF _____, 19__.

(SEAL)

3.1.8 Water quality monitoring - All new drainage projects will be evaluated based on the ability of the system to prevent degradation of receiving waters and the ability to conform to State water quality standards (see Chapter 17-3 Florida Administrative Code).

3.1.8.1 There are areas within the District where water quality considerations are extremely important, because of the sensitivity of the area. These areas include:

a. Lake Okeechobee and the Lower Kissimmee River.

b. Water bodies designated as Class I or Class II waters by the Florida Department of Environmental Regulation.

c. Canals back-pumped to Lake Okeechobee or to the Conservation areas, or proposed for back-pumping.

d. Sensitive areas, including but not limited to the Savannas in St. Lucie and Martin Counties, the Six Mile Cypress strand and Estero Bay Aquatic Preserve in Lee County and the Big Cypress area of Collier County.

e. Outstanding Florida Waters as defined in Chapter 17-3, Florida Administrative Code.

New developments which plan to utilize sensitive areas for disposal of stormwater will be given more detailed evaluation by the District Staff. In addition, new projects entailing a more intensified land use and planning to discharge to a sensitive receiving water, directly or indirectly, may be required to institute a water quality monitoring program. The following listing of land use intensity is in ascending order.

1. Wetlands (including transition zones adjacent thereto)
2. Forested lands
3. Rangeland
4. Agricultural
5. Urban and built-up land

3.1.8.2 Monitoring will normally be required for sites with high pollutant generating potential, such as industrial sites, and Class I and II solid waste disposal sites.

3.1.8.3 In general, there are two reasons for requiring water quality monitoring by permittees, as follows:

a. Such data can be used to determine if the pollution abatement practices incorporated into the design for the drainage system are functioning properly.

b. In some cases there may be a real and immediate concern regarding degradation of quality in the receiving waters, regardless of the pollutant removal efficiency of the drainage system.

3.1.8.4 The reason for the monitoring requirement will normally be stated in the Staff Report for each Permit. Also included in the permit will be the monitoring and reporting schedules and the parameters of interest. Each monitoring program will be designed specifically for the land use or individual project in question and may include surface and/or ground water sampling. Parameters of interest will normally include but not be limited to those listed in Chapter 17-3, Florida Administrative Code.

3.1.8.5 As a general rule, monitoring required of permittees will be confined to points within their boundaries. If additional sampling is needed in order to assess off-site impacts of the projects, such sampling will normally be conducted by the District.

3.1.8.6 Staff Reports written and Permits issued for projects not requiring monitoring at this time will normally include a statement to the effect that water quality monitoring may be required in the future. This should not be construed as an indication that the District is contemplating the implementation of a program of intensive water quality monitoring by all permittees. If water

quality problems develop in specific areas, however, permittees are in this manner put on notice that they may have to determine the quality of the water which they are discharging.

3.2 Technical

3.2.1 Water quantity

3.2.1.1 General - This document refers, in the usual engineering fashion, to flood and drought frequency impacts interchangeably with rainfall frequency. The Applicant is cautioned however that water resource impacts are of interest in the permit process, and that additional calculations may be necessary to identify other combinations of site conditions and rainfall frequencies which might result in impacts of the specified frequency. Examples include designs affected by spring tides, fluctuating tides and fluctuating receiving water stages.

3.2.1.2 Discharge - Off-site discharge is limited to amounts which will not cause additional adverse off-site impacts. These amounts are:

- a. historic discharges, or
- b. amounts determined in previous District permit actions, or
- c. amounts specified in District criteria (see Appendix 2).

Unless otherwise specified by previous District permits, District criteria or local government, a storm event of 3 day duration and 25 year return frequency shall be used in computing off-site discharge. Allowable discharges will be designated by the District on a case by case basis upon request.

3.2.1.3 Local government criteria - Designs shall provide drainage and flood protection in accordance with published local government criteria, but if unspecified the criteria are:

- frequency - 5 years
- duration - 1 day (road centerlines)
1 hour (parking lots served by exfiltration systems)

3.2.1.4 Flood protection - Building floors shall be above the 100 year flood elevations, as determined from the most appropriate information, including Federal Flood Insurance Rate Maps. Both tidal flooding and the 100 year, 3 day storm event shall be considered in determining elevations.

3.2.1.5 Flood plain encroachment - No net encroachment into the floodplain, between the average wet season water table and that encompassed by the 100 year event, which will adversely affect the existing rights of others, will be allowed.

3.2.1.6 Minimum drainage

a. Residential projects shall have systems with the calculated ability to discharge by surface flow or subsurface percolation at least 3/8 inch per day during or subsequent to the storm of the allowable discharge frequency and duration, so that lowering of the groundwater table to a depth of 2.5 feet below the ground surface will occur in 12 days or less.

b. Commercial and industrial projects to be subdivided for sale are required to have installed by the permittee, as a minimum,

1. the required water quality system for one inch of runoff detention or one half inch of runoff retention from the total developed site.

2. a stormwater collection and conveyance system to interconnect the retention/detention system with the outfall, with access points to the system available to each individual lot or tract. The system shall be sized to limit discharge under design conditions to the allowable discharge.

Projects permitted in such manner may require deed restriction which identify to lot or tract purchasers the amount of additional on-site storm water management system necessary to provide flood protection for specific design events and any additional retention/detention required for water quality purposes.

c. Commercial projects to remain as single owner projects may be permitted, with the approval of local government, to lesser degrees of stormwater protection than required by District standards. In no case however will the lesser standards be applicable to water quality, off-site discharge or building floor protection. Projects permitted in such manner will be special conditioned, as notice to the Permittee and local government, that a substandard design has been permitted.

3.2.1.7 Overdrainage and water conservation - Systems shall be designed to attempt to:

- a. Maintain water table in existing wellfield cones of depression, and
- b. Preserve site environmental values (see Sections 3.1.5 and 3.2.3 herein) and
- c. Maintain water tables no more than six feet below natural ground, and
- d. Not waste freshwater, and
- e. Not lower water tables which would adversely affect the existing rights of others, and
- f. Preserve site ground water recharge characteristics.

3.2.1.8 Historic basin storage - Provision must be made to replace or otherwise mitigate the loss of historic basin storage provided by the project site.

3.2.1.9 Offsite lands - Onsite diversion swales, dikes, etc., may be necessary to allow the passage of drainage from offsite upland areas to downstream areas. Diking of project development areas may be necessary to contain water at or above stages identified in the project discharge computations.

3.2.2 Water quality

3.2.2.1 State standards - Projects shall be designed so that discharges will meet State water quality standards, as set forth in Chapter 17-3, Florida Administrative Code.

3.2.2.2 Retention/detention criteria

a. Retention and/or detention in the overall system, including swales, lakes, canals, greenways, etc., shall be provided for one of the three following criteria or equivalent combinations thereof (Note: Appendix 3 may be utilized where the conditions therein can be met):

1. Wet detention volume shall be provided for the first inch of runoff from the developed project, or the total runoff of 2.5 inches times the percentage of imperviousness, whichever is greater.

2. Dry detention volume shall be provided equal to 75 percent of the above amounts computed for wet detention.

3. Retention volume shall be provided equal to 50 percent of the above amounts computed for wet detention. Retention volume included in flood protection calculations requires a demonstration of guarantees of long term operation and maintenance of system bleed-down ability. This must normally consist of proof of excellent soil percolation rates (example: coastal ridge sands) or an operations entity which specifically reserves funds for operation, maintenance and replacement (example: Orange County MSTU.) (NOTE: Orange County subdivision regulation criteria for retention may be utilized for Orange County MSTU projects in lieu of District retention criteria where retention volumes exceed one half inch.)

b. Commercial or industrial zoned projects shall provide at least one half inch of dry detention or retention pretreatment as part of the required retention/detention, unless reasonable assurances can be offered that hazardous materials will not enter the project's surface water management system. Such assurances may include deed restrictions on sale property occupancy, recorded lease agreements, local government restrictive codes, ordinances, licenses, engineered containment systems, etc.

c. Systems with inlets in grassed areas will be credited with up to 0.2 inches of the required wet detention amount for the contributing areas. Full credit will be based on a ratio of 10:1 impervious area runoff to pervious area with proportional credit granted for greater ratios.

d. Projects having greater than 40% impervious area and which discharge directly to sensitive receiving water shall provide at least one half inch of dry detention or retention pretreatment as part of the required retention/detention. Sensitive receiving waters are defined as:

1. Class I or Class II waters
2. Outstanding Florida waters
3. Water bodies within a District permitted public water supply wellfield cone-of-depression which are not separated from the aquifer by strata at least ten feet thick, having an average saturated hydraulic conductivity of

less than 0.1 foot per day; where the cone-of-depression is defined by one of the following:

1. in those areas of the District where no local wellfield protection ordinance has been adopted by the local governing body, the one foot drawdown line as expressed in the water table aquifer under conditions of no rainfall and 100 days of pumpage at the permitted average daily pumpage rate (where significant canal recharge is indicated, canal recharge representative of a 1 in 100 year drought will be considered).

2. Broward County Wellfield Protection Ordinance contour for Zone 3.

3. Dade County Wellfield Protection Ordinance contour showing maximum limits.

e. Water surface and roofed areas can be deducted from site areas for water quality pervious/impervious calculations.

f. Different standards may be applied to urban public highway projects.

3.2.2.3 High density projects - Projects which have more than 40 percent impervious area may be required to use retention rather than detention, depending on such variables as:

a. sensitivity of receiving water

b. soils

c. arrangement of on-site facilities.

3.2.2.4 Projects located within cones of depression - Retention/detention area locations shall not reduce hydraulic recharge distances to public water supply wells in excess of 2 percent, nor shall wet retention/detention areas be closer to public water supply wells than 300 feet.

3.2.2.5 Solid Waste Facilities

a. Surface water management systems for Class I and II solid waste facilities, as defined by Florida Administrative Code 17-7, shall be so designed and constructed as to maintain the integrity of the landfill at all times (during construction, operation, closure and post closure). Applicant must provide assurances that:

1. all flows will be conveyed at non-erosive velocities,

2. the project is designed to minimize erosion.

b. Design features in support of this requirement may include but not be limited to:

1. slopes adequate to promote runoff but not affect slope stability,

2. intermediate benches or swales which reduce runoff velocities and limit erosion,

3. vegetation of closed portion of landfill.

c. Class I and II landfill projects shall provide adequate assurance that leachate will not enter the surface water management system. This assurance may be provided through affirmative demonstration that the requirement of Chapter 17-7, FAC for design and emplacement of liners, leachate collection systems, and treatment and disposal of leachate will be met.

d. Borrow pits shall not be included in the surface water management system unless the applicant can affirmatively demonstrate that leachate will not enter the borrow pit, and that the provisions of Chapter 17-3 and 17-4 will be met.

e. Dewatering operations at active, unlined landfills will not be permitted.

f. For Class I and II landfills the District may require one or more of the following additional Best Management Practices:

1. Detention in excess of the quantities stated in 3.2.2.2.
2. Dry detention areas.
3. Dry conveyance swales with adequate dimensions to permit maintenance.
4. Filter mechanisms for additional water quality enhancement prior to discharge.
5. Skimmers in front of discharge structures to restrict discharge of floatable materials.
6. Screw gates on water control structures capable of restricting discharge of poor quality surface water.
7. Vegetation of appropriate portions of the water management system, including but not limited to conveyance swales.

g. To provide information for assessing the need for Best Management Practices at a specific site, District staff will require a hydrogeologic investigation that should, at a minimum, provide information on:

1. the hydrogeologic properties of the formations underlying the landfill, including aquifer and characteristics, groundwater elevations and direction and rate of groundwater flow,
2. location of existing wells within one-half mile of the site perimeter,
3. locations and specifications of existing or proposed monitor wells.

h. Applicants should consult with District staff prior to or at pre-application Technical Advisory Committee meetings to determine the specific requirements which will apply for a particular project.

3.2.2.6 Use of natural areas and existing water bodies - Natural areas and existing water bodies may be used for retention/detention purposes on some occasions, when not in conflict with environmental (see Sections 3.1.5 and 3.2.3 herein) or public use considerations. Candidate areas for such purposes might include:

- a. Previously degraded areas,
- b. Man made areas (borrow pits, etc.),
- c. Extensive areas which have the ability to absorb impacts easily,
- d. Areas incorporated into a system with mitigation features.

3.2.2.7 Underground Exfiltration Systems

a. Systems shall be designed for the retention volumes specified in Section 3.2.2.2 for retention systems, exfiltrated over one hour for retention purposes, prior to overflow, and based on test data for the site. (Note: such systems should not be proposed for projects to be operated by entities other than single owners or entities with full time maintenance staff.)

b. A safety factor of two or more shall be applied to the design to allow for geological uncertainties.

c. A dry system is one with the pipe invert at or above the average wet season water table.

3.2.2.8 Sewage treatment percolation ponds - Above ground pond dikes shall not be within 200 feet of water bodies or 100 feet of dry retention/detention areas. Additional calculations by the applicant may be necessary in unusual cases requiring deviations from these dimensions.

3.2.3 Environmental

3.2.3.1 Viable wetlands and appropriate buffer areas shall be preserved. Manmade wetlands (in on-site uplands and/or impacted wetlands) of equivalent productivity may be created to replace natural wetlands.

3.2.3.2 Habitat diversity systems - Natural systems composed of distinct upland/wetland systems shall be preserved where it is evident that the two are interdependent.

3.2.3.3 Centralized preservation areas - Smaller isolated wetlands may be disturbed and "traded off" in certain instances for larger combination upland/wetland systems, where equivalent system productivity can be achieved.

3.2.3.4 Lake - Wetland separation - Lakes which may adversely affect wetland areas shall be separated from the wetland preservation areas by a minimum

distance of 200 feet unless tests, calculations or other information demonstrate deviation from this dimension is appropriate.

3.2.4 Construction

3.2.4.1 Discharge structures

a. All design discharges shall be made through structural discharge facilities. Earth berms shall be used only to disperse or collect sheet flows from or to ditches, swales, etc., served by discharge structures.

b. Discharge structures shall be fixed so that discharge cannot be made below the control elevation, except that emergency devices may be installed with secure locking devices. Either the District or an acceptable governmental agency will keep the keys for any such devices.

c. Non-operable discharge structures shall be constructed so that they are just that. Flashboard risers should not be used for urban construction.

d. Discharge structures should include gratings for safety and maintenance purposes. The use of trash collection screens is desirable.

e. Discharge structures shall include a "baffle" system to encourage discharge from the center of the water column rather than the top or bottom. Discharge structures from areas with greater than 50 percent impervious area or from systems with inlets in paved areas shall include a baffle, skimmer, or other mechanism suitable for preventing oil and grease from discharging to and/or from retention/detention areas.

f. Direct discharges, such as through culverts, stormdrain, weir structures, etc., will normally be allowed to receiving waters which by virtue of their large capacity, configuration, etc., are easily able to absorb concentrated discharges. Such receiving waters might include existing storm sewer systems and man-made ditches, canals and lakes.

g. Indirect discharges, such as overflow and spreader swales, are required where the receiving water or its adjacent supporting ecosystem might be degraded by a direct discharge. The discharge structure would therefore discharge into the overflow, spreader swale, etc., which in turn would release the water to the actual receiving water. Such receiving waters might include natural streams, lakes and marshes and land naturally receiving overland sheetflow.

h. Pumped systems will only be allowed for single owner or governmental agency operation entities, unless perpetual operation ability can be assured.

3.2.4.2 Control devices/Bleed-down mechanisms for Detention Systems

a. Gravity control devices shall normally be sized based on a design discharge of one half inch of the detention volume in first day. The devices should incorporate dimensions no smaller than 6 square inches of cross sectional area, two inches minimum dimension, and 20 degrees for "V" notches.

b. Gravity control devices shall be of a "V" or circular shaped configuration to increase detention time during minor events.

c. Pumped control devices shall normally be sized based on a design discharge of 20 percent of the detention volume in one day.

3.2.4.3 Dry retention/detention areas (not applicable to natural or mitigation wetland areas):

a. Dry retention/detention areas shall have mechanisms for returning the groundwater level in the area to the control elevation.

b. Mosquito control ditches or other appropriate features for such purpose, shall be incorporated into the design of dry retention/detention areas.

c. The design of dry retention/detention areas shall incorporate considerations for regular maintenance and vegetation harvesting procedures.

3.2.4.4 Wet Retention/Detention Areas

3.2.4.4.1 Dimensional Criteria (as measured at or from the control elevation).

a. Area - 0.5 acre minimum

b. Width - 100 feet minimum for linear areas in excess of 200 feet length. Irregular shaped areas may have narrower reaches but should average at least 100 feet. (Note: Area and width requirements may be waived for project to be operated by single owner entities or entities with full time maintenance staffs with an obvious interest in maintaining the areas for water quality purposes, e.g. golf courses.)

c. Depth - A minimum of 20 percent of the area shallower than 6 feet is required up to 2.5 percent of the project waterbody and contributing area (including side slopes), and 25 to 50 percent of the area deeper than 12 feet is desirable.

d. Side slopes - for purposes of public safety, water quality enhancement and maintenance, all wet retention/detention areas should have side slopes no steeper than 4:1 (horizontal:vertical) out to a depth of two feet below the control elevation, or an equivalent substitute. Sideslopes should be topsoiled, etc. nurtured or planted from 2 feet below to 1 foot above control elevation to promote vegetative growth. Littoral zone vegetation growth survival shall be a consideration of operation permit issuance.

e. Bulkheads - Bulkheads may be allowed for no more than 40 percent of the shoreline length, but compensating littoral zone must be provided.

3.2.4.4.2 Support Facility Design Criteria:

a. Perimeter maintenance and operation easements of 20 feet (minimum preferable) width at slopes no steeper than 4:1 (horizontal:vertical) should be provided beyond the control elevation water line.

b. Control elevations should be no higher than 2 feet below the minimum road centerline elevation in the area served by the control device in order to protect the road subgrade.

3.2.4.5 Exfiltration systems

- a. Pipe diameter - 12" minimum
- b. Trench width - 3' minimum
- c. Rock in trench must be enclosed in filter material, at least on the top and sides
- d. Maintenance sumps in inlets.

3.2.4.6 Deep water bodies - water bodies shall meet both of the following criteria:

- a. Entrapped salt water, resulting from inland migration of salt water during hurricane tide conditions or penetration of the freshwater/salt water interface, will not adversely impact existing legal water users.
- b. The penetration of a water-bearing formation exhibiting poorer water quality, in terms of chloride concentrations, will not adversely impact existing legal water users or result in adverse environmental impacts.

3.2.4.7 Impervious areas - runoff shall be discharged from impervious surfaces through retention areas, detention devices, filtering and cleansing devices, and/or subjected to some type of Best Management Practice (BMP) prior to discharge from the project site. For projects which include substantial paved areas, such as shopping centers, large highway intersections with frequent stopped traffic, and high density developments, provisions shall be made for the removal of oil, grease and sediment from storm water discharges.

3.2.4.8 Stagnant water conditions - configurations which create stagnant water conditions such as hydraulically dead end canals are to be avoided, regardless of the type of development.

4.0 DESIGN INFORMATION

4.1 Antecedent conditions - average wet season

4.2 Rainfall - Reference Sources include:

a. SFWMD Technical Publication No. 81-3 and the following distribution table:

Time (hours)	Cumulative Percentage of Peak One Day Rainfall
0	0
24	14.6
48	35.9
58	57.2
59	62.8
59.5	67.8
59.75	82.8
60	101.5
60.5	108.8
61	112.6
62	117.7
72	135.9

} 100% One Day Rainfall

b. Actual gage data analyzed by accepted statistical methods,

c. U.S. Department of Agriculture, Soil Conservation Service, "Rainfall Frequency Atlas of Alabama, Florida, Georgia and South Carolina for Durations from 30 Minutes to 24 Hours and Return Periods from 1 to 100 years" (1973).

d. Florida Department of Transportation "Drainage Manual" (Second Edition, revised 1978) Revised Rainfall Intensity Curves per Directive No. 0736-01-79.

4.3 Evapotranspiration - amounts can be estimated as follows:

- a. Groundwater depth 0 to 1' - 0.3" ET/day
- b. Groundwater depth 1' to 2.5' - 0.2" ET/day
- c. Groundwater depth 2.5' to 4' - 0.1" ET/day
- d. Groundwater depth below 4' - 0" ET/day

4.4 Storage

4.4.1 Open surface - if open surface storage is to be considered in the review, the Applicant should submit stage-storage computations. If open surface storage plus discharge is to be considered, the stage discharge computations should also be submitted. Actual rather than allowable discharges shall be used in routing. Often for the more extreme events, such as 100 year frequency, discharge should be ignored because the high tail water stage in the receiving water effectively prevents any but a negligible discharge. In such cases a mass accounting of on-site water will suffice, if adjacent areas can safely be ignored.

4.4.2 Ground - the Soil Conservation Service has made the following estimate of soil storage capability for the normal sandy soils found within the District in their average natural state:

<u>Depth to Water Table</u>	<u>Cumulative Water Storage</u>
1'	0.6"
2'	2.5"
3'	6.6"
4'	10.9"

For the same sandy soils which have been compacted intentionally or incidental to earthwork operations, the cumulative storage should be reduced 25 percent.

Groundwater storage beneath impervious surfaces generally appears impractical to any great degree because of the trapped air which water cannot displace. It further appears impractical below four feet depths, except in high sandy coastal ridge areas, because of the relationship between infiltration rates and runoff rates in most parts of south Florida.

4.5 Infiltration and percolation

4.5.1 Ground surface - Ground surface infiltration will be reviewed on the basis of commonly accepted procedures such as those of Soil Conservation Service (see U.S. Department of Agriculture, Soil Conservation Service Technical Paper No. 149, "A Method for Estimating Volume and rate of Runoff in Small Watersheds" (1973), and U.S. Department of Agriculture, Soil Conservation Service Technical Release No. 55, "Urban Hydrology for Small Watersheds" (1975); or Rational Method (see Florida State Department of Transportation, "Drainage Manual" (2nd Edition, rev. 1978)); or standard Civil Engineering textbooks), unless test data are submitted to justify other procedures.

4.5.2 Subsurface - subsurface exfiltration will be reviewed only on the basis of representative or actual test data submitted by the Applicant. Tests shall be consistent as to elevation, location, soils, etc., with the system design to which the test data will be applied. The Dade County Department of Environmental Resource Management and Florida Department of Transportation are suggested as reference sources to Applicants for test procedures and design and maintenance performance of subsurface exfiltration systems.

4.6 Runoff - the usual methods of computation are as follows:

- a. Rainfall minus losses and storage.
- b. Soil Conservation Service (see U.S. Department of Agriculture, Soil Conservation Service, "National Engineering Handbook, Section 4, Hydrology" -1972), with extra attention to hydrologic accounting of water table conditions.
- c. Rational method, for water quality retention/detention purposes.

4.7 Receiving Water Stage

4.7.1 Regulated Systems - design and maintained stage elevations should be available either from the local jurisdiction or the District. Stages for frequencies other than the design will be estimated by the District upon request from the Applicant.

4.7.2 Non-regulated Systems - the Applicant should compute receiving water stages for such systems from the best available data and submit the results to the District for review and concurrence before utilizing such results in further computations.

4.7.3 Any system - variable tailwater stages should be considered if they have a significant influence on the design.

4.8 Discharge

4.8.1 Allowable discharges - peak discharge, for purposes of meeting maximum allowable discharges, may normally be computed as the maximum average discharge over a time period equal to the time of concentration of the contributory area.

4.8.2 Non-urban gravity systems - rural gravity systems which are to be connected to District facilities are generally reviewed on the basis of the discharge culvert operating at a fixed head loss to meet the allowable discharge rate. This basis is justified by the estimate that the upstream headwater generated by rural runoff will be unable to collect at the upstream culvert end appreciably faster than the rate at which the receiving water rises. The fixed head loss amounts are 0.5' except in south Dade County (south of Canal C-2) where the value is 0.2'.

APPENDIX 1

CHECKLIST FOR SURFACE WATER MANAGEMENT PERMIT APPLICATIONS

- I. Site Information including:
 - A. Detailed location sketch.
 - B. Topographic map (with contours) of the site and adjacent hydrologically related areas (minimum of 100 feet from project boundaries), which shall include location and description of bench marks (minimum of one per major water control structure).
 - C. Overall map of the area showing where runoff presently goes and size, location, topography, and land use of off-site areas which drain through, onto, and from the project.
 - D. Identification of seasonal water table elevations. If the project is in the known flood-way of a natural stream, it should be identified and approximate flooding depths determined. The 100 year flood plain elevations and limits should be identified if applicable.
 - E. Description of vegetative cover. Wetland areas and preservation or mitigation proposals should be identified.
 - F. A recent aerial photograph of the project area with project boundaries delineated.
 - G. Paving, grading and drainage plans, with special attention to perimeter site grading.
 - H. Percolation tests must be submitted if percolation or exfiltration systems are proposed. Percolation tests shall be representative of design conditions.
 - I. Complete description of measures to be implemented during the construction period to mitigate adverse quantity and quality impacts off-site.
 - J. Indicate whether either surface or groundwater withdrawals are proposed for irrigation or other on-site water use. Because of the inseparable nature of Water Use and Surface Water Management the application for either will not normally be considered complete until all information for both is complete. (See 3.1.3)
- II. Master Drainage Plan showing:
 - A. Location of all water bodies with details of size, side slopes, elevations and depths.

- B. Location and details of all major water control structures. Control elevations of the control structures must be included along with any seasonal water level regulation schedules.
- C. Drainage basin boundaries showing direction of flow, taking into account off-site runoff being routed through or around the project.
- D. Locations of roads and buildings along with their proposed elevations. Sufficient site grades to justify the proposed stage - storage curves.
- E. Right-of-way and easement locations for the drainage system including all areas to be reserved for water management purposes, with the legal method to be utilized.
- F. Location and size of internal minor water management facilities.
- G. Nearby existing offsite water management facilities such as wells, lakes, etc. which might be affected by the proposed construction or development. The names and addresses of the owners of such facilities should also be submitted.

III. Drainage Calculations including:

- A. Design storms used including depth, duration and distribution.
- B. Off-site inflows.
- C. Stage-storage computations for the project and stage-discharge computations for the outfall structure(s).
- D. Acreages and percentage of property proposed as:
 - 1. Impervious surfaces (excluding water bodies)
 - 2. Pervious surfaces (green areas)
 - 3. Lakes, canals, retention areas etc.
 - 4. Total acreage of project
- E. Runoff routing calculations showing discharges, elevations, and volumes retained and/or detained during applicable storm events. Included should be the necessary mathematical computations to demonstrate that the proposed development will not remove net storage from the basin for events up to the 100 year frequency.
- F. Calculations required for determination of minimum building floor and road elevations.
- G. Calculations which demonstrate compensation for flood plain encroachment, if applicable.

IV. Legal and Institutional Information including:

- A. Identify entity responsible for operation and maintenance of the surface water management system.
- B. If the operation and maintenance entity is to be a public body such as a city or drainage district, a letter of potential acceptance from the public body must be submitted prior to staff report approval. If the entity is a homeowners association, then documents verifying the existence of such an organization and its ability to accept operation and maintenance responsibility must be submitted prior to commencement of construction (assuming the permit is issued).
- C. Indicate how water and wastewater service will be supplied. Letters of commitment from off-site suppliers must be included.
- D. Give the status of all other government agency approvals required, indicating if site plan and/or subdivision approval has been granted, final plats have been recorded, building or construction permits have been issued, special exception or rezoning approvals have been granted, or if DER, U. S. Army Corps of Engineers, or other permits have been issued.
- E. Provide evidence from the appropriate local government of compatible density and classification under the local government's comprehensive plan and/or zoning code (i.e., zoning resolution, local government development order (DO), letter from local government, etc.). If not specified in the resolution, letter, etc., include the number of proposed dwelling units and/or the square footage of commercial, industrial, or other uses and the allowable number of dwelling units and/or square footage under the approved zoning classification.
- F. If the project is a Development of Regional Impact (DRI), include a copy of the final approved DO. If a Preliminary Development Agreement has been signed with the Florida Department of Community Affairs to allow a portion of the DRI to proceed prior to the issuance of a DO, provide a copy. If the DRI Application is being filed concurrently with a request for conceptual agency review and/or local government's comprehensive plan amendment, indicate the status under the DRI process and, if appropriate, include a copy of comprehensive plan amendment Application.
- G. Submit a copy of a boundary survey and a copy of the recorded deed or Affidavit of ownership. If the Applicant is a contractual buyer then a copy of the executed contract must be provided.
- H. Documentation of legal and physical availability of receiving water system to receive project discharge if such is not evident.

NOTES:

1. Include four copies of all information, and one completed copy of Application Form RC-1.

2. For a Conceptual Approval, Items I.G, I.I., II.E, and II.F will not be necessary.
3. For Conceptual Approvals which are being submitted concurrently with a DRI Application for Development Approval (ADA), six copies of the supporting information and six copies of the DRI Application for Development Approval (ADA) must be submitted.

APPENDIX 2

**ALLOWABLE DISCHARGE FORMULAS
FOR
SOUTH FLORIDA WATER MANAGEMENT DISTRICT
CANALS**

(MAXIMUM AMOUNTS BASED ON PRIMARY SYSTEM CAPACITY FOR NEW PROJECTS;
SECONDARY AND OTHER INTERMEDIATE SYSTEM CAPACITIES MAY BE MORE LIMITING.)

SFWMD - ALLOWABLE DISCHARGE FORMULAS

<u>Canal</u>	<u>Allowable Runoff</u>	<u>Design Frequency</u>
C-1	$Q = \left(\frac{112}{\sqrt{A}} + 31 \right) A$	10 year
C-2	Essentially unlimited inflow by gravity connections southeast of Sunset Drive; 54 CSM northwest of Sunset Drive	200 year +
C-4	Essentially unlimited inflow by gravity connections east of S. W. 87th Avenue	200 year +
C-6	Essentially unlimited inflow by gravity connections east of FEC Railroad	200 year +
C-7	Essentially unlimited inflow by gravity connection	100 year +
C-8	Essentially unlimited inflow by gravity connection	200 year +
C-9	Essentially unlimited inflow by gravity connection east of Red Road; 20 CSM pumped, unlimited gravity with development limitations west of Red Road or Flamingo Blvd.	100 year +
C-10	-----	200 year +
C-11	20 CSM west of 13A; 40 CSM east of 13A	-----
C-12	90.6 CSM	25 year
C-13	75.9 CSM	25 year
C-14	69.2 CSM	25 year
C-15	70.0 CSM	25 year
C-16	62.6 CSM	25 year
C-17	62.7 CSM	25 year
C-18	41.6 CSM	25 year
C-19	57.8 CSM	
C-23	31.5 CSM	10 year
C-24	30.25 CSM	10 year
C-25	$Q = \left(\frac{47}{\sqrt{A}} + 28 \right) A$ (Under review)	10 year
C-38	31.1 CSM (Subject to restrictions of Basin Rule)	10 year
C-40, 41, 41A	35.4 CSM	10 year
Hillsboro Canal (east of S-39)	35 CSM	25 year
North New River (East of S-34)	70.8 CSM	25 year
Everglades Ag. Area (all canals)	20 CSM	5 year
L-28	11.8 CSM	-----
C-51	35 CSM east of Turnpike; 27 CSM west of Turnpike (Subject to restrictions of Basin Rule)	10 year
C-100, 100A, 100B, 100C, 100D:	$Q = \left(\frac{104}{\sqrt{A}} + 43 \right) A$	10 year
C-102	$Q = \left(\frac{119}{\sqrt{A}} + 25 \right) A$	10 year
C-103N, C-103S	$Q = \left(\frac{107}{\sqrt{A}} + 39 \right) A$	10 year
C-110	$Q = \left(\frac{137}{\sqrt{A}} + 9 \right) A$	10 year
C-111	$Q = \left(\frac{117}{\sqrt{A}} + 29 \right) A$	10 year
C-113	$Q = \left(\frac{142}{\sqrt{A}} + 3 \right) A$	10 year

Definitions:

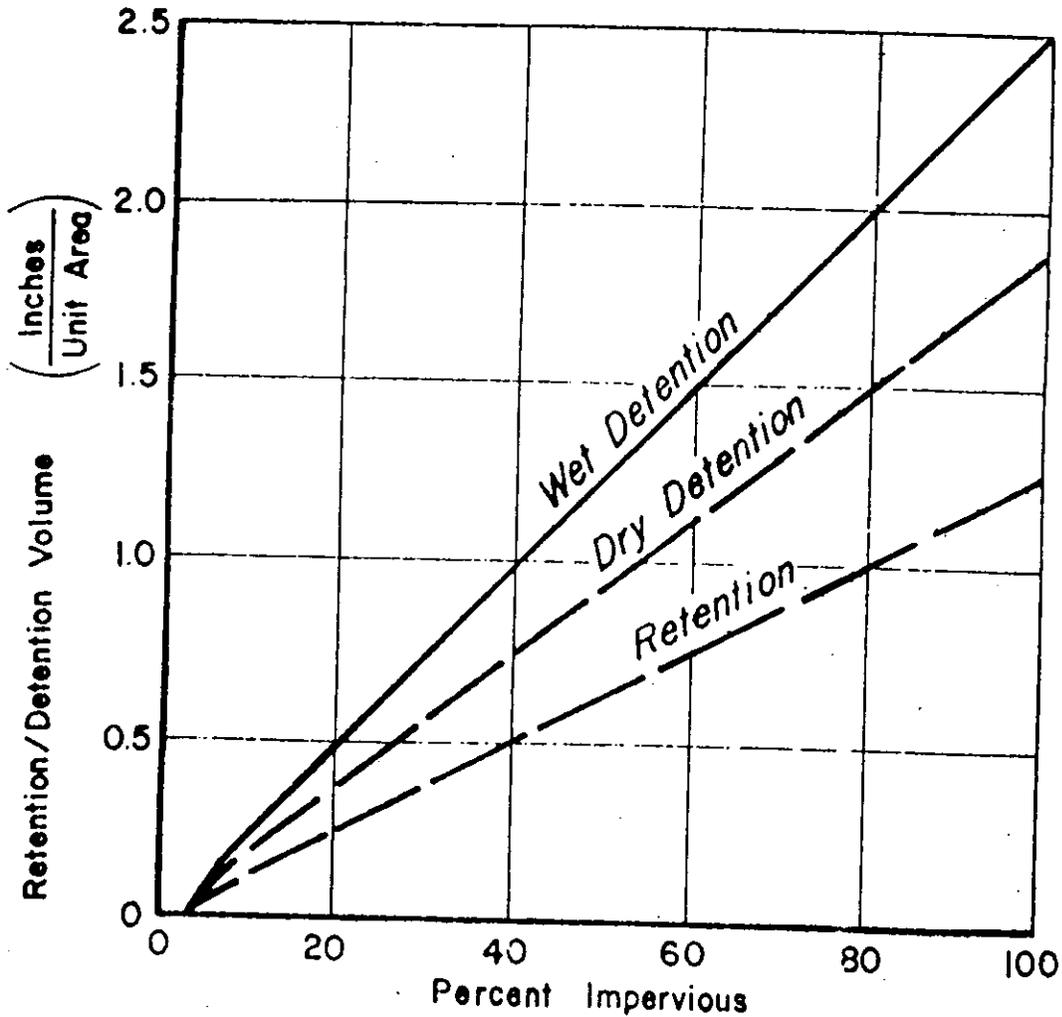
Q = Allowable runoff in cfs (cubic feet per second) A = Drainage area in square miles CSM = cfs per square mile

APPENDIX 3

URBAN RETENTION/DETENTION

Note: Storage Req'd. Is In Addition To Normal Street & Lot Swales Which Have Already Been Accounted For In Preparation Of Curve.

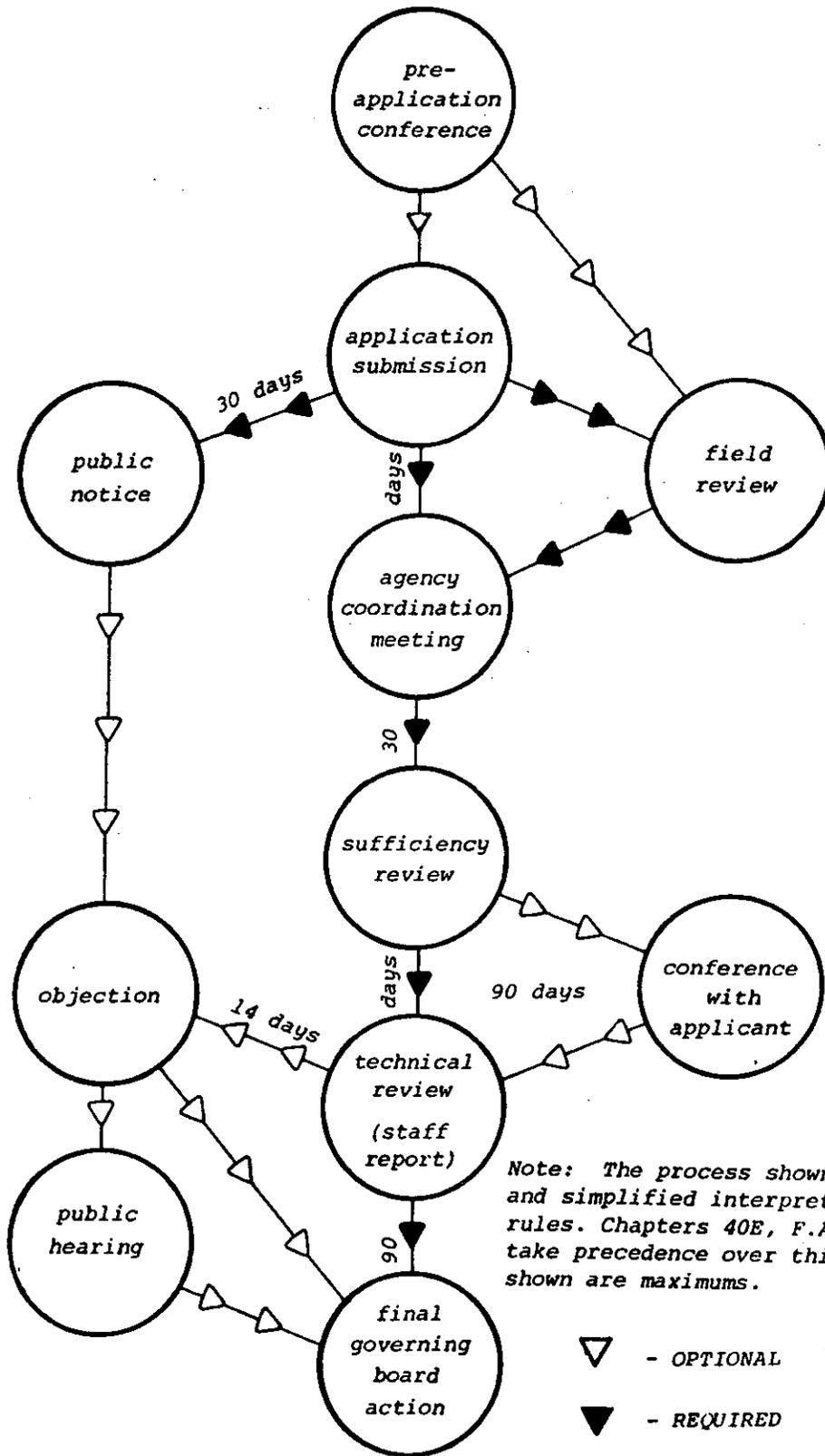
(Reference: 3.2.2.2)



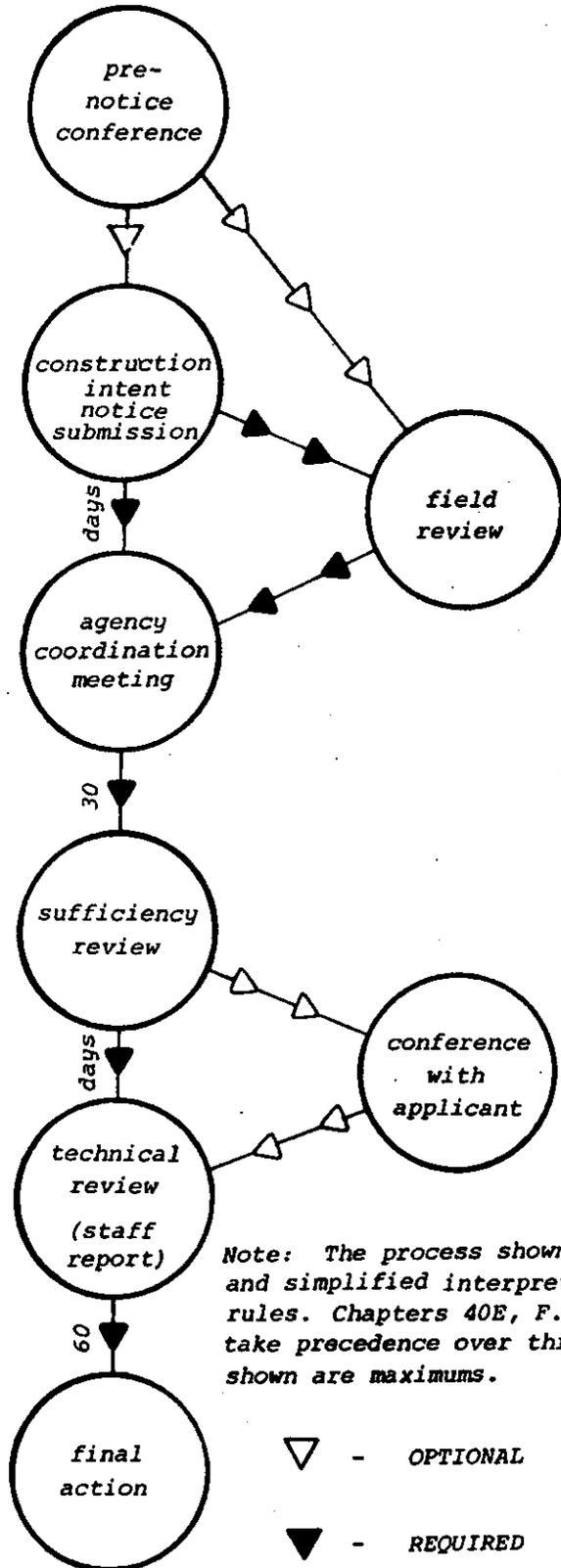
Separate Storage Req'd. For Grass Swale Systems

APPENDIX 4

SOUTH FLORIDA WATER MANAGEMENT DISTRICT INDIVIDUAL PERMIT PROCESS



APPENDIX 5
SOUTH FLORIDA WATER MANAGEMENT DISTRICT
GENERAL PERMIT PROCESS



Note: The process shown is a schematic and simplified interpretation of District rules. Chapters 40E, F.A.C. and 120 F.S. take precedence over this diagram. Times shown are maximums.

▽ - OPTIONAL
▼ - REQUIRED



APPENDIX 6

ABOVE GROUND IMPOUNDMENTS

Effective March 24, 1987

APPENDIX 6

ABOVE GROUND IMPOUNDMENTS

1.0 INTRODUCTION

1.1 Purpose

This Appendix to the South Florida Water Management District's Basis of Review for Surface Water Management Permit Applications has been prepared to elaborate on the criteria and standards applicable to above ground impoundments in accordance with the definition and requirements for "dams" in Part IV of Chapter 373, Florida Statutes. The content herein is not intended to be all inclusive of all possible situations, but is intended to provide guidelines and basic performance criteria wherever possible on design criteria for the situations commonly encountered for most typical south Florida situations. Because dam performance is a function of construction, operation and maintenance as well as design, information on those subjects is included. The basic responsibility for dam performance remains vested in the owner or permittee through appropriate representation by his engineer in accordance with State laws.

1.2 Classification

Upon request or application receipt District staff will classify impoundments or dams as "Major" or "Minor" for application review purposes in accordance with the following provisions:

1.2.1 Major - Impoundments located where failure would cause significant damage to the property of other than the permittee, could involve loss of human life, would create a public health hazard, or would cause irreversible environmental or water quality damage; maximum water depths above surrounding ground levels would generally exceed four feet.

1.2.2 Minor - Impoundments generally located in rural areas where failure would generally limit significant damage to the property of the permittee, would not involve loss of human life, would not create a public health hazard, and would not cause irreversible environmental or water quality damage; maximum water depths above surrounding ground levels would generally be limited to four feet, except where dam break analysis influence lines (six inch depth and two feet per second velocity) are limited to the land of the permittee and others, including the public, are not involved. It may be necessary that the permittee's land be legally restricted by such means as a unity of title to insure perpetual single ownership.

1.3 Certification responsibility

1.3.1 Major impoundments are considered to be individually engineered structures involving the disciplines of geotechnical, soils, foundation, and/or structural engineering and are therefore required to be certified in accordance with State law by individuals or firms expert in such disciplines.

1.3.2 Minor impoundments are considered to be general site improvements and may therefore be certified in accordance with State law as part of the overall surface water management system by individuals or firms with expertise in disciplines such as general civil and/or agricultural engineering.

1.4 Information submittals

1.4.1 Major impoundments require the submittal of all design, construction, operation and maintenance information necessary for complete review of the impoundment. Information to be submitted in addition to design calculations includes:

- a. Proposed construction schedule
- b. Safe filling and draining schedules
- c. Design of seepage and water level monitoring programs
- d. Operation and maintenance manual
- e. Influence lines for dam break analysis (6 inch depth and 2 feet persecond velocity)
- f. Emergency response and evacuation plan (if appropriate)

Review by the District will be done for purposes of confirming that reasonable assurances are offered that the intent of District policies and general engineering principles will be met. The review is not intended to supplant the certifying engineer's initiative, judgement, expertise, experience and/or responsibility. When necessary the District may retain outside expertise to participate in the review.

1.4.2 Minor impoundments require only the submittal of the usual surface water management permit information as enumerated in Appendix 1 (according to any specific standards herein) unless unusual circumstances exist. It is understood that the certifying engineer may perform calculations, tests, etc. for his/her own purposes or to meet State law and which may not be submitted.

2.0 DESIGN GUIDELINES

2.1 Major impoundments

2.1.1 Structural stability - All elements and appurtenant works for impoundments shall be designed for all possible conditions up to and including maximum water depths and in accordance with generally accepted engineering principles for such works, which include consideration of site preparation, construction materials, geological conditions, storm conditions, settlement, erosion, operation and maintenance and vandalism. More specific guidelines are as follows:

2.1.1.1 Dikes - Dikes shall be designed based on field test data of subsurface conditions and actual procedures and materials to be used in construction. Seepage and piping shall be considered and cutoff walls and toe drains included where necessary. Dimensions shall be such as to allow maintenance by normal equipment. Recommended side slopes for vegetated earth should be no steeper than 2 1/2:1 (horizontal to vertical) for external slopes and 3:1 (horizontal to vertical) for internal slopes. Top widths should be of sufficient width to allow safe vehicular access and no less than twelve feet. Dike toes should be continually

accessible by vehicle by relatively level toe berms of at least ten feet width. Dikes and toe berms should be widened at strategic points for vehicular turnaround or where necessary to load stockpiled material to be used for dike repair.

2.1.1.2 Structures - Discharge and other structures should be located to be accessible from the top of the dike during storm conditions for emergency operation and maintenance if necessary. They should be of permanent low maintenance materials, preferably reinforced concrete. The location and design should be such that dike integrity is maintained. Trash racks, seepage rings and vandalism protection should be included. A preferable design would consist of an inlet box which does not interfere with normal dike sideslopes and a conduit under the dike to an outfall endwall. Erosion protection, energy dissipators, etc. would be necessary at strategic points including the outfall.

2.1.2 Hydraulics - Unless more stringent criteria should apply because of other jurisdictional standards or unusual risks, the minimum District standards are as follows:

2.1.2.1 Maximum water depth as determined by routing a three day precipitation (distributed according to the Basis of Review, Section 4.2) through the inflow and outflow structures with rainfall on the reservoir. Three day precipitation amounts may vary between thirty six and fifty six inches depending on site specific conditions and risk management considerations. District staff will advise on request.

2.1.2.2 Design water depth - As determined by routing the project allowable discharge design event through the inflow and outflow structures with rainfall on the reservoir. The three day 25 year event should typically be used as a minimum.

2.1.2.3 Minimum freeboard above maximum water depth - Three feet minimum or that required to prevent overtopping or failure due to hurricane force winds as derived from the South Florida Building Code.

2.1.2.4 Discharge structure - Basis of Review allowable discharge for reservoir at maximum water depth with 100 year tailwater flood elevation, or Basis of Review allowable discharge for reservoir at design water depth and non-limiting tailwater, unless more accurate site specific tailwater elevations are applicable and substantiated by the applicant.

2.1.2.5 Return overflow - Impoundments must contain an outflow discharge structure which returns water to the area from which inflow occurs. Therefore a separate structure will be necessary for pump filled impoundments to allow return flow under the conditions of maximum or design water depths in the reservoir with pumps continuing to operate. For gravity filled impoundments this structure will actually be the inflow structure since reservoir and project stages will be the same.

2.1.2.6 Emergency discharge gates - Discharge structures should include emergency gates which can only be opened with District permission. Return overflow structures must include emergency gates to be operated at the discretion of the permittee or at the direction of the District.

2.1.2.7 Pumps - The pumps used to fill impoundments serving multiple owners, when allowed, should be multiple pumps of the same sizes to allow

interchange of parts. Electric pumps should have standby fuel operated power systems.

2.1.2.8 Seepage collection systems - A safety factor of three shall be utilized for hydraulic conveyance design purposes.

2.1.3.4 Floodplain encroachment and setbacks - Impoundments shall not be located within floodplains or shall otherwise provide compensation and setbacks as provided in Section 3.2.1.5 in the Basis of Review. Impoundments located in flat areas of diffused flow shall have the toe of dikes set back at least fifty feet from property lines to allow historic sheet flow to move around the impoundments. Greater dimensions or swale construction may be required if steep slopes, very large contributing areas, etc. would cause that dimension to be inadequate. Smaller dimensions may be allowed if the applicant can demonstrate smaller dimensions will suffice.

2.1.4 Environmental and water quality - The provisions of the Basis of Review apply. Since many impoundments are utilized for wetland management and/or mitigation, it may be necessary to set control elevations and emergency gate bottoms above natural ground levels in order to prevent wetland overdrainage.

2.1.5 Emergency repair material - Appropriate amounts of type, quantity and location of emergency repair materials shall be included in design plans.

2.2 Minor impoundments

2.2.1 Structural stability - The same general comments apply as for Major impoundments with specific guidelines as follow:

2.2.1.1 Dikes - Designs shall be in accordance with commonly accepted engineering principles and State laws. Dikes external to the permittee's property shall meet the dimensional and access criteria for Major impoundments to the degree necessary to meet the intent of Section 1.2.1. Internal dikes may be of lesser standards, but sideslopes should be no steeper than 2:1 (horizontal to vertical) and top widths no less than five feet.

2.2.1.2 Structures - Discharge and other structures should be as for Major impoundments.

2.2.2 Hydraulics - The same general comments apply as for Major impoundments with specific standards as follow:

2.2.2.1 Maximum water depth - The maximum water depth equals the design water depth as described for Major impoundments.

2.2.2.2 Minimum freeboard above maximum water depth - Equal to the maximum water depth dimensions but not less than two feet, nor more than three feet.

2.2.2.3 Discharge structure - Basis of Review allowable discharge for reservoirs at design water depth and non-limiting tailwater, unless more accurate site specific tailwater elevations are applicable and substantiated by the applicant.

- 2.2.2.4 Return overflow - Same as for Major impoundments.
- 2.2.2.5 Emergency discharge gates - Same as for Major impoundments except installation is optional.
- 2.2.2.6 Pumps - Same as for Major impoundments.
- 2.2.2.7 Seepage collection systems - Optional.
- 2.2.3 Floodplain encroachment and setbacks - Same as for Major impoundments.
- 2.2.4 Environmental and water quality - Same as for Major impoundments.
- 2.2.5 Emergency repair material - Optional.

3.0 CONSTRUCTION

Construction certification is a requirement of all permits for both Major and Minor impoundments, and it is therefore the responsibility of the certifying engineer to satisfy himself/herself and the State laws as to construction compliance with design. Changes to permitted design would require the need for As-Built plans to satisfy certification. Major changes, including changes to permit authorization or special or limiting conditions would require a permit modification prior to implementation. The District expects continual construction observation to be the minimum requirement necessary to evidence ability to perform certification on Major impoundments.

Certification must indicate that construction has been satisfactorily completed so that routine operation and maintenance may commence.

4.0 OPERATION AND MAINTENANCE

4.1 Reporting

Reporting of impoundment conditions, repairs, etc. will be a continuing process required by permit special condition. The District will indicate those general areas of interest for which reporting is required, but it is the basic responsibility of the permittee to initiate interim reporting and/or more detailed reporting as conditions change, emergencies or problems arise, etc. It is expected that Major impoundments will be reported in accordance with the operation and maintenance manual and emergency response and evacuation plan adopted at the time of permit issuance, with updates as necessary.

4.2 Primary subjects of interest

- 4.2.1 Major impoundments
 - 4.2.1.1 Dikes and seepage collection system

- a. Vegetation conditions
- b. Erosion
- c. Evidence of boils, piping, unusual seepage
- d. Slope stability, surface cracking
- e. Settlement
- f. Travelway conditions
- g. High and low water marks
- h. Presence of aquatic vegetation in supposed dry areas
- i. Monitoring system condition and monitoring data
- j. Adequacy and condition of emergency repair material
- k. Short and long term repair and modification recommendations

4.2.1.2 Structures and pumps

- a. Materials conditions
- b. Operational conditions
- c. Evidence of vandalism
- d. Settlement and erosion
- e. Freedom from trash problems
- f. Short and long term repair and modification recommendations

4.2.1.3 Impoundment area

- a. Vegetation changes
- b. Evidence of encroachment and misuse of land

4.2.1.4 Emergency response plan

- a. Land use changes in area of influence
- b. Topographic changes causing change in area of influence
- c. Changes in participants, addresses, phone numbers, etc. involved in emergency response plan
- d. Evidence of contact update with involved emergency management officials

4.2.2 Minor impoundments

4.2.2.1 Dikes

- a. Vegetation conditions
- b. Erosion, settlement, cracking, stability
- c. Short term repair and modification recommendations

4.2.2.2 Structures and pumps

- a. Structural conditions
- b. Operational conditions
- c. Short term repair and modification recommendations

4.2.2.3 Impoundment area

- a. Vegetation changes
- b. Evidence of encroachment and misuse of land

4.3 Typical special permit conditions

4.3.1 Upon completion of construction, or alteration the permittee shall submit a report to this District of engineering adequacy of all above ground dikes, levees and berms behind which water is to be contained and where failure could impact off-site areas. Such reports shall include proposal of technique and schedule for repair of any deficiencies noted, and shall be signed and sealed by a Florida registered professional engineer.

4.3.2 On a semi-annual basis (in May and December of each year), the permittee shall submit reports to this District of engineering adequacy of all above ground dikes, levees and berms behind which water is to be contained and where failure could impact off-site areas.

5.0 REFERENCES

Agencies with impoundment experience and publications:

- a. U.S. Army Corps of Engineers
- b. U.S. Department of Interior, Bureau of Reclamation
- c. U.S. Department of Agriculture, Soil Conservation Service

APPENDIX 7
ISOLATED WETLANDS

Effective April 15, 1987

**BASIS OF REVIEW FOR
SURFACE WATER MANAGEMENT PERMIT APPLICATIONS
WITHIN THE SOUTH FLORIDA WATER MANAGEMENT DISTRICT
APPENDIX 7
ISOLATED WETLANDS**

1.0 Introduction

An objective of the District expressed by the legislative policy of Section 373.016(2), Florida Statutes, is to manage and protect water related resources of the south Florida region, including isolated wetlands and their associated fish and wildlife functions and values. The loss of single isolated wetlands may cause localized adverse impacts to fish and wildlife and their habitats. Cumulative impacts from the loss of many such wetlands could cause significant adverse impacts on a broader basis to water quality, hydrologic function and fish and wildlife habitat. The protection of isolated wetland functions is necessary for the protection of wetland associated fish and wildlife.

Section 373.414, Florida Statutes (1986), directs water management districts to establish specific permitting criteria for review of fish and wildlife and their habitats, protection of threatened and endangered species, and consideration of cumulative and off-site impacts in isolated wetlands. This Appendix to the Basis of Review for Surface Water Management Permit Applications addresses isolated wetlands and the requirement of Section 373.414, Florida Statutes (1986). It applies to all proposed systems for projects with isolated wetlands.

Isolated wetlands vary in type and function, so the permit application for a project which contains them shall include site specific information. The applicant must provide reasonable assurance that the proposed system, including protection or mitigation/compensation plans, complies with the District's isolated wetland objectives. The applicant may provide such reasonable assurance in many cases by meeting the specific design criteria in Section 5.1 below. Other project designs will be considered pursuant to Section 5.2 below. Because of the uncertain ability of current mitigation technology to restore or create the various functions and values of isolated wetlands, protection and incorporation of existing isolated wetlands in surface water management systems are preferred alternatives to destruction and mitigation or compensation.

2.0 Glossary

2.1 Wetland--Areas that are inundated by surface or ground water with a frequency sufficient to support, and under normal circumstances do or would support, a prevalence of vegetative or aquatic life that require saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, and similar areas such as sloughs, potholes, wet meadows, river overflows, mud flats and natural ponds. [Ref: Executive Order 11990, 42 Fed. Reg. 26961 (1977)].

2.2 Isolated wetland--Any wetland not under jurisdiction of the Department of Environmental Regulation (DER) for the purposes of regulation of dredging and

filling. Multiple individual wetlands normally connected by surface flow during a wet season with average rainfall shall be presumed to be an isolated wetland.

2.3 Disturbed wetland-- Wetlands as defined in Section 2.1 altered by drainage, dredge and fill, or invasive exotic plants so that hydrologic and biological functions are significantly diminished. A wetland or portion of a wetland with a prevalence of exotic plant species, such as Melaleuca or Schinus, shall be presumed disturbed. Wetlands impacted by activities conducted in violation of District rules or permit conditions shall not be considered disturbed for the purposes of this rule.

2.4 Protected wetland--Wetland areas set aside through project design, conservation or protection easement, or other approved method, to ensure continued biological and hydrologic function indicative of that wetland's particular type.

2.5 Buffer zone--An area adjacent to the isolated wetland which protects wetland function and minimizes adverse impacts of upland development on wetland function.

2.6 Mitigation--Remedying isolated wetland impacts by restoring or enhancing affected habitat, or by creating similar habitat of equal or greater function. For purposes of this rule, there is a presumption that similar habitat equals similar function.

2.7 Compensation--Replacement of isolated wetlands with a mixture of wetland/upland habitat, unique upland habitat, or other offsetting processes which enhance fish and wildlife habitat or otherwise provide overall benefits to the natural system.

2.8 Maintenance--As used in this Appendix, maintenance means regular upkeep of isolated wetlands to assure goals of an approved mitigation or compensation plan will be met. This may include a guaranteed survival rate of planted species and/or recruited desirable wetland species, and the removal of undesirable invasion species, such as Melaleuca and Schinus.

3.0 Size threshold

Isolated wetlands less than 0.5 acres in size will not be reviewed for impacts to fish and wildlife and their habitats, and mitigation or compensation shall not be required for their loss, unless:

a. Threatened or endangered species are present (See Sections 5.1.8 and 5.2), or

b. Cumulative impacts from the loss of such wetlands reaches an excessive level based on either:

1) the presumption that the loss of such wetlands exceeding 3 acres for projects 100 acres or smaller in size or 3% of the project area for projects over 100 acres in size produces excessive cumulative impacts, or

2) an evaluation of the post development character of the site, based on significance of the habitat type, abundance of similar habitat proposed for protection within the project area, proximity to similar publicly owned and protected fish and wildlife habitat, and other relevant factors.

4.0 Review procedures for projects which propose to impact isolated wetlands.

4.1 This Appendix will apply to all pending and new applications which are not complete, as evidenced by a letter of completeness, on the effective date of this Appendix. The provisions of Rule 40E-4.301(3) (Conditions for Issuance) apply to the evaluation of applications for construction and operation permits for projects which have previously approved conceptual approvals or construction and operation permits.

For conceptual approvals issued prior to the effective date of this Appendix which have included review of impacts on wetlands, the grantee of the conceptual approval may request a verification of this determination, or a verification that future permit review of isolated wetland impacts is to be governed by applicable requirements prior to the effective date of this Appendix. Request for verification must be filed no later than September 30, 1987 and will be confirmed by the District within 60 days of the request.

4.2 Applications which propose to impact isolated wetlands may be approved in concept with a Letter of Conceptual Approval. Detailed proposals shall be submitted as part of the application for conceptual approval or as part of the application for a Surface Water Management Construction and Operation Permit and shall include

- a. A description of the type and function of the isolated wetland being impacted, which shall include area, vegetative community and hydrologic regime.**
- b. A list of all plant and animal species listed as endangered, threatened or of special concern pursuant to 50 Code of Federal Regulations, Section 17.12 and Rules 39-27.03 39-27.04, 39-27.05, Florida Administrative Code, which are incorporated by reference and made a part of this rule, which utilize the area, and an evaluation of the probable significance of the area to the listed species.**
- c. A short statement of project design alternatives considered to reduce or eliminate impacts to isolated wetlands.**
- d. Additional information as required to evaluate site specific conditions or site-specific project designs.**

4.3 Applications which propose mitigation shall include a description of the wetland habitat to be created, restored or enhanced as a result of the mitigation activity, and shall specifically include descriptions of:

- a. area and location**
- b. species to be planted**
- c. plant density**
- d. source of plants or mulch if not supplied by a commercial plant nursery**
- e. hydrologic regime.**
- f. monitoring and maintenance plan**

g. itemized estimate of the cost of implementing mitigation based on relevant market conditions.

4.4 Applications which propose compensation shall include relevant information to demonstrate the proposal provides the required reasonable assurances, and may include, but is not limited to, the information listed in Section 4.3 above.

4.5 The operation phase of a project which impacts isolated wetlands shall not become effective until the construction or provision of required mitigation/compensation.

5.0 Review criteria Because isolated wetlands vary in type and function, each permit application for a project that includes isolated wetlands will be reviewed individually. The applicant must provide reasonable assurance that the proposed activity, including protection or mitigation/compensation plans, complies with the District objective, expressed in the legislative policies of Sections 373.016(2) and 373.414, Florida Statutes, to maintain the functions of isolated wetlands, including fish and wildlife and their habitat, and to protect endangered and threatened species.

a. An applicant may provide reasonable assurances by: 1) meeting the criteria and quantitative values as provided in Section 5.1 below, or 2) proposing a site-specific project design appropriate for the particular site and environmental system affected and providing additional information necessary to evaluate the proposal, as provided in Section 5.2 below. Sections 5.1 and 5.2 are equivalent review procedures and either one is available to all applicants.

b. Staff may consult with the Florida Game & Fresh Water Fish Commission or other knowledgeable experts when reviewing the habitat of threatened and endangered species and considering proposals for the protection of endangered or threatened species.

5.1 Quantitative design criteria

5.1.1 The natural functions of isolated wetlands over 0.5 acres in size, including water quality, water quantity, and fish and wildlife habitat, shall be maintained, as provided for in a) - d) below.

(a) Mitigation or compensation for elimination of isolated wetlands between 0.5 and 5.0 acres in size, pursuant to Section 5.1.2 below, shall be presumed to maintain wetland functions.

(b) There is no presumption that the function of isolated wetlands over 5.0 acres in size can be maintained by measures other than protection as defined in Section 2.4 above. Protection of isolated wetlands over 5.0 acres in size shall be the preferred method of providing the required reasonable assurance, however, other reasonable alternatives proposed by the applicant will be considered.

(c) The total isolated wetlands impacted by a project shall not produce significant adverse cumulative impacts. Cumulative impacts will be evaluated by the same criteria described in Section 3.0(b)(2) above.

(d) Protection of isolated wetlands or incorporation of isolated wetlands into surface water management systems is favored over isolated wetland destruction and mitigation or compensation. Wetland destruction and mitigation or compensation shall be considered only when there are no feasible project design alternatives for the particular site. Reasonable project design alternatives to isolated wetland impacts shall be considered.

5.1.2 Isolated wetland mitigation shall be implemented based upon ratios of acres of wetlands created, or restored to acres of wetlands destroyed which provide reasonable assurance that the mitigation will be successful. The following ratios shall be presumed to provide such reasonable assurance for type-for-type mitigation:

- a. Forested swamp, non-cypress dominated-----2.5:1
- b. Forested swamp, cypress dominated-----2.0:1
- c. Freshwater marshes-----1.5:1

Ratios for mitigation with unlike habitat, including expanded littoral zones, or compensation shall be determined on a case-by-case basis. When type-for-type mitigation is provided prior to isolated wetland impacts, a one-to-one ratio shall be presumed to provide such reasonable assurance.

5.1.3 Disturbed isolated wetlands may be developed and their loss compensated for by:

a. Mitigation at ratios less than those required in 5.1.2, based on the degree of disturbance and the remaining functional qualities. Mitigation through restoration of other disturbed wetlands is preferred over wetland creation.

b. Preservation of unique uplands or inclusion of developable uplands within an upland/wetland protected system. Mitigation or compensation shall not be required for isolated wetlands which do not provide functions and values as expressed above in Sections 1.0 and 5.0.

5.1.4 Isolated or created wetlands may be part of a surface water management system provided the wetland's functional qualities are maintained or improved and no adverse water quantity impacts are caused.

5.1.5 Isolated wetlands which extend off-site may be included in surface water management systems, provided the project is consistent with other requirements of the Basis of Review for Surface Water Management Permit Applications and legal drainage rights and permit requirements are satisfied. The cooperative use of isolated wetlands is encouraged.

5.1.6 Water tables:

a. Water tables shall not be altered such that on-site and off-site isolated wetlands are adversely affected.

b. Minimum separation distance between protected wetlands and canal/lake excavations shall be 200 feet, unless soil or other data shows that water table elevations in the wetlands would not be adversely affected.

c. Control elevations shall be established which maintain or improve pre-development hydroperiods in protected wetlands.

d. Control elevations shall be established which provide adequate hydroperiods to promote successful creation, restoration or enhancement of wetlands in mitigation areas.

e. Other requirements of the Basis of Review for Surface Water Management Permit Applications shall be met.

5.1.7 Buffer zones:

a. Buffer zones may be required around isolated wetlands that are to be protected or incorporated into a surface water management system to protect wetland function and minimize adverse impacts of upland development on wetland function. Actual delineation of the buffer zone may vary according to site specific conditions. Buffer zones which extend at least fifteen feet landward from the edge of the wetland in all places and average twenty-five feet from the landward edge of the wetland will be presumed to be adequate.

b. Prior to issuance of Construction and Operation permits, buffer zones shall be field verified and delineated in the field.

c. Buffer zones may consist of undisturbed uplands, open water bodies, wildlife corridors or other natural or structural features which serve the purpose stated in Section 2.7 as appropriate for the particular site.

d. Upland areas or wildlife corridors adjacent to buffer zones may be incorporated as compensation areas, provided they are in excess of the minimum buffer zone and meet all other requirements for compensation areas.

5.1.8 An isolated wetland, regardless of size or land use, that is utilized by species of plants or animals designated as endangered or threatened pursuant to the authority cited in Section 4.2(b) shall be protected as described in Section 2.4 above.

5.2 Qualitative criteria Instead of meeting the quantitative criteria listed above, an applicant may propose a site-specific design which provides reasonable assurance that the project complies with the District's objective to manage and protect isolated wetlands and their associated fish and wildlife functions and values as expressed above in Sections 1.0, 5.0 and to protect threatened and endangered species. The applicant has the burden of demonstrating such reasonable assurance.

5.2.1 The applicant should provide the information necessary to evaluate the particular proposal. The District will consider such models it deems appropriate, including the U. S. Fish and Wildlife Service Habitat Evaluation Procedure (HEP), and information regarding the pre-and-post-development condition of the site and its relation to the surrounding ecosystem.

5.2.2 Innovative proposals for mitigation or compensation, including off-site proposals and replacement with unlike habitat, will be evaluated individually based on such factors as regional significance of the wetland type to be impacted,

expected system-wide benefits of the proposal, ability to comparatively replace lost wetland values, anticipated post development setting of the project, and requirements of public works programs authorized by Florida Statutes.

5.2.3 This section provides an alternate review process for isolated wetlands which is similar and parallels the existing procedures outlined in the Basis of Review Sections 1.3, Criteria Flexibility; 3.1.5, Process for Determining Environmental Impacts; and 3.2.3, Environmental.

6.0 Project guarantee criteria

6.1 Wetland monitoring and maintenance programs will be required for proposals involving mitigation and/or compensation.

6.2 Monitoring and maintenance requirements will normally be established based on wetland type, size, complexity and construction schedule and will typically range from 2-5 years.

6.3 Mitigation/compensation shall be provided for in each phase of construction to mitigate the wetlands lost by that phase of construction as defined by the areas included within a given construction permit.