

1 **POST CONSTRUCTION RUNOFF CONTROL PROCEDURES**

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3 **1. OVERVIEW**

4 The section to follow describes how the County will comply with State Water Resources
5 Control Board's storm water discharge permit requirements for long-term post-
6 construction practices that protect water quality and control runoff flow, to be
7 incorporated into development and significant redevelopment projects. The County will
8 comply with permit requirements by incorporating existing County Development
9 Standards to minimize the discharge of pollutants of development and redevelopment
10 projects. Revisions to the County Development Standards shall be developed and
11 implemented as well the development of storm water treatment practices, all of which are
12 outlined in the following sections:

- 13 • Current Program

14 The County currently has in place extensive policies and procedures for regulating design
15 and construction activities to protect the Region's water resources.

16 The design and construction site practices selected and implemented by the responsible
17 party for a given site are expected to be sufficient to achieve compliance with the State of
18 California NPDES General Permits for Storm Water Discharges Associated with
19 Construction Activity and Small Municipal Separate Storm Sewer Systems.

20 All proposed permanent storm water treatment practices that are not noted within this
21 SWMP must be pre-approved by the County's Storm Water Coordinator.

22 **2. CURRENT PROGRAM**

23 The County's Development Standards, which include the Grading, Erosion and Sediment
24 Control Ordinance; the County's Design and Improvement Standards Manual; and the
25 County's Drainage Manual contain measures and practices required upon all parties
26 undertaking construction to minimize the discharge of pollutants from the construction
27 sites.

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32 2.1 Grading, Erosion and Sediment Control Ordinance

33 The Grading, Erosion and Sediment Control Ordinance require that permittees be
34 responsible to:

- 35 • Prevent discharge of sediment from the site in quantities greater than
36 before the grading occurred, to any watercourse, drainage system or
37 adjacent property; and
- 38 • Protect watercourses and adjacent properties from damage by erosion,
39 flooding, or deposition that may result from the permitted grading.

40 Additionally, the Ordinance authorizes the Director of Transportation to:

- 41 • Require security deposit to assure faithful performance,
- 42 • Suspend or revoke the permit and abate a hazardous public nuisance
43 condition, and
- 44 • Require a one-year warranty on all work.

45 This Ordinance requires of the permittee the following:

- 46 • The slope of cut and fill slopes shall not be steeper than two horizontal to
47 one vertical, exclusive of terraces and slope roundings, except when
48 supported by bedrock and/or in accordance with a geotechnical or
49 geological report. Further, the Director of Transportation may require fill
50 slopes to be flatter for stability purposes.
- 51 • Drainage shall be affected in such a manner that it will not cause erosion
52 or endanger the stability of any cut or fill slopes.
- 53 • Grading plans shall be designed with long-term erosion and sediment
54 control as a primary consideration.
- 55 • Grading operations during the rainy season (from October 15th to May 1st,
56 inclusively) shall provide erosion and sediment control measures except
57 upon a clear demonstration to the satisfaction of the Director of
58 Transportation that at no stage of the work will there be any substantial
59 risk of increased sediment discharge from the site.
- 60 • Should grading be permitted during the rainy season, the smallest
61 practicable area of erosive prone land shall be exposed at any one time
62 during grading operations and the time of exposure shall be minimized.
- 63 • Wherever possible, natural features, including vegetation, oak trees,

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- 64 terrain, watercourses, wetlands and similar resources shall be preserved.
65 Limits of grading shall be clearly defined and marked to prevent damage
66 by construction equipment. Wetlands and oak trees so marked shall be
67 protected from construction activity.
- 68 • Permanent drought-resistant vegetation and structures for erosion and
69 sediment control shall be installed as soon as possible.
 - 70 • Adequate provision shall be made for long-term maintenance of
71 permanent erosion and sediment control structures and vegetation.
 - 72 • No topsoil shall be removed from the site unless otherwise directed or
73 approved by the Director of Transportation. Topsoil overburden shall be
74 stockpiled and redistributed within the graded area after rough grading to
75 provide a suitable base for seeding and planting. Runoff from the
76 stockpiled area shall be controlled to prevent erosion and resultant
77 sedimentation of receiving water.
 - 78 • Runoff shall not be discharged from the site in quantities or at velocities
79 substantially above those that occurred before the grading except into
80 drainage facilities whose design has been specifically approved by the
81 Director of Transportation.
 - 82 • Permittee shall take reasonable precautions (i.e. stabilized construction
83 entrances/exits and/or wash racks) to ensure that vehicles do not track or
84 spill earth materials into public streets and shall immediately remove such
85 materials if this occurs.
 - 86 • Erosion and sediment control plans shall include an effective revegetation
87 program to stabilize all disturbed areas that will not be otherwise
88 protected.
 - 89 • Erosion and sediment control plans shall be designed to prevent increased
90 discharge of sediment at all stages of grading and development from initial
91 disturbance of the ground to project completion. Every feasible effort
92 shall be made to ensure that site stabilization is permanent. Plans shall
93 indicate the implementation period and the stage of construction where
94 applicable.
 - 95 • Erosion and sediment control plans shall provide for inspection and repair
96 of all erosion and sediment control facilities at the close of each working
97 day during the rainy season and for specific sediment cleanout and
98 vegetation maintenance criteria.

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99 2.2 Design and Improvement Standards Manual

100 Among the key provisions of the County's Design and Improvement Standards
101 Manual administered by the County Planning Department are minimum lot sizes
102 and general development standards for varying slope conditions. These standards
103 are set to minimize the environmental effects of construction.

104 2.3 Drainage Manual

105 The Department of Transportation's Drainage Manual prescribes planning and
106 design criteria for drainage facilities within the County. Among the key
107 provisions of the County's Drainage Manual include:

- 108 • The planning and design of drainage systems within El Dorado County
109 shall take into consideration any potential downstream impacts including
110 those to property, flow regimes, water quality or riparian and wetland
111 areas. Provisions mitigating potential impacts shall be included as a part
112 of the drainage analysis for the proposed project.

- 113 • Increases in storm runoff from upstream properties resulting from
114 improvements are discouraged.

- 115 • Improvements that propose to increase storm water runoff shall be
116 evaluated to show, among other things, that land of downstream properties
117 is not lost due to increased flood plain limits, there is no increase in
118 erosion, and there is no net loss of storage available to attenuate peak
119 flows. When downstream properties are unable to adequately
120 accommodate increases in storm water runoff, appropriate mitigation
121 measures shall be implemented into the analysis and design. These
122 mitigation measures may include storm water storage facilities (detention
123 or retention structures) designed to hold storm water and then releasing it
124 at a rate that will not cause damage downstream.

- 125 • The County has approved the use of two types of detention basins, dry and
126 wet basins. However, due to the added long-term maintenance
127 requirements and vector concerns associated with wet basins, their use
128 requires site-specific approval by the County.

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- The County has approved the use of retention (infiltration) basins. However, due to varying site-specific infiltration concerns and added long-term maintenance requirements their use requires site-specific approval by the County. While the implementation of detention or retention facilities on-site to attenuate peak runoff to a level which does not impact downstream facilities is acceptable, the County sees facilities designed as a component of a watershed planning process (classified as regional or downstream storage facilities) as potentially being more economical and effective. Coordinated regional detention/retention facilities that take into account the entire watershed area are preferred. When a regional drainage study has been conducted and regional basins are designed, the regional basin will always take precedence over local basin design.
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- The use of natural channels for the collection and conveyance of storm water runoff is preferred. Natural channels shall be capable of conveying runoff without increased erosion, widening and meandering of the channel alignment due to increased runoff from development.
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- Grass lined channels are viable only for channels with relatively flat slopes. Successful grass lined channels require maintenance both for the establishment of the root network and to control the length of the grass.
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- Where appropriate, floodplain and open space criteria shall comply with FEMA standards and the 100-year flood plain shall be designated.
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- In order to determine the proper type of channel stabilization and flood & water quality protection measures, the following issues should be considered during the planning and design of drainage improvements:
 - The effect that any changes in the runoff hydrograph may have upon the floodplain limits.
 - The effect that potential growth of vegetation in the channel or floodplain has upon the long-term flood protection of adjacent development.
 - The effect that channelization of an existing stream has upon the natural floodplain storage volume.
 - The effect that increases of either peak flow or velocity may have on channel erosion or deposition.
 - The effect that the proposed development project will have on both short-term and long-term sediment production. This includes
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- 169 measures to control erosion during construction.
- 170 ○ For projects, which propose the creation or expansion of
171 permanent water bodies, the effect that, a change in water
172 temperature will have upon fish and wildlife.
- 173 ○ The role those drainage improvements will play in managing
174 pollutant in storm water runoff.
- 175 ○ The effect that the proposed drainage improvement has upon the
176 existing aesthetic quality of the area.

177 All of the above are not applicable to all drainage design projects. However,
178 multidisciplinary involvement is encouraged in both the planning and designs of
179 major drainage projects to the extent that it results in preservation of natural
180 systems and reliable flood protection.

181 2.4 Your project shall adhere to the following:

- 182 ● Incorporation within the site's plan or design, land use planning measures to
183 minimize water quality impacts, including stream buffers and restoration
184 activities.
- 185 ● Reduction of the site's imperviousness, conserving natural resources and areas,
186 maintaining and using natural drainage courses in the storm water conveyance
187 system and minimizing clearing and grading.
- 188 ● When landscaping is required or proposed, provision of runoff storage measures
189 dispersed uniformly throughout the site's landscape with the use of a variety of
190 detention, retention, and runoff practices.
- 191 ● Implementation of on-site hydrologically functioning landscape design and
192 management practices.

193 2.5 Your project shall adhere to the following design principles:

- 194 ● Strive to maintain pre-development rainfall runoff characteristics.
- 195 ○ Minimize project's impervious footprint and conserve natural
196 areas.
- 197 ○ Minimize directly connected impervious areas.
- 198 ○ Where landscaping is proposed in or adjacent to parking areas, to
199 the extent feasible, incorporate landscaped areas into a site
200 drainage design that minimizes runoff.

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- 202 • Maximize the protection of slopes and channels, including in hillside areas,
203 through the use of deep-rooted, drought tolerant plant species.
- 204 2.6 Your project shall adhere to the following design standards:
- 205 • Provide storm drain system stenciling and signage at inlets in areas where curb,
206 gutter and sidewalks are provided.
- 207 • Design outdoor material storage areas to reduce pollution introduction into storm
208 drain systems.
- 209 • Design hazardous material storage areas so as to prevent contact with runoff or
210 spillage to storm water conveyance systems.
- 211 • Design trash storage areas to reduce pollutant introduction.
- 212 • Use water efficient irrigation systems and landscape design.
- 213 • To the extent feasible, drain street runoff to vegetated swales (bio-filters) or
214 gravel shoulder (infiltration) areas.
- 215 • Encourage the covering of loading / unloading dock areas to preclude storm water
216 run-on/off.
- 217 • Prohibit direct connections to storm drains from depressed loading docks (truck
218 wells).
- 219 • Vehicle / equipment maintenance and wash areas shall be covered or designed to
220 preclude storm water run-on/off.
- 221 • Drainage systems serving areas with vehicle / equipment maintenance and wash
222 areas shall be designed to capture all wash water, leaks and spills so as to
223 facilitate proper disposal of all non-permitted, non-storm water discharges.
- 224 • Outdoor processing areas that pose a significant threat to water quality shall be
225 isolated from storm drain systems and runoff.
- 226 • Fuel dispensing areas shall contain the following:
- 227 ▪ Have an appropriate slope to prevent ponding, and be hydraulically
228 separated from the rest of the site by a grade break that prevents
229 run-on.
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- Overhanging roof structure or canopy. The cover's minimum dimensions must be equal to or greater than the area within the grade break. The cover must not drain onto the fuel dispensing area and the downspouts must be routed to prevent drainage across the fueling area.
 - Pavement of Portland cement concrete or equivalent. Asphalt concrete shall not be used.
 - At a minimum, the concrete fuel dispensing area must extend 6.5 feet from the corner of each fuel dispenser, or the length at which the hose and nozzle assembly may be operated plus 1 foot, whichever is greater.
- For the following sites:
 - Residential projects with 10 or more housing units;
 - Commercial sites involving auto repair shops, retail gasoline outlets, restaurants, or more than 2 acres total;
 - Commercial sites involving parking lots 5,000 square feet or more or with 25 or more parking spaces exposed to storm water runoff;
 - Industrial sites involving auto repair shops, retail gasoline outlets, restaurants, or more than 5 acres total; or
 - Industrial sites involving parking lots 5,000 square feet or more or with 25 or more parking spaces exposed to storm water runoff
 - Storm water treatment retention (infiltration) and/or detention basins, or equivalent, shall be provided and designed to infiltrate or treat, on site, runoff from the site prior to its discharge to a storm drain system or surface receiving water, unless a waiver is granted by the PM/PE based on a determination that to do so would be infeasible. First priority shall be to, where feasible and appropriate, provide for infiltration of the site's runoff. Where infiltration is not feasible or appropriate, detention shall be considered.
- Storm water treatment retention and detention basin siting practices and designs shall be in accordance with the Caltrans "Statewide Storm Water Quality Practice Guidelines", April 2002, Section 5.4, "Descriptions of Treatment BMPs".

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265 • The “design storm” used for storm water structural treatment devices shall be in
266 accordance with the following:

267 “Design Storm” is the particular event that generates runoff rates or volumes that
268 the drainage-related facilities are designed to handle. For water quality treatment
269 purposes, the volume of water that must be treated is termed the Water Quality
270 Volume (WQV), and the flow rate to be treated is the Water Quality Flow (WQF).
271 Methods for determining the WQV are generally tied to an analysis of rainfall
272 depths generated over 24-hour periods.

273 The WQV of treatment BMPs will be based on using one of the following
274 methods:

- 275 1. The maximized detention volume determined by the 85th percentile
276 runoff capture ratio. A Web-based design tool, which uses data
277 from more than 300 California rainfall stations, has been created
278 for use. It is available at <http://stormwater.water-programs.com>.
- 279 2. The volume of annual runoff based on unit basin storage WQV to
280 achieve 80 percent or more volume of treatment. A Web-based
281 design tool has been created for use. It is available at
282 <http://stormwater.water-programs.com>.
- 283 3. The volume of runoff produced from a historical-record based
284 reference 24-hour rainfall criterion for “treatment” that achieves
285 approximately the same reduction in pollutant loads achieved by
286 the 85 percentile, 24 –hour runoff event.

287 The WQV is subject to the review and approval of the County Storm Water
288 Coordinator when the site area is limited and cannot accommodate a treatment
289 BMP sized according to the methods described above.

290 The WQF is the primary design criteria to be used for filtering types of
291 treatment control devices. The following listed values of rainfall intensity
292 would be used in the Rational Formula ($Q=CiA$) to generate runoff from
293 areas, which would flow to the filtering treatment device:

- 294 ▪ 0.16 in./hr. for all areas below 1,000 feet in elevation.
- 295 ▪ 0.20 in./hr. for elevations between 1,000 and 4,000 feet.
- 296 ▪ 0.24 in./hr. for all elevations above 4,000 feet.

297 The resulting runoff rate would be the design WQF to be used at any specific

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298 site.
299 Also, where there are special circumstances or conditions, the designer and
300 the County Storm Water Coordinator should discuss the potential need for
301 modification of the WQF criteria on a case-by-case basis.

302 • Infiltration devices shall be designed to have a vertical distance from the base of
303 any device to the seasonal high groundwater mark of at least 10 feet.

304 • Infiltration devices shall not be used within drainage systems for runoff from
305 industrial areas, roadways with traffic volumes over 25,000 ADT, or other areas
306 that potentially pose a high threat to ground water quality.

307 • For the following sites:

308 ▪ Commercial sites involving restaurants with “drive through”
309 service, or

310 ▪ Other commercial sites involving 100,000 sq ft or more of building
311 space,

312 And where:

313 ▪ The use of detention or retention basins are not feasible, and

314 ▪ Vegetation within the drainage area will not be generating
315 significant amounts of vegetative debris.

316 ○ Gross solids removal devices (e.g. linear radial or inclined bar rack as set
317 forth in Caltrans “Statewide Storm Water Quality Practice Guidelines”, April
318 2002, Section 5.4, “Descriptions of Treatment BMPs”), or equivalent, shall
319 be provided and designed to treat runoff prior to its discharge to a storm
320 drain system or any surface receiving water, unless a waiver is granted by the
321 PM/PE based on a determination that to do so would be infeasible.

322 • There are situations where the placement of structural treatment devices is
323 infeasible due to: (i) extreme limitations of space for treatment on a
324 redevelopment project, (ii) unfavorable or unstable soil conditions at a site to
325 attempt infiltration, and (iii) risk of ground water contamination because a known
326 unconfined aquifer lies beneath the land surface or an existing or potential
327 underground source of drinking water is less than 10 feet from the soil surface.
328 Any other justification for infeasibility must be separately petitioned to the
329 RWQCB for consideration.

330 • The County may, as a result of on-going watershed planning processes, establish
331 impact fee program(s) as an alternative to on-site storm water structural treatment

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332 devices.

- 333 • Your project shall ensure ongoing long-term maintenance of all storm water
334 structural treatment devices by the current property owner.

335 **3. BMP PROGRAM SUMMARY**

336 The following page contains a summary of the Post Construction Runoff Control BMP
337 program set forth in the El Dorado County Storm Water Management Plan. These BMPs
338 will be subject to annual reviews and updates as outlined in Sections 3.2 and 5.6.1.

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340 EPA's NPDES rules state:

341 "Implementation of best management practices consistent with the provisions of
342 the storm water management program required pursuant to this section (the six
343 minimum control measures, evaluation & assessment, record keeping and
344 reporting) ... constitutes compliance with the standard of reducing pollutants to
345 the "maximum extent practicable "." (40 CFR 122.34)

346 This summary notes BMPs applicable to one of the six minimum control measure: Post
347 Construction Runoff Control. El Dorado County proposes that this program constitutes
348 fulfillment of the minimum General Permit and Federal Regulation requirements. As the
349 public review and the SWMP finalization processes proceed, the program, and the
350 County's assessment of this program, may change.