

Austin Integrated Water Resource Planning Community Task Force

August 4, 2015

Overview



- Task Force Website Updates
- Consultant Services Procurement: Request for Qualifications (RFQ) Process Update
- Conservation and Demand Management Briefing
- Green Infrastructure Working Group Overview including link to CodeNext
- Virtual Presentation on Stormwater Capture Master Plan from Los Angeles Department of Water and Power
- Stormwater Capture and Use Discussion



Task Force Website Updates



Consultant Services Procurement: Request for Qualifications (RFQ) Process Update

RFQ Process Update



- RFQ Released July 13th
- RFQ currently advertised locally and nationally
- Pre Response Meeting held July 28th
- CMD is lead on issuing addendums and clarifications on all items related to scope or evaluation criteria.

RFQ Process Schedule



- No Contact/Anti-Lobbying Ordinance is currently in effect until contract is executed
- Deadline for RFQ questions is Monday, August 24, 2015
 - Direct questions to Authorized Contact Persons (specified in RFQ)
- Submittals due prior to 3 PM Tuesday, September 8, 2015
- Anticipated recommendation for Council action is January 2016
- Anticipated contract execution is April 2016





Conservation and Demand Management Briefing





Austin Water Conservation Programs

August 4, 2015

Drema Gross Austin Water Utility Water Conservation Division Manager



Austin's Conservation Programs

- Started in early 1980s
- Expanded in mid-90s with focus on consumer incentives & household conservation
- 2006-2007 Task Force renewed interest
 Reduce Peak Use by 1% per year over 10 years (25 MGD)
- 2009 Resolution & Citizen Task Force
 - Reduce average use to 140 GPCD by 2020
- Delay LCRA payment trigger
 - Savings of \$10-15 million annually





WATER USE - GALLONS PER CAPITA PER DAY (GPCD)



Conservation Elements



Incentives

- Gradually decreasing focus
- Education
 - Capitalizing on drought awareness
- Regulation
 - Increasing importance over time
- Pricing
 - Effective, but with consequences
- Reuse
 - 1.5 BG/yr growing to 5.5 BG/yr
- Operations
 - Loss & leakage controls





Austin's Conservation Future

- Small ball, not grand slams
- Behavior changes harder to predict, measure
- Need for pilot projects, research partnerships
- Not every program fits every city





Program Planning

- What's the objective?
 - Peak day, average day, wastewater, specific sector or geographic area?
- What tools are available?
 - Differs for private utilities, municipalities, wholesalers
- What are the local characteristics?
 - Age of buildings, growth, sectors, climate
- Who benefits?



Program Selection

- Does the benefit to the <u>ratepayer</u> outweigh the cost?
 - Research, education can be benefits if they aid in future program design
- Is the technology available? Legal? Safe?
- Is there consumer interest?
- What is the duration & reliability of savings?



Program Design

- Establish financial controls, protect public funds
- Must document rebates (proof of purchase, photos, inspections, etc.)
- Avoid "free-riders" or "paid compliance"
- Avoid "apparent" savings
 - i.e., programs that document existing savings without generating new potable offset
- Be aware of public expectations



Moving Forward

- Proud of our accomplishments
- Excited to implement new ideas





to Austin's public trees

GPCD



www.austintexas.gov/water

Austin

ATER

Clearly Reliable



Questions?

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Green Infrastructure Working Group Overview including link to CodeNext



Green Infrastructure Working Group: Beneficial Use of Stormwater

August 4, 2015

Rainwater harvesting at Twin Oaks Library

CodeNEXT Process: Implementing Imagine Austin



What is the Land Development Code?



- CodeNEXT will address Zoning (25-2) as well as other chapters like Drainage (25-7), Environment (25-8), and Water & Wastewater (25-9)
- CodeNEXT will not address the Technical Codes (e.g., Plumbing Code) or other Titles within the City Code (e.g., Title 6 Water Conservation, Title 15 Utility Regulations)

Green Infrastructure Working Group

Council Direction (November 20, 2014)

• Asked that the CodeNEXT focus include green infrastructure & sustainable water management

Purpose of Green Infrastructure Working Group

 How we can achieve the Imagine Austin goals of integrating nature into the city, sustainably managing our water resources, and creating complete communities through revisions to the Land Development Code?

Green Infrastructure Working Group

- Over 300 stakeholders on distribution list
- Six meetings between January & July 2015
- Engineers, landscape architects, developers, neighborhoods, environmental groups, and staff from multiple departments



Four Green Infrastructure Themes

- 1. Land Cover and Natural Function
 - How to achieve functional, purposeful, connected open space?
- 2. Integrate Nature into the City
 - How to ensure adequate, multifunctional landscaping in every context (e.g., urban vs. suburban)?
- 3. Beneficial Use of Stormwater
 - How to optimize on-site use of stormwater runoff?
- 4. Stormwater Options for Redevelopment/Infill
 - How to address longstanding flooding problems resulting from development without sufficient controls or conveyance?

Mitigating Stormwater Runoff

• Water Quality Control

- Focus on smaller storms (< 2 inches) to capture first flush of pollutants and prevent channel erosion
- Capture and treat a required volume for the site
 Beneficial use of stormwater targets this scale

• Flood Mitigation

- Mitigate up to the 100-year storm (10 inches)
- Match peak flow rates to predevelopment

Mitigating Stormwater Runoff



Beneficial Use of Stormwater

Goals

- Address drought & climate change impacts on watershed health and water supply
- Incorporate natural systems & rainwater storage in designs to offset water use, preserve quality of life
- Final Report of the Austin Water Resource Planning Task Force recommended "Tapping into the Cityscape as a Water Supply Source"
- Practical methods & models have already been implemented in other cities

Beneficial Use of Stormwater

Challenges

- Current code addresses water quality treatment, but not the on-site beneficial use of stormwater
- How to handle redevelopment and high levels of impervious cover

Heat Drought Population Urbanization

Rainfall Surface & Groundwater Natural Land Cover

Recap of WPO Phase 2 Work

- 9 public stakeholder meetings in 2014 to discuss topics related to green stormwater infrastructure
 - How to optimize use of stormwater runoff volume (e.g., conservation & infiltration)
 - Reviewed best practices to incorporate into the Environmental Criteria Manual
 - Stakeholder conclusion: require beneficial retention and/or re-use on-site for new & re-development
 - Staff to expand research on national models

Two Overall National Models

1. Focus on infiltration and baseflow

- Required to infiltrate amount equal to average annual recharge volume for an undeveloped site
- 2. Focus on keeping stormwater on-site
 - Keep stormwater runoff from leaving the site
 - Use a combination of infiltration, harvesting, reuse, evaporation, and/or evapotranspiration
 - Reduce the effective impervious cover

Different approaches for redevelopment

"the Cityscape as a Water Supply"

- LCRA: Current drought is the most severe in the history of the Highland Lakes (<u>link</u>)
- Austin Water Resource Planning Task Force
 - Cityscape can be designed and retrofitted to function as a water supply source
 - Capture, store, & treat rainwater for beneficial use
- WPO Phase 2 Stakeholder support for same
- Given these challenges & goals, we need to focus on more than just infiltration & baseflow
 - Retain stormwater on-site for beneficial use

Retain Stormwater On-Site

- Used by multiple jurisdictions across the country
 - New York, Washington D.C., West Virginia, Delaware, Tennessee, Kentucky, Minnesota, Montana, New Mexico, California
- Based on a certain size/frequency of storm event (e.g., 1 inch of rainfall)
- Same basic concept as requiring an effective impervious cover limit
 - How runoff from impervious cover is reduced to levels of runoff from an undeveloped site
- Exceptions for redevelopment, unique conditions

Retain Stormwater On-Site: Questions to Answer

- How much stormwater to retain on-site?
- How to handle redevelopment and high levels of impervious cover?
- Are there best practices we would always want to see implemented on-site?
Major Themes from Stakeholders

Onsite infiltration/retention

- Require onsite infiltration/retention per other US models
- Use decentralized green options like rain gardens, porous pavement, rainwater harvesting, disconnected IC
- Provide a menu of re-use alternatives to reach requirements if cannot infiltrate due to site constraints
- Maintain/restore predevelopment hydrology; use to guide design
- Reduce barriers to speed approval of innovative controls & rainwater capture systems
- Work to address maintenance questions

Major Themes from Stakeholders

Re-use/conservation

- Water conservation essential, must incorporate into designs
- Work towards goal of no potable water for irrigation
 - Others: Still need a potable irrigation system as backup
- Require potable water budget for outdoor irrigation; use non-potable water to exceed
- Use regionally-appropriate plant list; ensure supply exists
- Limit use of grass/turf

Major Themes from Stakeholders

Special considerations for redevelopment

- Some like TN & WV model to reduce (but not eliminate) retention requirements to encourage other redevelopment benefits
- Others: do not support special considerations for redevelopment—should be held to greenfield standards
- Offsite mitigation should occur within same watershed
 - Consider additional offsite mitigation options such as the provision of open space and tree plantings

Going Forward

CodeNEXT Process

- Fall 2015: Draft Code Testing
- Summer 2016: Public Review Draft Anticipated
- Fall 2016: Public Review Process

Austin Integrated Water Resource Planning Community Task Force

- Summer 2015 through Fall 2017

Future GIWG Meetings

- What is being proposed in the draft code?
- Topic-specific meetings as key issues arise

Contact Information

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Green Infrastructure Working Group:

http://www.austintexas.gov/page/green-infrastructure-working-group



Virtual Presentation on Stormwater Capture Master Plan from Los Angeles Department of Water and Power

www.austintexas.gov/water



Stormwater Capture Master Plan

August 4, 2015

City of Austin Water Task Force Meeting













To provide our customers with safe, reliable, high quality and reasonably priced water services in a transparent and environmentally responsible manner.



Comprehensive Strategy for Future Reliability





Why we need to take action





Eastern San Fernando Valley 1949

Eastern San Fernando Valley 2008

Centralized vs. Distributed Capture







- On average, 27,000 acre-feet per year have been recharged through spreading ground operations in the San Fernando Basin from 1968 through 2014
- 50% increase in capture efficacy per inch of rain over the past 40 years



Hansen Spreading Grounds

(1 acre-foot = 325,851 gal)

Distributed Stormwater Capture Projects





North Hollywood Alleys



Sun Valley Park



Glenoaks and Sunland Street Improvements

Elmer Avenue Retrofit





What is the Stormwater Capture Master Plan?





Document that will outline LADWP's strategies for stormwater capture over the next 20 years by:

- Quantifying stormwater capture potential
- Identifying new projects/programs/policies
- Prioritizing based on water supply criteria
- Developing cost/benefits for proposed projects/programs/policies
- Defining timing and key milestones
- Developing 5, 10, 15 and 20 year goals
- Defining partnerships







Groundwater Recharge vs. Offsetting Potable Use



10

Stormwater Capture Potential



Distributed and Centralized Capture - 2035



Stormwater Project Evaluation Process





Centralized Project Development



Project Name	Score	Status			
Pacoima SG Upgrade	87	Concept Developed			
Van Norman Complex	83	Project Moving Forwar	d		
Arundo Removal	83	Newly Proposed (NFF)			
Spreading Grounds Optimization	82	Technology Based Solr			
Hansen Dam Water Conservation	80	Draft Feasibility Study			
Lopez SG Upgrade	73	Paid for and Moving Fo	prward		
Branford Spreading Basin Enhancement	73	Concept Developed			
Sepulveda Basin - HSG	73	Newly Proposed (GS)			
Debris Basin Retrofits (x3) - X	73	Newly Proposed (GS)			
Rory M Shaw Wetlands	71	Paid for and Moving Fo	prward		
Stormdrain Mining, Treat and Inject - X	71	Newly Proposed (WMC	G)		
Pacoima Dam Sediment Removal	69	Paid for and Moving Fo	prward		
Big Tujunga Sediment Removal	69	Paid for and Moving Fo	prward	-	· · · · · ·
Canterbury Power Line Easement	67	TWWGRMP	Bull Creek	65	Concept Developed
Old Pacoima Wash	67	Concept Identified	Sod Farm	65	Newly Proposed (GS)
Lakeside	67	Concept Developed	Sheldon Pit	65	Concept Developed
Strathern Park (near Hollywood Freeway)	66	Newly Proposed (GS)	Boulevard Pit	65	TWWGRMP
Whitsett Park Retrofit - X	66	Newly Proposed (GS)	Albion Dairy	64	Newly Proposed (WMG)
Park Retrofit 2 - X	66	Newly Proposed (GS)	Lopez Dam	62	Concept Developed
Park Retrofit 3 - X	66	Newly Proposed (GS)	Valley Generating Station Phase II	60	Concept Developed
North Hollywood Power Line Easement	65	Newly Proposed (GS)	Van Nuys Airport	59	Concept Developed
			Stormdrain Mining, Treat and Direct Use - X	59	Newly Proposed (WMG)
			Valley Generating Station Phase I	58	Concept Developed
			Bus Depot at HSG	58	TWWGRMP

Evaluated for SCMP					
Fact sheet developed					
Fact Sheet + Selected for Concept Design					

Doulevalu Fit	05			
Albion Dairy	64	Newly Proposed (WMG)		
<u>Lopez</u> Dam	62	Concept Developed		
Valley Generating Station Phase II	60	Concept Developed		
<u>Van N</u> uys Airport	59	Concept Developed		
Stormdrain Mining, Treat and Direct Use - X	59	Newly Proposed (WMG)		
Valley Generating Station Phase I	58	Concept Developed		
Bus Depot at HSG	58	TWWGRMP		
Whiteman Airport	55	Newly Proposed (WMG)		
Floodplain Buyback, Check Dams - X	54	Newly Proposed (TRP)		
Silver Lake	51	Newly Proposed (SLRC)		
LA Forebay LAR Projects - X		Newly Proposed (LACFCD)		
CalMat Pit - X	37	Concept Developed		

Centralized Project Alternative



Old Pacoima Wash

- Project consists of a system instream infiltration basins created by installing rubber dams along 2 miles of the Old Pacoima Wash
- The basins would accept overflow from the Pacoima Spreading Grounds and local flows from adjacent neighborhood.
- Estimated recharge: 1,000 to 1,500 AFY



Centralized Project Alternative



East Valley Baseball Park

- Project consists of 3 infiltration basins to be excavated with Strathern Park
- The basins would accept runoff from a storm drain along the SR-170 Freeway (draining 320 acres) and overflow from Tujunga Spreading Grounds.
- Estimated Recharge: 1,000 to 1,500 AFY



Centralized Project Alternative



- Project consists of 24 recharge basins to be excavated within the 18.8 available acres of the Canterbury Avenue Power Line Easement.
- The basins would receive overflow from Pacoima Spreading Grounds and local flows from adjacent neighborhood.
- Estimated Recharge: 1,000 to 1,500 AFY







Program	On-site	On-site	Subregional	Subregional	Green	Impervious
	Infiltration	Direct Use	Infiltration	Direct Use	Streets	Replacement
Examples	Residential Rain Garden Program	Residential or Commercial Cistern Program	Neighborhood Recharge Facility Program	Distributed Reservoir Program	Commercial Green Street Program	Impervious Surface Replacement Program







On-site Infiltration

- Collecting stormwater runoff from impervious areas for infiltration within the same parcel
- ✓ Permeable pavement with run-on
- ✓ Simple, rain garden
- ✓ Complex bioretention
- ✓ Dry wells with pretreatment



Residential rain garden

On-site Direct Use

- Collecting stormwater runoff from impervious areas and store in cisterns and rain barrels for use at a later time
- Irrigation through hand watering, drip feeds, gravity fed irrigation



Residential Cistern

Subregional Infiltration

- Collect stormwater runoff from multiple parcels, city blocks, or entire neighborhoods into an infiltration facility within the public right-of-way or adjacent public/private lands
- ✓ Underground infiltration galleries
- ✓ Bio-infiltration basins



Elmer Avenue Infiltration Gallery



Pelican Hill Golf Course Cistern, Newport

Subregional Direct Use

- Collect stormwater runoff from a larger tributary area into an underground storage reservoir
- Pump, smart cistern technology, and treatment enables reuse of water for irrigation





Green Streets

- Public right-of-way projects capturing stormwater through BMPs
- ✓ Permeable pavement with run-on
- ✓ ROW bulb-outs
- ✓ Simple rain gardens



Permeable interlocking concrete pavers



Elmer Avenue Green Street, Los Angeles

Impervious Replacement

- Removal of impermeable hardscape and replacement with highly permeable hardscape surfaces
- ✓ Porous concrete and asphalt
- ✓ Interlocking concrete pavers

Cost per Acre-Foot





Ancillary Benefits









SCMP is now complete

 Approval and review of projects, programs, and policies by the LADWP Board

✓ Approval on a project-by-project basis

• Seek partnerships and grants for funding opportunities



 2015 Excellence in Environmental Engineering and Science Award for Operations and Management

www.ladwp.com/stormwater
www.ladwp.com/scmp



Stormwater Capture MASTER PLAN



For more information

www.ladwp.com/stormwater www.ladwp.com/scmp

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Stormwater Capture and Use Discussion

www.austintexas.gov/water

Topics for Discussion



- Stormwater capture and use as a supply and/or a demand offset and discussion of scale: on-site and/or larger scale
- 2. Strengths and challenges of stormwater capture and use at either scale
 - a) Small-scale Distributed
 - b) Large-scale Centralized
- 3. Benefits and trade-offs involved in multi-objective infrastructure

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Stormwater capture and use: On-site and/or Large Scale



Medium











Large







Demand Offset

Strengths and Challenges: Small-Scale Distributed



Strengths

- Synergy with green infrastructure & vegetation
- Multiple options for flexible integration with most site designs
- Tangible benefits and function connect community with land, water
- Permissible and encouraged by state and federal rule
- Others?

Challenges

- Primarily a "from this day forward" solution
- Significant financial and operational obstacles to retrofit existing properties
- Dependent on active operation & maintenance by non-professional private landowners
- WPD permitting & inspection challenges, especially for single-family residential properties
- Potential public health issues (e.g., mosquito control)
- Others?

Strengths and Challenges: Large-Scale Centralized



Strengths

- Larger scale and quantifiable benefits
- Public operation and maintenance (consistency, reliability)
- Others?

Challenges

- Limited land availability
- Complex water rights and permitting process
- Potential for public costs for design, construction, and maintenance
- Limited ability to benefit from groundwater infiltration
- Others?

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Benefits and Trade-Offs of Multi-Objective Infrastructure



Objectives can include:

- Infiltration/Baseflow
- On-site retention
- Water quality
- Potable water demand offset
- Flood mitigation

And can be affected by:

- Design storm
- Scale
- Site-specific conditions, constraints, and opportunities

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Next Meeting

- Conservation Study Update (Office of Sustainability)
- Disaggregated Demand Briefing and Facilitated Discussion
- Continuation of information and discussion items from Meeting #4 as needed

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