Agenda

- Recap April 18 Introduction
  - Austin's stormwater management vision
  - Why water management matters; connecting dots
  - **New: Austin Water Resource Planning Task Force**
  - Maryland regulatory model—and how it compares with Austin's regulations
  - EPA Requirements for federal projects
  - **Takeaway for Austin: require beneficial retention and/or re-use on-site for new & re-development**
- Discussion
- Next steps

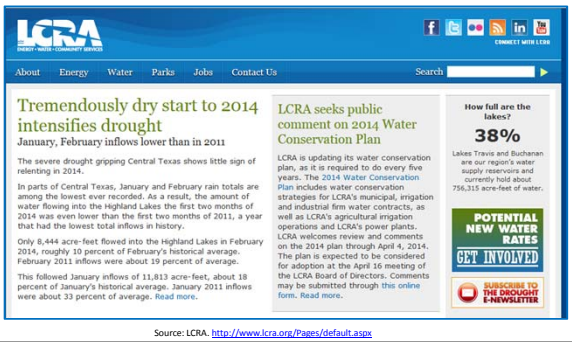
Stormwater Management Vision

- Imagine Austin Comprehensive Plan
  1. Compact & Connected: accommodate growth
  2. Green infrastructure: integrate nature into the city
  3. Sustainably manage our water resources
- WPO Phase 2: Beneficial Use of Stormwater
  - Retain/infiltrate water on-site for baseflow, pollutant removal, vegetation
  - Capture rainfall conservation/reduce potable water use
- EPA/Maryland (and at least 5 other states)
  - Maintain predevelopment hydrology to the "maximum extent practicable," including (some) retention on-site

How We Manage Water Matters

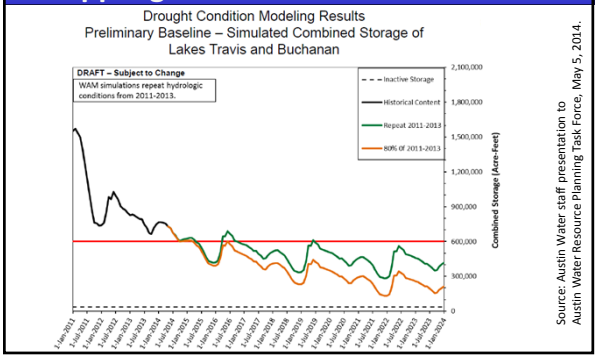
LCRA video of Lake conditions, March 10, 2014
http://www.youtube.com/watch?v=hmblt7kzU1U

How We Manage Water Matters



Source: LCRA. http://www.lcra.org/Pages/default.aspx

Austin Water Planning Task Force: Grappling with Our Water Predicament



Source: Austin Water staff presentation to Austin Water Resource Planning Task Force, May 5, 2014.

Climate Change Projections for Austin

Toward a Climate-Resilient Austin: May 1, 2014) Report to Council

Category	Current	Projected*
Avg. annual temps		+ 9 to 10°
Summer avg. high temp.	94°	98 - 103°
No. summer days over 100°F	13	35 - 80
No. summer days over 110°F	0 (rare)	1 - 20
Annual avg. precipitation	32"	32-33"
No. days/year > 2" rainfall	2	3
Max. 5 day rainfall	6"	8"
Max. consecutive dry days (no precip.)	52	70 - 75

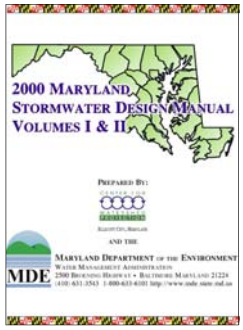
* Projected by end of this century (2071-2100).

Source: http://www.austintexas.gov/sites/default/files/files/Sustainability/Climate/Toward_a_Climate_Resilient_Austin.pdf

Challenges & Opportunities: Connecting the Dots…

1. Central Texas prone to periodic droughts
2. Droughts & heat predicted to worsen
3. Regional surface & groundwater supply finite (falling?)
4. Population growth among fastest in nation (expected to double in 30 years)
5. Natural land cover retains over 90% of avg. annual rainfall; sustains plants, creek flows, aquifers
6. Uncontrolled urbanization degrades these benefits
7. Can incorporate natural systems & rainwater storage in designs to offset water use, preserve quality of life
8. Practical methods/models already exist to accomplish
9. Let's get this done!

Maryland Stormwater Model



1. Maryland (2000)
2. Georgia (2001)
3. Vermont (2002)
4. Minnesota (2008)
5. New York (2010)
6. West Virginia (2012)

All six of these stormwater manuals written by the Center for Watershed Protection. Other good models exist too.

Maryland Stormwater Requirements

Main elements that differ from Austin approach:

- Require a recharge volume be infiltrated on-site
  - Subset of water quality volume
  - Infiltrated on-site with structural or non-structural controls
  - Hydrologic Soil Group (HSG) dependent; multiply WQ volume by the following: HSG A = 0.38; HSG B = 0.26; HSG C = 0.13; HSG D = 0.07
- Use non-structural "Environmental Site Design" (ESD) practices to "maximum extent practicable" (MEP)
- Use structural controls "only where absolutely necessary"
- Spreadsheet to help calculate ESD practices
- "Concept Phase" precedes site development plan submittal

Maryland's Environmental Site Design (ESD) Requirement

Maryland's Stormwater Management Act of 2007 requires implementation of ESDs to the "maximum extent practicable" (MEP) to ensure that structural controls are only used "where absolutely necessary." (Chapter 5, MD SW Manual)

But the authors also acknowledge: "A combination of structural and/or non-structural BMPs are normally required at most development sites to meet all five stormwater sizing criteria." (Chapter 2, MD SW Manual)

Maryland's Environmental Site Design (ESD) Requirement

5.0.3 Environmental Site Design

Definition

There are many stormwater design strategies that seek to replicate natural hydrology. Sometimes known as better site design, low impact development, green infrastructure, or sustainable site design, these strategies all espouse similar techniques. In each, a combination of planning techniques, alternative cover, and small-scale treatment practices is used to address impacts associated with development. For consistency, the Act adopts ESD as a more generic classification for use in Maryland.

Source: Maryland Stormwater Manual, Chapter 5, p. 5.2. Link.

Maryland's Environmental Site Design (ESD) Requirement

5.0.3 Environmental Site Design (continued)

Title 4, Subtitle 201.1(B) of the Act defines ESD as "…using small-scale stormwater management practices, nonstructural techniques, and better site planning to mimic natural hydrologic runoff characteristics and minimize the impact of land development on water resources." ESD includes:

- Optimizing conservation of natural features (drainage patterns, soil, veg.)
- Minimizing impervious surfaces (pavement, concrete channels, roofs)
- Slowing down runoff to maintain discharge timing and to increase infiltration and evapotranspiration
- Using other approved nonstructural practices or innovative technologies

Source: Maryland Stormwater Manual, Chapter 5, p. 5.2. Link.

Maryland's Environmental Site Design (ESD) Options

- B • Environmental mapping prior to layout
- A • Natural area conservation (forests, wetlands, steep slopes, floodplains)
- A • Stream, wetland and shoreline buffers
- - • Permeable soil disturbance minimization
- A • Maintenance of natural flow paths across site
- - • Building layout fingerprinting to reduce clearing and grading
- B • Grading to promote sheetflow from impervious to pervious areas
- B • Needless impervious cover not created
- - • Disconnection of impervious cover maximized
- B • Potential hotspot generating areas identified for treatment
- A • Construction & post-construction stormwater controls integrated into a comprehensive plan
- - • Tree planting used at site to convert turf areas into forest

➢ **Austin has some of the same (A) or similar (B) requirements.**

EPA Guidelines for Federal Projects

Goal: Maintain/restore predevelopment site hydrology during development/redevelopment process to protect and preserve both water resources on-site and downstream.

1.88 inch rainfall for Austin; 90th percentile = 1.35 in.

Two options:

1. Prevent offsite discharge from all rainfall events ≤ 95th percentile rainfall event to the maximum extent technologically feasible; or
2. Conduct site-specific hydrologic analysis to determine pre-development runoff conditions and quantify post-development runoff volume and peakflow discharges equal to predeveloped condition.

2009 EPA "Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act" http://water.epa.gov/polwaste/nps/upload/eisa-438.pdf

EPA Region 4 Guidance for MS4 Participants: GSI & Quantifiable Objectives

"Although the performance standards and practices discussed in this [2009 EPA technical] guidance were developed to apply to federal development and redevelopment projects, they can serve as a useful guide for municipal systems as well. **We encourage States to replicate similar green infrastructure and quantifiable objectives in their MS4 permits**, or at least develop a plan on working towards comparable requirements. We also recognize that some MS4s may not be equipped to achieve a 95th percentile storm events, but Region 4 does expect States to use their judgment to identify in MS4 permits an alternatively appropriate, specific, and measurable threshold that **maximizes the practice of infiltration, evapotranspiration, and/or rainwater harvesting and use**." [*emphasis added*]

James Giattina, US EPA Region 4. Memo to Florida Dept. of Environmental Protection: "Expectations for Municipal Separate Storm Sewer System [MS4] permits," April 15, 2010.

Vision, Opportunity & Next Steps

- Imagine Austin Comprehensive Plan
  1. Compact & Connected: accommodate growth
  2. Green infrastructure: integrate nature into the city
  3. Sustainably manage our water resources
- Mutually exclusive goals or opportunity for creativity?
- Next steps: Search for win-win solutions
  - **Require beneficial retention and/or re-use on-site**
  - Staff to deepen research on national models, experience
  - Coordinate with Austin Water Planning Task Force
  - Encourage community input, suggestions

WPO Phase 2 Schedule, 2014

Phase 2 Kickoff	**Jan. 22**
Perviousness: Introduction	**Feb. 21**
Perviousness: Porous Pavement (part 1)	**Mar. 07**
Porous Pavement (part 2), Artificial Turf & Rainwater Harvesting	**Mar. 21**
Rain Gardens for Single-Family Residential	**Apr. 04**
Beneficial Use of Stormwater: Potential Policy Approaches Introduction/National Examples	**Apr. 18**
New Criteria for SOS Ordinance Compliance/ECM 1.6.9	**May 02**
Beneficial Use of Stormwater: Follow-Up Discussion	**May 30**
Next Steps	**TBD**

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http://austintexas.gov/department/watershed-protection-ordinance