

APPENDIX I **STORMWATER QUALITY POLICY & PROCEDURES**

I.1 **TITLE**

This appendix is called the "El Paso County Addendum to the Colorado Springs Drainage Criteria Manual, Volume 2: Stormwater Quality Policies, Procedures and Best Management Practices (BMPs)" (DCM2) and shall be referred to throughout the text as the Addendum.

I.2 **OVERVIEW**

As part of the National Pollutant Discharge Elimination System (NPDES) – Phase II program administered in Colorado by the Colorado Department of Public Health and Environment, El Paso County has a Colorado Discharge Permit System General Permit (Permit). This Permit, made effective March 10, 2003, authorizes El Paso County to discharge stormwater associated with municipal separate storm sewers in its permitted area into waters of the State. As part of this permit, the County is required to take measures to protect the quality of stormwater from contaminants, including sediment.

The El Paso County Policy Plan, adopted January 20, 1998, includes several policies directly related to protecting the quality of surface water in the County, especially as it relates to stormwater runoff. Policy 2.1.1 commits the County to meeting the requirements of the Clean Water Act.

Directly related to the NPDES programs are:

- Policy 3.3.4 – Implement appropriate measures to protect and/or mitigate effects of point and non-point sources of pollution to surface water,
- Policy 3.3.5 – Regulate or restrict uses that are proven to contribute to contamination of water supplies,
- Policy 3.3.6 – Evaluate the consequences to surface water from new development including run off of natural soils, as well as chemical compounds that may result from the proposed uses,
- Policy 11.1.4 – Require development plans to effectively address both quantitative and qualitative impacts of drainage within the project site,
- Policy 11.3.3 – Fully evaluate the relative impact of proposed drainage improvements on the maintenance of water quality,
- Policy 11.3.4 – Promote the effective use of innovative short and long term strategies including sediment ponds, buffer strips, and constructed wetlands as a means of reducing peak flows and improving stormwater quality, and
- Policy 11.3.6 – Encourage the effective use of control measures to mitigate the short and long term erosion impacts of development.

The following Addendum, when combined with the City of Colorado Springs Drainage Criteria Manual Volume 2: Stormwater Quality Policies, Procedures and Best Management Practices, El Paso County Policy Plan, El Paso County Land Development Code, El Paso County Engineering Criteria Manual, and their successors, forms the basis for protecting surface water quality in the County by reducing exposure of stormwater runoff to contaminants.

Nothing contained herein relieves any person, corporation, firm or entity from the obligation to comply with any applicable state or federal laws or regulations relating to water quality or water quality standards or any other standards related to land disturbance activities.

I.3 ADOPTION OF DRAINAGE CRITERIA MANUAL VOLUME 2 BY EL PASO COUNTY

In November of 2002, the City of Colorado Springs adopted Drainage Criteria Manual Volume 2: Stormwater Quality Policies, Procedures and Best Management Practices (BMPs). The goal of this document is to provide guidance and engineering criteria for water quality protection measures during construction and for permanent installations.

DCM2 is adopted as the County’s stormwater quality design criteria with this Addendum that provides additions and revisions as applicable to the County in order to expand its scope to cover rural areas and other situations specific to the County. The goal has been to maintain consistency between criteria used in the County and the City of Colorado Springs.

To clarify applicability, “El Paso County” will be substituted for “City of Colorado Springs” or a County department or position analogous to one in the City will be used where appropriate unless otherwise specified in this Addendum. Table I-1 summarizes the most common or typical substitutions that shall be used in applying and interpreting DCM2. An example of a section where substitution would not be appropriate is the discussion of Colorado Springs’ stormwater discharge permit in Section 2.3 which is different in history and requirements from that of the County.

Table I-1. General Substitutions

Text in DCM2	Substitution in DCM2 as Applied in El Paso County
City of Colorado Springs	El Paso County
City	County
City Engineer	County Engineer
City Engineering Inspector	County Inspector
City Inspections	County Inspections
Erosion and Stormwater Quality Control Plan	Stormwater Management Plan
Other Changes	
Hillside Overlay	Remove references to “Hillside Overlay”

I.4 EL PASO COUNTY EROSION AND STORMWATER QUALITY CONTROL PERMITS

[Follows DCM2 Section 3.1]

I.4.1 Erosion and Stormwater Quality Control Permit

An Erosion and Stormwater Quality Control Permit (ESQCP) will be required for construction activities that result in a land disturbance of greater than or equal to one acre. An ESQCP is required for construction activity of less than one acre if the activity is part of a large common plan of development or sale that would disturb one acre or more. Measures to protect water quality are to be implemented when needed, even if a permit is not required. The ESQCP is a key part of protecting water quality in the County and provides for detailed and specific Best Management Practices (BMPs) during construction through final stabilization.

Builders of single family residences or duplexes may follow a simplified procedure by obtaining a Builder's Erosion and Stormwater Quality Control Permit (BESQCP) for each lot and structure with a separate address. The procedure is described following the ESQCP section. A builder who qualifies for a BESQCP may obtain an ESQCP for multiple lots in an area previously covered by an ESQCP, if he/she prefers. However, all requirements for an ESQCP must be met.

I.4.2 Application

Applications for an ESQCP shall include a completed permit application form and any required attachments reasonably necessary to review and evaluate the application or complete the permit. Generally, an application for an ESQCP shall be accompanied by the following:

A. Stormwater Management Plan (SWMP)

SWMP to be submitted as part of the plan set for the Development Review process. A separate SWMP document may be submitted with the plan set. A notation referencing a separate document must appear in the plan set.

B. Permit Fee

Permit fee as determined by the ECM Administrator. If the Stormwater Management Plan (SWMP) is reviewed as part of the Plan Review process, the ESQCP fee is included in the fee for Plan Review. The permit fee shall be in a form acceptable to the ECM Administrator.

C. Financial Surety

Financial surety equal to the estimated cost of the construction Best Management Practices as described in the SWMP plus 20 percent shall be required with each ESQCP application. The financial surety shall be in a form acceptable to the ECM Administrator.

D. Statement of Certification

Signed statement from owner (applicant) certifying that the SWMP and other terms of the permit will be met.

E. Operation and Maintenance Plan

Submitted and approved Operation and Maintenance Manual for Permanent BMPs, if any to be located on site.

F. Maintenance Agreement

Submitted and signed Private Stormwater Quality Structural Best Management Practice Agreement and Easement, if any to be located on site.

G. Application Information

- Property location and legal description
- Owner Name and Contact Information
- Contractor Name and Contact Information

- Project-related information such as: total acres, disturbed acres, brief description of project, and project schedule
- Erosion and Stormwater Quality Control Measures being proposed
- Cost Estimates of Construction and Maintenance of Control Measures for Determination of Financial Surety

Because each permit and site is different with respect to the scope of work and location, additional requirements may be added to address specific concerns relative to the proposed work. Attached to each approved permit will be a list of Special Provisions, if any, which shall govern the work and set forth minimum requirements for disturbing land in the County.

I.4.3 Permit Holder Responsibilities

The permit holder shall be responsible for the work authorized under the permit. Should there be any defects or failures in the work that result in erosion or sediment releases, following preliminary acceptance, corrective work shall be performed immediately upon notification from the County Stormwater Staff or County Subdivision Inspector. Failure to respond in a reasonable time frame, as determined by the County Stormwater Staff, shall be just cause for the County Stormwater Staff to take the necessary action to have the defect corrected and to bill the permit holder or draw on the financial assurance for the cost to correct the defect.

The permit holder is responsible for subcontractors and others at the site meeting the provisions of the SWMP.

I.4.4 Transfer of Property and Permit Holder Responsibilities

Each successive owner of a property through the land development and building process will obtain its own ESQCP and submit its own permit fees and financial surety until final stabilization is achieved. The new owner of a property that is under an open ESQCP must immediately obtain its own ESQCP. The SWMP from the previous owner may be used, if the previous owner agrees, it covers the phases of work planned by the new owner and it remains relevant to the work to be done. If the new owner will be building single-family residences or duplexes, it may qualify for a BESQCP. The BESQCP is to be obtained immediately following purchase.

If only part of the property is transferred to a new owner, the responsibility for erosion and stormwater quality control on the retained property will remain with the current owner. Following the transfer and issuance of an ESQCP (or BESQCP as described below), the original owner may receive a partial release of the financial assurance proportional to the BMPs on the part of the property that was sold.

In situations where a BMP that provides protection for property that has been sold is located on the property that belongs to the original or other owner, the responsibility for the BMP rests with the owner of the property where it is located.

I.4.5 Builder's Erosion and Stormwater Quality Control Permit

A BESQCP covers stormwater protection on individual building lots or small blocks of building lots. A property must be covered by either an ESQCP or a BESQCP in order to obtain a building permit. If the lot has been disturbed previously by construction work but has been completely restabilized and any ESQCP on the property has been closed, the lot may be considered undisturbed.

A builder that has acquired property that has been covered by an ESQCP that has not been stabilized nor the ESQCP closed will obtain a new ESQCP to cover the active and future building sites, or if the builder meets the criteria for a BESQCP, it may obtain a BESQCP.

A. Application

Applications for a BESQCP shall include a completed permit application form and any required attachments reasonably necessary to review and evaluate the application or complete the permit, a signed statement from the owner (applicant) certifying the terms of the permit will be met, and a permit fee. Financial surety or a SWMP are not required for a BESQCP. However, a site covered by a BESQCP is required to meet stormwater quality protection criteria of preventing pollutants, including sediment, from leaving the site. If a BESQCP is revoked, the applicant will obtain an ESQCP, including the submission of a SWMP and payment of permit fee and financial surety.

Table I-2 provides guidance on which permit is to be obtained for various situations.

Table I-2. ESQCP and BESQCP Permit Guidance

ESQCP	BESQCP	Description
For Developers		
X		Disturbs >= 1 acre
X		Disturbs < 1 acre, but part of larger project that disturbs >= 1 acre
New		Acquires disturbed land previously covered by an ESQCP unless meets criteria for BESQCP
For Builders		
None	None	Single family residence or duplex building site disturbs < 1 acre and has not been part of larger project and is not in a sensitive area.
	X	Single family residence or duplex building site that has < 1 acre of disturbed area and the site has been covered by ESQCP in past and is not in sensitive area.
X		Single family residence or duplex building site that has < 1 acre of disturbed area and the site has been covered by ESQCP in past and is in sensitive area.
X		Single family residence or duplex building site that disturbs >= 1 acre that has not previously been covered by an ESQCP.
X		Permit applications for commercial or multi-family buildings other than duplexes.

B. Permit Holder Responsibilities

The builder is responsible for subcontractors and others at the site meeting the provisions of the BESQCP.

I.5 EL PASO COUNTY CONSTRUCTION SITE INSPECTIONS

[Replaces DCM2 Section 3.4]

Inspections of construction sites are conducted by the County Inspectors (Stormwater and Subdivision) to ensure compliance with the Construction Permit.

At a minimum, a SWMP and an ESQCP or a BESQCP will be required when 1 acre or more of land will be disturbed. A SWMP may be required for other specific minor land disturbing activities if deemed necessary by the ECM Administrator.

The focus of construction site inspections is to ensure grading is in compliance with the approved plans and that BMPs are installed and maintained properly to prevent site runoff, erosion, sediment, spillage and leakage, improper sludge or waste disposal, and drainage from raw material storage from leaving the site creating public safety, property or stormwater quality impacts. Inspections also serve as a means of educating owners/owners' representatives, developers, and contractors of the need to minimize the stormwater quality impacts from site operations and to assist in complying with the requirements of the County's Stormwater Program. County Stormwater Inspectors and Staff will work with and assist the owner/owner's representative and contractor to maintain compliance with its grading and erosion and stormwater

quality control requirements. The inspection procedures listed below provide a means of achieving this.

1.5.1 County Engineering and Subdivision Inspections

County Engineering Inspections shall be accomplished by County Stormwater Inspectors for the purpose of assuring compliance with the County's Colorado Discharge Permit System General Permit for Stormwater Discharges Associated with Municipal Separate Storm Sewer Systems (MS4s). These inspection types will include Reconnaissance, Complaint Response, Follow-up, Preliminary Acceptance and Final Acceptance. These inspections are not limited to new development but include any other land-disturbing activities except agriculture and mineral extraction in unincorporated areas of the County.

County Subdivision Inspections of installed BMPs shall be accomplished by County Subdivision Inspectors. The types of inspections that County Subdivision Inspectors will perform are the Initial, Compliance, Follow-up, Preliminary Acceptance and Final Acceptance Inspections.

1.5.2 Types of Inspections

The following are inspections that may be performed at the construction sites within the unincorporated areas of the County. Not all inspection types will be performed at all sites.

A. Self-Monitoring Inspections

The permit holder or authorized agent will conduct Self-Monitoring Inspections. The purpose of these Self-Monitoring Inspections is to ensure that all BMPs are installed according to approved plans and that the BMPs are being properly maintained. The person performing the inspections must be a registered professional engineer in Colorado, a certified erosion control specialist, or certified in a County-approved inspection training program within 12 months of County adoption of these BMP requirements. Attendance at a training program is recommended for all self-inspectors. The Self-Monitoring Inspections are to be performed and documented at least every two weeks. In addition to the bi-weekly inspections, the owner or his representative shall perform inspections of all BMPs after significant precipitation events to insure that the BMPs have operated as designed, to determine if maintenance is needed, and to locate and clean up any areas where materials have run off the site. The owner or his representative will record the results of all bi-weekly inspections and inspections after a significant precipitation event by completing a copy of the Field Inspection Report or similar inspection checklist. Completed inspection reports will be kept on site and available to County Inspectors (Stormwater and Subdivision). Self-Monitoring Inspections will be required on all construction sites, even if an ESQCP or BESQCP is not required. The County may require the submission of these inspection reports on a site-specific basis.

The owner or his representative will keep records of the BMPs as they are installed or removed according to the SWMP and revisions made to the SWMP.

A map showing the current status and changes to the BMPs is strongly recommended.

B. Initial Inspections for Sites Covered by ESQCPs

Initial inspections are to confirm that the SWMP is being implemented. The Initial Inspection must be scheduled at least 48 hours in advance. At the time of the Initial Inspection, the Initial BMPs will have been implemented according to the SWMP. No other land disturbing activity will occur prior to the Initial Inspection. This inspection also serves to establish contact between Inspectors and the site personnel responsible for implementing the approved plans. This is especially important for those sites that have a long construction period or the potential to have a significant impact. These inspections are documented on the Field Inspection Report. Following a satisfactory Initial Inspection and obtaining an ESQCP and other required permits and documentation, a Notice to Proceed will be issued during the Preconstruction Conference. Failure to obtain an ESQCP, install initial BMPs, pass an Initial Inspection, and obtain a Notice to Proceed prior to beginning land disturbing activities will result in an immediate Stop Work Order. Initial Inspections and Notices to Proceed are not required for sites with BESQCPs.

C. Compliance Inspections

Compliance Inspections are routine inspections conducted to ensure that the BMPs are implemented according to approved plans and are receiving proper maintenance. The County Inspectors (Stormwater and Subdivision) not only verify that the BMPs are functioning according to design and only allowable discharges are occurring, but also that the required documentation of activities is occurring. The County Inspectors (Stormwater and Subdivision) will examine the bi-weekly inspection reports to make sure the owner or his representative is performing the inspections as required and to compare actual conditions to those stated on the checklist. Compliance Inspections may also occur during or immediately after a precipitation event. Routine Compliance Inspections are only conducted for sites that require an ESQCP. The County uses the Field Inspection Report to document these Compliance Inspections.

D. Reconnaissance Inspections

Reconnaissance Inspections do not occur on a routine basis and are conducted for the general purpose of determining conditions at the site, particularly if the site has contributed sediment to drainageways or other drainage facilities, or if material has run off the site. These Reconnaissance Inspections are generally performed from off-site on adjacent streets or property, and may occur during or immediately after a significant precipitation event. This type of inspection is normally aimed at potential problem sites or sites that typically do not require an ESQCP. The results of a Reconnaissance inspection could require a site that previously was not required to develop a SWMP to develop and implement one.

The Reconnaissance Inspection will be documented using the Field Inspection Report.

E. Complaint Response Inspections

These Compliant Response Inspections will occur in response to either a citizen complaint or a complaint from another County agency. The County Inspectors (Stormwater and Subdivision) will inform the permit holder or authorized agent of the complaint, determine the validity of the complaint, and if necessary, advise on the necessary repair, maintenance or cleanup. The County Inspectors (Stormwater and Subdivision) may also require the implementation of specific measures or additional BMPs to prevent the recurrence of the problems that gave rise to the complaint. All construction sites are subject to complaint response inspections. The Complaint Response Inspection will be documented using the Field Inspection Report.

F. Follow-up Inspections

Follow-up Inspections are conducted to ensure that measures or requirements from a previous inspection have been performed or complied with. These requirements may involve the cleanup of a discharge, implementing additional or revised BMPs, repairing, re-installing, or maintaining damaged or non-functioning BMPs. All construction sites are subject to Follow-up Inspections. The Follow-up Inspection will be documented using the Field Inspection Report.

Reconnaissance, Complaint and Follow-up Inspections will be used for construction sites with BESQCPs.

G. Preliminary Acceptance Inspections

Preliminary Acceptance Inspections will focus on overall compliance with the SWMP, whether the following actions have occurred, and if sediment from erosion is leaving the site or entering into drainageways or other drainage facilities. Preliminary Acceptance Inspections must be scheduled at least 48 hours in advance.

Preliminary Acceptance Inspections shall be conducted for those sites that are required to have an ESQCP. The Preliminary Acceptance Inspections will be documented using the Field Inspection Report and the items listed below.

1. All grading is in compliance with the approved Construction Plans and all stabilization, except final vegetation, such as retaining walls and other approved measures is completed.
2. The vegetation for final stabilization is planted and maintenance necessary to achieve final stabilization has begun.
3. Removal of all temporary erosion and stormwater control measures not needed to achieve final stabilization.
4. Installation of all approved permanent (post construction) BMPs.

5. Removal of all stockpiles of soil, construction materials/debris, construction equipment, etc.
6. Streets, parking lots and other paved surfaces (on-site and off-site) are clean.
7. Removal of sediment and debris from drainage facilities (on-site and off-site) and other off-site property caused by the construction activity, including proper restoration of any damaged property.

H. Final Acceptance Inspections

A Final Acceptance Inspection of the site is conducted to determine overall compliance with the SWMP, to determine if measures have been taken to stabilize the site prior to final approval, and prior to release of any financial sureties. Final Acceptance Inspections must be scheduled at least 48 hours in advance. The inspection will focus on whether the following have occurred and if sediment from erosion is leaving the site or entering into drainageways or other drainage facilities.

- The site has final stabilization equal to a uniform vegetative cover with a density of at least 70 percent compared to the original undisturbed site and such cover is capable of adequately controlling soil erosion, as determined by the County Inspectors (Stormwater and Subdivision), or equivalent permanent, physical erosion reduction methods have been employed.
- The site shall be free of noxious weeds or treated according to an approved Noxious Weed Control Plan.
- All approved permanent (post construction) BMPs have been maintained and are functioning in accordance with the design and with the Operation and Maintenance Manual.
- Streets, parking lots and other paved surfaces (on-site and off-site) are clean.
- Drainage structures such as pipes, inlets and channels are clean and in good repair.
- The site is still in compliance with items verified during the Preliminary Acceptance Inspection.

Final Acceptance Inspections shall be conducted for those sites that are required to have an ESQCP, unless other documentation from the owner or owner's representative is allowed by the County Stormwater staff. Following a satisfactory Final Acceptance Inspection, the financial surety less any charges against it will be returned to the provider of the surety.

I.5.3 Frequency and Types of Inspections of Construction Sites

The frequency and type of inspections conducted by County Inspectors (Stormwater and Subdivision) will depend on the characteristics of the site, the type or phase of construction and the potential for the site to impact stormwater quality and other areas of environmental concern. The level of construction activity throughout the County and availability of staff resources will also factor into the decision. Key factors involved in the decision that relate to construction and the site are:

- The size of the disturbed area.
- The length of time that the site will be left disturbed.
- The proximity of the construction site to areas of environmental concern.
- Past experiences with the permit holder.
- The phase of construction.
- Season of land disturbing activity.

I.6 CONSTRUCTION STORMWATER ENFORCEMENT

[Replaces DCM2 Section 3.5]

As part of the effective stormwater protection and erosion control, a series of enforcement measures will be followed to ensure compliance with the County's stormwater program.

The County considers the owner of the land the ultimate responsible party for all construction activities. It is the responsibility of the owner to take all necessary measures to ensure that the site is in compliance with County resolutions and Construction Permit, Stormwater Management Plan and the Erosion and Stormwater Quality Control Permit or Builder's Erosion and Stormwater Quality Control Permit.

In addition to County requirements, the owner must meet State and Federal regulatory requirements for permits and BMPs. The County has tried to make its requirements consistent with State requirements for construction activities (CDPS General Permit – Stormwater Discharges Associated with Construction Activities). Should requirements conflict, it will be the responsibility of the owner to bring these conflicts to the County's attention and propose how to address them.

Whenever a Stop Work Order is issued, it will be the County's policy to stop any or all related work activities or further approvals relative to the site until the necessary measures are taken to address the concerns, as stipulated in the Stop Work Order.

I.6.1 Definitions

A. Stop Work Order

For this program, a Stop Work Order is an order issued by the ECM Administrator, including County Stormwater staff and Subdivision Inspectors, to the permit holder or authorized agent of a construction site. An immediate Stop Work Order shall be issued when the owner has failed to obtain an ESQCP and a Notice to Proceed prior to land-disturbing activity. A Stop Work Order will also be issued if the site operator has demonstrated obvious non-compliance with the SWMP and ESQCP or BESQCP and after repeated coordination attempts by the

Inspector. When the Stop Work Order is issued, it requires all work on the site to cease until the permit holder takes the measures necessary to bring the site into compliance with the Construction Permit.

B. Notice and Order

The initiation of formal enforcement action is considered the Notice and Order.

C. Inspection

The term “inspection” in this document refers to an inspection performed by a County Inspectors (Stormwater and Subdivision), except for self-monitoring inspections which are performed by the owner or its representative, in an effort to determine the status of compliance of a construction site with its SWMP. The inspection includes, but is not limited to, the following inspection types: Initial Inspections, Compliance Inspections, Reconnaissance Inspections, Complaint Inspections, Follow-Up Inspections, and Final Inspections.

D. Stormwater Management Plan

A SWMP is a plan developed in compliance with the requirements in the “El Paso County Stormwater Management Plan Checklist” and “Standard Notes for El Paso County Grading and Erosion Control Plans” in Appendix M of the ECM. Its purpose is to ensure that measures are in place to ensure that the construction site does not create negative impacts on persons, property or water resources. It requires the design, implementation, and maintenance of BMPs. The SWMP may be incorporated into the plan set for plan review, if clearly identified. The SWMP may be combined with the Construction Plans if all required information for both can be clearly presented.

E. Erosion and Stormwater Quality Control Permit

An ESQCP will be issued after the submission of a signed application form, payment of permit fee, posting of financial surety, approval of the SWMP by Development Review Engineers, and signed statement from the owner that the SWMP will be implemented, maintained and revised as necessary. The permit authorizes the implementation of the approved erosion and stormwater quality control measures.

F. Builder’s Erosion and Stormwater Quality Control Permit

A BESQCP for the construction of a building(s) will be issued after the submission of a signed application form, payment of permit fee, and signed statement from the owner that permit requirements for BMPs will be implemented and maintained.

G. Notice to Proceed

Notice to Proceed will be issued by the County Stormwater Inspector after an ESQCP is issued and a satisfactory Initial Inspection is obtained. Land disturbance is authorized after issuance of a Notice to Proceed.

H. Letter of Noncompliance

A Letter of Noncompliance is written to the property owner and contractor to notify them that they are in violation of the ESQCP or BESQCP or are in noncompliance with the requirements of DCM2 or this Addendum or other County documents or codes relating to grading, erosion, and stormwater quality requirements. The letter contains a description of the measures required to bring the site into compliance and a date by which these measures must be implemented.

I. Performance or Contracting of Remedial Work

If the permit holder does not successfully complete all required work or violates any requirement of the permit, the County may take corrective measures and charge the cost of such to the permit holder. Such costs shall include the actual cost of any work deemed necessary by the County plus reasonable administrative and inspection costs and penalties, as established by Resolution adopted by the Board of County Commissioners or by a fee schedule adopted by the ECM Administrator as authorized by the Board of County Commissioners. If the total of such costs exceeds the financial assurance, the permit holder shall be responsible for payment of the remaining balance within thirty calendar days of receipt of an accounting of such from the County.

J. County Court Summons

An issuance of a summons to appear before a judge in El Paso County Court to any person, corporation, partnership, firm or other entity of whatever description violating any provision of these regulations shall be guilty of a misdemeanor and, upon conviction thereof, shall be punished by a fine of not more than \$100, or by imprisonment in the El Paso County jail for not more than 10 days or by both such fine and imprisonment, provided that no person under the age of 18 years shall be subject to imprisonment. Each day during which a violation exists shall constitute, and shall be punishable as, a separate offense.

K. Injunction

Section I.5 may be enforced by injunction, including both the enjoining of actions or inactions in violation of this Addendum (i.e., failure to mitigate erosion and sedimentation problems undertaken without, or in violation of the terms of, a permit as required herein), and a mandatory injunction to require the installation or repair of BMPs or remediation of failure of BMPs or the non-installation of BMPs accomplished without, or in violation of the terms of, such a permit. In any such injunctive action the County shall be entitled to an award of its costs of suit and any costs incurred in removal of stored materials or mitigating erosion and sedimentation problems where construction activities have been undertaken in violation of the provisions of this addendum.

L. Attorney Fees

In addition to any other penalty or remedy provided hereunder, the County shall be entitled to recover its attorney's fees incurred in bringing action to compel compliance with the provisions of these regulations or to compel compliance with any plan approved hereunder.

I.6.2 Enforcement Procedures

When the County performs inspections at construction sites, it notes those areas that need to be addressed to bring the site into compliance with its ESQCP. A time frame for addressing any noncompliance is included in the inspection report as a required follow-up action. Based on a review of the site, the inspector will list the actions that are needed. The Inspector will determine if a Follow-Up Inspection is needed or if submission of information that verifies that the necessary actions were taken is adequate. Subdivision Inspectors or County Engineering Stormwater Staff may initiate Letters of Non-compliance.

There are several situations where the County may determine that more aggressive action is necessary to get the site into compliance with its permit. The first situation is when there are impacts on public safety, property or water resources. This could include, but is not limited to, the deposition of sediment on a roadway that has the potential to cause accidents, the deposition of materials into water ways, the wash out of channels, spills of toxic materials, or deposition of sediment that causes or has the potential to cause property damage. The magnitude of the impacts will determine what action is appropriate.

Another instance that may result in more aggressive action is when the history of the permit holder or authorized agent suggests that a more formal action is necessary. Problems that may warrant such action include:

- Where the same problem is reoccurring at the site.
- Where the site appears to be having frequent minor problems.
- The individuals involved have a history of noncompliance.

There are several options for formal action that are available to the County. Table I-3 summarizes some of the more common options. The County may take other action as deemed appropriate.

It is expected that under normal conditions the progression of enforcement actions is a Letter of Noncompliance, then a Stop Work Order, then a revocation of the ESQCP or BESQCP and then a Notice and Order. Once a permit has been revoked, it will be necessary to submit or resubmit a SWMP and permit application to the County. An El Paso County Court Summons may be issued for noncompliance with a Stop Work Order, a Notice and Order or other situations as outlined in DCM2 and ECM.

I.7 NEW DEVELOPMENT STORMWATER MANAGEMENT

I.7.1 New Development Planning

[Replaces DCM2 Section 4.1, pages 4-1 through "Other BMPs" continued on 4-5]

A. Overview

This chapter contains guidance and requirements for the selection and siting of structural BMPs for new development and significant redevelopment. Guidance is provided within the context of a flow chart and a four-step process to be followed for new site developments and significant redevelopments.

Detailed descriptions, sizing and design criteria, and design procedures for these BMPs are provided in the New Development BMP Factsheets. It is recommended that discussions and collaboration regarding proposed BMPs occur early in each project between the developer's planner and engineer, County Stormwater and County Development Services Review staff. These Section 4.0 requirements shall be incorporated into existing ECM Administrator submittals for review and acceptance including Preliminary/Final Drainage Reports and construction plans, or as otherwise specified by the ECM Administrator.

B. BMPs for New Development or Significant Redevelopment

For the purpose of defining when permanent water quality BMPs are required, "New Development and Significant Redevelopment" are defined as:

- All sites that include total development/redevelopment areas of one (1) acre or larger except developments with low density (rural) housing (2.5 acre or larger lots). Water Quality Capture Volume (WQCV), as discussed later in DCM2, shall be provided for the total site or individual lots/parcels. Other permanent BMPs may also be required as appropriate.
- Development/redevelopment areas of low density (rural) housing (2.5 acre or larger lots). WQCV is not required, but may be considered, in addressing stormwater protection in rural subdivisions. Sediment control BMPs for lots and roads must be provided. If a legal entity that will provide maintenance such as a Homeowners' Association is in place, a BMP serving several lots may be used. Otherwise, sediment control BMPs must be included on each lot. If a pollution source other than normal residential activities is present, stormwater quality protection measures such as spill control measures and WQCV-based BMPs must be implemented.
- All sites in any zone that include total development/redevelopment areas of one (1) acre or larger for which stormwater quantity detention is required, as specified in the approved Final Drainage Report. WQCV shall be incorporated into stormwater quantity detention basins as discussed later in this section. Retrofitting of existing stormwater quantity detention facilities may be possible. The method for feasibility analysis of retrofitting is referenced below and in DCM2. If retrofitting is not feasible, a new BMP(s) will be required. Other permanent BMPs may also be required as appropriate.

Table I-3. Enforcement Options

Enforcement Option	Description	Typical Applications
Letter of Noncompliance	This is a letter written to the owner and contractor. It contains a description of the problem, the measures required to bring the site into compliance and a timeframe for completion of those measures.	(1) No immediate danger to the public safety, property or water resources. (2) Compliance has not been achieved while working with the owner/representative or contractor. (3) When the County wants to document ongoing problems and agreed upon follow-up.
Stop Work Order	This Stop Work Order requires the owner and contractor to stop all activity on the site except for the work necessary to bring the site into compliance with its ESQCP or BESQCP. Depending on the compliance problem and the County's past experience with the individuals involved, the County may impose the Order on only a portion of the site.	(1) Used when there is an immediate threat to the public safety, property or water resources. (2) Used when the site has failed to comply with the Letter of Noncompliance. (3) Used when land disturbance occurs before issuance of an ESQCP and Notice to Proceed.
Permit Revocation	The County may revoke the ESQCP or BESQCP if the requirements of the SWMP are not implemented. Revocation of the permit has the same effect as a Stop Work Order, except that the owner will need to resubmit a Grading Plan, if required, and SWMP.	(1) Used when the site has failed to comply with the Stop Work Order. (2) Used when the current plan has been judged to be inadequate, and the owner and/or contractor have failed to take the necessary measures to improve the plan.
Notice and Order	Formal enforcement action by the County. This can result in financial penalties. This action can be taken in conjunction with any of the measures listed above.	This action will be taken whenever the County will need to collect funds for abating the violation and when the lesser levels of enforcement as described above are deemed not adequate for any reason.
Performing Remedial Work	A County crew or a private contractor may be retained to perform remedial work. The cost of the work may be billed to the owner or deducted from the Financial Assurance.	(1) Used when high risk situation is imminent. (2) Used when permit holder is intransigent about non-compliance.
County Court Summons	Issuance of a summons to appear before a judge in County Court	Used when the site has failed to comply with the Stop Work Order or Notice and Order.

- All other sites that do not meet the above requirements may be required to provide permanent water quality BMPs, if significant water quality

impacts are anticipated as a result of development/redevelopment of the site, as determined by County Stormwater staff. Sensitive and high risk sites are discussed below.

The intent of permanent BMPs is that they be placed prior to the stormwater runoff being discharged to State Waters. However, downstream BMPs (such as detention ponds or improved channels) may also be acceptable if there are minimal impacts to State Waters between the downstream BMP and the area of new development/redevelopment. At a minimum, grass buffer or swales or equivalent BMPs are required before stormwater reaches the State Waters. With increased impacts, other permanent BMPs may also be required on or adjacent to the site or in combination with new/retrofitted downstream BMPs. When determining the need for permanent BMPs for reaches of State Waters above downstream BMPs, consideration will be given to, but not limited to the following: overall assessment of water quality impacts/benefits (including looking at the intervening reach between the development site and any downstream BMP), other BMPs incorporated into the overall site, costs, and long-term maintenance viability.

Whenever practical, the County promotes permanent BMPs for all sites.

I.7.2 BMP Selection

The selection of appropriate BMPs is based on the characteristics of the site and potential pollutants. The Four-Step Process provides a method of going through the selection process. Figure I.1 and Figure I.2 with annotations covers site-specific issues to be considered in selecting an effective BMP for each site.

A. Four-Step Process

The following four-step process is recommended for selecting structural BMPs in newly developing and redeveloping urban areas:

Step 1: Employ Runoff Reduction Practices

To reduce runoff peaks and volumes from urbanizing areas, employ a practice generally termed "minimizing directly connected impervious areas" (MDCIA). The principal behind MDCIA is twofold -- to reduce impervious areas and to route runoff from impervious surfaces over grassy areas to slow down runoff and promote infiltration. The benefits are less runoff, less stormwater pollution, and less cost for drainage infrastructure. There are several approaches to reduce the effective imperviousness of a development site:

Reduced Pavement Area

Sometimes, creative site layout can reduce the extent of paved areas including parking, thereby saving on initial capital cost of pavement and then saving on pavement maintenance, repair, and replacement over time.

Porous Pavement

The use of modular block porous pavement or reinforced turf in low-traffic zones such as parking areas and low use service drives such as fire lanes can significantly reduce site imperviousness. This practice may reduce the extent and size of the downstream storm sewers and detention.

Grass Buffers

Draining impervious areas over grass buffers slows down runoff and encourages infiltration, in effect reducing the impact of the impervious area.

Grass Swales

The use of grass swales instead of storm sewers slows down runoff, promotes infiltration, and also reducing effective imperviousness. It also may reduce the size and cost of downstream storm sewers and detention.

Implementing these approaches on a new development site is discussed further in the DCM2 section titled Employing Runoff Reduction Techniques. This section provides a procedure for estimating a reduced imperviousness based on the use of grass buffers and swales. The latter three of the approaches for reducing imperviousness are structural BMPs and are described in detail in Section 4.2 of DCM2 (New Development BMP Factsheets):

- Grass Buffer.
- Grass Swale.
- Modular Block Porous Pavement (or Stabilized-Grass Porous Pavement).

Step 2: Stabilize Drainageways

Drainageway, natural and manmade, erosion can be a major source of sediment and associated constituents, such as phosphorus. Natural drainageways are often subject to bed and bank erosion when urbanizing areas increase the frequency, rate, and volume of runoff. Therefore, drainageways are required to be stabilized. One of three basic methods of stabilization may be selected.

Constructed Grass, Riprap, or Concrete-Lined Channel

These methods of channel stabilization have been in practice for some time. The water quality benefit associated with these channels is the reduction of severe bed and bank erosion that can occur in the absence of a stabilized channel. On the other hand, the hard-lined low flow channels that are often used do not offer much in the way of water quality enhancement or wetland habitat. The use of riprap or concrete lined flood conveyance channels is not recommended, unless hydraulic

or physical conditions require such an alternative. Rock lined low-flow channels in many cases may be a better alternative.

Stabilized Natural Channel

In practice, many natural drainageways in and adjacent to new developments are frequently left in an undisturbed condition. While this may be positive in terms of retaining desirable riparian vegetation and habitat, urban development may cause the channel to become destabilized. When degradation occurs in these drainageways, significant erosion, loss of riparian and aquatic habitat, and elevated levels of sediment and associated pollutants can result. Therefore, it is recommended that some level of stream stabilization always be considered. Small grade control structures sized for a 5-year or larger runoff event are often an effective means of establishing a mild slope for the baseflow channel and arresting stream degradation. Severe bends or cut banks may also need to be stabilized. Such efforts to stabilize a natural waterway also preserve and promote natural riparian vegetation which can provide paybacks in terms of enhanced aesthetics, habitat, and water quality.

One additional method of drainageway stabilization gives special attention to stormwater quality and is described in Section 4.2 (New Development BMP Factsheets):

- Constructed Wetland Channel.

Step 3: Provide Water Quality Capture Volume (WQCV)

All multi-family residential, commercial, and industrial sites and all sites requiring stormwater quantity detention, as listed above in the Section 1.7.1B, must address stormwater quality by providing the WQCV. One or more of six types of water quality basins, each draining slowly to provide for long-term settling of sediment particles, may be selected. Information on selecting and configuring one or more of these WQCV facilities at a site is provided in the section providing Water Quality Capture Volume (WQCV). These six BMPs are also described in detail in the New Development BMP Factsheets:

- Porous Pavement Detention
- Porous Landscape Detention
- Extended Detention Basin
- Sand Filter Extended Detention Basin
- Constructed Wetland Basin
- Retention Pond

Step 4: Consider Need for Industrial and Commercial BMPs

If a new development or significant redevelopment activity is planned for an industrial or commercial site, the need for specialized BMPs must be considered. Two approaches are described in the New Development BMP Factsheets:

- Covering of Storage/Handling Areas
- Spill Containment and Control

Other Specialized BMPs may also be required

B. Other Specialized BMPs

The Technical Advisory Committee (TAC) selected the above structural BMPs after a comprehensive screening of known structural BMPs. The members of TAC included representatives from many city and County agencies and individuals from the development community. Final selection by TAC was based on the review of documentation on potential effectiveness in a semiarid climate, local applicability, maintenance considerations, and cost.

Development and evaluation of permanent BMPs are continuing processes. Better designs of the BMPs included in DCM2 and designs of new BMPs, including manufactured (proprietary) BMPs, will be developed and tested. To allow for this progress, additional BMPs will be considered on a case-by-case basis by County Stormwater Staff. Design and sizing details and results of independent testing of the BMP in conditions similar to those at the site will be submitted demonstrating that the BMP will meet or exceed the performance of approved BMPs for the site.

To promote improvement in stormwater protection, County Stormwater Staff may approve promising BMPs on an experimental basis. A performance monitoring program to be pre-approved by County Stormwater Staff and an agreement to replace the Experimental System with an approved system should it not function to the required level of performance, both at the owner's expense, will be required. Design of an experimental BMP is not to commence until after a meeting with County Stormwater Staff is held.

C. Guidance for Selecting and Locating WQCV Facilities

[The following section replaces DCM2 Section 4.1 pages 4-19 through 4-23]

Laying out WQCV facilities within a development site and watershed requires thought and planning. This planning and decision-making should occur during a master drainage planning process (Drainage Basin Planning Study or Master Development Drainage Plan) undertaken by local jurisdictions or a developer's engineer. Such plans, studies or other reports may depict a recommended approach for implementing WQCV on a watershed basis. Such reports may call for a few large regional WQCV facilities, smaller sub-regional facilities, or alternatively an onsite approach. It is always a good idea to find out if a master planning study has been completed that addresses water quality and to attempt to follow the Plan's recommendations.

If the master drainage planning process addresses water quality, the following provides supplemental information on the BMPs. If the existing master drainage planning process has not addressed water quality, or if a new master drainage process is underway, this will direct the water quality evaluation.

D. Permanent Best Management Practice Selection Process

The BMP selection process is illustrated in Figure I-1 and Figure I-2. These two figures shall be used for all projects except those that are strictly highway/roadway projects; that is, projects with no plans for building pad sites. Projects that are strictly highway/roadway projects are discussed in a separate section below.

The following requirements pertain to sites that are not otherwise covered under NPDES permits for post-construction BMPs. For construction activity permitting, see other County and State requirements. Sites that are covered by an industrial NPDES permit do not need to meet these requirements if they adequately protect stormwater quality with onsite BMPs.

The following process references the use of the BMPs and other practices outlined in DCM2 and this Addendum. The use of DCM2 BMPs will promote consistency between the City and County. These BMPs are commonly found in manuals and other literature from municipalities across the country, and they are the accepted “state of the art” in stormwater quality control. As described below, other BMPs (which may be relatively new to the field of stormwater management) are acceptable if they can be shown to meet certain performance criteria.

The following items explain the decision points (i.e., the Boxes) in Figure I-1 and Figure I-2:

Box 1: For all sites, the possibility of incorporating runoff reduction practices must be investigated. Impervious area should be reduced to the maximum extent practicable, per DCM2. DCM2 also provides guidance for MDCIA by routing runoff to pervious areas. This is Step 1 in the Four-Step Process.

Box 2: All drainageways, ditches, and channels shall be stabilized with one of three methods included in Step 2, which include the use of appropriate methods for the type of drainageway as described in the DCM1.

Drainageways include:

- Tributaries to creeks that have been left in a relatively natural state,
- Tributaries, channels, and drainageways that are graded or regraded and may include drop or check structures, side slope stabilization, and low-flow channels.
- Roadside ditches that are completely man-made and should only be used to convey runoff from roads and roadway right-of-ways (ROWs).

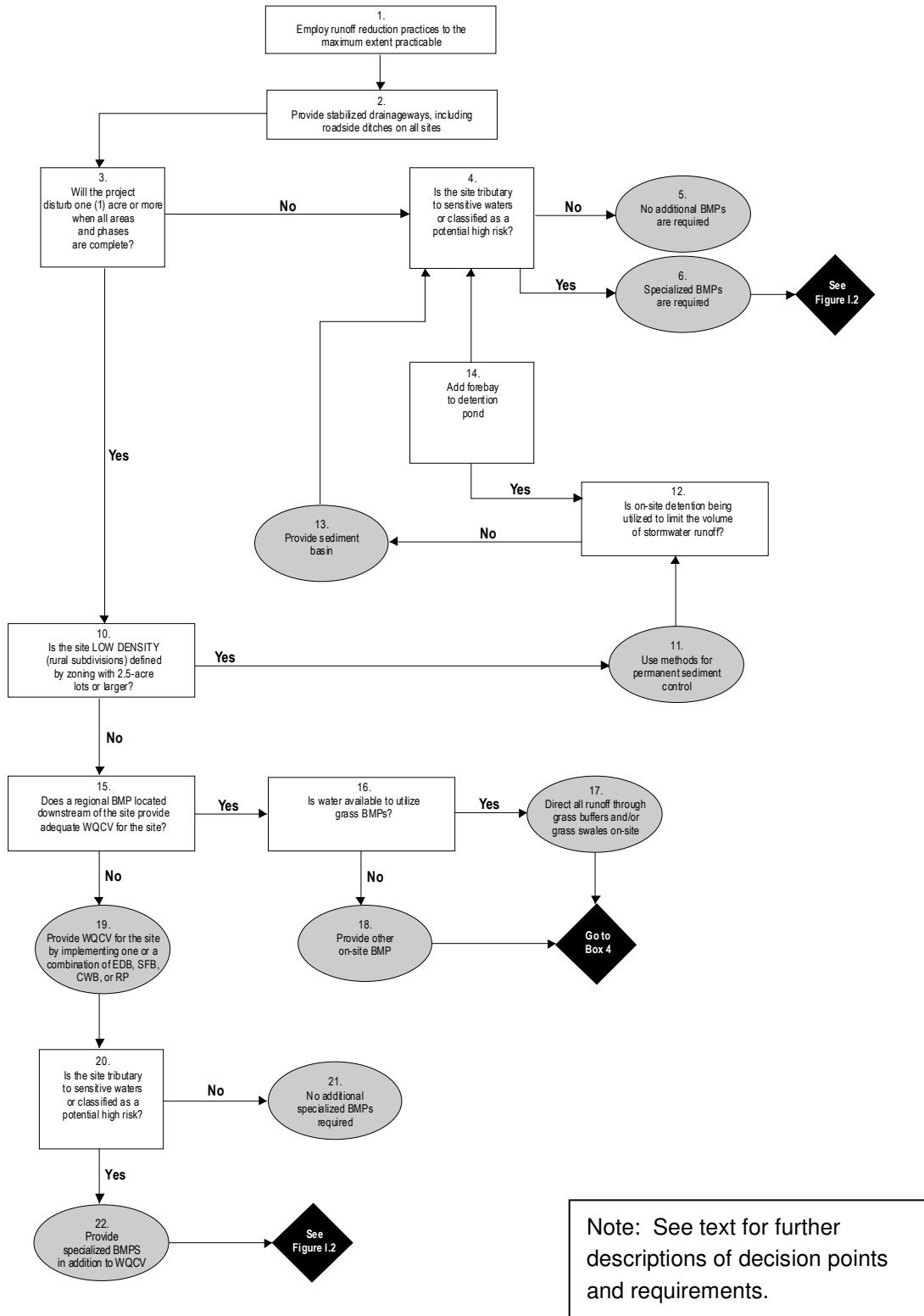
Box 3: It must be determined if the development and/or redevelopment disturbs an area of land that is 1 acre or larger (or planned to be 1 acre or larger) when all phases are complete.

Box 4: Sites tributary to sensitive waters should consider specialized BMPs to address the parameter of concern as shown in Table I-5. At this time, no special BMPs are required until the County develops an overall strategy to address the

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parameters of concern, probably if and when a Total Maximum Daily Load (TMDL) is determined.

Figure I-1. BMP Requirements Flowchart for New Development and Redevelopment Sites - For Selecting Post-Construction BMPs in Compliance with El Paso County's Stormwater NPDES Permit



Note: See text for further descriptions of decision points and requirements.

Figure I-2. BMP Requirements Flowchart for New Development and Redevelopment Sites - For Selecting Post-Construction BMPs in Compliance with El Paso County's Stormwater NPDES Permit

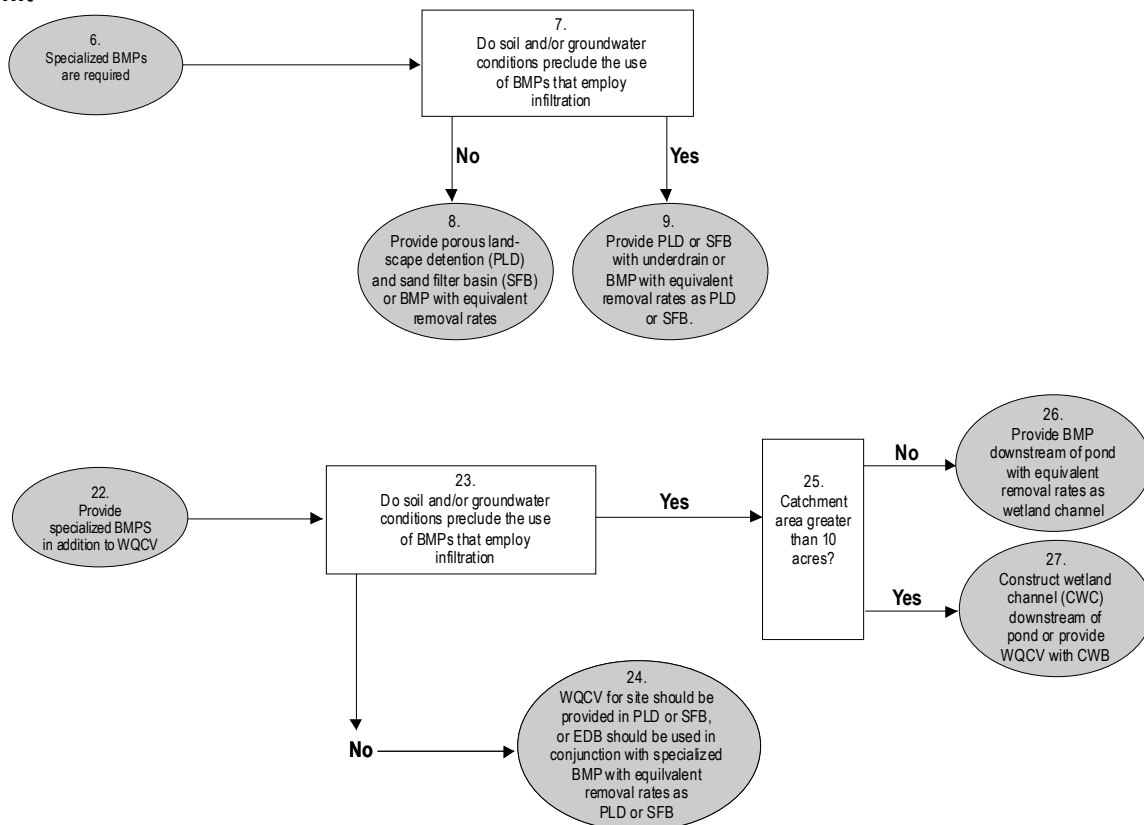


Table I-4. Best Management Practices Abbreviations

Abbreviation	Best Management Practice
CWB	Constructed Wetlands Basin
CWC	Constructed Wetlands Channel – Sedimentation Facility
EDB	Extended Detention Basin – Sedimentation Facility
PLD	Porous Landscape Detention
RP	Retention Pond – Sedimentation Facility
SFB	Sand Filter Extended Detention Basin
WQCV	Water Quality Capture Volume
GB	Grass Buffer
GS	Grass Swale
MBP	Modular Block Porous Pavement
PPD	Porous Pavement Detention

Table I-5. El Paso County Sensitive¹ Waters

Stream and Segment	Parameter of Concern	Specialized BMPs Required
Fountain Creek and tributaries above Monument Creek	E. coli and Se	None at this time
Fountain Creek from Monument Creek to Highway 47	E. coli	None at this time
Monument Creek from National Forest to Fountain Creek	Se	None at this time
Willow Springs Pond #1 and #2	PCE	None at this time
¹ CDPHE 2006 303(d) list. Standard agreement forms for Private Detention Basins are in Appendix G. [This list may change in the future. The 303(d) list or equivalent in effect at the time of permitting will apply.]		

Potential high-risk sites must also incorporate specialized BMPs. High-risk sites are defined by two factors:

- Sites with land uses involving the potential for significant deposition of pollutants.
- Sites without practices to eliminate exposure of pollutants to stormwater.

Land uses involving the potential for significant deposition of pollutants include, but are not limited to:

- Vehicle maintenance facilities,
- Gas stations,
- Automobile salvage yards and junk yards,
- Commercial sites with high levels of “in and out” traffic such as fast-food restaurants and convenience stores,

Many industrial facilities are required to obtain coverage under an industrial stormwater permit; these facilities include automobile salvage yards. Practices to eliminate exposure of pollutants to stormwater may or may not be part of an industrial stormwater permit. These practices include coverage of material storage areas, berms around tanks, spill control plans, and other “good housekeeping” measures. For industrial sites where stormwater is not exposed to pollutants, structural BMPs, including detention ponds for water quality and other BMPs discussed below, may not be required.

Because stormwater pollutants are often transported with sediment, erosion protection and sediment control are necessary for stormwater quality protection. This is very important in the County because of the sandy soils in the region. In particular, discharges that may impact sensitive waters or that come from potentially high-risk sites should have a high level of sediment protection. Thus,

in addition to the specialized BMPs, sediment control practices such as revegetation, grading to prevent steep side slopes, check dams, slope drains, and sediment basins should be employed where practical.

Box 5: No BMPs are required other than stabilized drainageways and possibly MDCIA.

Box 6: Specialized BMPs are required and therefore proceed to Box 7 on Table I-1.

Box 7: BMPs that employ infiltration include porous landscape detention and sand filter basins without underdrains. Certain conditions preclude the use of these types of BMPs, including close proximity of groundwater or relatively impervious soils to the bottom of the facility. Groundwater levels should be characterized during the season with the highest levels (often late Spring or early Summer). Impervious soils include bedrock as well as soil types C and D. The term "close proximity" means 5 feet or less. If there is less than 5 feet, a study of the hydraulic conductivity of the soils must be conducted to show that excessive groundwater mounding or direct groundwater contamination will not result from the use of BMPs that employ infiltration.

Box 8: If groundwater or relatively impervious soils are not within 5 feet of the surface, implement porous landscape detention (PLD) or a sand filter basin (SFB) from DCM2. Alternative BMPs can be used if shown to be equally effective as PLD or SFB (see discussion below).

Box 9: Implement PLDs or SFBs with underdrains, or implement a BMP with removal rates equivalent to PLDs or SFBs, including qualifying manufactured BMPs. Qualifying manufactured BMPs are those that have undergone independent tests to verify that the installation, flow volumes, and removal rates will work for the site under consideration.

Box 10: If the site is larger than one acre and is low density residential, then no water quality capture volume is required, but the need for sediment basins must be evaluated, and the site must be categorized by the sensitive waters and high-risk criteria (return to Box 4). Low density (rural) subdivisions include lots with 2.5 acre or larger lots.

Box 11: Sediment is best controlled at the source. That is, rather than using structures to collect soil after it is suspended in stormwater, it is preferable to stabilize soil to prevent suspension from occurring. Sediment source controls must be implemented for all low-density developments and include (but are not limited to):

- Adequately established vegetation per DCM1 criteria,
- Side slopes that are 3 horizontal to 1 vertical or flatter or the use of benched side slopes when slopes are steeper than 3 horizontal to 1 vertical,
- The use of erosion control blankets to aid establishment of vegetation,

- Check dams,
- Slope drains.

Temporary irrigation and maintenance of vegetation until adequately established may be required.

Box 12: In addition to source controls, sediment basins must be used to catch sediment leaving rural sites. There are two possibilities for a sediment basin for this application: a forebay at the inlet end of a detention pond or a separate sediment basin. For either application, the basin should be sized to collect 1,800 cubic feet per acre of drainage area as described in DCM2, page 3-32.

Box 13: If there are no detention ponds, separate sediment basins must be located to catch all runoff leaving the disturbed area of the site.

Box 14: In cases where a detention pond is already required for controlling the volume of runoff, a sediment basin can take the form of a forebay to this pond.

Box 15: Regional ponds are often used to control the increase in runoff flow and volume due to development. If the site is not low density, and there is a regional downstream BMP that provides adequate WQCV for the site plus the other sites planning to use it, then proceed to Box 16.

Box 16: The site is required to direct all runoff through grass buffers and/or grass swales or provide a similar BMP. (Note that this is required in accordance with the CDPHE guidance manual to afford some protection to state waters in between the site and the downstream WQCV BMP.)

Box 17: Grass buffers require irrigation in almost all cases in the County; swales sometimes require irrigation.

Box 18: “Dry” alternatives may be used if they are shown to have equivalent removal rates as buffers and swales. All of the structural treatment BMPs in DCM2 (Section 4.2) have equivalent removal rates and may be used. The covering of storage/handling areas and spill containment and control are not structural treatment BMPs, and thus are not substitutes for grass buffers and swales.

Box 19: If there is no regional downstream BMP that provides WQCV, then WQCV must be provided for the site with one or a combination of the following BMPs in DCM2: Extended Detention Basin (EDB), Sand Filter Basin (SFB), Constructed Wetland Basin (CWB), or Retention Pond (RP). Chapter 4 in DCM2 (in particular, Figure ND-7) should be consulted for a selection process for the BMP with WQCV. For all ponds, issues related to dam construction and potential groundwater contamination must be considered. Retention Ponds must be considered in the context of additional issues including safety and health (e.g., drowning and mosquito/West Nile virus) and water rights. Surface water storage rights will be obtained before a retention pond can be proposed for a site.

Box 20: Sites tributary to sensitive waters must meet the requirements as outlined in Table I-5, and potential high-risk sites must have specialized BMPs.

Box 21: No additional BMPs are required other than WQCV-based BMPs. Also, as always, drainageways must be stabilized and runoff should be reduced as much as possible (Boxes 1 and 2).

Box 22: When specialized BMPs are required, proceed to Box 23 on Figure I-2.

Box 23: Two situations apply, one where conditions preclude the installation of BMPS that employ infiltration, and one where they do not. (See Box 7.) If conditions preclude the installation of BMPS that employ infiltration then proceed to Box 25; otherwise proceed to Box 24.

Box 24: Where soil and groundwater conditions are not prohibitive (that is, groundwater or relatively impervious soils are not within 5 feet of the surface), implement PLD or SFB from DCM2. Alternative BMPs can be used if shown to be equally effective as PLD or SFB (see discussion below).

Box 25: Constructed wetlands (either channels or basins) are an effective BMP for sites with drainage areas greater than 10 acres.

Box 26: Provide a BMP downstream of the pond with equivalent removal rates as a wetland channel; this could be a qualifying manufactured BMP or other BMP that meets the criteria below.

Box 27: If the catchment area is greater than 10 acres, provide a constructed wetland channel (CWC) downstream of pond or provide WQCV with CWB.

E. Projects that are Strictly Roadway Construction

For projects that entail highway or other roadway construction, there are three basic questions for the applicant:

- Is the road urban or rural? That is, does the road have curb and gutter or does it utilize roadside ditches?
- For rural roads, do the ditches require “water turnouts?”
- Is the road a “hot spot” or does it discharge to sensitive waters?

For urban road construction, the applicant must follow the requirements in DCM1. Rural roads (which by definition have roadside ditches) must be stabilized with one of three methods included in DCM2 on pages 4-3 and 4-4. These methods are described in DCM1.

Rural roads, i.e. those roads which utilize roadside ditches for conveyance of runoff from the roadway, do not have sufficient capacity in the roadside ditches to convey much more runoff than that which runs off the road itself. “Water turnouts,” which function as spillways which direct flow out of the ditches onto property adjacent to the ROW, are frequently required as a result. Design for the “water turnout” should ensure the turnout discharges into a “suitable outfall” as described in DCM1 along the roadway such as a natural swale. A drainage easement for this runoff must be acquired at these locations. A possible consequence of “water turnouts” is the loading of sediment onto private property. If “water turnouts” will be utilized for the ditches, sediment basins shall be used at

these locations. However, there must be sufficient space in the ROW for both the structure itself and for maintenance access, or a specific drainage easement must be provided for the feature and access. Sediment basins can be designed in accordance with the guidelines in DCM2 in the section for construction BMPs. The basin shall be sized to collect 1,800 cubic feet of sediment per acre of drainage area of the roadway.

The term “high risk site” can be defined by traffic volume for a section of roadway. If the road will experience traffic volume of 30,000 average daily traffic (ADT) or more it is likely to contribute high levels of pollutants. For these situations, additional BMPs are required and selection must follow Boxes 6, 7, 8, and 9 in Figure 1b. Additional BMPs may also be required for discharge to sensitive waters. As described above for the general developments (with building pads), these additional requirements will depend on the TMDL process.

F. Additional Guidelines for BMP Selection

Additional Guidelines for selecting among the appropriate BMPs determined from Figure I-1 and Figure I-2. Figure I-3 (Figure ND-7 in DCM2) depicts a decision tree for selecting one of the six WQCV BMPs based on drainage catchment area and whether water is available to satisfy evapotranspiration requirements.

Porous pavement and porous landscape detention are generally suited for small drainage areas (i.e. much less than 1.0 acres); however, larger subwatersheds can be subdivided into individual drainage sub-catchment areas meeting the criteria shown in Figure I-3 for these BMPs.

One of the questions involved in laying out WQCV facilities on a site is whether to locate a BMP onstream or offstream. Onstream refers to locating a BMP on a drainageway that traverses a site such that all of the runoff from the upstream watershed flows through the facility. A single onstream BMP can treat both site runoff and runoff generated in any upstream offsite catchment areas that are part of that watershed. Locating BMPs offstream requires that all onsite catchment areas flow through a BMP prior to entering the drainageway. Offstream BMPs do not provide treatment of runoff from any upstream drainage catchment areas.

Onstream WQCV facilities are only recommended if the offsite drainage catchment area tributary to the drainageway has less impervious area than the onsite drainage catchment's impervious area tributary to the same drainageway. Nevertheless, onstream WQCV facilities must be designed to serve the entire upstream watershed, including any catchment areas upstream of the development, based on future development conditions. This is true even if upstream developments have installed their own WQCV facilities.

The intent of WQCV facilities is they are located prior to the stormwater runoff being discharged to State Waters. However, see additional information in [Section 4.1 of DCM2: Definition of New Development and Significant Redevelopment/BMP Requirements](#) regarding the acceptability of using

downstream BMPs (including WQCV facilities) to serve as BMP controls for upstream development.

Figure I-4 (Figure ND-8 in DCM2) provides an illustration of selection and location options for WQCV facilities based on the principles discussed above.

Figure I-6 (Table ND-1 in DCM2) indicates the BMP options for the four watershed areas shown in Figure I-4.

I.7.3 Incorporating WQCV into Stormwater Quantity Detention Basins

Wherever possible, it is recommended that WQCV facilities be incorporated into stormwater quantity detention facilities. This is relatively straightforward for an extended detention basin, constructed wetland basin, and a retention pond. When combined, the 2, 5, 10, and 100-year detention levels are provided above the WQCV and the outlet structure is designed to control two or three different releases. Stormwater quantity detention could be provided above the WQCV for porous pavement and landscape detention provided the drain times for the larger events are kept short.

The following approaches are to be implemented when incorporating WQCV into stormwater quantity detention facilities:

1. Water Quality

The full WQCV is to be provided according to the design procedures documented in the New Development BMP Factsheets.

2. Minor Storm

The full WQCV plus the full minor storm quantity detention volume is to be provided.

3. 100-Year Storm

One-half the WQCV plus the full 100-year detention volume is to be provided.

At this time, water quality detention is not to be incorporated into underground detention facilities, such as installations of buried large-diameter pipe sections, stone trenches, underground "infiltrating" devices, etc. Any underground detention facilities proposed for use in the County must meet state requirements for Injection Wells and requirements for experimental systems, in addition to Operation and Maintenance Manuals and maintenance agreements.

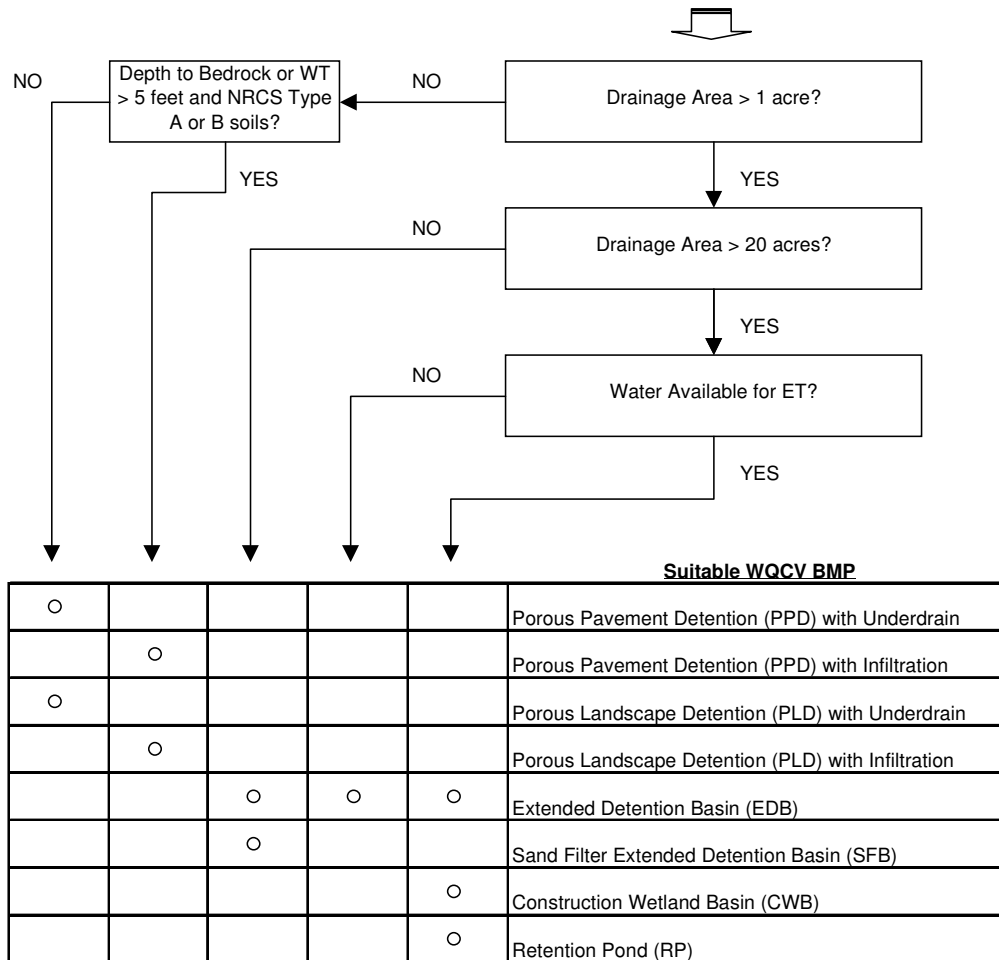
I.7.4 Separate Presedimentation Facilities

The design criteria shown in the New Development BMP Factsheets section shows presedimentation forebays at the upstream end of the extended detention basin, constructed wetland basin, and retention pond. The purpose of the forebay is to settle out coarse sediment and skim off floatables prior to the main body of the facility. An option to this approach is to install a separate facility upstream from the main WQCV facility. If this option is selected, the recommended size is at least 20 percent of the WQCV and the recommended drain time is 1 hour for the presedimentation forebay volume only. Using

this approach, the size of the main WQCV facility may be reduced by 10 percent, any requirement for sediment storage in the main facility may be reduced by one-half, and the forebay within the main facility may be eliminated.

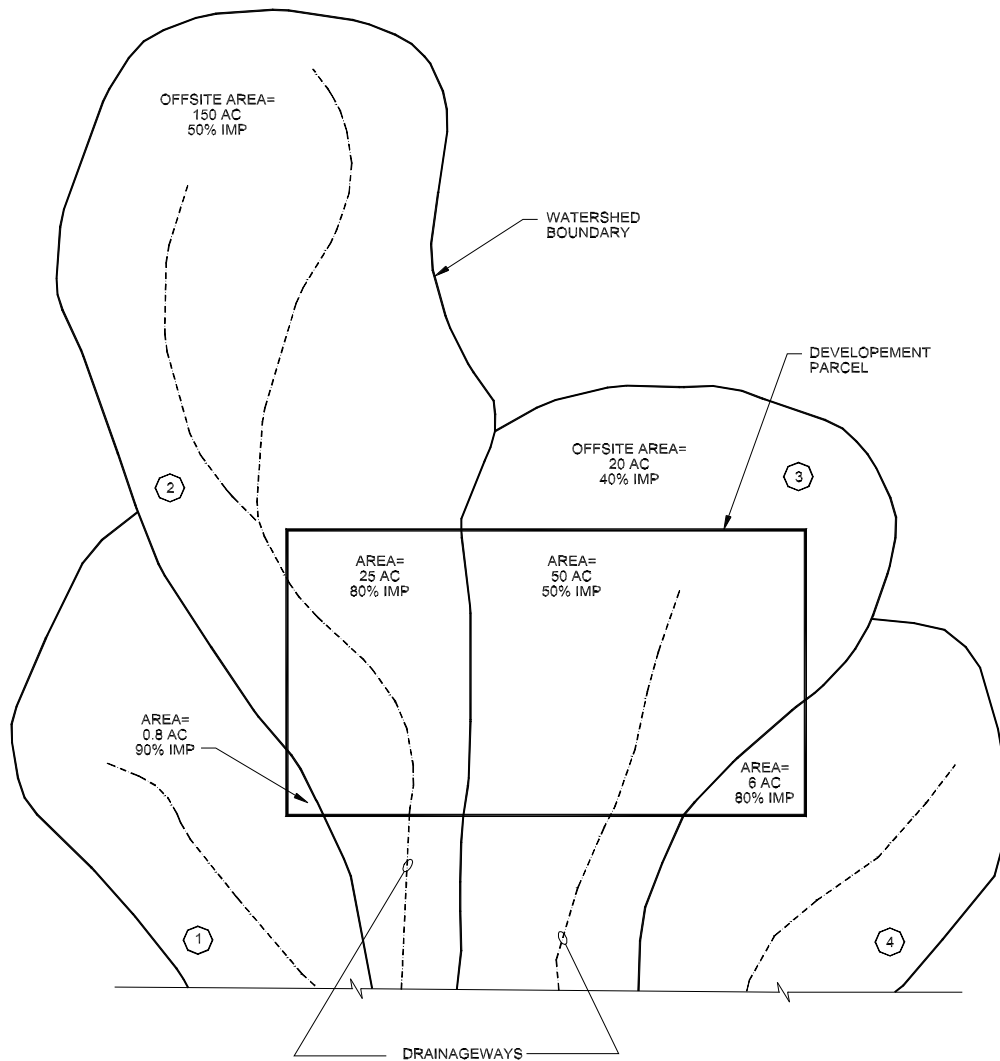
It is extremely important that high sediment loading be controlled for porous pavement detention, porous landscape detention, and sand filter extended detention basins. These facilities are best suited to being brought on line at the end of the construction phase where disturbed ground has been established with pavement or vegetation.

Figure I-3. Decision Tree for WQCV BMP Selection



Note: Large drainage areas may be subdivided into areas <20 acres for use of SFB or <1 acre for use of PPD or PLD.

Figure I-4. Illustration of Selection and Location Options for WQCV Facilities



Note: For this example, sufficient make-up water exists for constructed wetlands and retention pond for the watershed areas >50 acres through irrigation return flows.

Table I-7. Illustration of Selection and Location Options for WQCV Facilities for the Development Parcel on Figure I.4

Watershed Number	Onstream or Offstream	BMP Options	Minimum Number of BMP Installations	Average Drainage Area for Sizing each BMP, acre
1	Offstream	Porous Pavement Detention	1	0.8
		Porous Landscape Detention	1	0.8
2	Offstream	Porous Pavement Detention	24	1
		Porous Landscape Detention	24	1
		Extended Detention Basin	2	12
		Sand Filter Extended Detention Basin	2	12
3	Offstream	Porous Pavement Detention	49	1
		Porous Landscape Detention	49	1
		Extended Detention Basin	2	24
		Sand Filter Extended Detention Basin	3	16
	Onstream	Extended Detention Basin	1	70
		Constructed Wetland Basin	1	70
		Retention Pond	1	70
4	Offstream	Porous Pavement Detention	6	1
		Porous Landscape Detention	6	1
		Extended Detention Basin	1	6
		Sand Filter Extended Detention Basin	1	6

I.7.5 Structural BMP Effectiveness

Table I-7 (Table ND-2 in DCM2) indicates ranges of removal efficiencies reported in literature for a number of structural BMPs. Although combinations of nonstructural/structural BMPs can improve the overall water quality of the runoff, the effectiveness of several BMPs in their ability to reduce influent pollutant concentrations as a group are not directly additive. Table I-7 also shows a most probable range of removal efficiencies for structural BMPs recommended in the New Development BMP section.

I.7.6 Separation Distances

To reduce potential for surface and ground water contamination, permanent water quality BMPs will be located away from wells and Individual Sewage Disposal Systems (ISDS). Rules for separation distances and grouting depths for wells and BMPs will be based on distances between wells and “sources of contamination” in Colorado's Rules and Regulations for Water Well Construction, Pump Installation, and Monitoring and Observation Hole/Well Construction. Permanent BMPs and ISDS will be separated by the

same distances specified between the components of the ISDS and “waterways” in the El Paso County ISDS regulations.

Table I-8. BMP Pollutant Removal Ranges for Stormwater Runoff and Most Probable Range for BMPs

Type of BMP	(1)	TSS	TP	TN	TZ	TPb	BOD	Bacteria
Grass Buffer	LRR:	10-50	0-30	0-10	0-10	N/A	N/A	N/A
	EPR	10-20	0-10	0-10	0-10	N/A	N/A	N/A
Grass Swale	LRR:	20-60	0-40	0-30	0-40	N/A	N/A	N/A
	EPR	20-40	0-15	0-15	0-20	N/A	N/A	N/A
Modular Block Porous Pavement	LRR:	80-95	65	75-85	98	80	80	N/A
	EPR	70-90	40-55	10-20	40-80	60-70	N/A	N/A
Porous Pavement Detention	LRR:	8-96	5-92	-130-	10-98	60-80	60-80	N/A
	EPR	70-90	40-55	85 10-20	40-80	60-70	N/A	N/A
Porous Landscape Detention	LRR:	8-96	5-92	-100-	10-98	60-90	60-80	N/A
	EPR	70-90	40-55	85 20-55	50-80	60-80	N/A	N/A
Extended Detention Basin	LRR:	50-70	10-20	10-20	30-60	75-90	N/A	50-90
	EPR	55-75	45-55	10-20	30-60	55-80	N/A	N/A
Constructed Wetland Basin	LRR:	40-94	-4-90	21	-29-82	27-94	18	N/A
	EPR	50-60	40-80	20-50	30-60	40-80	N/A	N/A
Retention Pond	LRR:	70-91	0-79	0-80	0-71	9-95	0-69	N/A
	EPR	80-90	45-70	20-60	20-60	60-80	N/A	N/A
Sand Filter Extended Detention	LRR:	8-96	5-92	-129-	10-98	60-80	60-80	N/A
	EPR	80-90	45-55	84 35-55	50-80	60-80	60-80	N/A
Constructed Wetland Channel*	LRR:	20-60	0-40	0-30	0-40	N/A	N/A	N/A
	EPR	30-50	20-40	10-30	20-40	20-40	N/A	N/A

Ref: Bell et al. (1996), Colorado (1990), Harper & Herr (1992), Lakatos & McNemer (1987), Schueler (1987), Southwest (1995), Strecker et al. (1990), USGS (1986), US EPA (1983), Veenhuis et al. (1989), Whipple and Hunter (1981), Urbonas (1997).

(1)LRR Literature reported range, EPR—expected probable range of annual performance by DCM2 BMPs.

N/A Insufficient data to make an assessment.

*The EPR rates for a Constructed Wetland Channel assume the wetland surface area is equal or greater than 0.5% of the tributary total impervious area.

I.7.7 Operation and Maintenance of Best Management Practices

A. Long-term Maintenance Agreements for BMPs

Per the Colorado Department of Public Health and Environment, Colorado’s Phase II Guidance Document:

“All stormwater BMPs shall have an enforceable operation and maintenance agreement to ensure that the system functions as designed. This agreement will

include any and all maintenance easements required to access and inspect the BMP(s), and to perform routine maintenance as necessary to ensure proper functioning of the stormwater BMP. In addition, prior to the issuance of any permits for land development, legally binding documents shall be adopted and agreed to wherein the owners of the real property associated with the BMPs that benefit that property are held ultimately responsible for the proper maintenance of all BMPs, including a mechanism for the collection of the costs of the maintenance if it is not performed by the owners of the property.”

The property owner shall be responsible for the maintenance of all permanent stormwater quality measures. All temporary stormwater quality control measures shall be removed after work on the site has been completed and the measures are no longer needed. Should any property owner fail to adequately maintain the permanent stormwater quality control measures or remove the temporary measures, the County may, after notifying the owner of the required maintenance and/or removal and the owner failing to perform such maintenance and/or removal, enter the affected property and perform or cause to be performed the required work and assess the charge for such work against the property owner. Prior to approval of a subdivision or issuance of a Certificate of Occupancy for a site that did not go through the subdivision review process that has permanent BMPs, a signed Private Maintenance Agreement for Permanent BMPs must be submitted to the County.

B. Operation and Maintenance Manual

A detailed Operation and Maintenance Manual covering inspections, operation and maintenance of permanent BMPs will be provided to the party who holds the Private Maintenance Agreement for Permanent BMPs. The Operation and Maintenance Manual will include specifics on frequency of inspections and maintenance; standards for vegetation or structures, such as species of vegetation, mowing height, revegetation of worn or eroded areas, cleaning methods; depth of sediment requiring removal; replacement frequencies; and other relevant topics.

I.8 PROCEDURES FOR ASSESSMENT OF STRUCTURAL CONTROLS FOR RETROFITTING WATER QUALITY FEATURES

[Replaces DCM2 Section 4.4, page 4-133]

At some sites, there may be an existing structure for flood control and other water quantity control purposes. It may be possible to retrofit this structure for water quality in addition to the quantity functions. The following procedure will assist in evaluating the potential for retrofitting. In a new or major redevelopment project, new erosion and water quality control BMPs will be required, if retrofitting is not a reasonable option.

The purpose of this document is to outline the procedures for these evaluations. These procedures would then be utilized in conjunction with developing each new Drainage Basin Planning Study (DBPS) to determine the potential and feasibility for retrofitting existing structural controls (detention/retention basins).

The analysis of the structures involves three possible levels of review. The first is a qualitative review to determine if retrofitting of the structure is acceptable. The second element is quantitative to determine the pollutant removal effectiveness of the structure, both with and without water quality elements. Total Suspended Solids (TSS) will normally be the only constituent evaluated, unless other pollutants of concern are specified by the ECM Administrator, based on site-specific information such as draining to sensitive waters or high risk pollution sources. A third element of review involves developing a cost estimate for retrofitting to determine the economic feasibility.

A qualitative assessment evaluates the changes that would occur if the flood-control detention facility was modified for water quality purposes, and determines the extent to which the changes would affect these functions, and if these changes in function are acceptable. The detention pond must first be acceptable under the qualitative criteria, or the evaluation will conclude and not continue to the second level of review. A quantitative analysis involves a determination of whether the percent removal of TSS (or other specified constituent of concern) is significant. For purposes of this assessment, a significant change is defined as the percent removal of the constituent after retrofitting the detention pond is estimated to be at least 20 percent greater than the percent removal of the constituent for the detention pond without the water quality element incorporated. If a significant change is estimated, then the third element of analysis, a cost estimate of the economic feasibility, is conducted. If a significant change is not estimated, then the option to retrofit the detention pond is eliminated.

I.8.1 Final Alternative Selection

The final alternative selection process for drainage improvement options in any new DBPS is based on the evaluation of many factors including costs, safety, environmental issues including water quality, public input, etc. If the selected alternative includes retrofitting structural controls to provide additional pollutant removal, responsibility for implementation would need to be outlined in the study. If the responsibility was determined to be a public (County) responsibility, consideration for funding any such drainage improvement project would be made by the Board of County Commissions during its annual budget approval process in conjunction with all other budget requests. If the responsibility was determined to be a private development responsibility, ECM Administration would decide when implementation would be required in conjunction with the timing of future developments.

I.9 SUPPLEMENTAL INFORMATION A: NEW DEVELOPMENT DESIGN FORMS

[Replaces DCM2 Appendix A]

ATTENTION TO PERSONS USING THE URBAN DRAINAGE AND FLOOD CONTROL DISTRICT SUPPLIED DESIGN FORM WORKSHEETS

The Design Form Worksheets with the accompanying Visual Basic macros have been developed using a high standard of care, including professional review for identification of errors, bugs, and other problems related to the software. Minor modifications have been made by the City of Colorado Springs. However, as with any initial release of software driven products, it is likely that some nonconformities, defects, bugs, and errors with the software program will be discovered as

they become more widely used. The developers of these products welcome user feedback in helping to identify these potential problems so that improvements can be made to future releases of the Design Form Worksheets.

The Design Form Worksheets are intended to streamline the preliminary design process. Preparation of final design plans, addressing details of structural adequacy, public safety, hydraulic functionality, maintainability, and aesthetics, remain the sole responsibility of the designer.

BY THE INSTALLATION AND USE OF THE URBAN DRAINAGE AND FLOOD CONTROL DISTRICT SUPPLIED DESIGN FORM WORKSHEETS, AS MODIFIED BY THE CITY OF COLORADO SPRINGS, THE USER AGREES TO THE FOLLOWING:

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To the maximum extent permitted by applicable law, in no event shall the Urban Drainage and Flood Control District or the City of Colorado Springs or El Paso County, their contractors, advisors, reviewers, or their member governmental agencies, be liable for any incidental, special, punitive, exemplary, or consequential damages whatsoever (including, without limitation, damages for loss of business profits, business interruption, loss of business information or other pecuniary loss) arising out of the use or inability to use these products, even if the Urban Drainage and Flood Control District or the City of Colorado Springs or El Paso County, their contractors, advisors, reviewers, or their member governmental agencies have been advised of the possibility of such damages. In any event, the total liability of the Urban Drainage and Flood Control District or the City of Colorado Springs or El Paso County, their contractors, advisors, reviewers, or their member governmental agencies, and your exclusive remedy, shall not exceed the amount of fees paid by you to the Urban Drainage and Flood Control District for the Product.

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Appendix I Stormwater Quality Policy & Procedures
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