## LOS ANGELES RIVER MASTER PLAN UPDATE

Precedent Analysis



19 September 2019



## PRECEDENT MATRIX

LINEAR AMENITY	ECOSYSTEM FUNCTION	PROGRAM
• <b>GUADALUPE RIVER PARK</b>	• BOLSA CHICA WETLANDS	• <b>DIAGONAL MAR</b>
SAN JOSE, CA	HUNTINGTON BEACH, CA	BARCELONA, SPAIN
• SAN ANTONIO RIVER WALK	• ATLANTIC PARK DE LAS LLAMAS	• <b>COPENHAGEN HARBOU</b>
SAN ANTONIO, TX	SANTANDER, SPAIN	COPENHAGEN, DENMAR
<ul> <li>RIO BESOS BARCELONA, SPAIN</li> </ul>	MILLIKEN STATE PARK     DETROIT, MI	• <b>TEMPE CENTER FOR AR</b> TEMPE, AZ
• SAN GABRIEL RIVER	• HOUTAN PARK	• <b>PENN PARK</b>
LA COUNTY, CA	Shanghai. China	PHILADELPHIA, PA
CHICAGO RIVERWALK     CHICAGO, IL	• <b>BALLONA WETLANDS</b> PLAYA VISTA, CA	• LA GREEN GROUNDS LOS ANGELES, CA
• WALLER CREEK	• MILL RIVER	• SEATTLE WATERFRONT
AUSTIN, TX	STAMFORD, CT	SEATTLE, WA
	LINEAR AMENITY • GUADALUPE RIVER PARK SAN JOSE, CA • SAN ANTONIO RIVER WALK SAN ANTONIO, TX • RIO BESOS BARCELONA, SPAIN • SAN GABRIEL RIVER LA COUNTY, CA • CHICAGO RIVERWALK CHICAGO, IL • WALLER CREEK AUSTIN, TX	LINEAR AMENITYECOSYSTEM FUNCTION• GUADALUPE RIVER PARK SAN JOSE, CA• BOLSA CHICA WETLANDS HUNTINGTON BEACH, CA• SAN ANTONIO RIVER WALK SAN ANTONIO, TX• ATLANTIC PARK DE LAS LLAMAS SANTANDER, SPAIN• RIO BESOS BARCELONA, SPAIN• MILLIKEN STATE PARK DETROIT, MI• SAN GABRIEL RIVER LA COUNTY, CA• HOUTAN PARK SHANGHAI. CHINA• CHICAGO RIVERWALK CHICAGO, IL• BALLONA WETLANDS PLAYA VISTA, CA• WALLER CREEK AUSTIN, TX• MILL RIVER STAMFORD, CT

	POLICY
	• TRINITY RIVER VISION
	FORT WORTH, TX
R BATH	• TRINITY RIVER CORRIDOR
K	DALLAS, TX
TS	• CENTRAL ARTERY
	BOSTON, MA
	• FOOTHILL GOLD LINE
	LA COUNTY, CA
	• SOUTH PLATTE RIVER
	DENVER, CO
	• ATLANTA BELTLINE
	ATLANTA, GA
	1

# INFRASTRUCTURE

Source: OLIN

11.



## SELECTING COMPARABLE INFRASTRUCTURE EFFORTS

- Large scale projects
- Projects with large budgets
- Long-term projects that span decades to go from planning to construction
- Projects with significant engineering challenges and constraints



## **INFRASTRUCTURE SCALE COMPARISON**

LA RIVER LOS ANGELES, CA LA AQUEDUCT LOS ANGELES, CA

CENTRAL ARTERY BOSTON, MA

5

CHEONGGYECHEON SEOUL, SOUTH KOREA

1

MADRID RIO MADRID, SPAIN



れ

#### KLYDE WARREN DALLAS, TX

T.A.R.P. CHICAGO, IL

## **INFRASTRUCTURE PRECEDENT COMPARISON**

	LA AQUEDUCT LOS ANGELES, CA	CENTRAL ARTERY BOSTON, MA	CHEONGGYECHEON STREAM SEOUL, SOUTH KOREA	MADRID RIO MADRID, SPAIN	<b>WA</b>
ECOSYSTEM FUNCTION AND HABITAT					
OPEN SPACE, REC. AND TRAILS					
COMMUNITY ART AND PROGRAMMING					
OPERATIONS AND MAINTENANCE					
ACCESS AND SECURITY					
HOUSING AND PUBLIC HEALTH					
SUSTAINABILITY AND RESILIENCE					
WATER RESOURCES					
	Project does no	t highlight analysis area	Project does high	nlight analysis area	





### **LA AQUEDUCT** LOS ANGELES, CA

#### TWO AQUEDUCTS

**1st AQUEDUCT COMPLETED** 1913

**SCALE** 370 mi. (Both Aqueducts) Roughly 3,360 ac.

#### PLANNING BEGAN 1905

2nd AQUEDUCT COMPLETED 1970

**TOTAL COST** \$1,100,000,000 (2017 inflation)



## LA AQUEDUCT LOS ANGELES, CA

#### **PROJECT GOALS**

- Provide a reliable source of water to the city of Los Angeles
- Facilitate growth of development in Los Angeles



### LA AQUEDUCT LOS ANGELES, CA



#### **LESSONS LEARNED**

- + Entirely gravity fed system
- + Generates power
- + Large investment in infrastructure that yielded high returns for Los Angeles

Aqueduct changed the regional economic structures in the Owens Valley, from agriculture and private ranches to open space and ranch leases

Project does not highlight analysis area





Key area of importance

### CENTRAL ARTERY/TUNNEL PROJECT BOSTON, MA



COST

\$21,000,000,000

#### SIZE

7.5 mi. 300 ac. of new park space

#### 14 years

Source: https://commons.wikimedia.org/wiki/File:Park\_on\_Big\_Dig\_Parcel\_18,\_Boston.JPG, Wikipedia User: NewtonCourt





#### **PROJECT GOALS**

- Relieve traffic congestion
- Connect people and communities
- Provide better airport connections
- Create additional public plazas and parks
- Improve air quality

### **CENTRAL ARTERY/TUNNEL PROJECT BOSTON, MA**



#### **LESSONS LEARNED**

- + Infrastructure corridors that were seen as barriers were transformed to connect communities and provides amenities
- + Large infrastructure project had the ability to gain community buyin and spur additional development in adjacent communities
- Large infrastructure project was difficult to construct when attempting to build around existing subterranean infrastructure
- Inadequate construction budget and planning led to serious errors that ended up significantly increasing costs, delaying completion, and souring the public on infrastructure interventions long term



Key area of importance

### CHEONGGYECHEON STREAM SEOUL, SOUTH KOREA

#### FLOOD RELIEF CHANNEL AND TREATED STREAM

PLANNING BEGAN 2002

SCALE 3.6 mi. of overall 7 mi. length 100 ac.

### 3 years

Source: Francisco Anzola, https://www.flickr.com/photos/55254782@N00/2030625405, 2007

STREAM CHANNELIZATION 1958

CONSTRUCTION COMPLETED 2005

**TOTAL COST** \$380,000,000





### **PROJECT GOALS**

- Provide flood protection
- Increase biodiversity
- Reduce air pollution

- Reduce urban heat island effect
- Increase business development and land prices

## CHEONGGYECHEON STREAM

SEOUL, SOUTH KOREA



#### **LESSONS LEARNED**

- + In this circumstance, a large scale urban project was be completed in a short period of time
- + Flood warning system: police monitored entrances during monsoon season and signage
- Without regulation, increased development displaced locals who can no longer afford to live or operate their business
- Pumping water into a stream that no longer has flow is an expensive way to activate urban space
- An "artificial restoration" of the Cheonggyecheon has created a project that while it is flood risk resilient is purely symbolic of being "green" instead of being sustainable



Key area of importance

## MADRID, SPAIN

#### DECKING OVER HIGHWAY

CONSTRUCTION BEGAN 2008

#### SCALE

5 mi. 370 ac.

10 years

Source: https://commons.wikimedia.org/wiki/File:Madrid\_Rio,\_riverfront\_redevelopment\_(6382193575).jpg Wikipedia User: La Citta Vita PLANNING BEGAN 2005

CONSTRUCTION COMPLETED 2011

**TOTAL COST** \$5,800,000,000





#### **PROJECT GOALS**

- Expand and create "green" and "blue" areas
- Construct recreational and leisure zones
- Bury highway under new park space

- Revitalize an urban waterway
- Promote tourism and regenerate the surrounding urban environment

### MADRID RIO MADRID, SPAIN



#### **LESSONS LEARNED**

- + Extending into the urban fabric made the project able to engage with the adjacent communities
- + Utilizing a masterplan and site development plan strategy fostered the creation of diverse spaces that relate to each other and the adjacent communities in a cohesive manner
- + Transforming a large site from one singular use to a diverse set of public spaces generated multiple benefits





Key area of importance

### **KLYDE WARREN PARK** DALLAS, TX

#### DECKING OVER HIGHWAY

CONSTRUCTION BEGAN 2009

SCALE 5.2 ac.

10 years

Source: https://commons.wikimedia.org/wiki/File:Klyde.Warren\_Park\_and\_Dallas%27.Skyline.jpg Wikipedia User: Gattacal [CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0)], from Wikimedia Common PLANNING BEGAN 2002

CONSTRUCTION COMPLETED

**TOTAL COST** \$110,000,000





#### **PROJECT GOALS**

- Encourage social interactions
- Reduce urban heat island effect
- Reduce air pollution

- Promote the use of public transportation
- Increase outdoor urban recreation





### **KLYDE WARREN PARK** DALLAS, TX



#### **LESSONS LEARNED**

- + Masking infrastructure was one way to create new and innovative spaces for the community
- + Re-configuring infrastructure that formerly only served vehicles to connect people was successful
- + Mixing various types of programming allowed for the park to be constantly utilized for events

Park is privately managed by the Woodall Rodgers Park Foundation with the amenities and programming being funded by private donations raised by the organization





Key area of importance

### TUNNEL AND RESERVOIR PLAN (T.A.R.P.) CHICAGO, IL



#### TUNNELS AND RESERVOIRS

**CONSTRUCTION BEGINS** 2005

#### SCALE

109.4 mi. 166 ac. (Tunnels) 47,600 ac. ft. 60 ac. (Reservoirs)

#### 58 years

PLANNING BEGAN 1972

ESTIMATED COMPLETION 2030

**TOTAL COST** \$3,830,000,000 (projected)

Source: © Black & Veatch



### **PROJECT GOALS**

- Improve water quality of rivers and streams
- Improve river related recreation

• Decrease CSO events

- Improve habitat
- Protect drinking water coming from Lake Michigan





### **TUNNEL AND RESERVOIR PLAN (T.A.R.P.)** CHICAGO, IL



#### **LESSONS LEARNED**

- + Large investment in engineering and design projects yielded extensive returns for cities and counties and was possible to complete
- + Water quality improvements have brought waterside economic drivers and interest throughout the region
- The operating agency chose to prioritize engineered grey solutions to flood risk reduction over green solutions
- Entire system is out of sight and not available to be used as an education tool throughout communities
- Treatment of water is not immediately visible at the surface which limits its public exposure

Project does not highlight analysis area



Key area of importance

## **INFRASTRUCTURE PRECEDENTS: OVERVIEW**



### **PROGRESS**



CHICAGO, IL

# EINER ARENIEVE

## SELECTING COMPARABLE LINEAR AMENITY EFFORTS

- Linear projects that span multiple neighborhoods
- Projects that utilize rivers as a means to activate or develop adjacent spaces
- Different magnitudes of and solutions for flood risk management
- Projects that are part of an urban environment

**GUADALUPE RIVER PARK** 

SAN JOSE, CA

## **COMPARABLE LINEAR AMENITY EFFORTS**



#### SAN ANTONIO RIVERWALK SAN ANTONIO, TEXAS

**CHICAGO RIVERWALK** 



#### SAN GABRIEL RIVER LA COUNTY, CA







#### **RIO BESÒS RIVER PARK** BARCELONA, SPAIN





## LINEAR AMENITY SCALE COMPARISON

Precedent Extents

River / System Extents

Project Locator (in the case of small projects)







CHICAGO RIVERWALK CHICAGO, IL



## LINEAR AMENITY COMPARISON

	GUADALUPE RIVER PARK SAN JOSE, CA	SAN ANTONIO RIVERWALK SAN ANTONIO, TX	<b>RIO</b> <b>BESOS</b> BARCELONA, SPAIN	SAN GABRIEL RIVER LOS ANGELES COUNTY, CA	RI
ECOSYSTEM FUNCTION AND HABITAT					
OPEN SPACE, REC. AND TRAILS					
COMMUNITY ART AND PROGRAMMING					
OPERATIONS AND MAINTENANCE					
ACCESS AND SECURITY					
HOUSING AND PUBLIC HEALTH					
SUSTAINABILITY AND RESILIENCE					
WATER RESOURCES					
Γ	Project does not highlight analysis area		Project does h	nighlight analysis area	





### **GUADALUPE RIVER PARK** SAN JOSE, CA

URBAN FLOOD-WAY PARK LAND

CONSTRUCTION BEGAN 1992

SCALE 3 mi.

13 years

Source: https://www.sanjoseinside.com/2013/03/07/3\_7\_13\_environment\_parks\_climate.change\_carbon\_footprint/, Ray Rodriquez, 2013

CONSTRUCTION COMPLETED



# GUADALUPE RIVER PARK SAN JOSE, CA

#### **PROJECT GOALS**

- Create diverse recreational opportunities
- Provide flood risk management
- Increase public art presence

- Utilize prototype projects to test solutions
- Provide access to the river



### **GUADALUPE RIVER PARK** SAN JOSE, CA



#### **LESSONS LEARNED**

- + River bank terracing, in moderation, created inhabitable spaces along a floodable water way though this obviously creates safety issues in times of flood
- + Combining hardscape and softscape material palettes made for a comfortable public space
- + Topography was a powerful tool to transform a space and alleviate noise pollution
- The lack of established programming created a lack of diverse uses





Key area of importance

## SAN ANTONIO, TEXAS

URBAN FLOOD-WAY PARK LAND

EXPANSION BEGAN 2002

SCALE 2.5 mi.

10 years

PLANNING BEC 1929

EXPANSION COMP 2013

**TOTAL COST** \$385,000,000

Source: Flickr user: Aby Novy, SAMA Museum Reach Portion of the SA Riverwalk, https://www.flickr.com/photos/thenovys/364844





### **PROJECT GOALS**

- Address flooding issues
- Enhance urban life
- Spur economic development

- Promote and provide recreation opportunities
- Facilitate cultural connections
# **SAN ANTONIO RIVERWALK** SAN ANTONIO, TEXAS

**SAN ANTONIO** RIVERWALK SAN ANTONIO, TX **ECOSYSTEM FUNCTION** AND HABITAT **OPEN SPACE, REC.** AND TRAILS COMMUNITY ART AND PROGRAMMING **OPERATIONS AND** MAINTENANCE ACCESS AND SECURITY HOUSING AND PUBLIC HEALTH SUSTAINABILITY AND RESILIENCE WATER RESOURCES

### **LESSONS LEARNED**

- + Planning efforts went through multiple phases and needed to be constantly evolved
- + Corridor projects linked communities and other successful projects together to create a vibrant network of spaces
- + The linear park/corridor proved itself to be a tourist attraction and completely became the new urban identity for a place
- Being driven by economics, water quality is an ongoing issue, although more recent efforts have proven to be successful in improving water quality



# RIO BESÒS RIVER PARK BARCELONA, SPAIN









- Improve environmental and landscape quality
- Improve wastewater treatment by providing tertiary wetland treatment
- Improve the hydraulic capacity of the river
- Utilize parts of the river banks for leisure

# **RIO BESÒS RIVER PARK BARCELONA**, SPAIN



### **LESSONS LEARNED**

- + Areas along the river were identified for public use that allow all humans and wildlife to successfully inhabit the space
- + Flexible and floodable river-banks allowed the opportunity for large park programs such as sports fields and event spaces
- + Water levels were altered and managed via a dam system to maximize public usage
- + Flood warning systems: loud speakers and signage
- Areas that could be used for environmental education are not available to the public



# SANGABRIEL RIVER LOS ANGELES COUNTY, CA

### RECREATION TRAIL ALONGSIDE A RIVER

# SCALE 38 mi.



# PROGRESS

San Gabriel River Biker

512

BIKewa

JAVEL

Teisges Ues

# SANGABRIEL RIVER LOS ANGELES COUNTY CA

- Provide access to the river
- Facilitate active and passive recreation
- Allow exposure to various regional ecologies
- Connect neighborhoods and people
- Utilize natural resource for urban and ecological improvements





# **SAN GABRIEL RIVER**

LOS ANGELES COUNTY, CA



#### **LESSONS LEARNED**

- + Trails that run parallel to bodies of water allowed users to experience a number of diverse environments
- + Public access points became destinations and became economic drivers in communities
- Trail did not allow users to interact with the river





# CHICAGO, IL



#### RIVERFRONT PARK SPACE

**CONSTRUCTION BEGAN** 2009

SCALE 1.25 mi.

7 years

Source: SecretName101 [CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0)], from Wikimedia Commons

CONSTRUCTION COMPLETED 2016

**TOTAL COST** \$112,000,000

# PROGRESS



- Transform the promenade into a series of recreational amenities
- Accommodate 7 ft. of flooding
- Diversify programs based on portions of the river connected to urban blocks
- Improve water quality

# **CHICAGO RIVERWALK** CHICAGO, IL



#### LESSONS LEARNED

- + Creating diverse experiences along the length of the riverwalk drew users to inhabit the entirety of the project
- + Making ecological systems visible and available for education was a successful way to educate the community
- + Providing easy access to river recreation was important to ensure the success of so many diverse types of programming making sure enough people can participate
- Project lacked an innovative solution to flood risk management and did not address larger stormwater issues of the Chicago River





# WALLER CREEK AUSTIN, TX

CONSTRUCTION BEGAN 2012

SCALE 1 mi. (out of 7 total)

7 years

Source: William Beutler, https://www.flickr.com/photos/washingtoncanard/4475090428

CONSTRUCTION COMPLETED ONGOING

ile Hi Fidelity

**TOTAL COST** \$230,000,000

# PROGRESS



- Provide flood risk management
- Increase public art presence

- Utilize prototype projects to test ideas
- Provide access to the river

# WALLER CREEK AUSTIN, TX



#### **LESSONS LEARNED**

- + The revival of urban waterways was powerful in spawning public and economic interest
- + A bypass and tunnel solution to flood risk created opportunities along the river that would not exist otherwise
- + Project phasing allowed for parts of the project to be opened and generate revenue for future sections







# **LINEAR AMENITY: OVERVIEW**



SAN JOSE, CA

SAN ANTONIO, TX

**BARCELONA**, SPAIN

RIVER LOS ANGELES COUNTY, CA CHICAGO, IL

# **PROGRESS**

AUSTIN, TX

# ECOSYSTEM FUNCTION

July Ale Destaur







# SELECTING COMPARABLE ECOSYSTEM FUNCTION EFFORTS

- Focus on ecosystem performance and significance over aesthetics
- Variety of spaces created as a result of project functionality
- Ecological amenities are clear and visible to users
- Effort to integrate the project with both the urban/human needs and the environment
- Similar ecosystem needs such as salt and freshwater wetlands



# **COMPARABLE ECOSYSTEM EFFORTS**

#### **BOLSA CHICA WETLANDS HUNTINGTON BEACH, CA**



**ATLANTIC PARK** SANTANDER, CANTABRIA, SPAIN







**BALLONA WETLANDS** PLAYA VISTA, CA



STAMFORD, CT





# **MILL RIVER PARK AND GREENWAY**

# **ECOSYSTEM FUNCTION SCALE COMPARISON**









#### BALLONA **WETLANDS** PLAYA VISTA, CA

1

MILL RIVER PARK STAMFORD, CT

# **ECOSYSTEM FUNCTIONS PRECEDENT COMPARISON**

	BOLSA CHICA WETLANDS HUNTINGTON BEACH, CA	ATLANTIC PARK SANTANDER, SPAIN	MILLIKEN STATE PARK DETROIT, MI	HOUTAN PARK Shanghai, china	<b>BALLONA</b> <b>WETLANDS</b> PLAYA VISTA, CA	MILL RIVER PARK STAMFORD, CT
ECOSYSTEM FUNCTION AND HABITAT						
OPEN SPACE, REC. AND TRAILS						
COMMUNITY ART AND PROGRAMMING						
OPERATIONS AND MAINTENANCE						
ACCESS AND SECURITY						
HOUSING AND PUBLIC HEALTH						
SUSTAINABILITY AND RESILIENCE						
WATER RESOURCES						
	Project does not highlight analysis area		Project does highlight analysis area			

# **PROGRESS**

# BOLSA CHICA WETLANDS HUNTINGTON BEACH, CA



### WETLAND CONSTRUCTION

CONSTRUCTION BEGAN 2000

**SCALE** 1240 ac.

8 years

PLANNING BEGAN 1990

CONSTRUCTION COMPLETED 2008

**TOTAL COST** \$144,000,000





# BOLSA CHICA WETLANDS HUNTINGTON BEACH, CA

- Connect users to nature
- Utilize community involvement to educate and facilitate wetland success
- Provide vital habitat for endangered species and other fauna
- Preserve last of remaining wetlands in the region





# **BOLSA CHICA WETLANDS** HUNTINGTON BEACH, CA

**BOLSA CHICA WETLANDS** HUNTINGTON BEACH, CA ECOSYSTEM FUNCTION AND HABITAT **OPEN SPACE, REC.** AND TRAILS COMMUNITY ART AND PROGRAMMING **OPERATIONS AND** MAINTENANCE ACCESS AND SECURITY HOUSING AND PUBLIC HEALTH SUSTAINABILITY AND RESILIENCE WATER RESOURCES

### **LESSONS LEARNED**

- + Business interests, local/state/federal government, and environmental conservationists effectively partnered on significant projects
- + Resource production (e.g. oil) and resource protection (e.g. sensitive habitat) were not mutually exclusive

When the restoration work is 'complete' the job is not 'done' (partnering on maintenance was critical)

Salinity presented a unique set of engineering challenges (i.e., corrosion)

Project does not highlight analysis area





# ATLANTIC PARK DE LAS LLAMAS SANTANDER, SPAIN

### PARK OVER FORMER DUMPING SITE

CONSTRUCTION BEGAN 2006

SCALE 74 ac.

2 years June Source: Tiia Monto, CC BY-SA 3.0, https://commons.wikimedia.org/w/index.php?curid=51301834 PLANNING BEGAN 2006

CONSTRUCTION COMPLETED 2008

**TOTAL COST** \$26,000,000

# **PROGRESS**



# **ATLANTIC PARK DE LAS LLAMAS**



- Transform former dump location into an ecologically rich urban park
- Revitalize former ecological functions in a new manner
- Utilize a three tier design to create different habitats
- Remove pollutants from runoff and provide infiltration





# **ATLANTIC PARK DE LAS LLAMAS** SANTANDER, SPAIN



### **LESSONS LEARNED**

- + Success came from the project's ability to blend the public and urban uses with the necessary ecosystem functions
- + Highly designed public space has proven to operate successfully in terms of ecosystem functions
- + Providing access from all points of the surrounding neighborhoods and communities maximized its urban potential
- + The park successfully utilized geometric forms for waterway/ waterfront design of public space





# MILLIKEN STATE PARK DETROIT, MI



### PARK ON FORMER BROWNFIELD LOCATION

**CONSTRUCTION BEGAN** 2004

SCALE 6.1 ac.

6 years

Source: USFWS Midwest Region, https://www.flickr.com/photos/usfwsmidwest/5489095304

CONSTRUCTION COMPLETED 2010

**TOTAL COST** \$4,000,000

# PROGRESS



- Filter 100% of surface runoff
- Remove 99% of sediment and other toxins from surface runoff before Detroit River
- Create habitat for 62 bird species
- Generate \$6 million in visitor revenue and \$152 million in multi-family residential in watershed





# MILLIKEN STATE PARK DETROIT, MI



#### **LESSONS LEARNED**

- + Capping and sealing brownfield contaminated soils saved \$250,000 or 18% of total project cost vs. soil removal
- + Working with state Natural Resources Dept resulted in extensive environmental education through interpretive signage
- Even with sterile soil, invasive species (phragmites, etc.) proved difficult to control during the initial construction of the wetlands and required repeated mechanical removal to allow native plants to become securely established





# HOUTAN PARK SHANGHAI, CHINA

GREEN TECHNOLOGIES PLANNING BEGAN EXPO PARK & WETLAND 2007

PARK OPENED 2010

SIZE 34 ac.

5 years

2007 WETLAND CONSTRUCTION

WETLAND CONSTRUCTION ENDS 2015

**COST** \$15,700,000

Source: bricoleurbanism, https://www.flickr.com/photos/bricoleurbanism/5113873222/in/photolist-8MTSeC-8MQTCe-8MQLNg-8MTTUb-8MTWkY-8MTYZE-8MQHEa-8MTVcy-8MTXcW-8MTPhY

# **PROGRESS**



- Create "green" technologies Expo
- Construct wetland to absorb pollutants and flood water

- Regenerate the site ecologically with agricultural landscapes
- Select vegetation to act as biofilter

# **HOUTAN PARK** SHANGHAI, CHINA



#### **LESSONS LEARNED**

- + Project with an emphasis on ecosystem functions provided environmental, social, and economic benefits
- + Ecologically regenerative landscapes drew inspiration from regional agriculture and industry (rice terraces, fishing ports, etc.)

Trying new technologies and solutions involved risk and willingness to test and troubleshoot design strategies





# **BALLONA WETLANDS** PLAYA VISTA, CA



### WETLAND INTERVENTION

**CONSTRUCTION BEGAN** MULTIPLE PHASES

**SCALE** 600 ac.

PLANNING BEGAN Early 1990s

CONSTRUCTION COMPLETED ONGOING









- Recycle nutrients into the coastal ecosystem
- Provide education opportunities for youth
- · Remove fill to promote healthy wetland

- Support rich and diverse fish and wildlife communities
- Create popular recreation activities for people

# **BALLONA WETLANDS** PLAYA VISTA, CA



#### **LESSONS LEARNED**

- + Wetland remediation played a large role in multi-disciplinary master plan development
- + Early 20th century channelization was modified to re-direct the flow of freshwater and allow for saltwater inflow into estuarine conditions





# MILL RIVER PARK AND GREENWAY STAMFORD, CT

### USACE & MUNICIPAL COLLABORATION

CONSTRUCTION BEGAN 2009

#### **SCALE** 28 ac. of park 3 mi. greenway

7 years ⊢──── DESIGN CHOSEN 2007

CONSTRUCTION COMPLETED 2013

**TOTAL COST** \$60,000,000

# PROGRESS



- Re-establish flow of formerly dammed and channelized river
- Reduce flood risk through recreational greenway

- Reintroduce floodplain habitat and species
- Reconnect residents to the water




### MILL RIVER PARK AND GREENWAY STAMFORD, CT



#### LESSONS LEARNED

- + Partnerships with academic institutions and digital outreach produced many citizen stewards of new parks
- + Re-establishing flows created a large range of spatial typologies that mimicked natural morphology of the river (riffles, pools, meanders, etc.) and thus offered many diverse habitat and recreation opportunities
- + Re-introducing a floodplain habitat supported large anadromous fish populations and more than 400 endemic trees and shrubs
- + Close collaboration among USACE, engineers, scientists, and landscape architects created a beautiful, functional system that addresses flood risk management and public space needs in both wet and dry seasons



Key area of importance

# **ECOSYSTEM FUNCTION PRECEDENT: OVERVIEW**



# PROGRAM

pw.lacounty.gov

Source: OLIN





# **SELECTING COMPARABLE PROGRAM EFFORTS**

- Public spaces that encourage community interaction and foster cultural opportunity
- Community engagement
- Possible activities and unique ideas that can be developed along the LA river
- Promote the advancement of the arts, culture, sustainability, and community





# **COMPARABLE PROGRAM EFFORTS**



#### **COPENHAGEN HARBOUR BATH COPENHAGEN HARBOUR BATH**



TEMPE, AZ



SEATTLE, WA





LA GREEN GROUNDS LOS ANGELES, CA

## **PROGRESS**

# WATERFRONT SEATTLE ART PLAN

# **PROGRAM SCALE COMPARISON**









SEATTLE ART PLAN SEATTLE, WA

# **PROGRAM FUNCTIONS PRECEDENT COMPARISON**

	DIAGONAL Mar Park Barcelona, Spain	<b>COPENHAGEN</b> <b>HARBOUR BATH</b> COPENHAGEN, DENMARK	TEMPE CENTER FOR THE ARTS TEMPE, AZ	<b>PENN</b> <b>PARK</b> PHILADELPHIA, PA	<b>LA GREEN</b> <b>GROUNDS</b> LOS ANGELES, CA	WATERFRONT SEATTLE ART PLAN SEATTLE, WA
ECOSYSTEM FUNCTION AND HABITAT						
OPEN SPACE, REC. AND TRAILS						
COMMUNITY ART AND PROGRAMMING						
OPERATIONS AND MAINTENANCE						
ACCESS AND SECURITY						
HOUSING AND PUBLIC HEALTH						
SUSTAINABILITY AND RESILIENCE						
WATER RESOURCES						
Γ	Project does not highlight analysis area		Project does highlight analysis area			

### **DIAGONAL MAR PARK** BARCELONA, SPAIN



CONSTRUCTION BEGAN 1995

SCALE 84 ac. mixed-use with 36 ac. park MIXED USE PLANNING BEGAN 1992

CONSTRUCTION COMPLETED

**TOTAL COST** \$900,000,000

#### 7 years



Source: https://upload.wikimedia.org/wikipedia/commons/d/d6/Barcelona\_-\_Parc\_Diagonal\_Mar\_04.jpg Wikipedia User: Zarateman



#### **PROJECT GOALS**

- Connect 2 major roadways
- Connect urban fabric to the ocean
- Fun, water-themed program (spray parks, etc.)
- Utilize water in all facets of the project
- Promote both passive and active recreation both on land and in water (ping pong tables, paddling and sailing on the lake, etc.)

#### **DIAGONAL MAR PARK BARCELONA, SPAIN**



#### **LESSONS LEARNED**

- + A park successfully connected transportation infrastructure as well as water systems
- + Water infrastructure was a main sculptural element throughout the entire project
- + Showcasing the piping infrastructure clued visitors into how the park is sustained and maintained
- + Utilizing water as a play element provided thematic underpinning to waterway/waterfront sites







# **COPENHAGEN HARBOUR BATH**

COPENHAGEN, DENMARK

WATER QUALITY IMPROVEMENTS BEGAN EARLY 1990S

SCALE .6 ac.

20 years

4 BATH CONSTRUCTIONS COMPLETED 2003-2010

**TOTAL COST** \$787,000

Source: Jacob Friis Saxberg from Denmark - IMG\_0742.JPG, CC BY 2.0, https://commons.wikimedia.org/w/index.php?curid=15788742





## **COPENHAGEN HARBOUR BATH** COPENHAGEN, DENMARK



#### **PROJECT GOALS**

- Provide free outdoor pool
- Strengthen programming for Islandsbrygge Harbour Park
- Create identity to former industrial waterfront
- Extend public space from boardwalk





# **COPENHAGEN HARBOUR BATH**

#### **COPENHAGEN, DENMARK**



#### **LESSONS LEARNED**

- + Small built project transformed identity of a former industrial site
- + Pools and piers extended narrow linear public spaces and created nodes for recreation, performances, and other program
- + Outdoor pools were a destination as well as a neighborhood amenity
- + Water quality improvements were the driving force behind being able to implement the baths







# TEMPE, AZ

#### FORMER LANDFILL TRANSFORMED INTO LEVEE WITH PARK AND CULTURAL CENTER

**CONSTRUCTION BEGAN** 2004 CONSTRUCTION COMPLETED 2008

SCALE 17 ac. **TOTAL COST** \$65,000,000

#### 4 years

Source: davidpinter, <a href="https://creativecommons.org/licenses/by/3.0" title="Creative Commons Attribution 3.0">CC BY 3.0</a>, <a href="https://commons.wikimedia.org/w/index.php?curid=54334288">Link</a>



#### **PROJECT GOALS**

- Provide ground level, interior public space for new cultural center
- Reflect Salt River and surrounding landscape
- Bury high voltage electricity lines
- Transform levee infrastructure into landmark institution for arts and culture

## PROGRESS



creativecommons.org/licenses/by/3.0" title="Creative Commons Attribution 3.0">CC BY 3.0</a>, <a href="https://commons.wikimedia.org/w/index.



### **TEMPE CENTER FOR THE ARTS** TEMPE, AZ



#### **LESSONS LEARNED**

- + Cultural center anchored program as one of many nodes along the Salt River
- + Flood risk management infrastructure such as levees formed a unique, elevated site for landmarks and open space
- + Using transparent glass and reflective surfaces and facade treatments creates a welcoming ground level, interior public space as well as continuity between the building and its landscape





Key area of importance



#### PARK ON FORMER PARKING LOT

CONSTRUCTION BEGAN 2008

SCALE 24 ac.

**3 years —** Source: © Penn Facilities & Real Estate Services, https://www.facilities.upenn.edu/maps/locations/penn-pa CONSTRUCTION COMPLETED 2011

**TOTAL COST** \$46,500,000





#### **PROJECT GOALS**

- Transform parking lot into multi-sport athletic Connect a contained and inaccessible site to fields and park
- pedestrians and surrounding community
- Capture, treat, and monitor stormwater

#### **PENN PARK** PHILADELPHIA, PA



#### LESSONS LEARNED

- + Master plans have a long horizon
- + Strategic pedestrian bridges and lighting improvements connected a formerly inaccessible site to its surrounding community
- + Various athletic and sports programs incorporated stormwater capture, treatment, and monitoring into field construction techniques
- + An underground support system ensured that the weight from the berms and meadow plantings was evenly distributed to avoid disruption of the adjacent rail line
- Bioswales accommodating significant grade change that sit within a meadow, featuring a range of upland plantings, provide a large maintenance challenge

Project does not highlight analysis area



Key area of importance

# LOS ANGELES, CA

COMMUNITY-LED URBAN FARMING ORGANIZATION IN SOUTH CENTRAL AND SOUTH LA NEIGHBORHOODS

ESTABLISHED 2010 ONGOING RELIES HEAVILY ON VOLUNTEERS

TOTAL COST

non-profit budget

**SCALE** 27 Edible gardens as of 2013

8 years

Source: LAGreenGrounds, https://www.flickr.com/photos/lagreengrounds/15299120158/

## LA GREEN GROUNDS LOS ANGELES CA

ECEDENT ANALYSIS

#### **PROJECT GOALS**

- Create sustainable, local sources of food
- Strengthen communities through urban farming and wellness programming
- Reclaim vacant lots







### LA GREEN GROUNDS LOS ANGELES, CA



#### **LESSONS LEARNED**

- + Vacant lots in Los Angeles provided opportunities for communityled programs and sustainable gardening practices
- + Urban farming was a powerful and wide-reaching community catalyst for programming





Key area of importance

### WATERFRONT SEATTLE ART PLAN SEATTLE, WA



MASTER PLAN FOR ARTS PROGRAMMING

PLAN COMPLETED 2012

SCALE 20 ac.

9 years

PLANNING BEGAN 2003

PROJECTS ONGOING

**TOTAL COST** \$3,300,000 annual budget (2016)

Source: Cristie Guevara, https://www.publicdomainpictures.net/en/view-image.php?image=101540&picture=art-installation-seattle-waterfrom

## WATERFRONT SEATTLE ART PLAN SEATTLE, WA

#### **PROJECT GOALS**

- Transform industrial waterfront into dynamic public space
- Advocate for oversight and funding of public art along waterfront
- Identify specific site typologies unique to the waterfront for public art
- Develop implementation plan with artists







### WATERFRONT SEATTLE ART PLAN SEATTLE, WA



#### **LESSONS LEARNED**

- + Plan leveraged infrastructure development with removal of Alaskan Way Viaduct freeway by claiming the new open spaces for art and recreation funded by DOT and 1% for Art revenues
- + Plan advocated for a dynamic framework for funding, oversight, and implementation of public art
- + Plan identified unique opportunities along "continuous elements" of waterfront like promenades and tide lines as well as nodes that connect the site to existing urban grid
- + The process involved artists early on for successful identification of locations and strategies for public art as well as post-plan implementation



Key area of importance

## **PROGRAM FUNCTION PRECEDENT: OVERVIEW**

mons.wikimedia.org/wiki/File:Barcelona\_-\_Parc\_Diagonal\_Mar\_04. Source: Jacob Friis Saxberg from Denmark - IMG\_0742.JPG, CC BY 2 Source: © Penn Facilities & Real Estate Services, https://www.facilities.upenn.ed edia.org/w/index.php?curid=15788742 ing, Wikipedia User: 7arateman SIZE 84 ac. 24 ac. 17 ac. 27+ Gardens .6 ac. PLANNING & CONSTRUCTION **3** years Ongoing 7 years 1 years 4 years BUDGET \$787,000 \$65,000,000 \$46,500,000 \$900,000,000 Non-profit and \$1,311,666/ac. \$3,823,529/ac. \$1,937,500/ac. \$10,714,285/ac. Volunteers **TEMPE CENTER** LA GREEN DIAGONAL COPENHAGEN PENN MAR PARK HARBOUR BATH PARK GROUNDS FOR THE ARTS TEMPE, AZ PHILADELPHIA, PA LOS ANGELES, CA **BARCELONA, SPAIN** COPENHAGEN, DENMARK



Ongoing

20 ac.

\$3,300,000 (annual) \$165,000/ac.

WATERFRONT SEATTLE ART PLAN SEATTLE, WA

# POLICY

m. Anot

the state of the state

Source: OLIN





# **SELECTING COMPARABLE PLANNING EFFORTS**

- Leveed/engineered rivers or other linear infrastructure corridors
- Scope of plan goes beyond primary mission (i.e. water management, transportation)
- Differing demographic/economic conditions along the project's length
- Multi-jurisdictional
- Positive or negative lessons learned



# **COMPARABLE PLANNING EFFORTS**







#### **FOOTHILL GOLD LINE PHASE 3** LA COUNTY, CA







## **COMPARABLE PLANNING EFFORTS: SCALE COMPARISONS**



LA RIVER LA COUNTY, CA

**TRINITY RIVER** FORT WORTH, TX

**TRINITY RIVER** DALLAS, TX

**CENTRAL ARTERY**/ **TUNNEL PROJECT BOSTON, MA** 

5

FOOTHILL GOLDLINE LA COUNTY, CA



Source: OLIN \* All projects are shown at the same scale.





## ۶Ţ

SOUTH PLATTE **RIVER GREENWAY** DENVER, CO

**ATLANTA** BELTLINE ATLANTA, GA

## **COMPARABLE PLANNING EFFORTS: SCALE COMPARISONS**

35.46

-<u>\*</u> -\*-----\*\*\*\*\*\*

TRINITY RIVER DALLAS, TX



TRINITY RIVER FORT WORTH, TX

SOUTH PLATTE RIVER GREENWAY DENVER, CO

FOOTHILL GOLDLINE LA COUNTY, CA



CENTRAL ARTERY/TUNNEL PROJECT BOSTON, MA



0 50' 100' 200'



# LA RIVER MASTER PLAN ANALYSIS AREAS

#### **ECOSYSTEM FUNCTION & HABITAT**

- Soils & Geology
- Urban Footprint
- Vegetation Forms
- Rare & Threatened Species
- Historical Hydrology
- Species Observation
- Spawning & Migration

#### **ACCESS & SECURITY**

- Access Points
- Fences & Gates
- Multi-Modal Transportation
- Signage
- Accessibility
- Injury & Crime Risk
- Public Perception

#### **OPEN SPACE, REC, & TRAILS**

- Park Need
- Park Acreage Standards
- Park Amenities
- Park Access
- Trail Gaps
- Water Recreation

#### **COMMUNITY ART &** PROGRAMMING

- Historical Culture
- Social Service Facilities
- Community Centers
- Advocacy & Environment
- Landmarks
- Public Art Programs

#### **HOUSING & PUBLIC** HEALTH

- General Characteristics
- Income & Employment
- Education
- Housing
- Displacement Risk
- Homelessness
- Health

#### **SUSTAINABILITY &** RESILIENCY

- Sustainability & Climate **Action Plans**
- Precipitation & Flow
- Energy & Climate
- Urban Agriculture
- Human Hazards
- Wildfire & Flooding

## PROGRESS

#### **OPERATIONS &** MAINTENANCE

- Existing Responsibilities
- Maintenance Regions
- Entities Involved
- Bottom Conditions
- Levees & Landslides
- Bridges
- Utilities and Fences

#### WATER RESOURCES

- Flood Risk
- Groundwater
- Surface Water Quality
- **Beneficial Uses**
- Water Supply
- Hydrology (Dry & Wet Weather)

## COMPARABLE PLANNING EFFORTS: POLICY COMPARISON

ECOSYSTEM AND HABITAT

OPEN SPACE, REC. AND TRAILS

COMMUNITY ART AND PROGRAMMING

OPERATIONS AND MAINTENANCE

> ACCESS AND SECURITY

HOUSING AND PUBLIC HEALTH

SUSTAINABILITY AND RESILIENCE

> WATER RESOURCES

PLAN DOES NOT	PLAN DOES	PLAN P
ADDRESS ISSUE	MENTION ISSUE	POLICY AR



#### PROPOSES ROUND ISSUE

# **POLICY PRECEDENT COMPARISON**

	TRINITY RIVER FORT WORTH, TX	TRINITY RIVER DALLAS, TX	CENTRAL ARTERY BOSTON,MA	FOOTHILL GOLD LINE LA COUNTY,CA	SO RIVE
ECOSYSTEM AND HABITAT					
OPEN SPACE, REC. AND TRAILS					
COMMUNITY ART AND PROGRAMMING					
OPERATIONS AND MAINTENANCE					
ACCESS AND SECURITY					
HOUSING AND PUBLIC HEALTH					
SUSTAINABILITY AND RESILIENCE					
WATER RESOURCES					
	Plan does not ad	ddress issue	Plan mentions issue	Plan proposes policy	





## **TRINITY RIVER VISION PROJECT** FORT WORTH, TX

#### **PLANNING BEGAN** 1971₅

SIZE 12 mi. PLAN ADOPTED 2002

COST \$900,000,000 (2009)

#### **PREVIOUS PLANNING EFFORTS**

- 1971 The "Halprin Plan"
- 2002 Trinity River Masterplan
- 2004 Trinity Uptown Plan
- 2006 Neighborhood Recreation Enhancement Plan
- 2008 Gateway Park and Panther Island



# TRINITY RIVER VISION PROJECT

. .....



• Flood protection

PRECEDENT

- Urban revitalization
- Ecosystem function

- Promote recreation
- Sustainable design




# TRINITY RIVER VISION PROJECT





# **TRINITY RIVER VISION PROJECT** FORT WORTH, TX



### **LESSONS LEARNED**

- + Flood risk management can go hand in hand with regional recreation and ecosystem function
- + A large regional park can be used to store flood waters while also housing recreational amenities, and improving habitat, river, wetland, and forest restoration
- + River management can create opportunities for new housing and development
- + Flood risk management infrastructure is aiding in restoring more than 800 acres of underutilized land, resulting in opportunities for over 10,000 housing units and over 3 million square feet of commercial, retail, and educational space







# **TRINITY RIVER CORRIDOR PROJECT** DALLAS, TX

### PLANNING BEGAN 1998

SIZE 20 mi. **CONSTRUCTION STARTED** 2005

COST \$1,700,000,000 (2003 projected)

### **PREVIOUS PLANNING EFFORTS**

- 1945 Dallas Floodway Project
- 1959 Parks and Open Space Plan
- 1965 Dallas Floodway Expansion Project
- 1972 Trinity River Greenway Prototype
- 1983 Trinity River Greenbelt Plan
- 1997 Dallas County Trail Plan

# PROGRESS



# TRINITY RIVER CORRIDOR PROJECT DALLAS, TX

Source: Steve Rainwater, https://www.flickr.com/photos/steevithak/3489313

## **PROJECT GOALS**

- Flood protection
- Recreational amenities
- Improve infrastructure

- Add public spaces
- Benefit environment





# TRINITY RIVER CORRIDOR PROJECT





# **TRINITY RIVER CORRIDOR PROJECT** DALLAS, TX



### **LESSONS LEARNED**

- Despite having a wide, planted "green" river channel, envisioned park space has been difficult to develop
- + New vehicular bridges over the river have improved traffic circulation and are public art pieces
- + The reuse of an old vehicular bridge as play space has added recreational value to the river corridor
- Despite a broad vision for the river, implementation has languished due to lack of political and financial support and because the department with jurisdiction has a narrow water-related mission







# **CENTRAL ARTERY/TUNNEL PROJECT BOSTON, MA**

CONSTRUCTION BEGAN CONSTRUCTION ENDED 2006 1991

SIZE 7.5 mi. 300 ac. of new park space COST \$21,000,000,000

### **PREVIOUS PLANNING EFFORTS**

- 1982 CA/T Project Planning
- 1987 Approved funding
- 1991 Construction Began
- 2006 Project Completed

Source: https://commons.wikimedia.org/wiki/File:Park\_on\_Big\_Dig\_Parcel\_18,\_Boston.JPG, Wikipedia User: NewtonCourt Source: https://www.mass.gov/info-details/the-big-dig-project-background





## **PROJECT GOALS**

- Relieve traffic congestion
- Connect people and communities
- Provide better airport connections
- Create additional public plazas and parks
- Improve air quality





# **CENTRAL ARTERY/TUNNEL PROJECT** BOSTON, MA







# **CENTRAL ARTERY/TUNNEL PROJECT BOSTON, MA**



### **LESSONS LEARNED**

- + Infrastructure corridors that are seen as barriers can be transformed to connect and provides amenities
- + By burying a highway corridor and topping it with park space, downtown Boston became reconnected with the North End and the waterfront
- + The new greenway adds park space that is a regional draw in a part of the city that was lacking it
- + Public/private models for operations and maintenance can be successful
- + The Rose Fitzgerald Kennedy Greenway Conservancy in a non-profit organization that was established to operate and maintain the greenway using half public and half private funds







# **FOOTHILL GOLD LINE** LOS ANGELES COUNTY, CA



### **PLANNING BEGAN** 1999

SIZE 23.9 mi. CONSTRUCTION ENDS (projected) 2026

COST \$2,250,000,000 (projected)

### **PREVIOUS PLANNING EFFORTS**

- 2003 Los Angeles to Pasadena Extension
- 2016 Pasadena to Azusa Extension

# **PROGRESS**

1998 - Creation of Foothill Gold Line Construction Authority





- Improve and expand existing infrastructure
- Address the need for mixed-income housing
- Enhance city-to-city mobility
- Improve transportation capacity
- Connect neighborhoods and cities
- automobile use







# • Encourage users to increase public transit activity and decrease

# **FOOTHILL GOLD LINE** LOS ANGELES COUNTY, CA





# **FOOTHILL GOLD LINE** LOS ANGELES COUNTY, CA



### **LESSONS LEARNED**

- + Within LA County, large-scale corridor planning that provides access to multiple cities has been successful
- + Previous phases of the Gold Line added stations in eight cities within LA County
- + Infrastructure corridor planning has been paired with affordable housing development in LA County
- + The effects of Metro's affordable housing policy should be monitored along this line moving forward
- Previous phases of the Gold Line, before Metro's affordable housing policy went into effect, still produced 100 affordable housing units due to policies already in place





# SOUTH PLATTE RIVER GREENWAY **DENVER**, CO

### **PLANNING BEGAN** 2006

SIZE 10 mi. CONSTRUCTION ENDS (projected) 2025

COST \$40,000,000

### **PREVIOUS PLANNING EFFORTS**

- 1974 Greenway Improvements Began
- 2009 River North Greenway Masterplan
- 2010 River South Greenway Masterplan

# **PROGRESS**



# **PROJECT GOALS**

- Create additional recreation opportunities along the river
- Emphasize environmental education

- Protect and restore habitats and ecologies along the river
- Improve water quality





# SOUTH PLATTE RIVER GREENWAY DENVER, CO





# SOUTH PLATTE RIVER GREENWAY **DENVER, CO**



### **LESSONS LEARNED**

- + Re-imagining a river corridor to include continuous trails and parkland happens incrementally with persistence
- Park land, habitat, and continuous trails were built one project at a time over 20 years, in a way that connects with adjacent neighborhoods
- + Multiple objectives can be met if management is integrated and balanced
- + Various departments have responsibilities and work together along the corridor for a complete vision







# **ATLANTA BELTLINE** ATLANTA, GA

**PLANNING BEGAN** 2005

SIZE 22 mi. 2000 ac. of new park space CONSTRUCTION ENDS (projected) 2030

COST \$4,800,000,000 (projected)

### **PREVIOUS PLANNING EFFORTS**

- 1999 Graduate Thesis Proposed Plan
- 2006 Work Plan Begins
- 2013 Strategic Implementation Plan



# **PROJECT GOALS**

- Create a rails to trails system
- Build parks for the city
- Address city health issues

- Induce economic growth
- Provide mixed and low income housing





# **ATLANTA, GA**





# **ATLANTA BELTLINE** ATLANTA, GA



### LESSONS LEARNED

- Affordable housing goals are not enough; clear responsibilities and solid requirements are necessary
- + Though the BeltLine initially included targets for affordable housing, no entity had clear responsibility for ensuring those targets were met
- By the time an entity had been established, much of the existing affordable housing had been lost and land had become expensive
- + Tax increment financing (TIF) can be successful at capturing value created by infrastructure investments, which can then be reinvested
- The funding is tied to a tax allocation district (TAD)[a version of TIF]
- + New stormwater infrastructure can be an incentive for development and provide amenities





# **POLICY PRECEDENT COMPARISON**

	TRINITY RIVER FORT WORTH, TX	TRINITY RIVER DALLAS, TX	CENTRAL ARTERY BOSTON,MA	FOOTHILL GOLD LINE LA COUNTY,CA	SO RIVE
ECOSYSTEM AND HABITAT					
OPEN SPACE, REC. AND TRAILS					
COMMUNITY ART AND PROGRAMMING					
OPERATIONS AND MAINTENANCE					
ACCESS AND SECURITY					
HOUSING AND PUBLIC HEALTH					
SUSTAINABILITY AND RESILIENCE					
WATER RESOURCES					
	Plan does not address issue Plan mentions issue Plan proposes policy				





# **COMPARABLE PLANNING EFFORTS: COSTS**





Source: Laura Grace Bordeaux, https:// cevhordeaux/15372604277/in/ 2014



22 mi. | 2000 ac.

### \$4,800,000,000 \$218,181,818/mi.

ATLANTA BELTLINE ATLANTA, GA



# LARiverMasterPlan.org

