



Meeting Receiving Water Challenges, While Preserving Water Resources

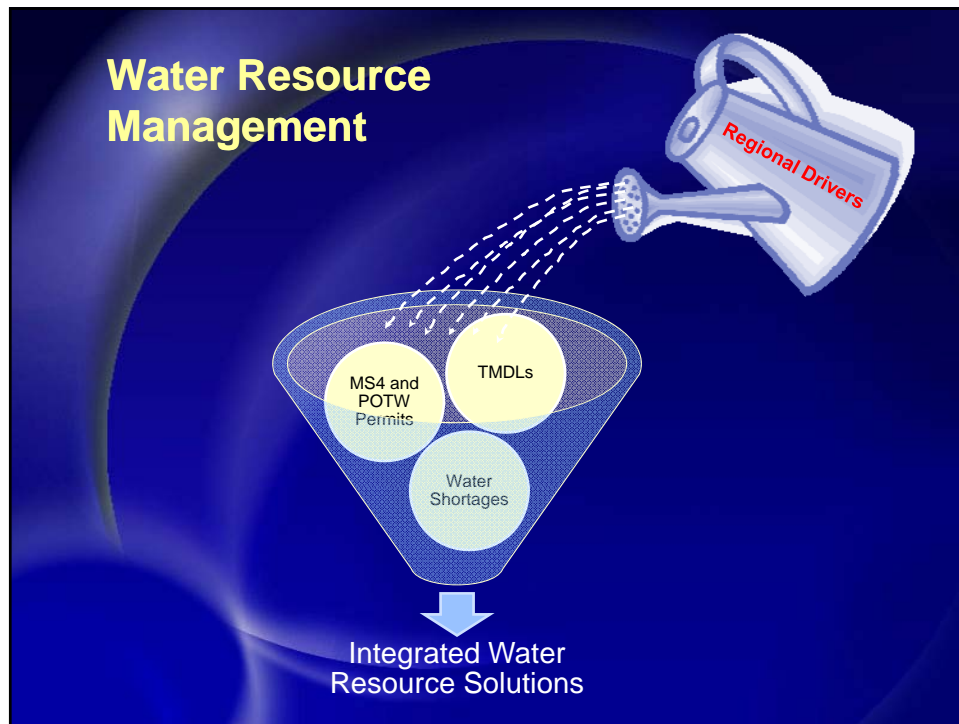
Western Coalition of Arid States

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Water Quality Challenges – TMDLs and Urban Runoff

- Impaired Waters in the Los Angeles Region (Los Angeles & Ventura Counties)
 - ✓ 2006 List – 522 impairment listings affecting 161 waterbodies (includes beaches)
 - ✓ Proposed 2008 List
 - 66 new listings currently proposed affecting 35 named waters in Basin Plan
 - 20 existing listings proposed for delisting affecting 12 waters
- TMDLs – typically have an urban runoff allocation; in many cases urban runoff is the primary target for load reduction

Water Quality Challenges – Next Generation Stormwater Permits

- 4th Generation Phase I City/County Stormwater Permits emphasize
 - ✓ Significant reduction of runoff from new or redeveloped sites
 - Required low impact development (LID) BMPs
 - Minimization of imperviousness
 - Mimic pre-development hydrology
 - ✓ Incorporation of TMDL compliance requirements
 - ✓ “Watershed Action Plans” as pre-TMDL requirement
- Examples: Ventura County, Orange County, San Diego, South Orange County

Water Supply Challenges – Imported Water

- Major reductions or uncertainties in imported water supplies
 - ✓ Colorado River cutbacks to Southern California and extended dry period
 - ✓ Reductions in Delta outflows for species protection and below normal hydrology
 - ✓ Shifting hydrology patterns due to climatic change



Water Supply Challenges - Local

- Local supplies stretched thin
 - ✓ Below normal hydrology in southern California
 - ✓ Degraded water quality in groundwater basins
 - ✓ Continued growth
 - ✓ Public and environmental concerns



Where are the Water Resource Intersections?

MS4 Permits & TMDLs

Dry Weather
Runoff Reduction
Infiltration

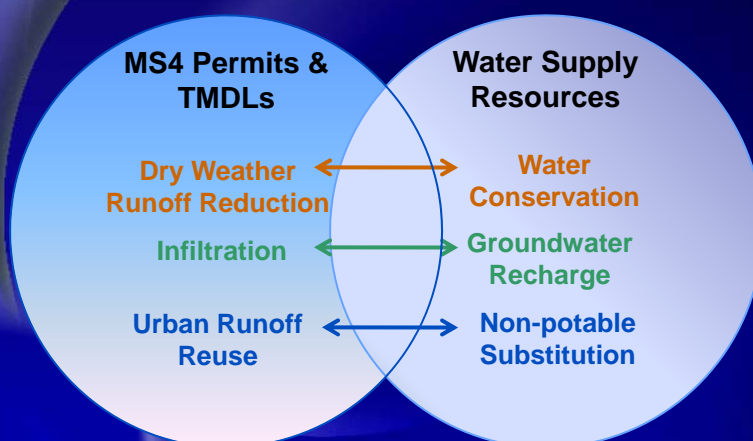
Urban Runoff
Reuse

Water Supply Resources

Water
Conservation
Groundwater
Recharge

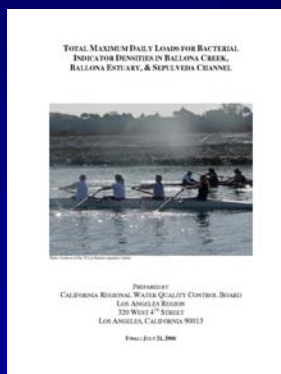
Non-potable
Substitution

Where are the Water Resource Intersections?



Integrated Solutions Gain Interest Because of Challenges

- **Stormwater Permittees: Cities and Counties**
 - ✓ TMDL Implementation Plans must demonstrate quantitatively how compliance will be achieved
 - ✓ MS4 permit incorporates TMDL compliance targets
 - ✓ Must manage costs – minimize structural; maximize non-structural solutions
 - ✓ Feasibility issues – especially in built out watersheds
 - ✓ Budget crisis!



Integrated Solutions Gain Interest Because of Challenges

- **Water Suppliers – Complex Web**
 - ✓ Regional wholesale agencies
 - ✓ Local cities, retail water agencies, investor-owned utilities, mutual water companies
 - ✓ Groundwater management agencies, water conservation districts, flood control agencies
- **Many Pressures**
 - ✓ Financial, especially in current economy
 - ✓ Water quality regulations – always evolving
 - ✓ Other – public awareness, environmental issues
 - ✓ Easy/obvious solutions long gone

Integrated Solutions Gain Interest Because of Challenges

- **Numerous NGO Advocacy Groups**
 - ✓ Have the ear of the regulators and significantly influence TMDL & MS4 permit requirements...
 - ✓ But recognizing limitations of budgets, feasibility issues
 - ✓ Still want to see restoration of concreted buried waterbodies, more green spaces, limitations on new development/redevelopment unless urban runoff managed effectively
 - ✓ Increasingly working in partnership with Permittees to help facilitate implementation of BMP projects

Integrated Solutions Gain Interest Because of Challenges

➤ State Regulators

- ✓ Stringency of regulatory requirements varies by region
- ✓ Lean towards advocacy groups when deciding whether to promote more regulation...
- ✓ But, like advocacy groups, increasingly recognizing budget/feasibility limitations

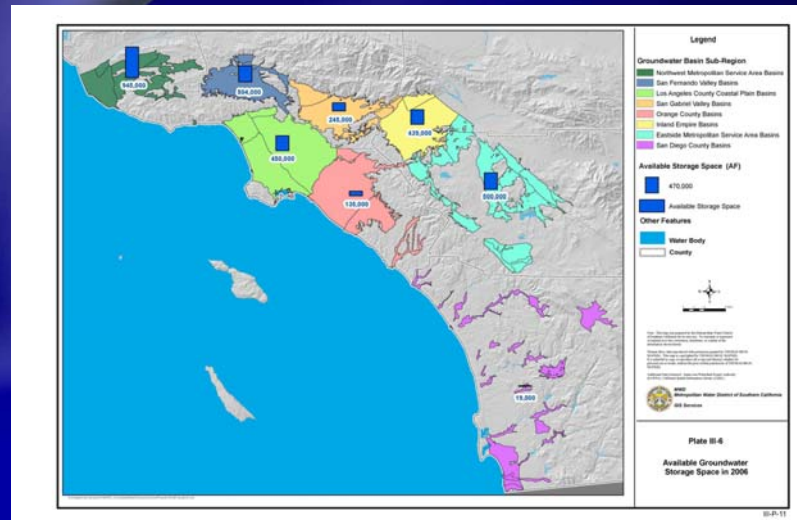
➤ EPA

- ✓ Close collaboration with regulators behind the scenes



Case Study: Groundwater Recharge with Urban Runoff in the Los Angeles Area

Groundwater Storage and Recovery – Long History with Accelerating Emphasis



MWDSC, 2007

Groundwater Storage and Recovery Background

- Programs are widespread in larger basins
- Historically focused primarily on sources such as:
 - ✓ Local runoff at base of mountains
 - ✓ Imported water
 - ✓ Effluent dominated base flow (e.g. Santa Ana River)
 - ✓ Advanced wastewater treatment - recycled water (e.g. barriers, spreading grounds)

Until Recently, Urban Runoff Recharge was More Incidental Than Planned

- Much runoff reaches receiving water lower in basins, often below prime recharge areas
- Urban drainage systems were historically designed to convey water rapidly to ocean with minimum drainage footprint
- Have been some concerns about quality of urban runoff as source of recharge
- Drainage/flood control agencies often not water supply agencies

However, “Water” Landscape is Rapidly Changing

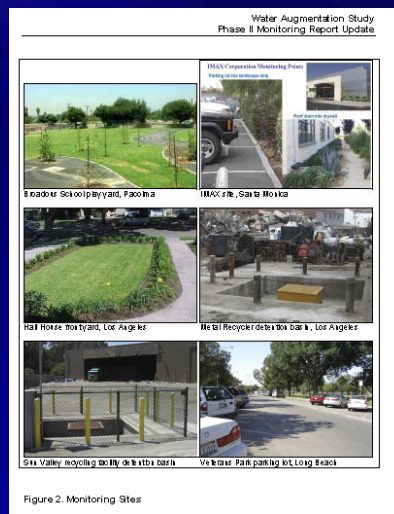
- Water Supply Agencies – looking for any new water not currently being captured or used
- MS4 Permittees – adjusting to burden of TMDL compliance which is creating a major shift in emphasis towards retention/infiltration

MWD Integrated Resource Plan

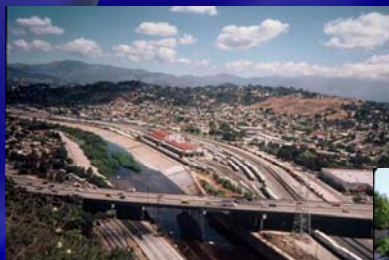
Los Angeles Basin Water Augmentation Study

- Extensive eight-year continuing program evaluating potential groundwater quality impacts from infiltration of urban runoff at variety of sites

"Based on trend analysis collected between 2000 and 2007, groundwater quality was stable or improved for most constituents at sites with shallow groundwater and sites with deep groundwater" LASGRWC, 2007



Case Study: City of Los Angeles TMDL Implementation



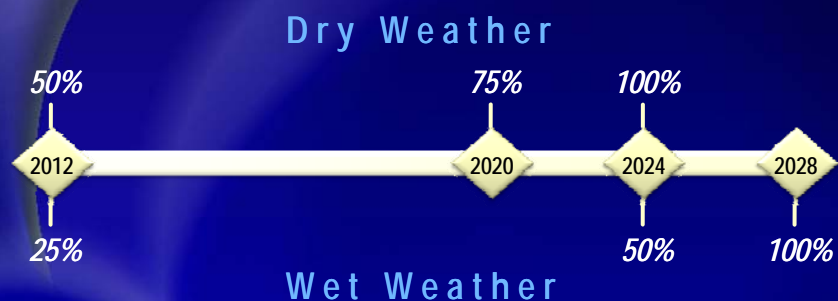
Los Angeles Region TMDLs

- Over 60 TMDLs expected by 2012
- Urban runoff commonly named source
- Except LAR nutrient TMDL, all existing TMDLs have urban runoff allocations
- TMDL Implementation Plans required to demonstrate compliance

Watershed	Existing TMDLs
Ballona Creek	trash, metals, toxics (estuary), bacteria
Dominguez Channel	trash, nutrients (Machado Lake)
Los Angeles River	trash, nutrients & related compounds, metals, bacteria (harbor only)
Santa Monica Bay	bacteria (beaches), bacteria & toxics (Marina del Rey)

Compliance Timelines Often Long, but Challenge to Comply Significant

- Example: Compliance Deadlines for Los Angeles River Metals TMDL



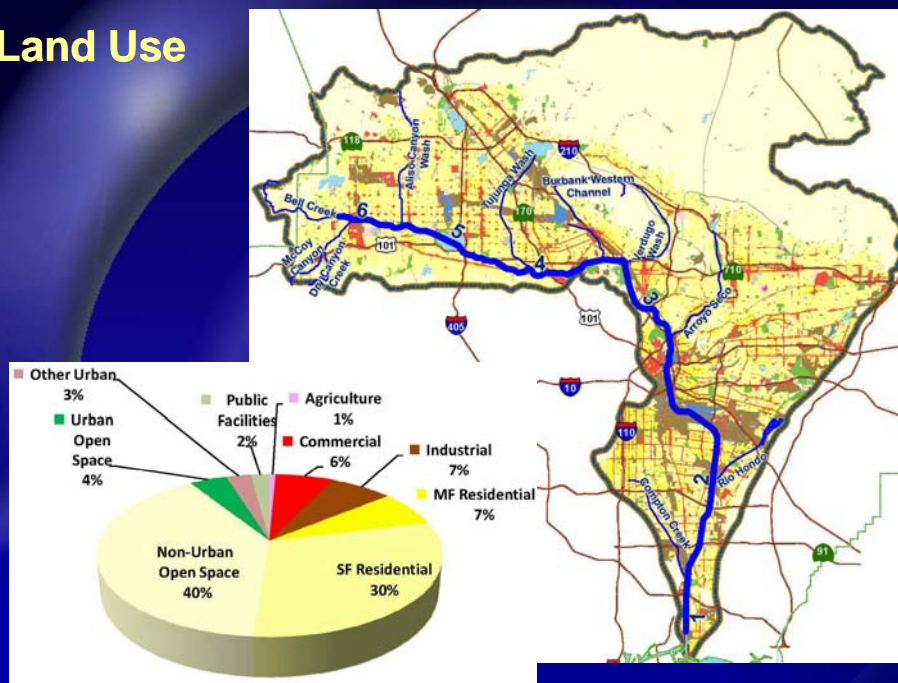
- Percentages represent % of drainage area that must meet urban runoff wasteload allocation by specific date

Los Angeles River (LAR) Watershed

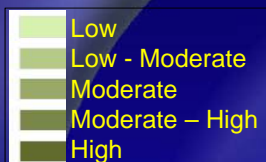
- TMDL applies to LAR reaches and selected tributaries
- Watershed area - 834 square miles
- City of LA - 33% of the watershed area (45% of urban area)



Land Use



Storm Event Pollutant Loading Based on Land Use: Example - Copper



Integrated Water Resource Approach to Achieve Compliance

➤ Balance non-structural/structural BMPs

✓ Non-structural

- Emphasis on source control
- Institutional – modify ordinances, implement incentive programs to encourage retrofits

➤ Structural

- BMPs address multiple pollutants
- Focus on “green solutions”; support existing sustainability initiatives
- Partner with NGOs



Structural Regional BMPs Examples



Infiltration Basin



Wet Detention Pond

Structural Distributed BMPs



Urban Streetscape



Bioretention Areas



Example: Distributed BMPs (Prop O)

Oros Street Biofiltration

- Retrofit in Oros Street residential area
- Drainage area – 2.3 acres
- Targeted pollutants – bacteria, metals, trash, oil & grease



Grand Avenue Retrofit

- 5-acre high-density residential and commercial corridor in the Venice area
- Targeted pollutants – bacteria, metals, trash, oil & grease



Example: Regional BMPs (Prop O)

Strathern Pit

- Project site – 46 acres
- Drainage area – 929 acres
- Capture & treat – 895 acre-ft
- Targeted pollutants – trash, bacteria, nitrogen, metals, pH, algae



Machado Lake

- 45 acre urban lake
- Drainage area – 12,800 acres
- Targeted pollutants - algae, ammonia, PCBs, trash, fish tissue pollutants (chlordane, DDT, dieldrin)



Closing Remarks



- *Assured water supply is a growing challenge in southern California*
- *At the same time, urban runoff management requirements are increasingly stringent*
- *A convergence of ideas regarding solutions to separate water-related issues is occurring*
- *Opportunities being created for multiple stakeholder partnerships*