

COUNTY COUNCIL
OF
TALBOT COUNTY, MARYLAND

2011 Legislative Session Day No.: November 22, 2011

Resolution No.: 190

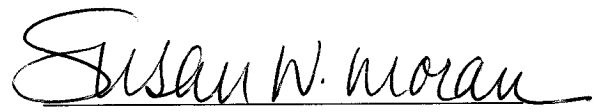
Introduced by: Mr. Bartlett, Mr. Duncan, Mr. Hollis, Mr. Pack, Ms. Price

**A RESOLUTION TO ADOPT THE TALBOT COUNTY STORMWATER
MANAGEMENT PROCESS & IMPLEMENTATION GUIDE ATTACHED HERETO,
WHICH IS INCORPORATED BY REFERENCE HEREIN**

By the Council: November 22, 2011

Introduced, read first time, ordered posted, and public hearing scheduled on Tuesday, December 13, 2011 at 6:30 p.m. in the Bradley Meeting Room, South Wing, Talbot County Courthouse, 11 North Washington Street, Easton, Maryland 21601.

By Order:


Secretary

**A RESOLUTION TO ADOPT THE TALBOT COUNTY STORMWATER
MANAGEMENT PROCESS & IMPLEMENTATION GUIDE ATTACHED HERETO,
WHICH IS INCORPORATED BY REFERENCE HEREIN**

SECTION ONE: BE IT RESOLVED BY THE COUNTY COUNCIL OF TALBOT COUNTY, MARYLAND, that the Talbot County Stormwater Management Process & Implementation Guide attached hereto, which is incorporated by reference herein, shall be and is hereby adopted.

SECTION TWO: BE IT FURTHER RESOLVED, that this Resolution shall become effective upon adoption.

Introduced, read first time.

By order, _____, Secretary

ADOPTED

By the Council, _____

Certified _____, Secretary

PUBLIC HEARING

Having been posted and Notice of time and place of hearing and Title of Resolution No. _____ having been published, a public hearing was held on _____ at _____ p.m. in the Bradley Meeting Room, South Wing, Talbot County Courthouse, 11 North Washington Street, Easton, Maryland 21601.

BY THE COUNCIL

ENACTED: _____

By Order

Secretary

Bartlett -
Hollis -
Pack -
Price -
Duncan -



Talbot County Stormwater Management Process & Implementation Guide

October 31, 2011

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1.0 General

1.1 General Objectives

This Talbot County Stormwater Management Process & Implementation Guide, "Guide," is a companion to the Talbot County Stormwater Management Ordinance, which requires Environmental Site Design (ESD) as mandated by the State of Maryland's *Stormwater Management Act of 2007*. The purpose of this Guide is to provide guidance on the use and selection of stormwater best management practices to achieve the strategy of "environmental site design to the maximum extent practicable."

The Guide also outlines review and approval processes for development projects in the unincorporated areas of Talbot County. These include opportunities for community review and input, depending on project size or type, at the discretion of the County Engineer.

1.2 Amendment Procedure

The County Council may amend this Guide by resolution.

1.3 Authority for Interpreting the Guide

The County Engineer or the County Engineer's representative shall have final decision making authority over the interpretation and application of this Guide.

1.4 Interpretation of this Guide

This Guide should be construed consistent with the County's Stormwater Management Ordinance (the "Ordinance"). Terms used in this Guide shall have the meaning set forth in the Ordinance.

28 **2.0 Environmental Site Design (ESD) Selection**

29

30 **2.1 General Objectives**

31 Development in the unincorporated areas of Talbot County (outside of towns or
32 municipalities) must be consistent with State and County stormwater management
33 requirements. Specifically, these requirements are the Talbot County Stormwater
34 Management Ordinance and the *2000 Maryland Stormwater Design Manual* (Design
35 Manual). The Design Manual is incorporated into the Talbot County Code by reference.
36 The Design manual has been adopted by the State of Maryland, Department of the
37 Environment, Water Management Administration. This Design Manual has been
38 recently revised for consistency with State legislation entitled, "Stormwater Management
39 Act of 2007." This revision requires "environmental site design to the maximum extent
40 practicable," or "ESD to the MEP."

41

42 The Design Manual includes a palette of environmental site design (ESD) practices that
43 must be used to the maximum extent practicable before traditional structural best
44 management practices, such as centralized ponds, can be considered for a development
45 project. Some of these ESD practices may be less desirable than others, depending on
46 individual site characteristics, such as development type, site size, soil type, water table,
47 drainage patterns, etc. Site characteristics may render certain ESD practices less likely
48 to function as intended or generate maintenance problems even if generally allowed by
49 the Design Manual or County Code.

50

51 This section 2.0 details typical uses for the ESD techniques itemized in the Design
52 Manual and Talbot County Stormwater Management Ordinance.

53

54 **2.2 Residential Development**

55 Residential development can include a broad spectrum of development types, sizes, and
56 quantities including large and small lot sizes, quantity of new lots and existing lots of
57 record. To facilitate decisions on appropriate ESD techniques, this Guide categorizes
58 residential development into large lot, small lot, and existing single residential lot
59 development.

60

61 **2.2.1 Large Lot Residential Subdivision**

62 "Large Lot Residential Subdivision" means any proposed subdivision of a lot or lots
63 greater than or equal to 2.0 acres.

64

65 ESD to the MEP is typically easiest to achieve on Large Lot Residential Subdivisions.
66 Nonstructural Practices such as Disconnection of Rooftop, Disconnection Non-Rooftop
67 Runoff, and Sheetflow to Conservation Areas will typically address most stormwater
68 management requirements. Implementing nonstructural practices minimizes
69 maintenance requirements for the property owner or community, and on-site inspection
70 by the County. Some of the other ESD practices available in the Design Manual are not
71 encouraged on these lots due to concerns for maintenance by the homeowner and
72 inspection access by the County.

73

74 **2.2.2 Small Lot Residential Subdivision**

75 "Small Lot Residential Subdivision" means any proposed subdivision of a lot or lots less
76 than 2.0 acres.

Due to space limitations of smaller lots, achieving ESD to the MEP requires stormwater management planning, design and implementation at the time of subdivision (lot creation). These space limitations usually require stormwater management facilities that treat runoff for the community, not necessarily just for each individual lot. ESD measures must be located on community owned open space, or, if approved by the County Engineer, located on well defined easement areas of the lots. The location of these facilities must provide convenient access for maintenance and inspection, must be readily identifiable and permanently marked or delineated, or must provide a physical barrier from encroachment by the lot owners and shall be described on the subdivision plat.

All stormwater management systems must have a maintenance and inspection agreement recorded among the County land records and referenced on the subdivision plat. It shall define access, maintenance, ownership, and financial obligations that run with and bind all lots in the subdivision, regardless of the location of the stormwater management system.

2.2.3 Existing Single Residential Lot

An "Existing Single Residential Lot" means an existing lot recorded in the Talbot County Land Records prior to May 4, 2010, or one that has received an administrative waiver from the County Engineer pursuant to § 164-1.3 B of the Stormwater Management Ordinance. These lots may be required to address stormwater management, dependent on the time of lot creation based on the recorded subdivision/revision plat or recorded agreements, covenants or deed.

2.3 Non-Residential Site Plans

For the purposes of this Guide Non-Residential Site Plans include industrial, institutional, commercial, or other non-residential development. The full palette of ESD stormwater practices is usually available for these site plans provided they meet design requirements of the Design Manual.

2.4.0 ESD Practices

This section details which ESD practices are encouraged based upon the type of development. If a design is to achieve ESD to the MEP, theoretically, all ESD practices must be exhausted before proposing a structural BMP. This Guide represents the County's general perspective on feasibility of different ESD practices based upon type of development.

In this Guide, when an ESD measure is "*encouraged*", it means that typically, the ESD measure should be one of the possible measures initially proposed. In this Guide, when an ESD measure is "*not encouraged*," it means that the ESD measure should not be part of the initial proposal to meet ESD to the MEP. Such an ESD measure may be viable to achieve ESD to the MEP on a specific project, but should only be pursued after efforts to use encouraged ESD practices have been exhausted. Prior to using ESD practices that are not encouraged, the designer should seek guidance from the County Engineer, or authorized designee, to evaluate feasibility of the practice, or specific County requirements for the practice. Only after all feasible ESD measures, to meet the minimum requirements of ESD to the MEP, have been pursued and exhausted, will a structural BMP be eligible for consideration.

Table 1, "Table of ESD Measure Use," generally summarizes the availability of ESD practices for different sizes and types of development.

Any ESD measure may be proposed for any development types as *additional* stormwater treatment greater than that required by the Ordinance. Such measures do not require County inspection or maintenance. For example, a Green Roof is not encouraged on private residential lots in proposed subdivisions to meet the minimum requirements for ESD to the MEP. However, Green Roofs may be constructed to provide additional stormwater treatment greater than required by the Ordinance.

2.4.1 Alternate Surfaces

A-1 Green Roofs

Green roofs *are generally encouraged* on structures in Non-Residential development. These areas are typically accessible to the public allowing adequate access for County inspection and enforcement throughout the design life.

Green roofs *are not encouraged* on private residential property due to the extensive maintenance requirements by the homeowner for these facilities and access required for inspection by the County.

A-2 Permeable Pavements

Permeable Pavements *are generally encouraged* for improvements in Residential Community Open Space or Non-Residential development. These areas are typically accessible to the public allowing adequate access for County inspection and enforcement throughout the design life.

Permeable Pavements *are not encouraged* on private residential property in new residential subdivisions due to the extensive maintenance required by the homeowner, the high probability of conversion to impervious cover, and lack of access required for inspection by the County.

Permeable interlocking concrete pavements, a type of permeable pavement, *are generally encouraged* on Existing Single Residential Lots.

A-3 Reinforced Turf

Reinforced Turf *is encouraged* on Commercial, Industrial, or Institutional sites. Use of reinforced turf is allowed only for emergency vehicle access roads and occasional-use parking areas.

Reinforced Turf *is not encouraged* for the main driveway or main access to single family homes due to maintenance associated with frequent use.

2.4.2 Nonstructural Practices

N-1 Disconnection of Rooftop Runoff

Disconnection of Rooftop Runoff *is encouraged* for all types of development.

N-2 Disconnection of Non-Rooftop Runoff

Disconnection of Non-Rooftop Runoff *is encouraged* for all types of development.

N-3 Sheetflow to Conservation Areas

Sheetflow to Conservation Areas *is encouraged* for all types of development.

2.4.3 Micro-Scale Practices

M-1 Rainwater Harvesting

Rainwater Harvesting *is generally encouraged* on Non-Residential projects only. These areas have public access and allow adequate access for County inspection and enforcement throughout the design life.

Rainwater Harvesting *is not encouraged* on residential lots due to the number of individual facilities required, the maintenance required by the homeowner, and access required for inspection by the County.

Larger cisterns connected to an irrigation system are preferable to smaller Rain Barrels, which are subject to elimination and/or neglect by homeowners.

M-2 Submerged Gravel Wetlands

Submerged Gravel Wetlands *are encouraged* in Residential Community Open Space and Non-Residential projects.

Submerged Gravel Wetlands are not encouraged on residential lots due to the inspection and maintenance required by the homeowner, and access required for inspection by the County.

M-3 Landscape Infiltration

Landscape Infiltration *is encouraged* in Residential Community Open Space and Non-Residential projects.

Landscape Infiltration *is not encouraged* on residential lots due to the inspection and maintenance required by the homeowner, and access required for inspection by the County.

To address site constraints of Existing Single Residential Lots that are not part of a proposed subdivision, Landscape Infiltration may be considered on a case-by-case basis.

M-4 Infiltration Berms

Infiltration Berms *are encouraged* in Residential Community Open Space and Non-Residential projects.

Infiltration Berms *are not encouraged* on residential lots because of the large area required for treatment, the potential for changes by the homeowner to eliminate areas of ponding water and access required for inspection by the County.

M-5 Dry Wells

Dry Wells *are not encouraged* for any type of development. Dry wells are problematic as seasonal high water tables are typically close to the ground surface.

M-6 Micro-Bioretenction

Micro-Bioretenction *is encouraged* in Residential Community Open Space and Non-Residential projects.

Micro-Bioretenction *is not encouraged* on residential lots due to inspection and the maintenance required by the homeowner, and access required for inspection by the County.

M-7 Rain Gardens

Rain Gardens *are encouraged* in Residential Community Open Space and Non-Residential projects.

Rain Gardens *are not encouraged* on residential lots due to the inspection and the maintenance required by the homeowner, potential removal by the homeowner, and access required for inspection by the County.

To address site constraints of Existing Single Residential Lots that are not part of a proposed subdivision, Rain Gardens may be considered on a case-by-case basis.

M-8 Swales

Swales include Grass Swales, Wet Swales, and Bio-Swales.

Grass Swales

Grass Swales *are encouraged* for linear applications, such as along a road or driveway, on all types of development.

Wet Swales

Wet Swales *are encouraged* in Residential Community Open Space, and Non-Residential projects.

Wet Swales *are not encouraged* in public road right of ways due to the maintenance required of the County.

Wet Swales *are not encouraged* on residential lots because of the potential for changes by the homeowner to eliminate areas of standing water and access required for inspection by the County.

Bio-Swales

Bio-Swales *are encouraged* in Residential Community Open Space and Non-Residential projects.

Bio-Swales *are not encouraged* in public road right-of-ways due to the maintenance required of the County.

280 **Bio-Swales** *are not encouraged* on individual private residential
281 properties due to inspection and maintenance required of the
282 homeowner, and access required for inspection by the County.
283

284 **M-9 Enhanced Filters**

285 **Enhanced Filters** *are encouraged* in Residential Community Open Space
286 and Non-Residential projects.
287

288 **Enhanced Filters** *are not encouraged* on residential lots due to the
289 inspection and maintenance required of the homeowner, and access
290 required for inspection by the County.

Talbot County Stormwater Management Process & Implementation Guide

TABLE 1 - TABLE OF ESD MEASURE USE

- Key:**
- 1 ⇨ Primary ESD Practice
 - 2 ⇨ Secondary ESD practice
 - 3 ⇨ Tertiary ESD practice (consult with County Engineer or his designee before use)

ESD Measure	New Residential Subdivisions***				Existing Single Residential Lot ***	Non Residential
	Large Lot	Small Lot	Community Space**	Road ROW		
A-1 Green Roofs	3	3	3	3	3	2
A-2 Permeable Pavements	3	3	2	3	2	2
A-3 Reinforced Turf	2	2	1	3	2	1
N-1 Disconnection of Rooftop Runoff	1	1	1	N/A	1	1
N-2 Disconnection of Non-Rooftop Runoff	1	1	1	1	1	1
N-3 Sheetflow to Conservation Areas	1	1	1	1	1	1
M-1 Rainwater Harvesting	3	3	3	3	3	2
M-2 Submerged Gravel Wetlands	3	2*	1	3	3	1
M-3 Landscape Infiltration	3	3	1	3	2	1
M-4 Infiltration Berms	3	3	1	3	3	1
M-5 Dry Wells	3	3	3	3	3	3
M-6 Micro-Bioretenion	3	2*	1	3	3	1
M-7 Rain Gardens	3	2*	1	3	2	1
M-8 Swales						
Grass Swales	1	1	1	1	1	1
Wet Swales	3	3	2	2 (Private Rd.)	3	1
Bio-Swales	3	2*	1	2 (Private Rd.)	3	1
M-9 Enhanced Filters	3	2*	1	3	3	1

Note:

The County Engineer, or his designee, has the final decision on the interpretation and the application of these Guidelines.

* These ESD practices may be allowed on individual lots due to space limitations, provided they are contained within adequate easements, are under the control of a community association and readily accessible from a road for inspection by County officials.

** Including stormwater management facilities and community amenities (active and passive). Easements on individual lots, under control of a community association, may be considered community space, if allowed by the County Engineer.

*** New residential subdivisions are those lots created on or after May 4, 2010. Existing Single Residential Lots are those lots created prior to this date.

3.0 Maintenance & Inspection

3.1 General Objectives

The owners of stormwater management systems must maintain them to ensure that they function as originally designed to treat and manage stormwater runoff. In most cases multi-lot developments will have a homeowners or community association for the purpose of maintaining stormwater management facilities. The homeowners or community association and the property owner (collectively the "Association") shall be jointly and severally responsible for maintenance and inspection of all stormwater management systems in the subdivision, regardless of title or ownership of the system.

A maintenance and inspection agreement recorded in the County Land Records shall be required for stormwater management systems unless waived by the County Engineer.

3.2 Inspection

The Association shall perform regular inspections of the stormwater management system after each rainstorm and monthly, annually, etc.; as required by the Design Manual and the Ordinance. These routine inspections are important so that minor deficiencies may be identified and addressed before significant failures occur. Additionally, the County will inspect these systems at intervals typically of one to three years. The County shall charge a reasonable fee for such inspections, which may include the cost of a third party inspection.

3.3 Maintenance

The Association is responsible for stormwater management system maintenance. This includes routine or minor maintenance, as well as any major rehabilitation or reconstruction necessary. Maintenance work must be performed promptly to ensure that the stormwater system continues to function as designed. In the event that the Association does not perform required maintenance, the County will have it performed at the Association's expense.

4.0 Stormwater Quantity Control

4.1 General Objectives

If target ESD volumes are met, State law does not require additional runoff quantity control. Nevertheless, the County Engineer may require "2-year" and "10-year" design frequency storm event quantity control when historical flooding problems exist, or are reasonably anticipated.

4.2 Design

When additional quantity control is required, it can be managed within ESD systems, provided the design complies with all design standards in the Design Manual. For the purpose of additional quantity control, the County Engineer may allow the design model (stormwater management analysis) to replicate actual existing conditions, rather than "meadow," as stipulated in the Design Manual. Such analysis would be for the additional runoff quantity control only.

4.3 Quantity Control and Structural BMPs

When quantity control is required and a structural BMP is necessary, ESD to the MEP still must be achieved. The developed site still must mimic existing drainage patterns of the undeveloped site, particularly with respect to individual drainage patterns leaving the site. Centralized stormwater management facilities that significantly modify runoff patterns leaving the site or that are inconsistent with ESD principals are not permitted.

5.0 Review & Approval Process

5.1 General Objectives

In accordance with the State's *Stormwater Management Act of 2007*, the County's Ordinance requires a phased approach for review and approval of proposed stormwater management plans. These phases, or milestones, are Concept Plan, Site Development Plan and Final Plan. Although this review and approval process for stormwater management is separate from the development review process through the Planning Office, the two approval tracks are interrelated. This relationship is represented in Sections 5.3 and 5.4, which provide flow charts for subdivisions and site plans, respectively. The County Engineer is represented through most of the development review process administered by the Planning Office, and therefore, where possible, stormwater review will align with that process. When feasible, depending on the project type, the two review and approval processes will be related as follows:

<u>Stormwater Management</u>	<u>Planning Office</u>
Concept Plan-----	Sketch Plan
Site Development Plan -----	Preliminary Plan
Final Plan -----	Final Plan

Depending on the type, size and nature of a project, the stormwater management milestones may occur prior to, concurrent with or subsequent to the related development review milestones. Applicants/designers should contact Public Works for assistance to determine how a particular project can best be scheduled.

5.2 Stormwater Management Informational Meeting

Without advance notification, neighbors potentially affected by stormwater impacts may be unaware of a proposed project until after the design and layout are well underway. By the time these neighbors have an opportunity to express concerns or comments on drainage issues, a significant amount of time and effort will have been spent on the plan. This can be particularly troublesome on larger projects, which have a higher potential to impact neighbors. In an effort to obtain "local knowledge" and community feedback prior to significant project design, neighbors of certain projects must be afforded an opportunity for an informational meeting on a proposed project. Any such meeting will be focused only on stormwater management and drainage issues. The flow charts of Sections 5.3 and 5.4 determine those projects that require community notification and opportunity for an informational meeting. Sections 5.3 and 5.4 also give the County Engineer discretion to require informational meetings or increase the area of required notice if appropriate.

If a proposed project is required to provide an opportunity for an informational meeting, the applicant shall:

- A. Compile a complete, accurate and up-to-date list and map of adjacent and downstream property owners satisfactory to the County Engineer. The list shall include property owner mailing addresses to which the real estate tax bills are sent. Downstream properties include those properties that receive or may receive existing or proposed runoff from the proposed development or land disturbance. For the purpose of notification, downstream properties are those non-adjacent properties that contain or abut drainage paths for a distance of 500

395 feet from the development site, or as otherwise determined by the County
396 Engineer.
397

398 B. The applicant shall mail, at his or her expense, written notice to all of the adjacent
399 and downstream property owners and the County Engineer, by regular mail. The
400 notice shall contain proposed project information, including location of the
401 property, its area, name of owner, and the nature and scope of proposed site
402 improvements/modifications. The notice shall provide an opportunity to request a
403 stormwater management informational meeting by filing a written request
404 addressed to the County Engineer within 15 days from the mailing date of the
405 notice; the deadline may be extended by the County Engineer for good cause.
406 Absent any request, no meeting is necessary.
407

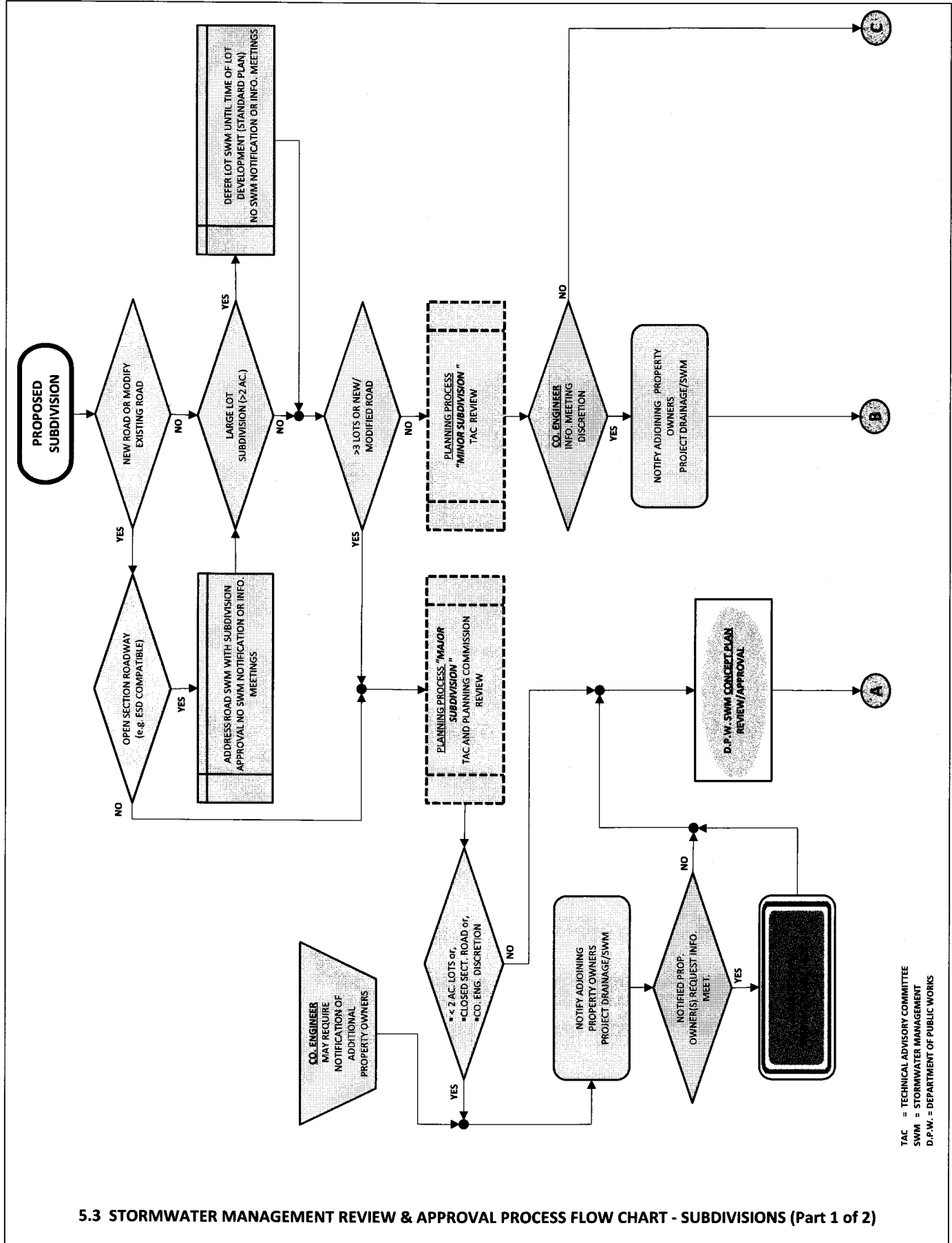
408 C. If the County receives a valid request for an informational meeting, the applicant
409 shall organize and conduct the meeting at a location and time convenient to the
410 community. Such a meeting shall be open to all interested persons.
411

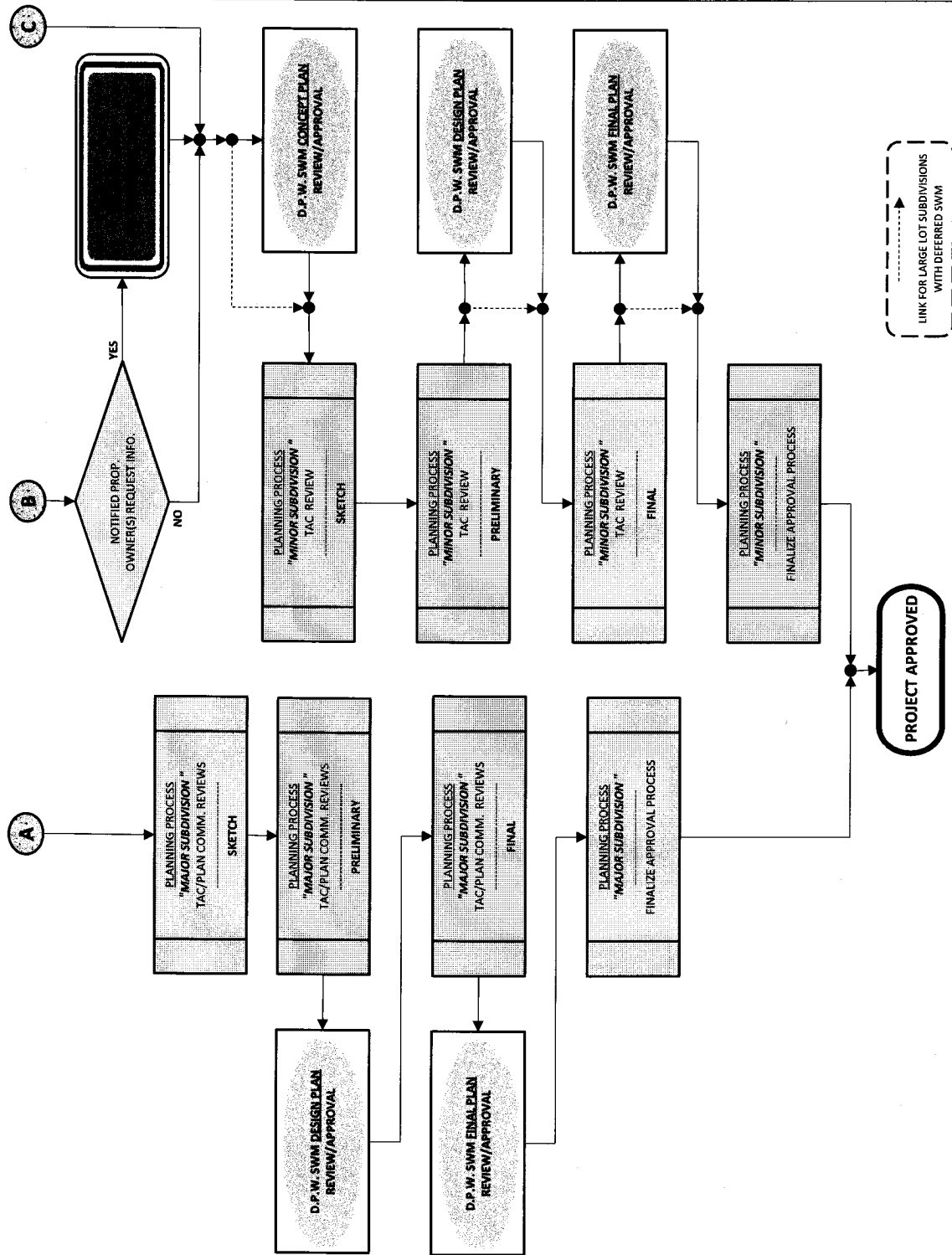
412 D. The applicant, at his or her expense, shall mail notices of the date, time and
413 place of the informational meeting to all adjacent and downstream property
414 owners (see Section A above) and the County Engineer by regular mail,
415 postmarked at least 15 days prior to the meeting. The notice shall include
416 proposed project information, such as location of the property, its area, name of
417 owner, and the nature and scope of proposed site improvements/modifications.
418

419 E. The meeting notice shall advise recipients that any concerns and/or comments
420 should be provided in writing directly to the County Engineer in order to be part of
421 the Public Works project file. This requirement shall also be announced at the
422 informational meeting.
423

424 F. Complete written minutes and an audio recording of an informational meeting
425 shall be provided by the applicant to the County Engineer, in a format acceptable
426 to the County Engineer. When no informational meeting is held, the applicant
427 shall affirm by affidavit that he has fully complied with the stormwater
428 management informational meeting procedure and that no meeting was
429 requested.
430

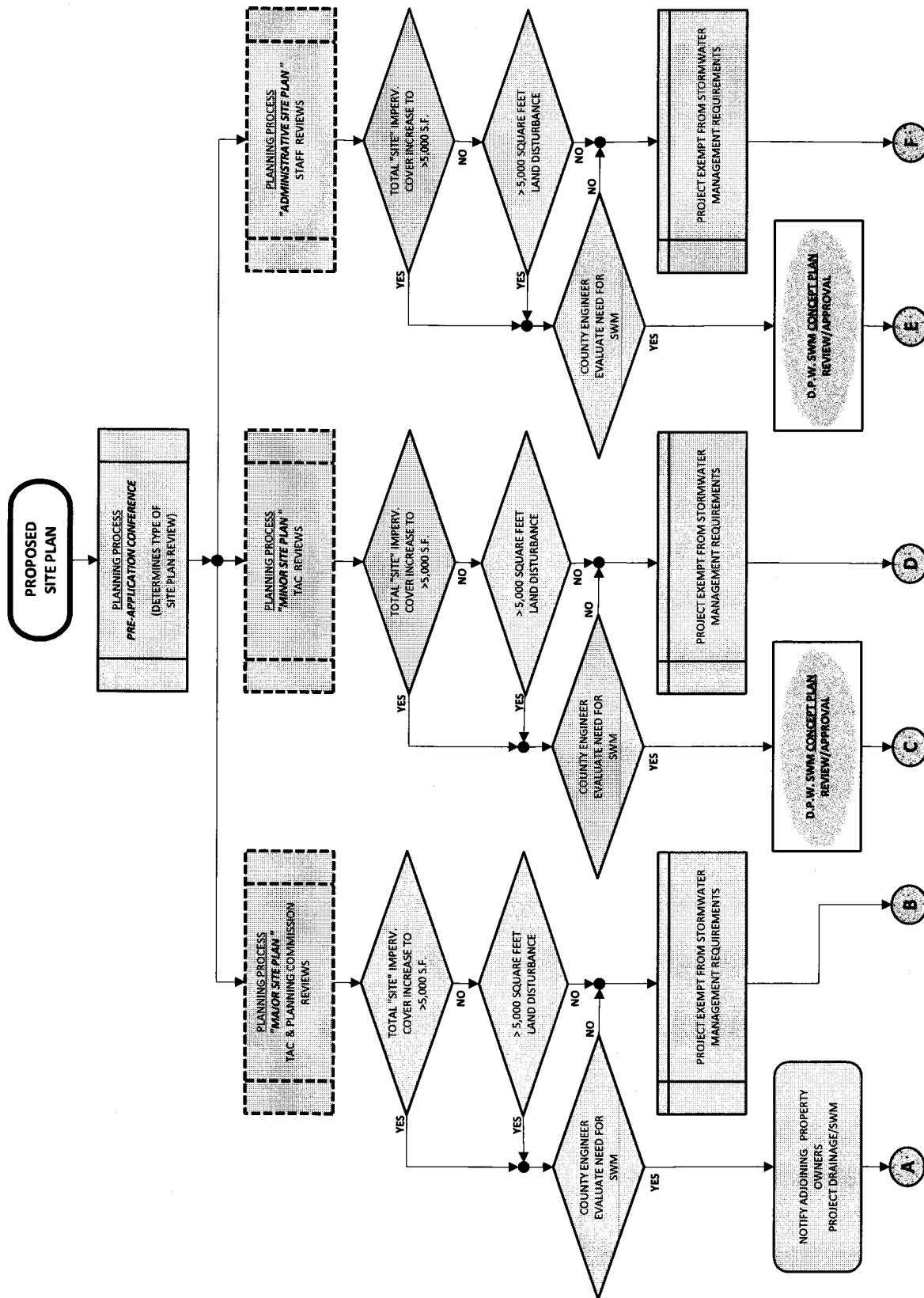
431 G. Within three (3) days of receipt of final project approval, the applicant shall send a
432 copy of the same with written notice to all interested parties of the right to file an
433 appeal to the Board of Appeals. Interested parties include all persons entitled to
434 notice of the informational meeting, and all attendees at any such meeting. The
435 applicant is responsible for the cost of this mailing and shall provide the County
436 Engineer a copy of the notice and a list of all interested party recipients, with
437 mailing addresses.



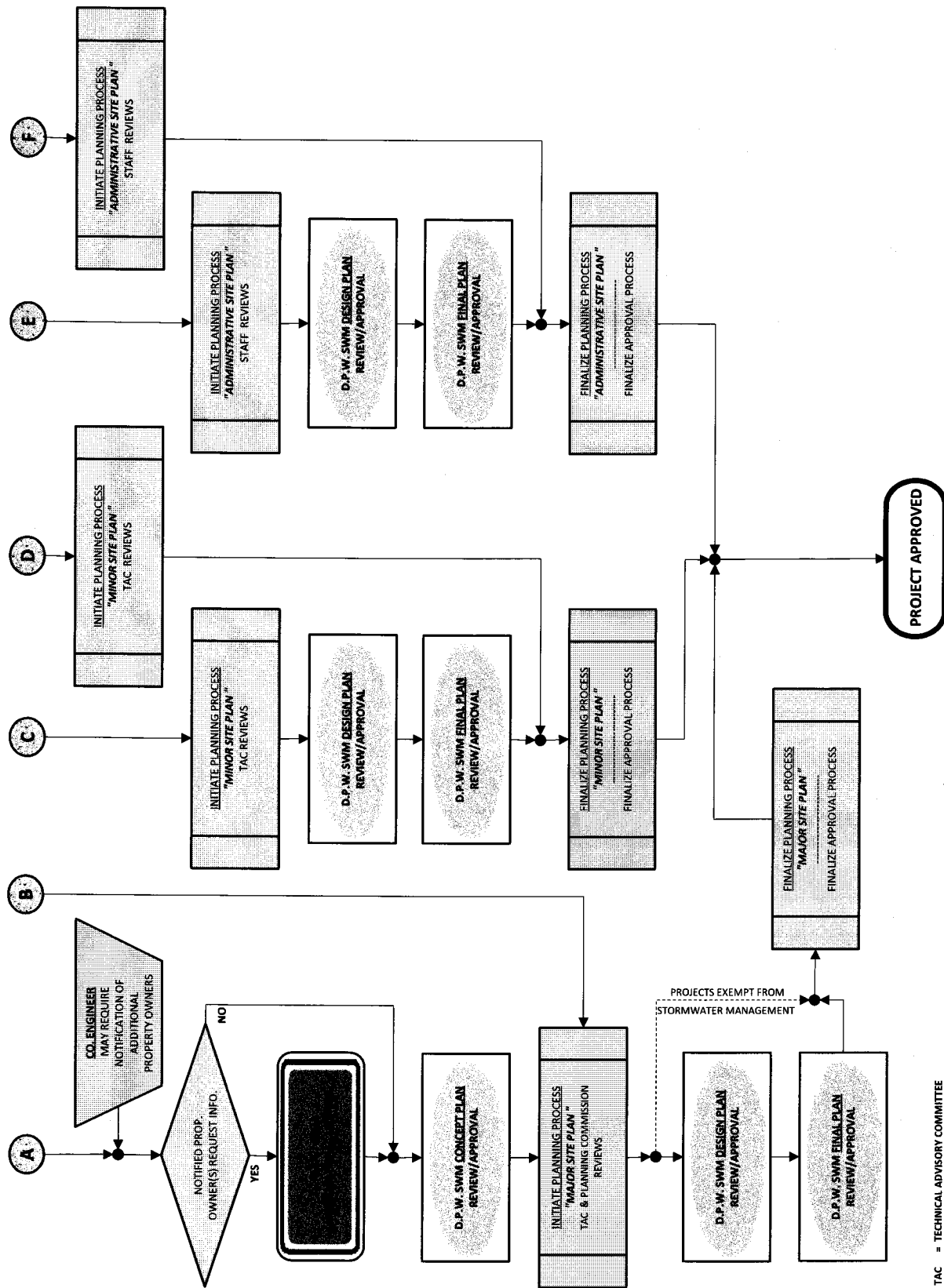


TAC = TECHNICAL ADVISORY COMMITTEE
 SWM = STORMWATER MANAGEMENT
 D.P.W. = DEPARTMENT OF PUBLIC WORKS

5.3 STORMWATER MANAGEMENT REVIEW & APPROVAL PROCESS FLOW CHART - SUBDIVISIONS (Part 2 of 2)



5.4 STORMWATER MANAGEMENT REVIEW & APPROVAL PROCESS FLOW CHART - SITE PLANS (Part 1 of 2)



5.4 STORMWATER MANAGEMENT REVIEW & APPROVAL PROCESS FLOW CHART - SITE PLANS (Part 2 of 2)

5.5 Approval

5.5.1 Design

A project receives final approval when the Planning Office issues a "Final Notice to Proceed and Administrative Decision," or equivalent. Stormwater management design for a proposed subdivision or site plan is only one of multiple elements of a project. Until the Planning Office issues a final approval, project design and layout is subject to change, or even abandonment. Therefore, final stormwater management approval does not occur until final project approval is issued by the Planning Office.

5.5.2 Construction

Construction of proposed stormwater management systems must comply with the approved design plans for the project. Final approval by the County of constructed stormwater management systems requires certification by the design engineer, as required by the County Engineer. This certification includes field inspection during construction, written inspection reports and as-built plan certification as detailed in the Stormwater Management Ordinance and the Design Manual. Unless otherwise authorized by the County Engineer, such certification shall be made by a Maryland registered professional engineer.