

Pima County Regional
FLOOD CONTROL
D I S T R I C T



DETENTION/RETENTION MANUAL

2013

MS4 SUMMIT

June 18, 2013

APPLICABILITY

- × Applicable to commercial and residential developments
- × Regional basins require watershed-scale planning.

WHY?

- ✘ Update policy approved approximately 1987
- ✘ Re-assess large volume retention
- ✘ Incorporate Low Impact Development (LID) practices

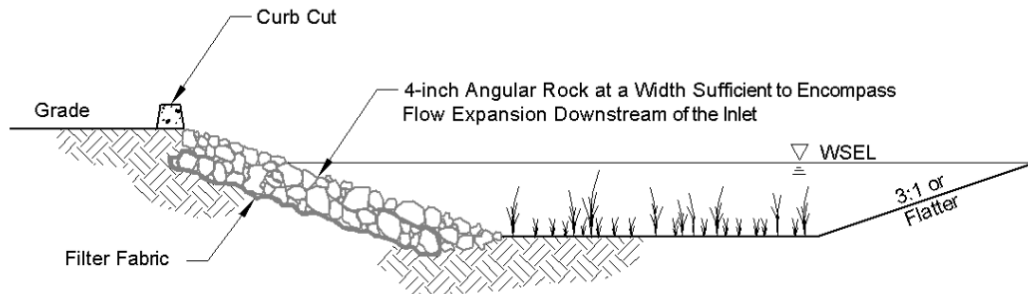


- ✘ Detention systems remain

WHAT'S NEW?

- × Detail for Construction Standards
- × First Flush Retention Replaces 5-year or 2-year Retention
- × Method to Calculate Peak Discharge Rate Reduction of Storm Water Harvesting/Retention
- × Low Impact Development (LID) Practices

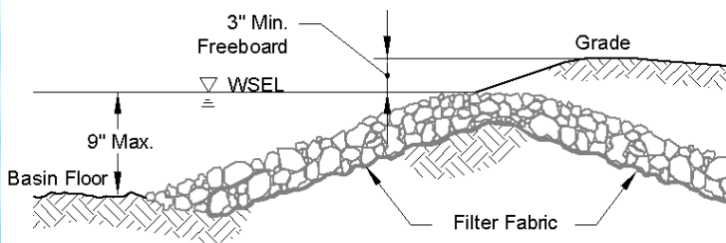
EXAMPLE DETAIL SKETCH



① INLET EROSION PROTECTION

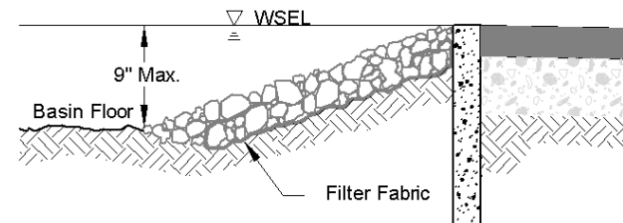
Scale: N.T.S.

- Hand placed, non-grouted rock shall be placed in two layers on filter Fabric.
- Hand placed, grouted rock shall be imbedded into the concrete a minimum of $\frac{1}{2}$ the rock diameter.



DISCHARGING ONTO AN EARTHEN SURFACE

Scale: N.T.S.



DISCHARGING ONTO A PAVED SURFACE

Scale: N.T.S.

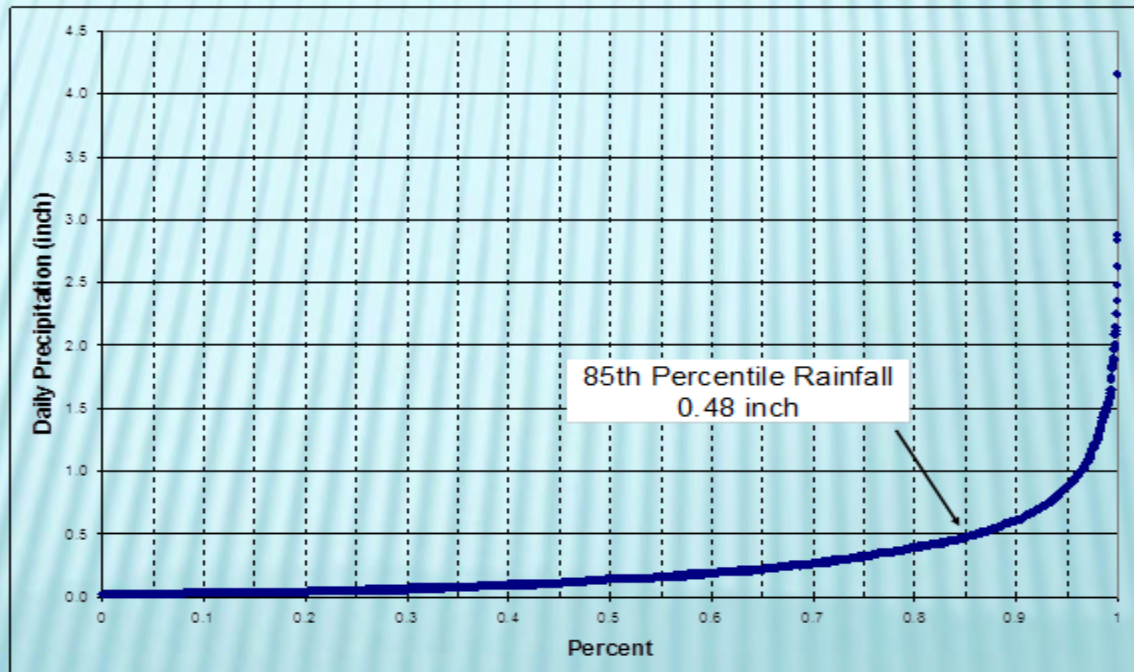
② OUTLET EROSION PROTECTION

FIRST FLUSH RETENTION

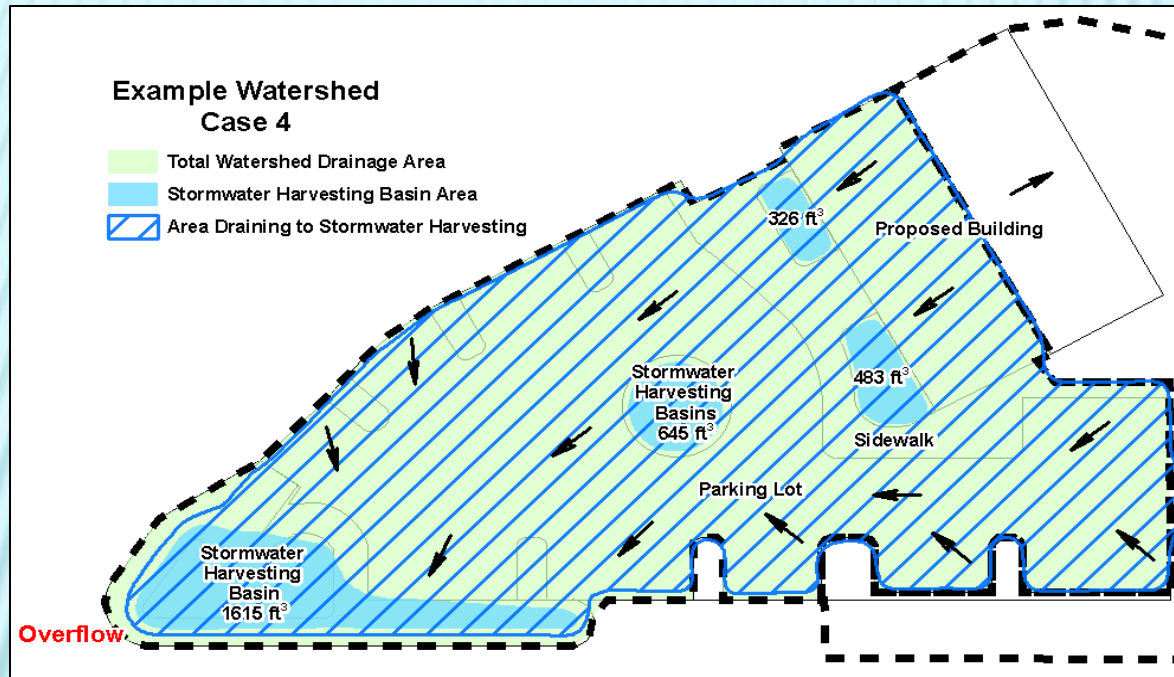
- × “First Flush” chosen as descriptor to benefit County reporting on water quality measures.
- × Intent is to incentivize location of retention adjacent to site areas producing greater pollutant concentration and runoff volume.
- × Retention in detention basins acceptable.

FIRST FLUSH RETENTION

- ✘ No water quality component yet
- ✘ Defined as .5" runoff from impervious or disturbed surfaces
- ✘ 85% of all daily rainfall depths are less than .5" (ASCE, 1998)



METHOD TO CALCULATE PEAK Q REDUCTION ATTRIBUTABLE TO STORM WATER HARVESTING



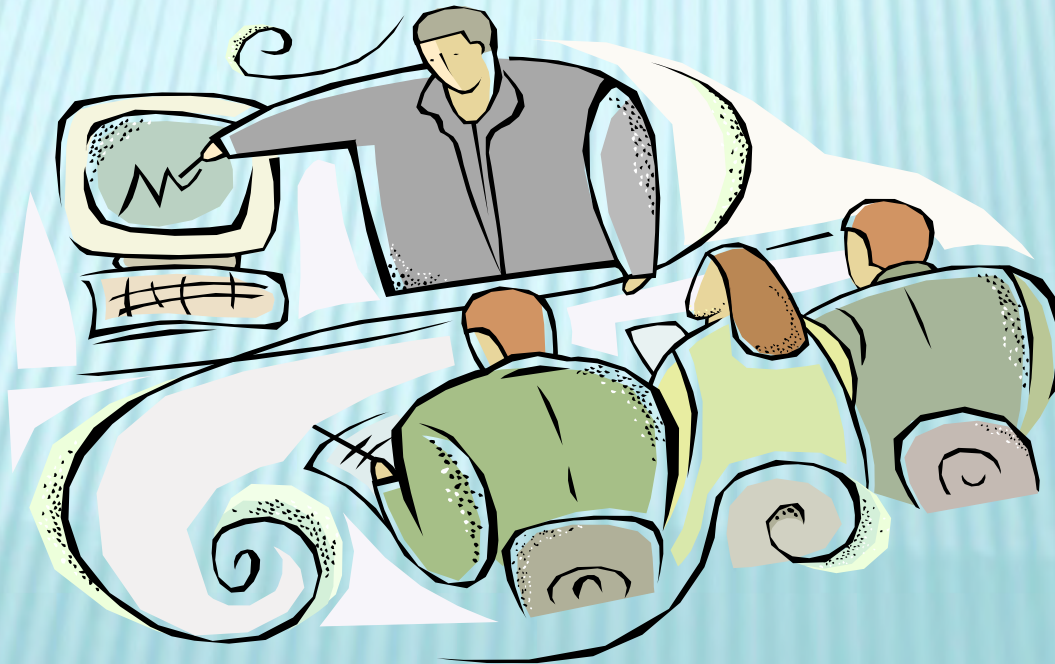
- ✘ Volume of Storm Water Harvesting vs. Volume of Post-Developed Runoff

PEAK DISCHARGE RATE REDUCTION

- + For Stormwater Harvesting Basins:
 - × Factor developed from runoff measurements replicated by SWMM modeling to assess volume/Q relationship
- + For Detention Basins:
 - × Stage-Storage Method

WORKSHOPS

- ✘ After Final Draft is accepted by all reviewers, RFCD will schedule workshops to provide training about methods in manual



LOW IMPACT DEVELOPMENT (LID)

Low impact development is a comprehensive land planning and engineering design approach with a goal of maintaining and enhancing the pre-development hydrologic regime of urban and developing watersheds.

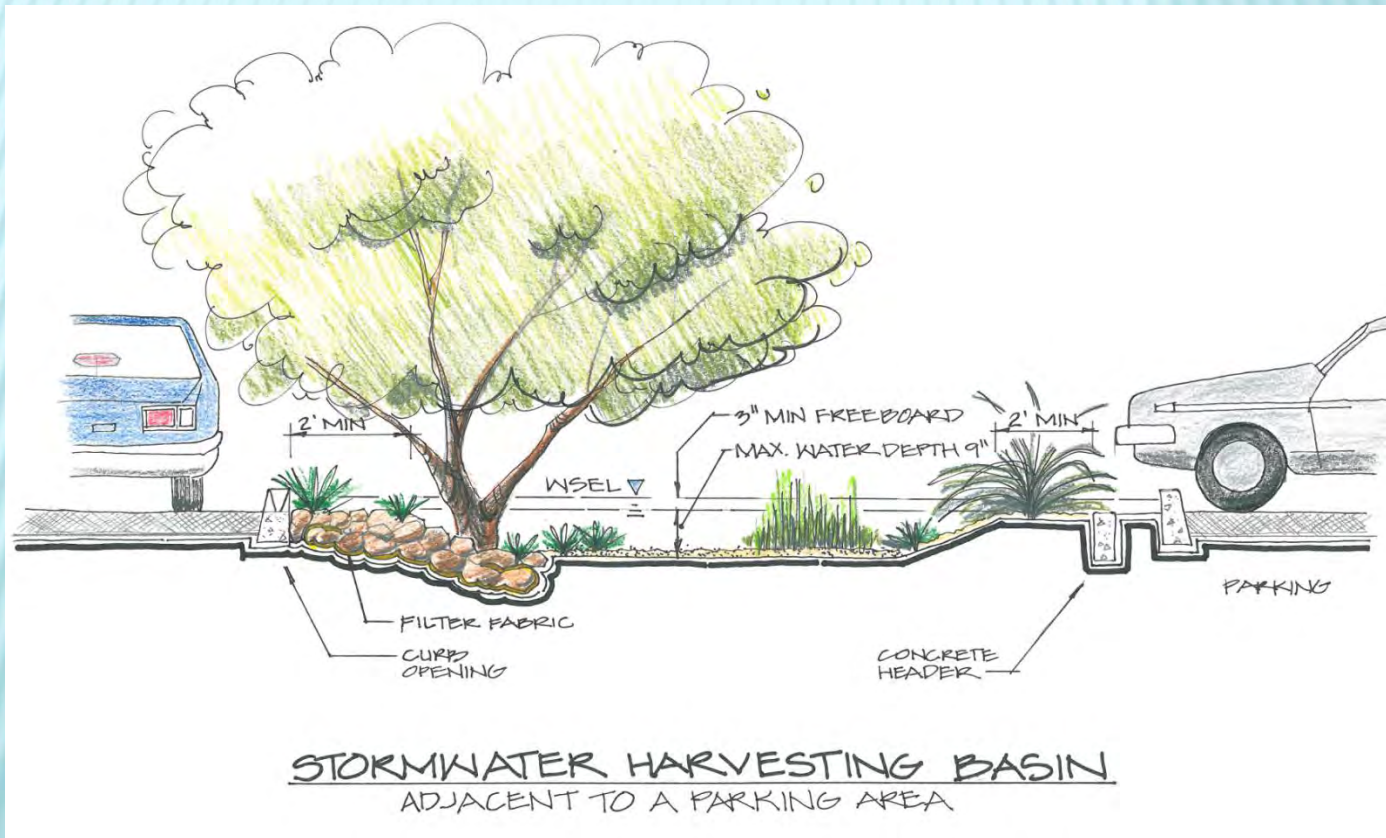
Low Impact Development Center

Chapter 16.36, SUBDIVISIONS AND DEVELOPMENT, requires:

- compatibility with pre-development drainage conditions
- mitigation of peak and volumetric flood water runoff

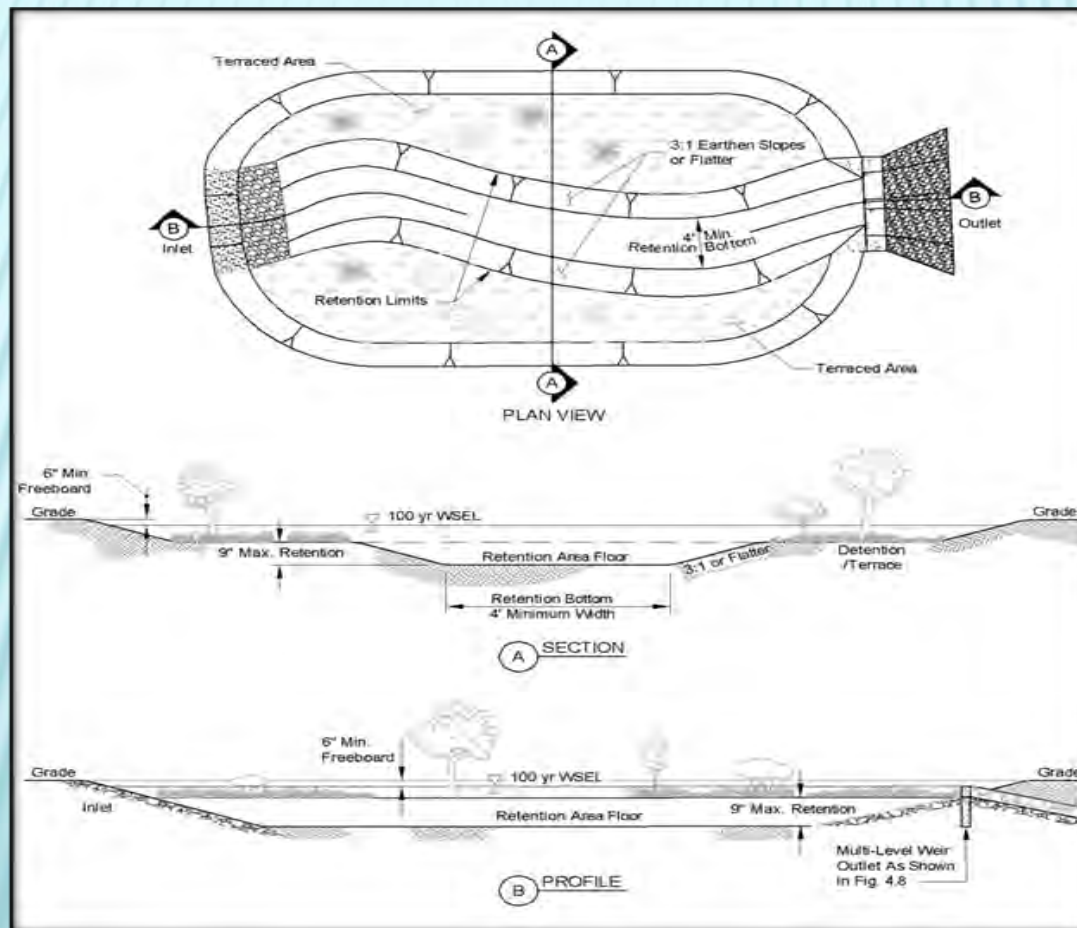
ACCEPTABLE LID PRACTICES

+Storm Water Harvesting Basins



ACCEPTABLE LID PRACTICES

+Retention in Detention Basins



ACCEPTABLE LID PRACTICES

+Swales that mimic natural flow paths



ACCEPTABLE LID PRACTICES

+ Minimized/discontinuous
impervious surfaces



✘ Protection of riparian habitat and natural flow paths



REVIEW STATUS

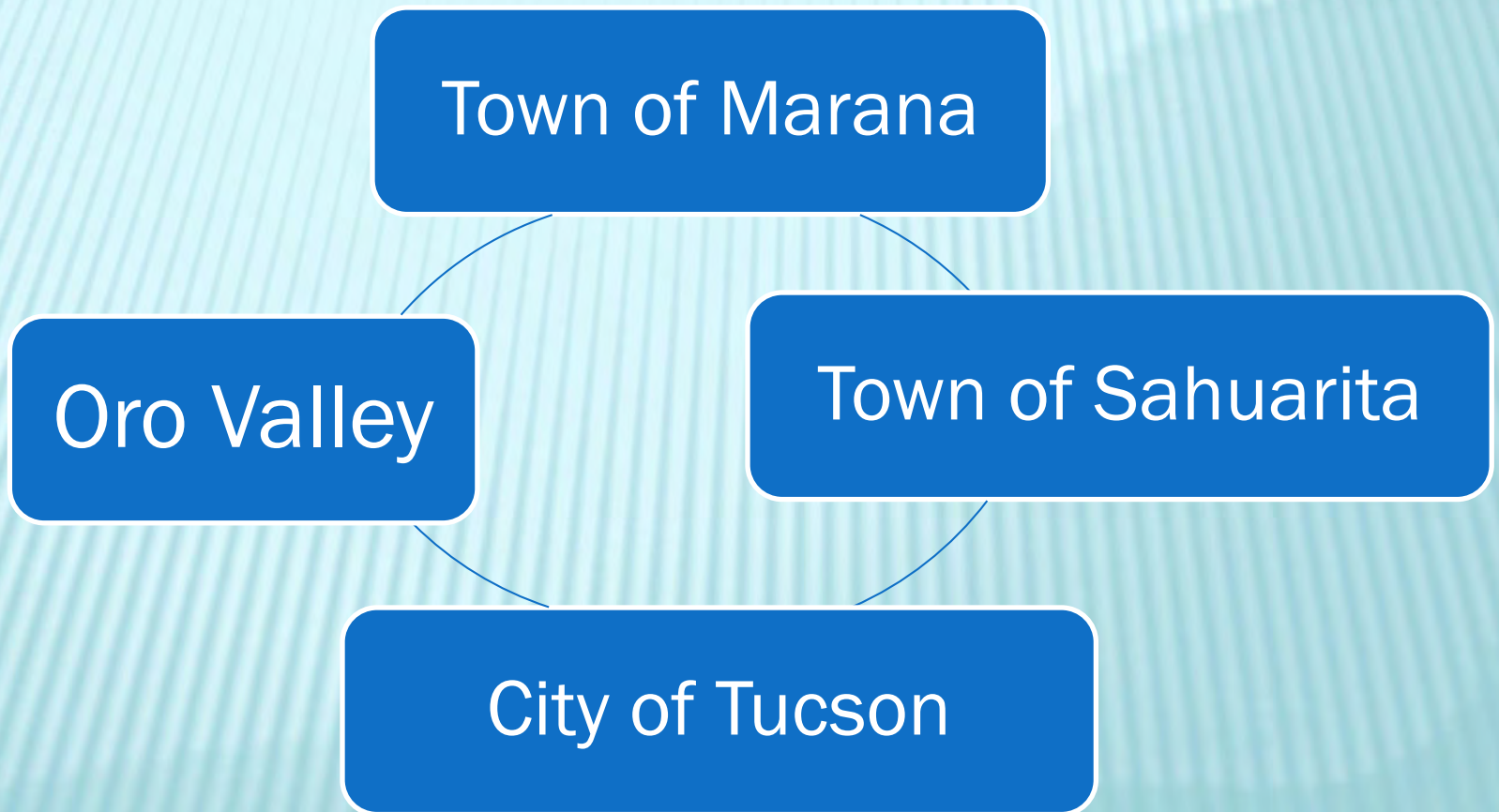
Internal

Practitioners

Jurisdictions

FCDAC

REVIEWING JURISDICTIONS



JURISDICTIONAL OUTCOME

- ✘ Obtain as much consensus as possible
- ✘ Local amendments as necessary

FLOOD CONTROL DISTRICT ADVISORY COMMITTEE

16.48.010:

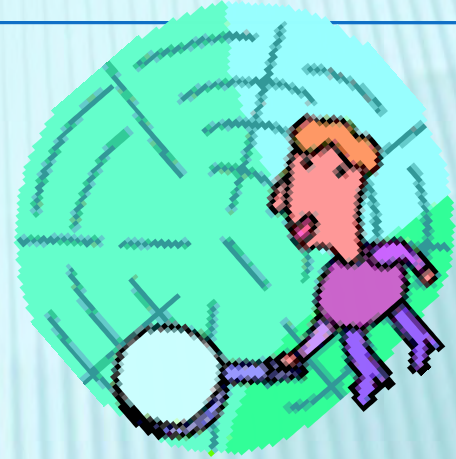
Any revisions to the Storm Water Retention/Detention Manual will be reviewed by the Flood Control District Advisory Committee, prior to adoption by the Board as updated design standards for detention/retention.

COMMENTS

✘ In writing to:

Ann. Moynihan @pima.gov

LINK TO DRAFT



✘ <http://rfcd.pima.gov/rules/stormwater.cfm>