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Model LCP Water Quality Guidance Webinar

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Model LCP Water Quality Guidance - Workshop for Local Governments

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December 2015

Workshop Agenda

- CCC WQ authority
- Overview of Model WQ guidance
- Low Impact Development
- Model IP
- Stormwater permits & other regs.

Coastal Act Authority for WQ

- § 30231:

  "…quality of coastal waters, streams, wetlands, estuaries, and lakes…shall be maintained and, where feasible, restored through, among other means…controlling runoff…"

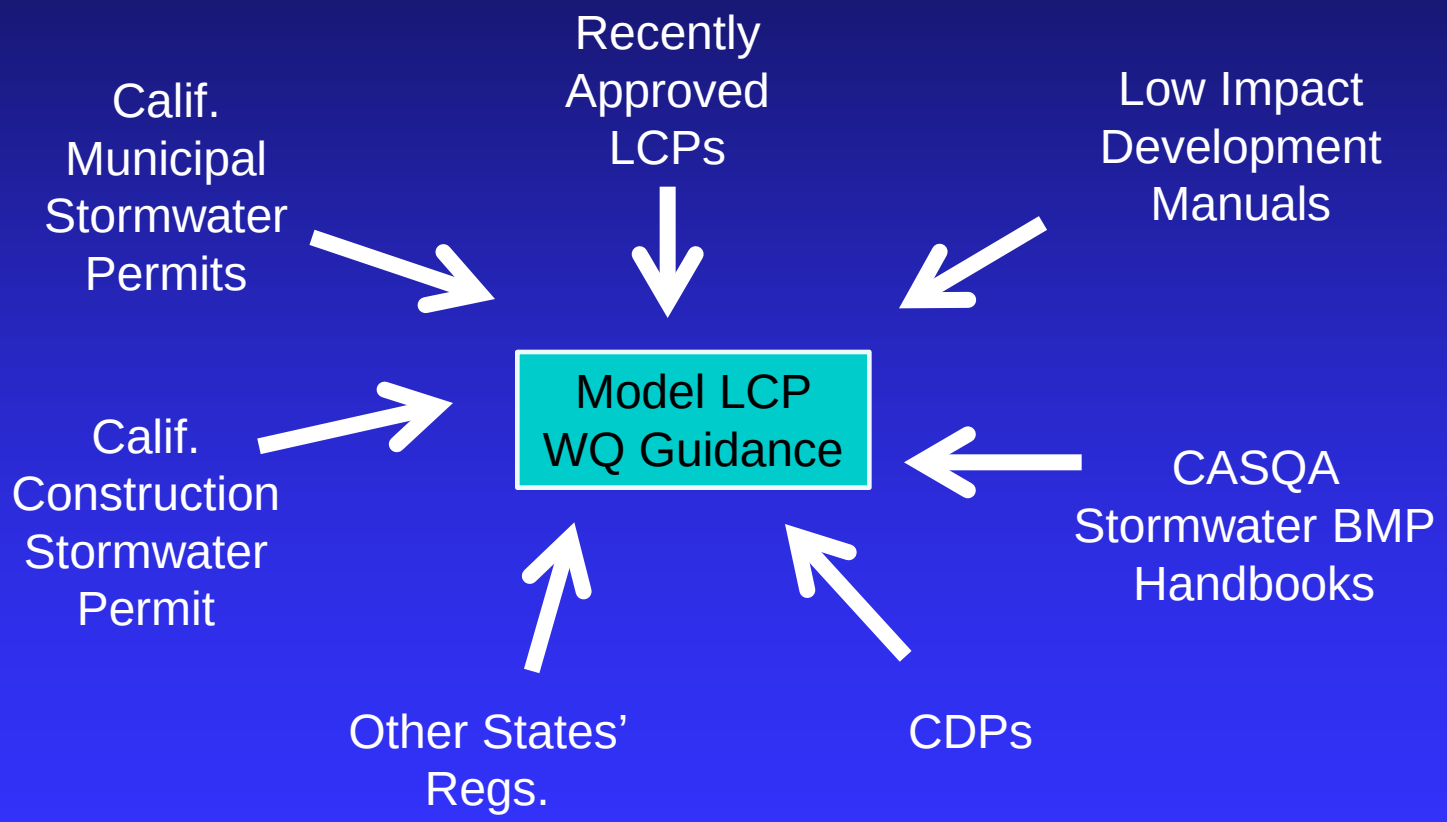
California NPS Program

- CCC & State Water Board co-leads
- Implement Coastal NPS Program statewide
- CWA & CZARA requirements

Model LCP WQ Guidance

- LCPs & LRDPs
  - LUP policies
  - IP standards
- Examples, not required
  - Adapt to reflect local needs
- Local governments & CCC analysts

Synthesis of Many Resources



Model IP: 3 WQ Plans

- Construction-Phase:
  - *Construction Pollution Prevention Plan*
- Post-Development – 2 tiers:
  - *Post-Development Runoff Plan*
  - *Water Quality & Hydrology Plan*

All Plans

- Stand-alone or not
- Detail commensurate with type and scale
- Easy-to-use framework for LCP WQ elements

Model IP: Organization

- Index
- Overview of 3 WQ plans
- Project site info needed in application
- For each plan:
  - Applicability
  - Submittal
  - Performance standards
  - Content

Principles of Model WQ Guidance

- Protect and restore water quality
- Minimize pollutants in runoff
- Minimize changes in runoff flow regime:
  - Volume, flow rate, timing, duration
  - Not just peak rate

Impacts of Changes in Runoff Flows

- Erosion & sedimentation
- Pollutant transport
- Flooding
- Groundwater recharge
- Stream base-flow
- Salinity & water temperature

Low Impact Development

- Replicate site's pre-development hydrology
  - Preventive Site Design strategies
  - Small-scale, distributed BMPs –
    - Infiltration, evapotranspiration, harvesting, detention, or retention of runoff

LID Site Design Strategies

- Minimize impervious surfaces
- Disconnect impervious from storm drains
- Enhance on-site infiltration
- Protect natural hydrologic features
- Preserve vegetation

Examples of LID BMPs

- Bioretention system, swale, or rain garden
- Direct roof-top runoff into landscaping
- Permeable pavement system
- Harvest runoff with rain barrel
- Plant trees

Construction Pollution Prevention Plan

- Erosion & sediment control

  Plus:

- Other construction pollutants
- BMPs for projects near water
- Removal of vegetation
- Land disturbance

Post-Development Runoff Plan

- Address runoff early in Site Design
- Give precedence to LID
- Alternative BMPs if can't infiltrate
- Source Control BMPs
- Manage BMPs for life of development

Plus:

What's New in *PDRP*

- Low Impact Development
- Dry weather runoff
- Stormwater outfalls
- Impacts to ESHA from runoff

and…

Runoff from Impervious Areas

- Address runoff from:
  - All new and/or replaced impervious surfaces
  - Entire developed area, including pre-existing impervious surfaces, *if*:
    - New and/or replaced impervious surfaces ≥ 50% of pre-existing impervious area

(1 acre pre-existing + 0.6 acre new = address all)

Developments of Water Quality Concern

- Elevated potential for impacts
  - Proximity to coastal waters
  - Type of land use
  - Amount of impervious surface
- Additional WQ protection planning

Water Quality & Hydrology Plan

- Qualified professional
- Site characterization
- Numerical design standards
- Use LID to retain design storm if feasible

Site Characterization

- Site hydrology & expected pollutants
- Drainage management areas
- Calculate runoff for each DMA
- Q=CiA

Numerical Design Sizing

- *Volume-based* (WQv)
  - Rainfall volume expected in 24-hour period
- *Flow-based* (WQf)
  - Highest rainfall rate for 1-hour period x 2

85th Percentile Standard, or?

- Treat (or retain) all small storm events
  - Small storms mobilize most pollutants
- Larger storms' pollutant to volume ratio low
  - Economy of scale
- Design standard chosen
  - According to pre-development infiltration rates

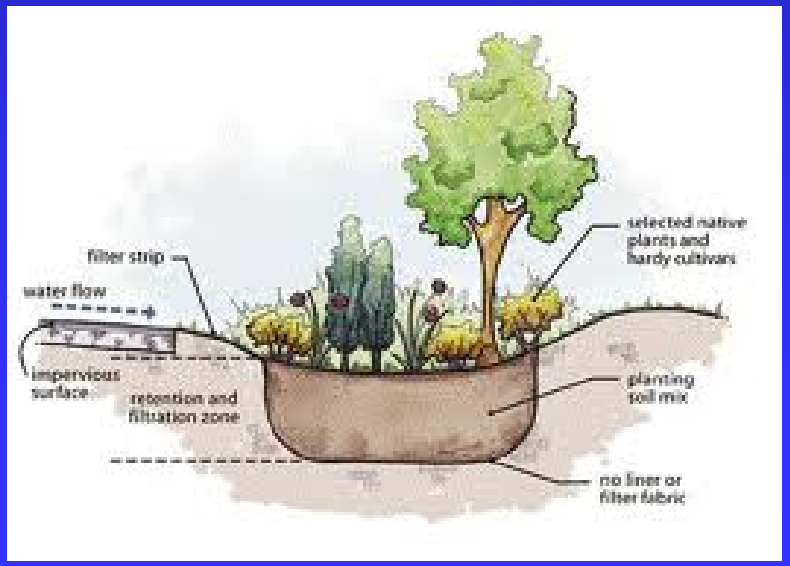
Treatment Control BMPs

- Filter pollutants
- May infiltrate or just detain runoff


Example:
Santa Barbara
1.09 in/24-hrs or 0.2 in/hr

Earthen-Based TBMPs

bio-swale or bio-strip



Proprietary TBMPs

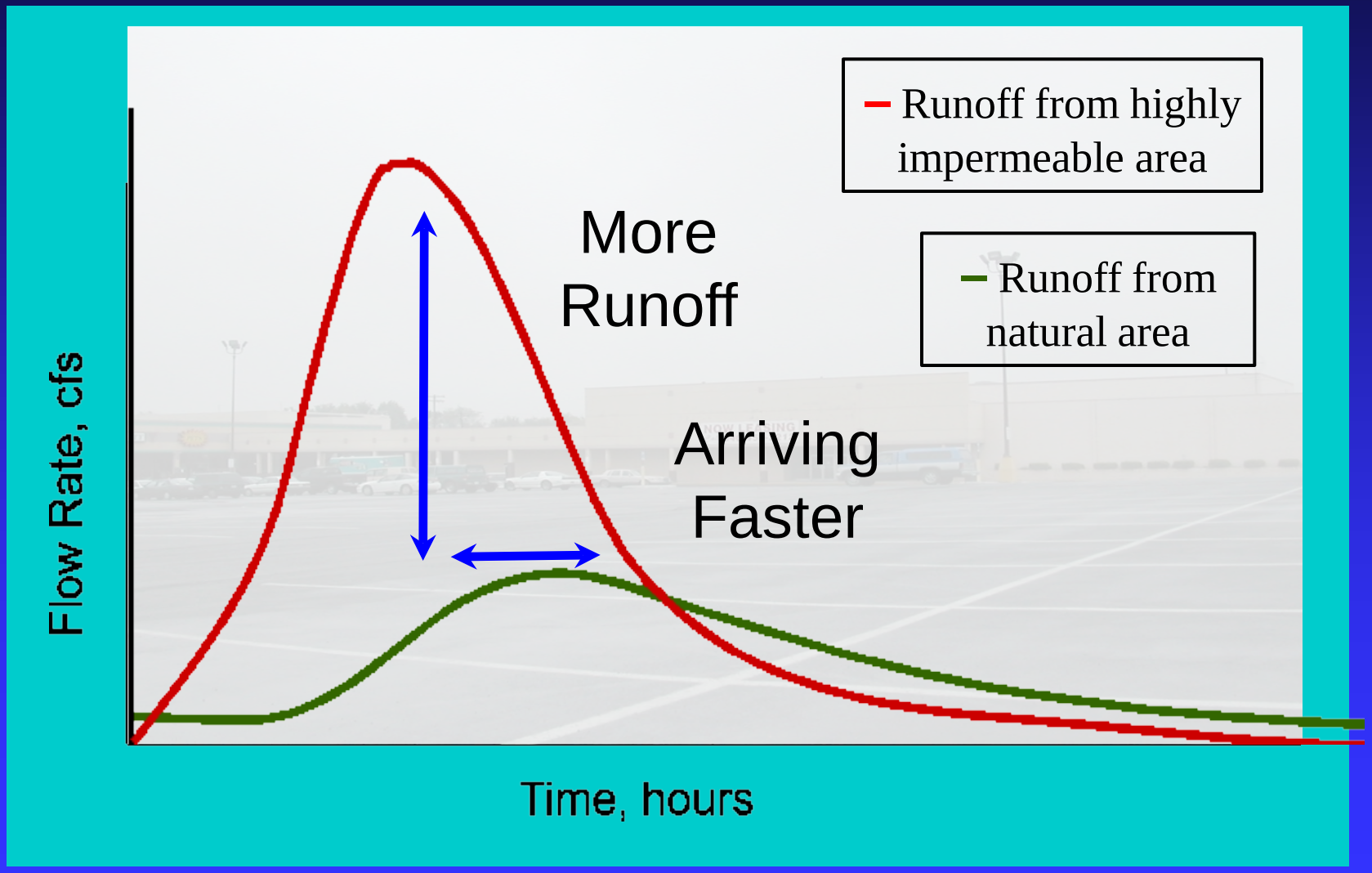
media filter or hydrodynamic separator

Flow and Volume Based Treatment Measure Sizing Criteria		
Type of Treatment Measure	**LID?**	**Hydraulic Sizing Criteria**
Bioretention area	Yes	Flow- or volume-based or combination
Flow-through planter box	Yes	Flow- or volume-based or combination
Tree well filter	Yes	Flow-based
Infiltration trench	Yes	Volume-based
Subsurface infiltration system	Yes	Volume-based
Rainwater harvesting and use	Yes	Volume-based
Media filter	No	Flow-based
Extended detention basin	No	Volume-based

If LID Can't Retain WQv On-site

- Alternatives analysis
  - Modify site design
- Runoff controls
  - *If* adding >15,000 ft^2 (= 122 x 122 feet)
  - WQv retention on-site and/or peak management

Site Runoff Hydrology



Runoff Controls

- Flow retention –
  - Retain 85th percentile volume (WQv)
- Peak management –
  - Retain or detain any post-development increase in 2-year through 10-year peaks

Other Regulatory Requirements

Stormwater Permits

Municipal Permits
- **Phase I**
- **Phase II**

Industrial Permits
Construction Permits

State / Local Requirements

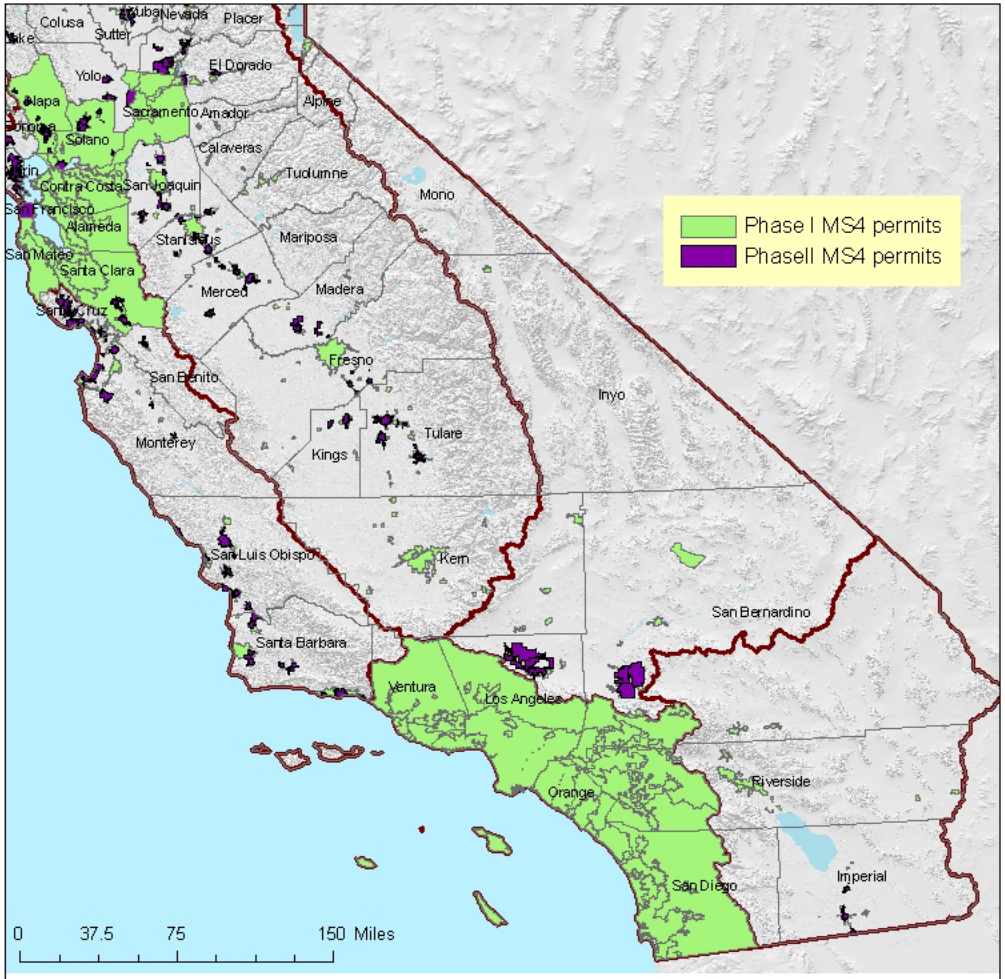
California Environmental Quality Act

Endangered Species Act Requirements

Section 401 Water Quality Certifications

TMDLs

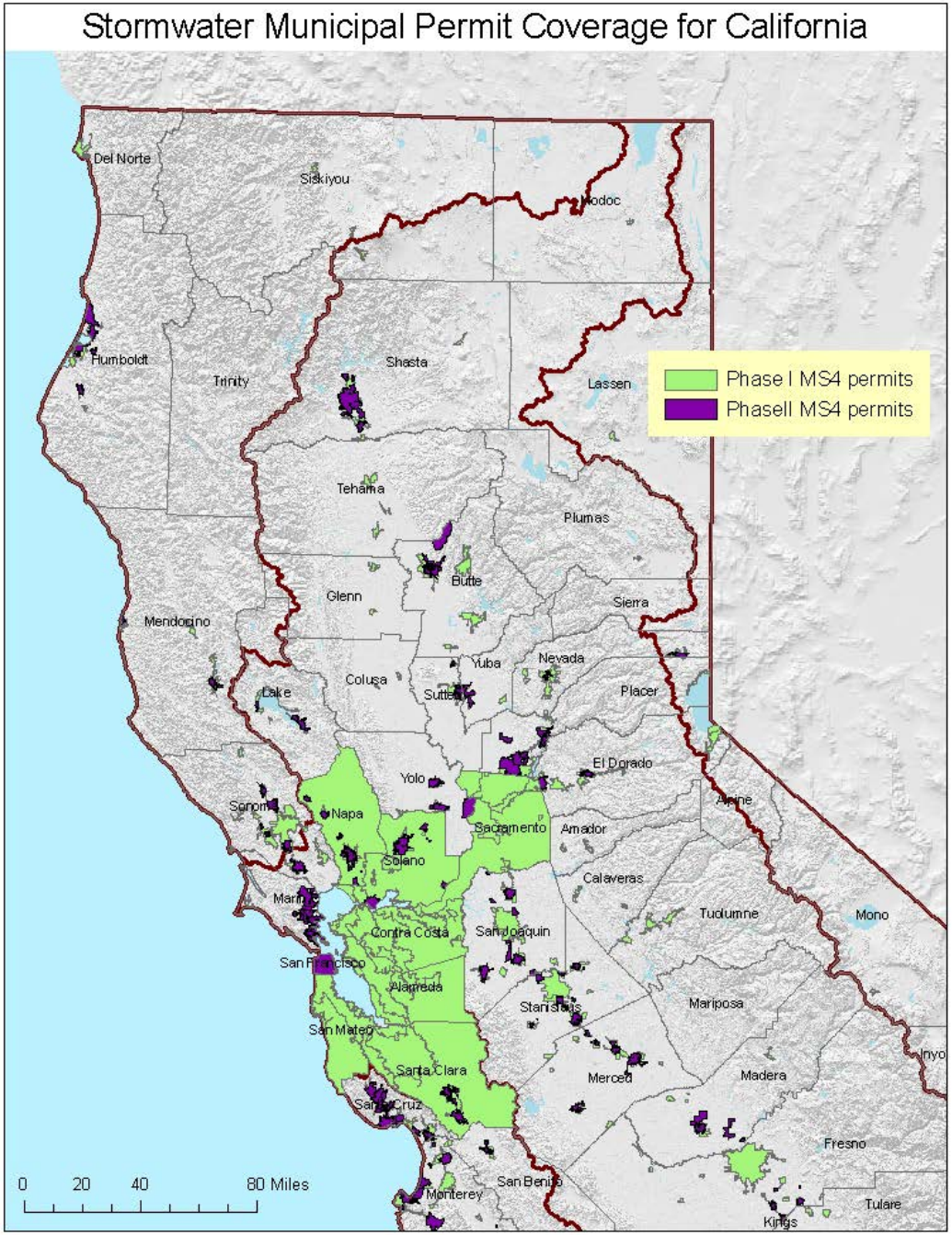
From CASQA BMP Handbook - New Development/ Redevelopment



Stormwater Municipal Permit Coverage for California

State Water Board's Stormwater Permits

- Municipal – MS4:
  - Phase I & II
- Central Coast not well covered



MS4 Stormwater Permits, North

- North Coast also not well covered

Other Stormwater Permits

- Caltrans – MS4
  - Different thresholds than Phase I or II local government permits
- Construction
  - Requires SWPPP
  - Only if ≥ 1 acre disturbed
  - Some post-construction requirements

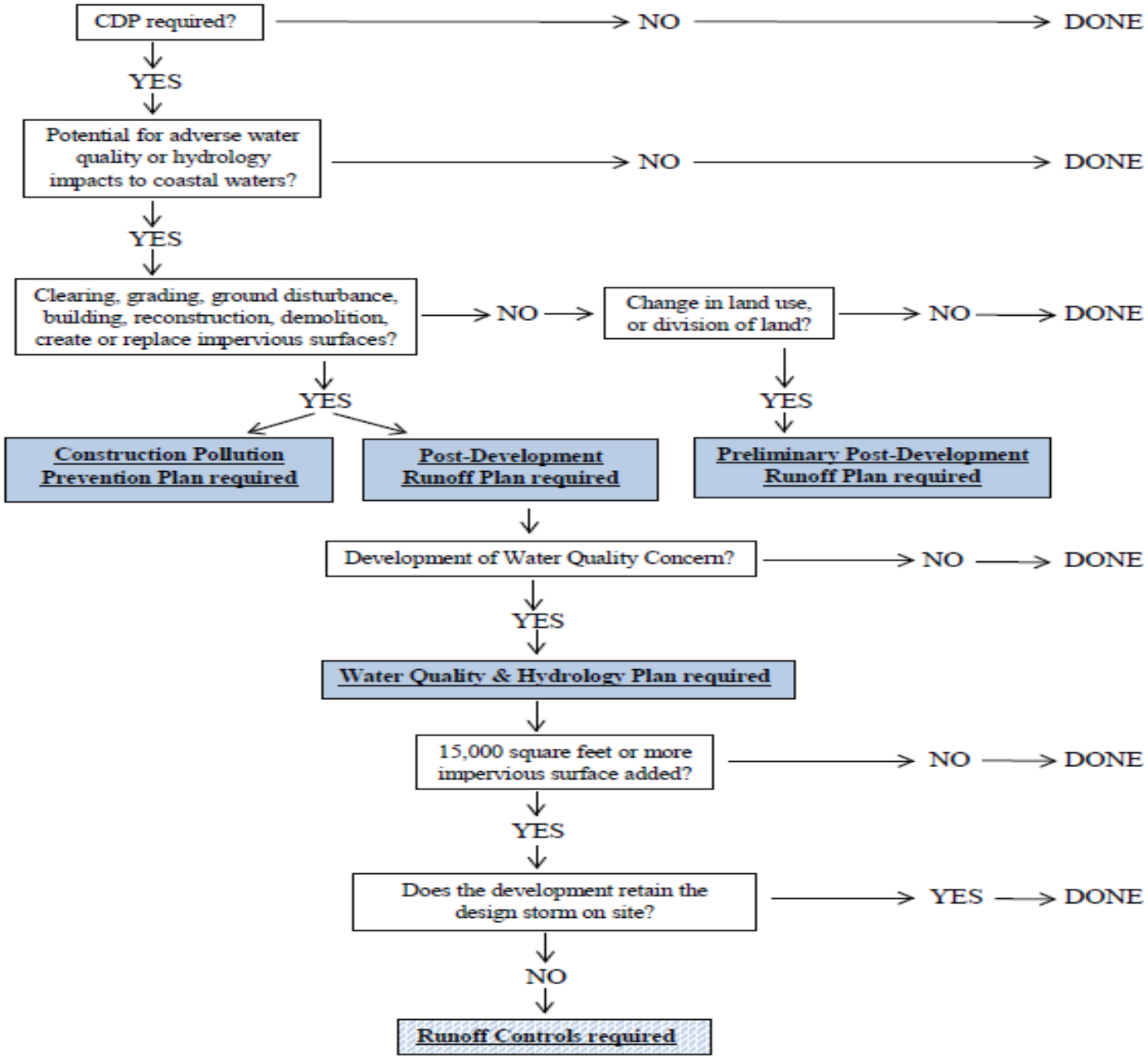
Why Put WQ Requirements in the LCP?

- Provides the standard of review for CDPs and appeals
- Addresses rural areas in the CZ not under MS4 permit
- Includes coastal-specific WQ requirements

Apply standards that are most protective of coastal resources

Questions?

Flow Chart of Water Quality Plans Required in Model LCP



Comparison Proposed vs. Model IP

***SUMMARIZED** CCC MODEL IP WQ STANDARDS - draft 4-21-15 (*Note that the Model standards are **not** all fully quoted)*	***RELEVANT PROPOSED IP STANDARDS*** **Section 21.30.135 – Water Quality Control**	***Metz Comments: Does Proposed IP Cover CCC Model IP WQ Standard?***
extent feasible.		
c. Design BMPs using 85th percentile design storm standard. The BMP (or suite of BMPs) implemented to comply with WQHP requirements shall be sized, designed, and managed to infiltrate, retain, or treat the amount of runoff produced by all storms up to and including the 85th percentile 24-hour storm event for volume-based BMPs, or the 85th percentile 1-hour storm event (with an appropriate safety factor of 2 or greater) for flow-based BMPs.	C. Post Construction – WQMP. A water quality management plan (WQMP) shall be required for all development requiring a coastal development permit pursuant to the Water Quality Ordinance. The WQMP shall identify best management practices (BMPs) that will be used to minimize to the maximum extent practicable dry weather runoff and runoff from small storms (less than 0.75 inch of rain falling over a 24-hour period) from the property. … D.3. To the maximum extent feasible, development shall minimize adverse effects of waste water discharges and control runoff. Design and siting practices include, but are not limited to, the following: D.3.a. Retaining runoff on private property to prevent the transport of bacteria, pesticides, fertilizers, pet waste, oil, engine coolant, gasoline, hydrocarbons, brake dust, tire residue, and other pollutants into recreational waters.	➢ **KEY POINT – very important!** Partially addressed. This is a key component of the WQHP. NB's section (C) refers to what sounds like it could be the 85th percentile design storm (0.75" rain in 24 hours). But NB's sizing standard refers only to minimizing runoff from their design storm volume (which applies to Runoff Control BMPs), not to treating runoff (for Treatment Control BMPs, which can be flow-based or volume-based). We require this 85% numerical sizing standard (or an equivalent standard) for Treatment Control BMPs, and for some Runoff Control BMPs.

Why Earthen-Based BMPs

- LID approach
- Filter pollutants *and* detain runoff
- Self-maintaining

Alternatives Analysis

- Alternative project designs to retain design storm runoff on-site
- Maximize runoff retention on-site
- Consider off-site runoff retention

Hydrograph - LID

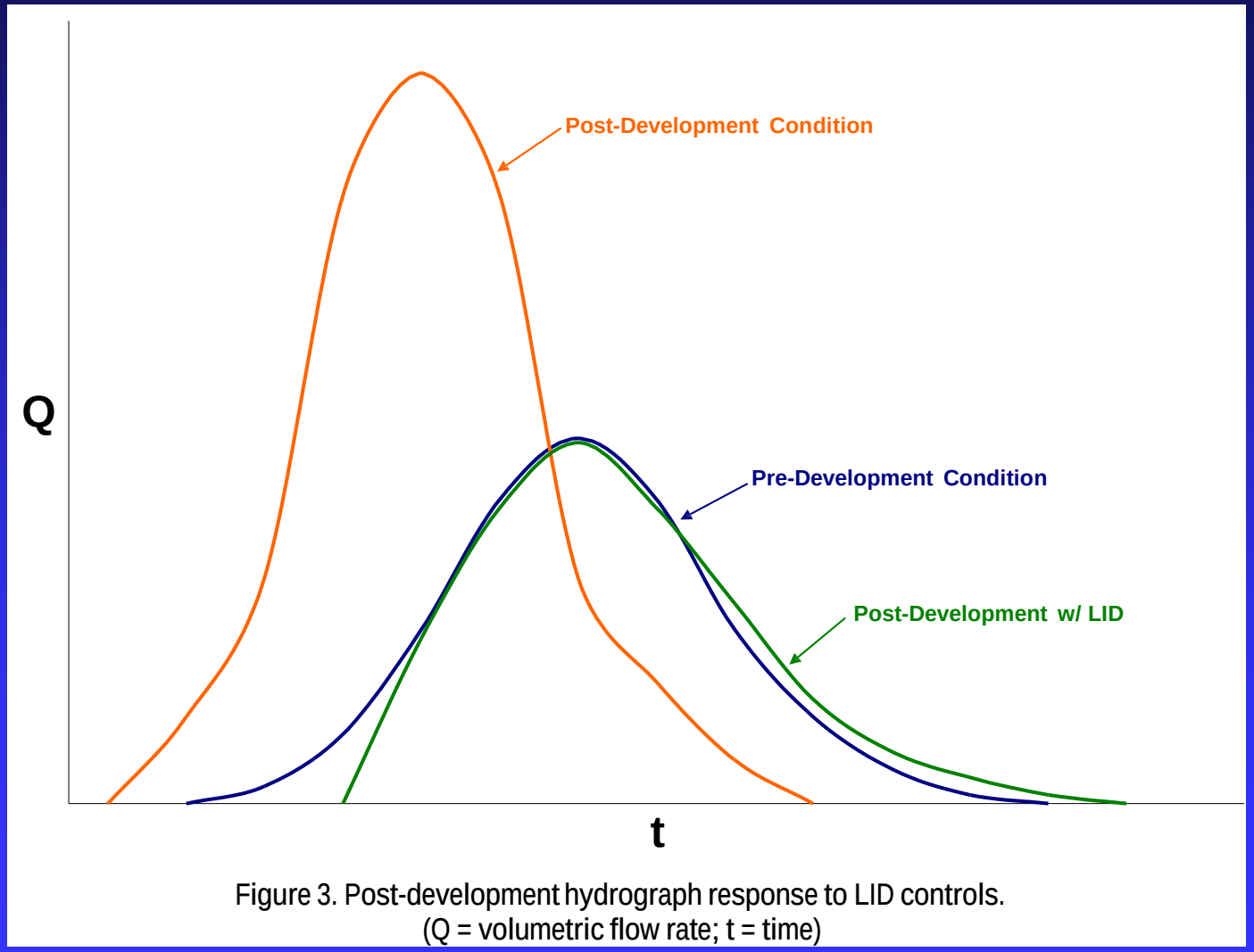


Figure 3. Post-development hydrograph response to LID controls.
(Q = volumetric flow rate; t = time)

From: *A Review of Low Impact Development Policies: Removing Institutional Barriers to Adoption* (SWRCB, 2007)