



LAURA SOLANO

PRINCIPAL

MICHAEL VAN VALKENBURGH ASSOCIATES, INC

Finding Opportunities to Join Landscape Performance and Place

Laura Solano, Principal
Michael Van Valkenburgh Associates Inc, Landscape Architects

21 March, 2018

Brooklyn Botanic Garden

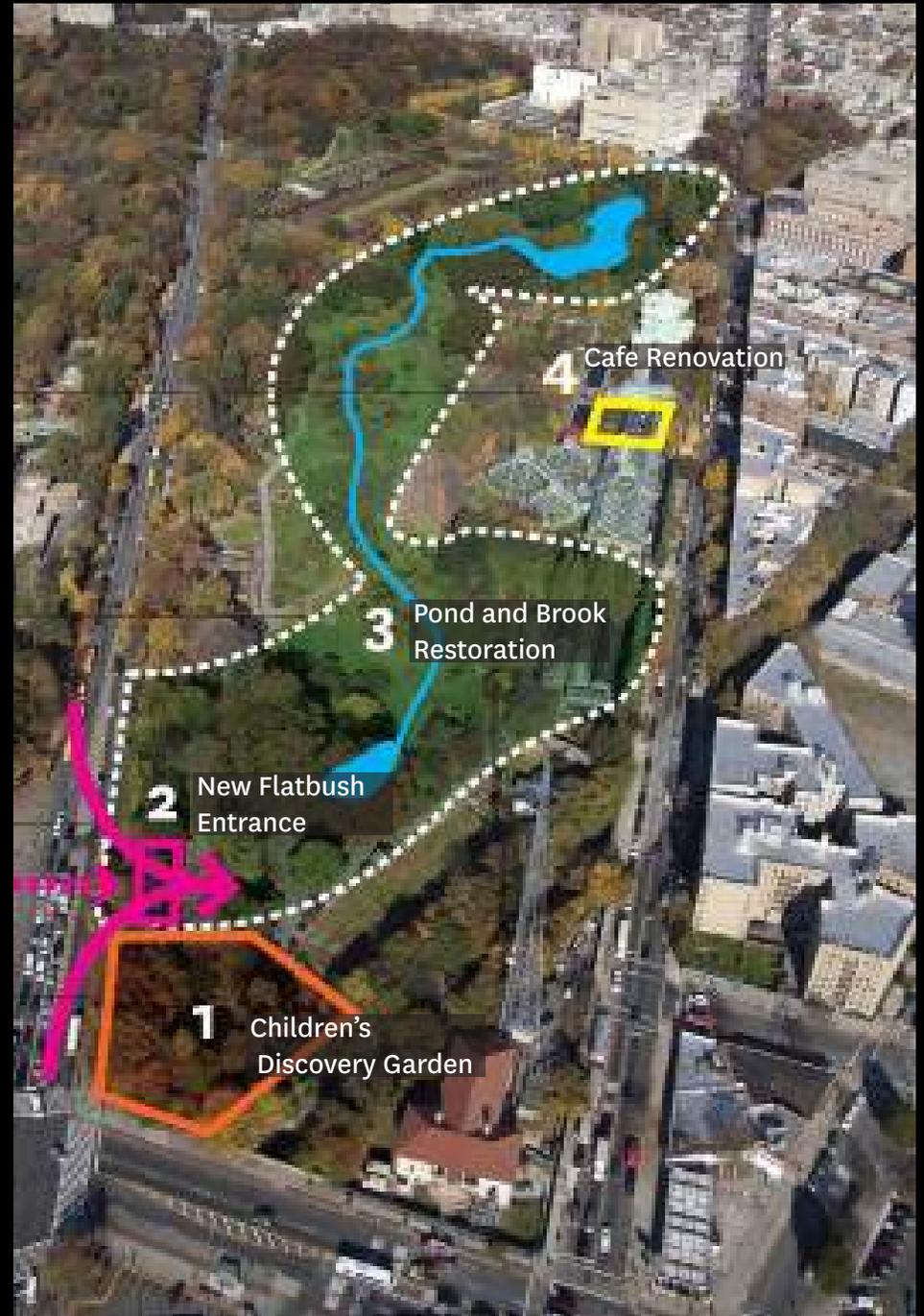
Brooklyn, NY



Stormwater Opportunity: reduce potable water use

Fast Facts:

- 2010-2016
- 52 acres
- Dense, Diverse Neighborhood
- Childrens Garden
- Potable Water Before: 22M gals/year
- Potable Water After: 900K gals/year





Prospect Heights

Park Slope

Brooklyn Public Library

Brooklyn Art Museum

Crown Heights

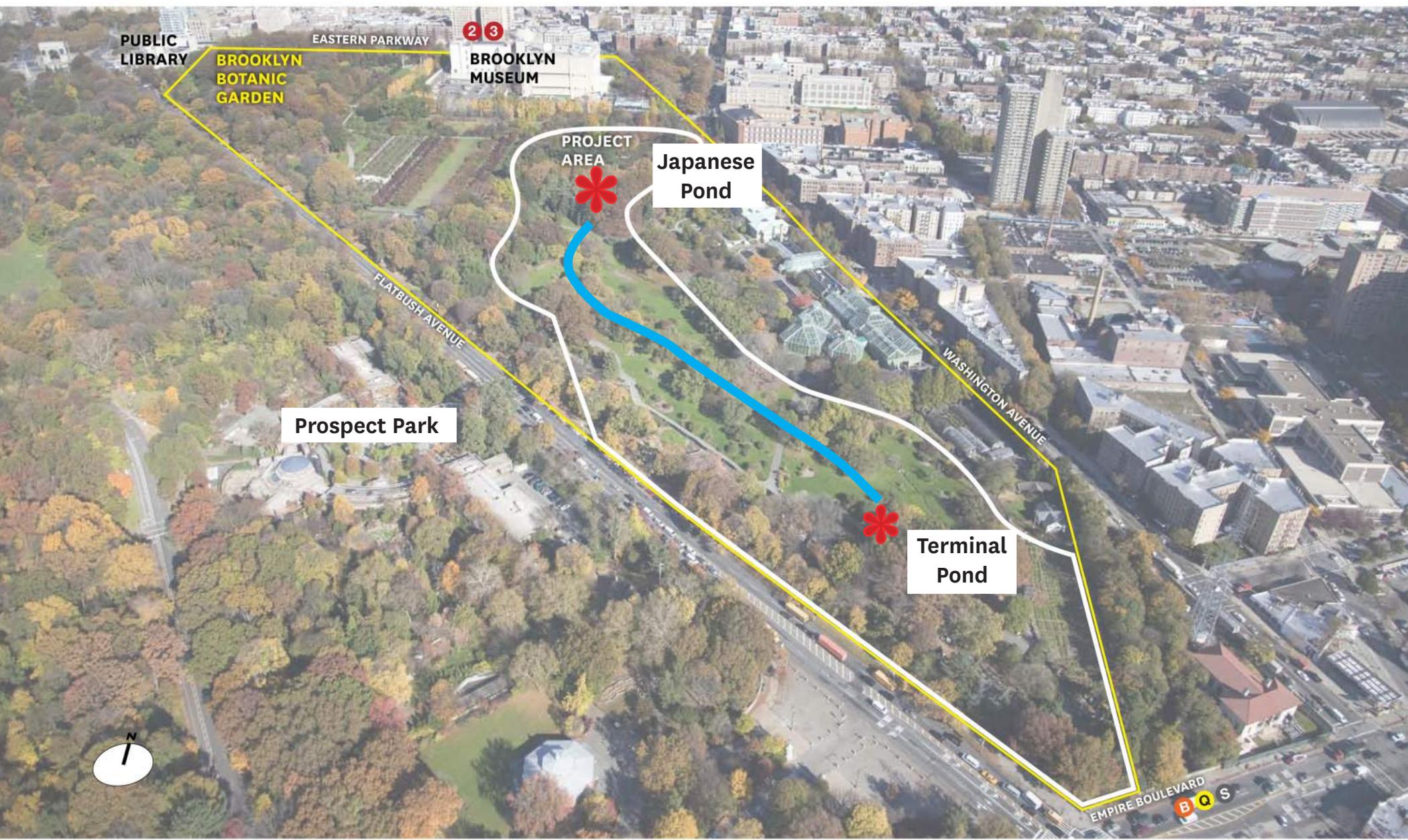
Prospect Park

EXISTING SITE

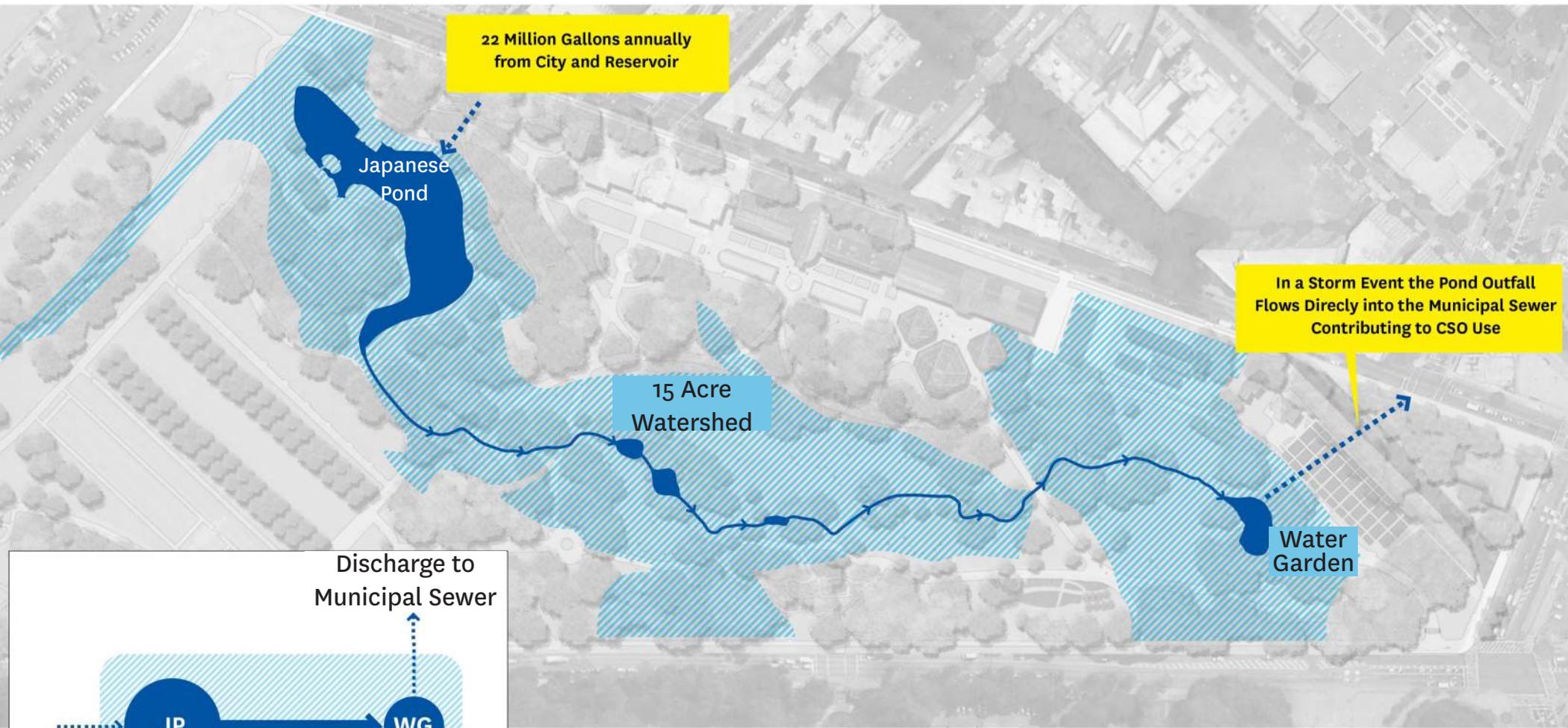
Lefferts Gardens



Existing Stream



Pond and Brook Restoration



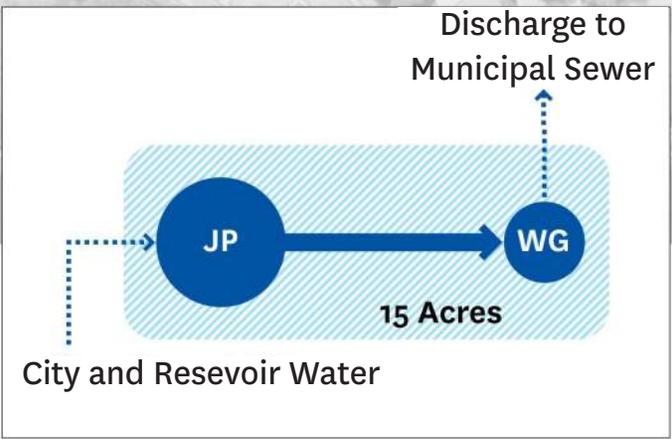
22 Million Gallons annually from City and Reservoir

Japanese Pond

15 Acre Watershed

In a Storm Event the Pond Outfall Flows Directly into the Municipal Sewer Contributing to CSO Use

Water Garden



Discharge to Municipal Sewer

JP

WG

15 Acres

City and Reservoir Water

Existing Site Hydrology

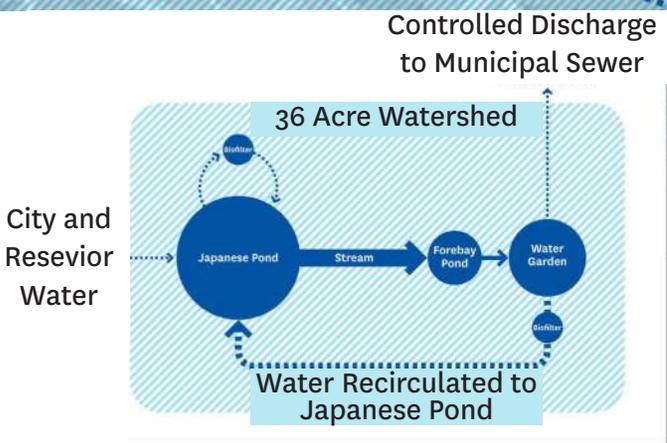
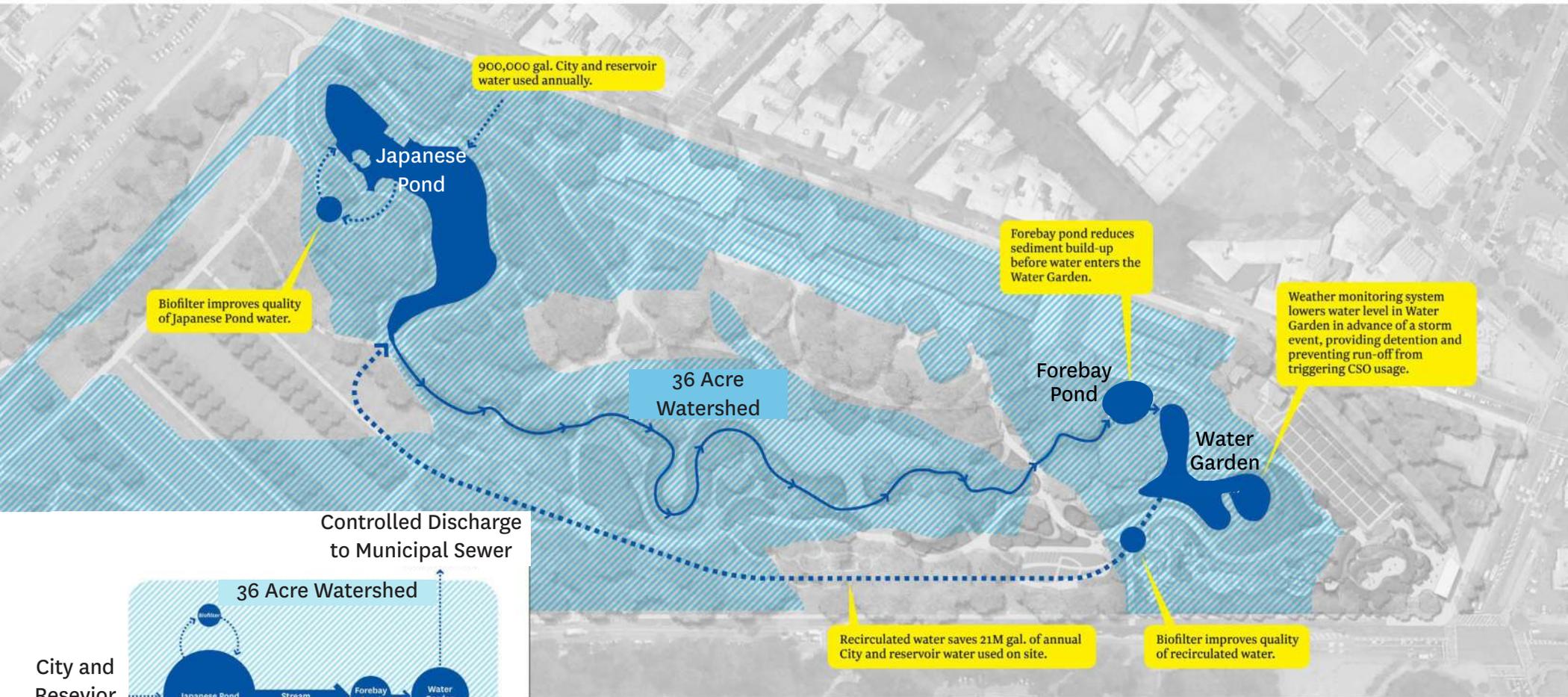


Japanese Pond

Water Garden

Prospect Park

Proposed Site Plan



Proposed Site Hydrology





GW Bush Presidential Center

Dallas, TX



Stormwater Opportunity: shape 100K CY of soil into valley/ridge system

Fast Facts

- 2007- 2013
- 23 Acres
- SMU Campus
- Private Park Open to Public
- Ecological Stewardship
- Fully Engaged Client
- Organic maintenance



NORTH CENTRAL TEXAS PLANT COMMUNITIES



Native Lawn



Tallgrass Prairie



Wildflower Meadow



Savanna and Woodland



Floodplain Forest



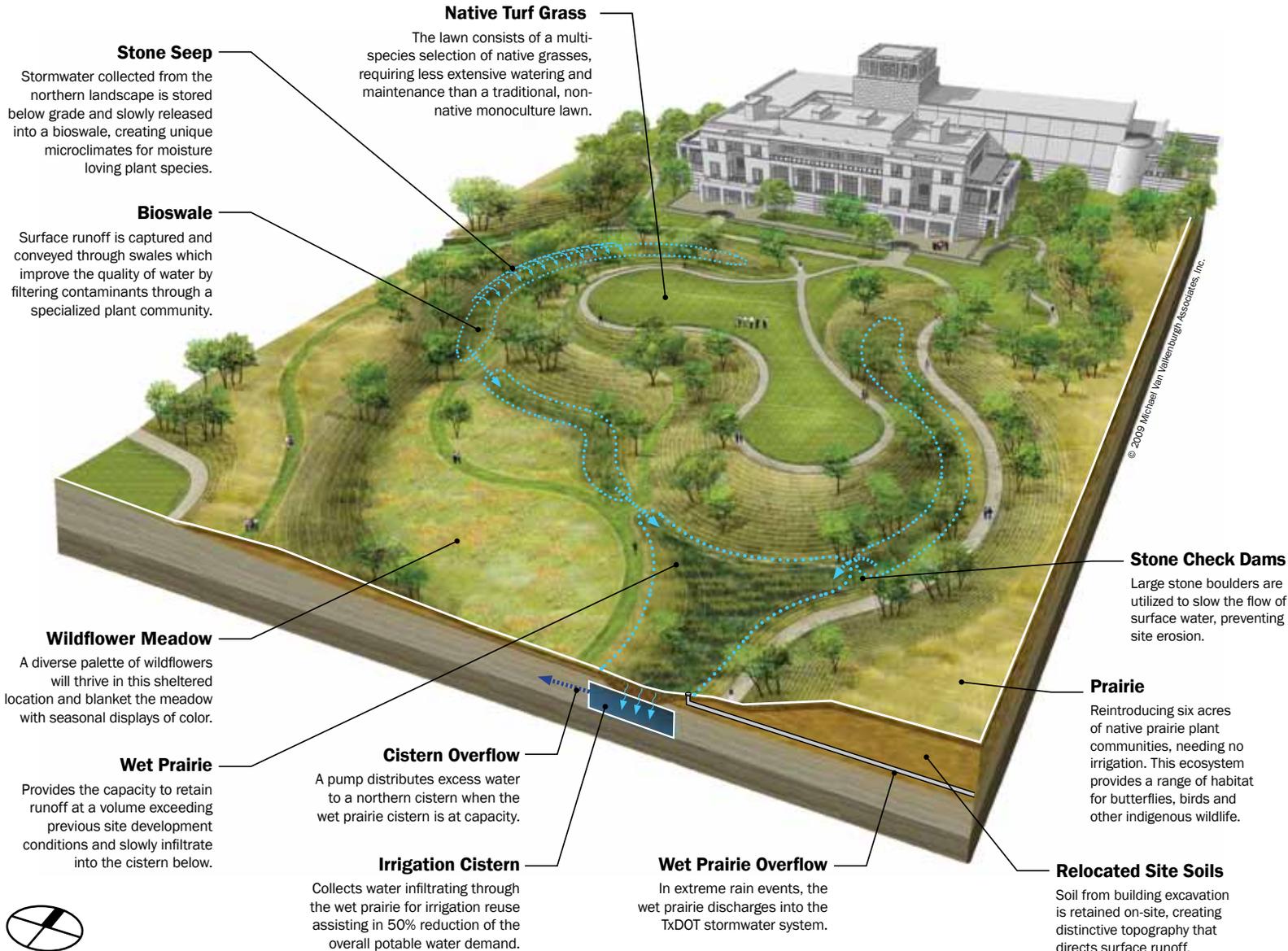
Wet Prairie

The Concept: Texas blackland prairie ecosystem



George W. Bush Presidential Center Landscape

The Presidential Center plantings, site hydrology, and topography work together to create a landscape that is ecologically rich and environmentally sustainable, while providing a dynamic experience in every season of the year. The native plant communities of North Central Texas are selected for their compatibility with various site microclimates.



Stormwater Management

The overall stormwater collection and distribution strategy will dramatically limit the need for water intake and the occurrence of water outflow into municipal systems. The landscape absorbs rainwater runoff on-site, cleanses contaminants from stormwater, harvests stormwater for irrigation reuse, and sustainably supports native plant communities that thrive in wet conditions.



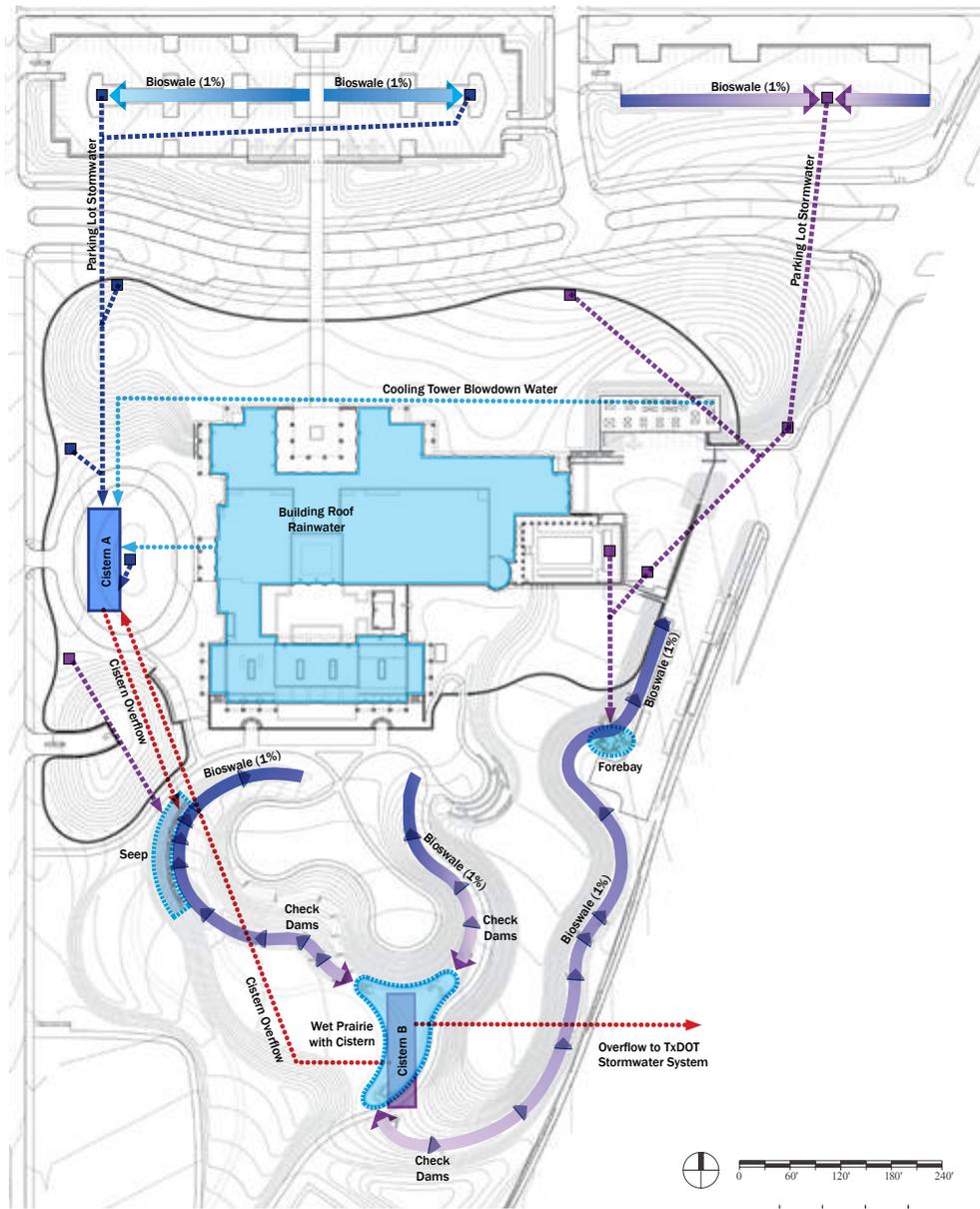
Limestone Seep (Browning Ranch, Johnson City, TX)



Wet Prairie (Fort Worth Nature Center and Refuge, Fort Worth, TX)



Check Dams (Alumnae Valley, Wellesley College, Wellesley, MA)



STORMWATER MANAGEMENT DIAGRAM
NOVEMBER 18, 2009

GEORGE W. BUSH PRESIDENTIAL CENTER
SOUTHERN METHODIST UNIVERSITY
DALLAS, TEXAS
MICHAEL VAN VALKENBURGH ASSOCIATES, INC.,
LANDSCAPE ARCHITECTS



Bioswale (Iowa NRCS)



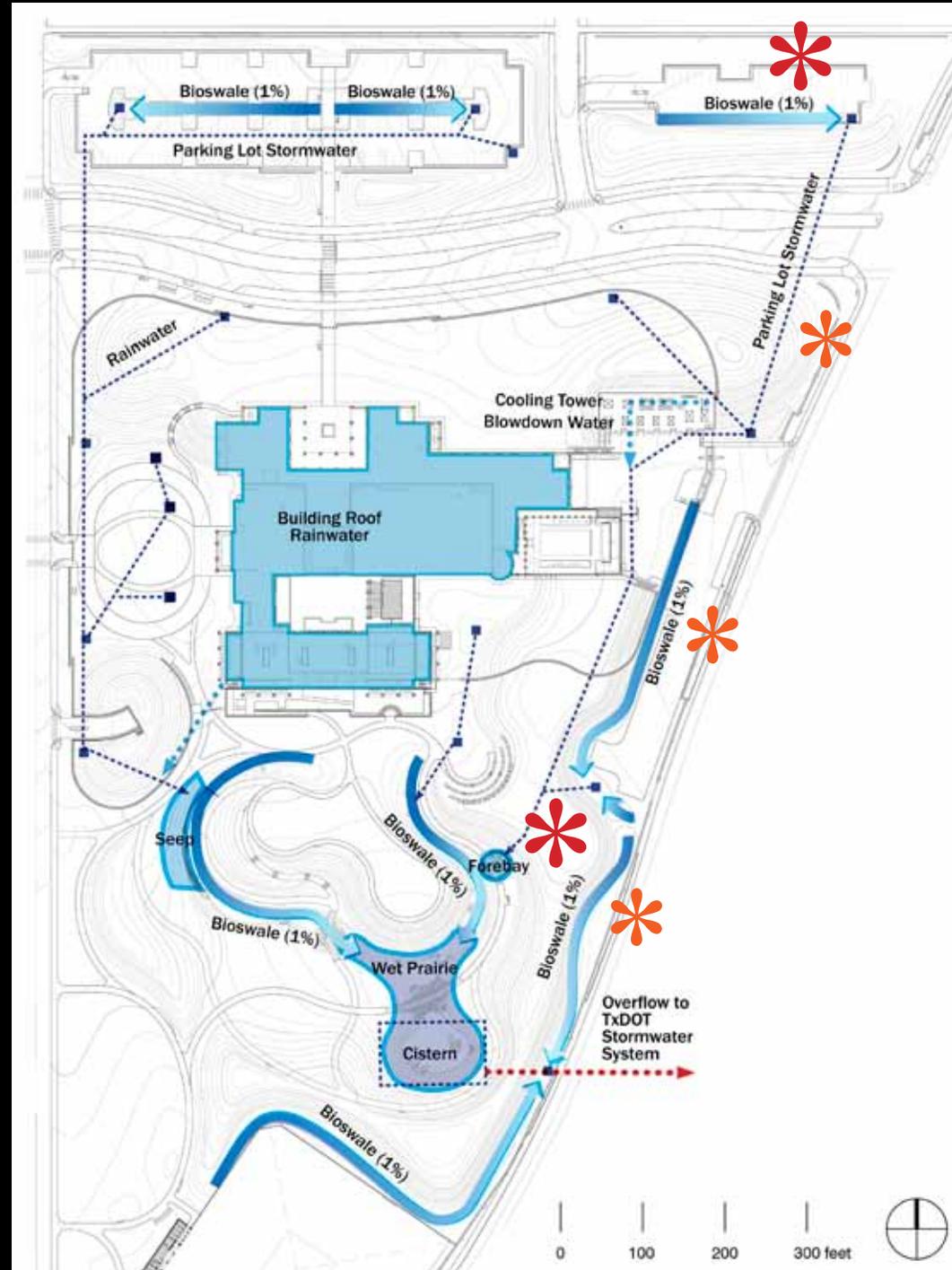
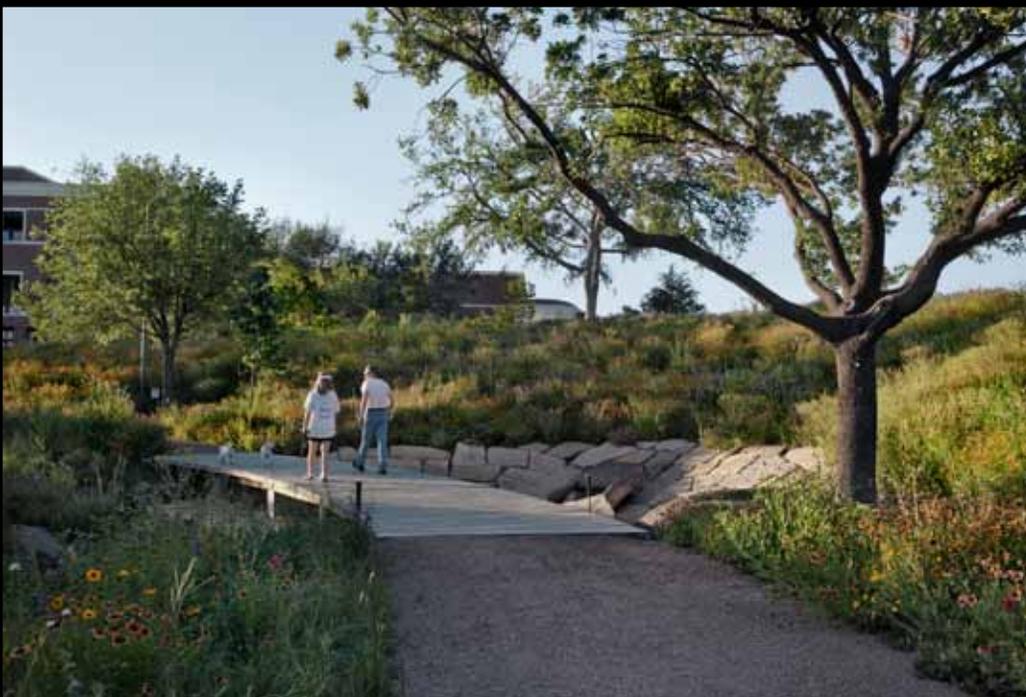
Underground Cistern



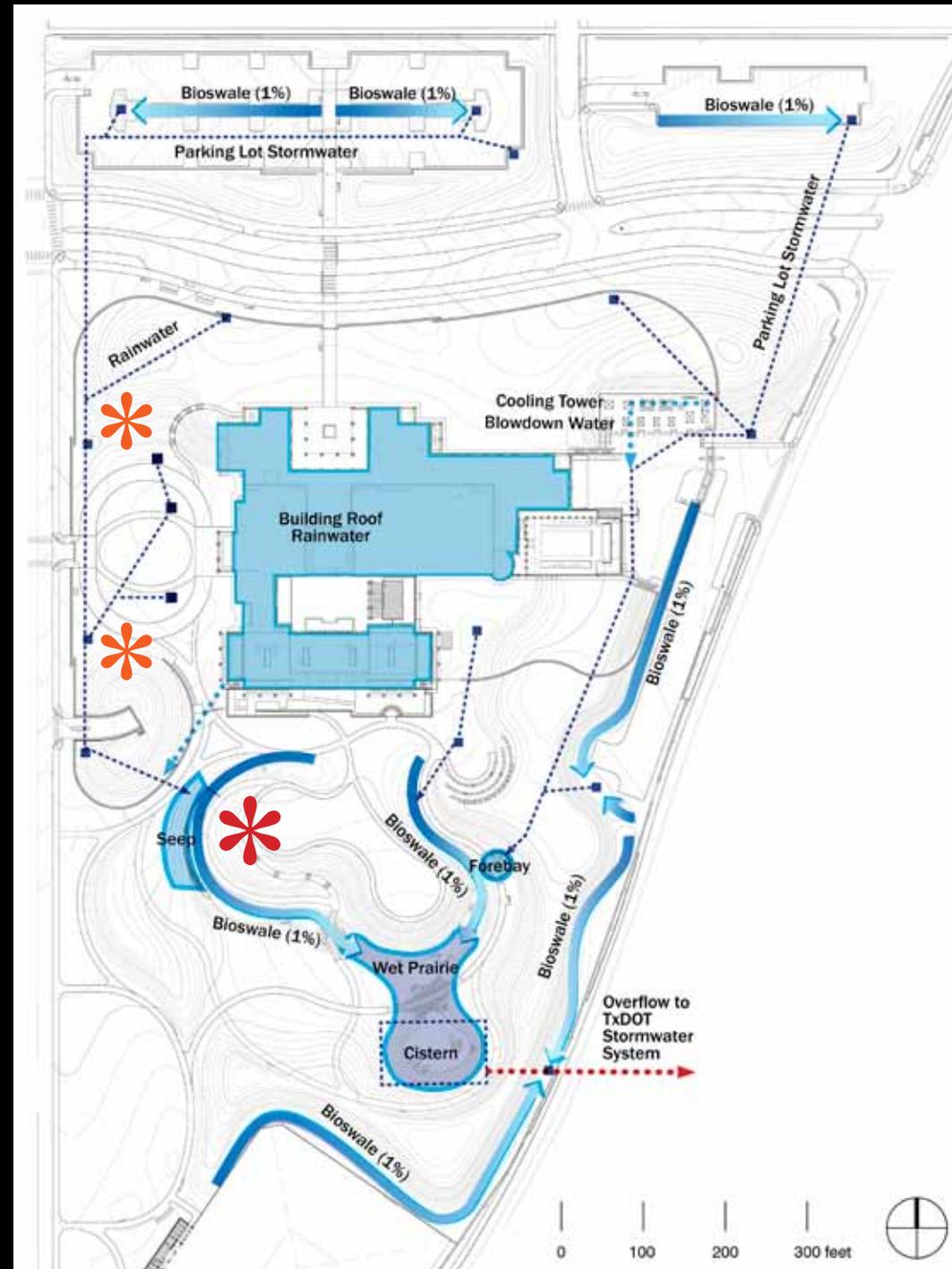
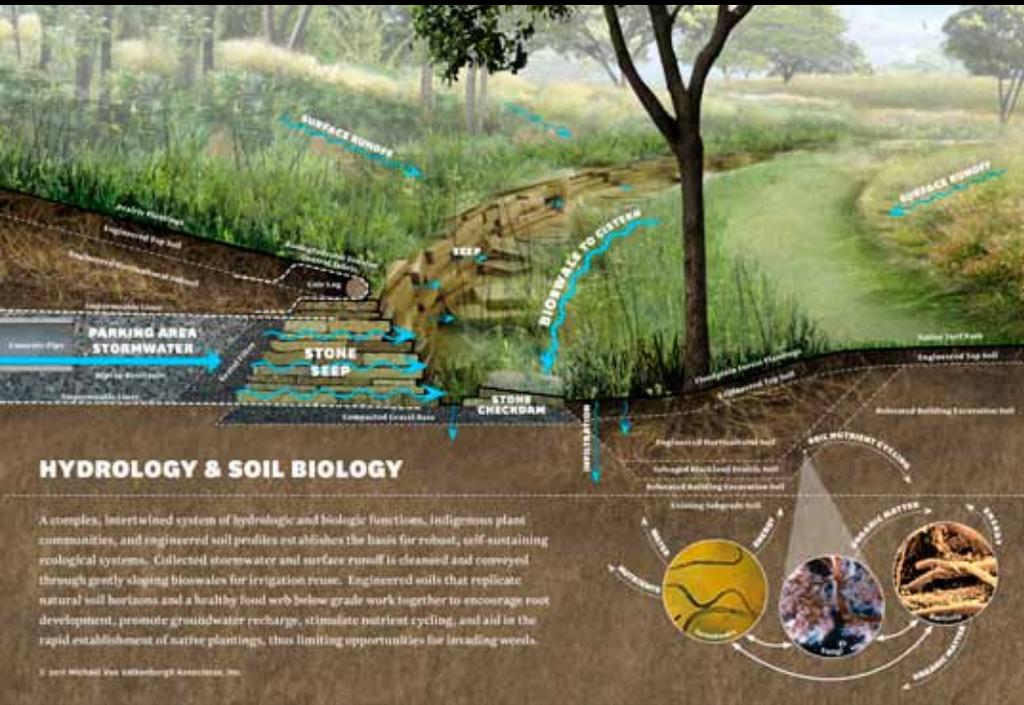
Bioswale/Check Dams

Site hydrology supports the overall ecological self-sufficiency of the Presidential Center landscape through its integration with the design of architectural systems and planting typologies. This multi-faceted stormwater strategy enables the Center to absorb rainwater runoff on site, cleanse contaminants from stormwater, harvest stormwater for irrigation reuse, and sustainably support native plant communities that thrive in wet conditions. Roofwater and cooling tower blowdown water will be captured and piped directly to the cisterns without the need for filtration. Surface runoff from pavement areas will be conveyed and treated through a series of bioswales. Within the southern landscape, bioswales deposit stormwater into a wet prairies/constructed wetland. Following the rain event, this volume of water slowly infiltrates into a below grade cistern and is reused for irrigation.

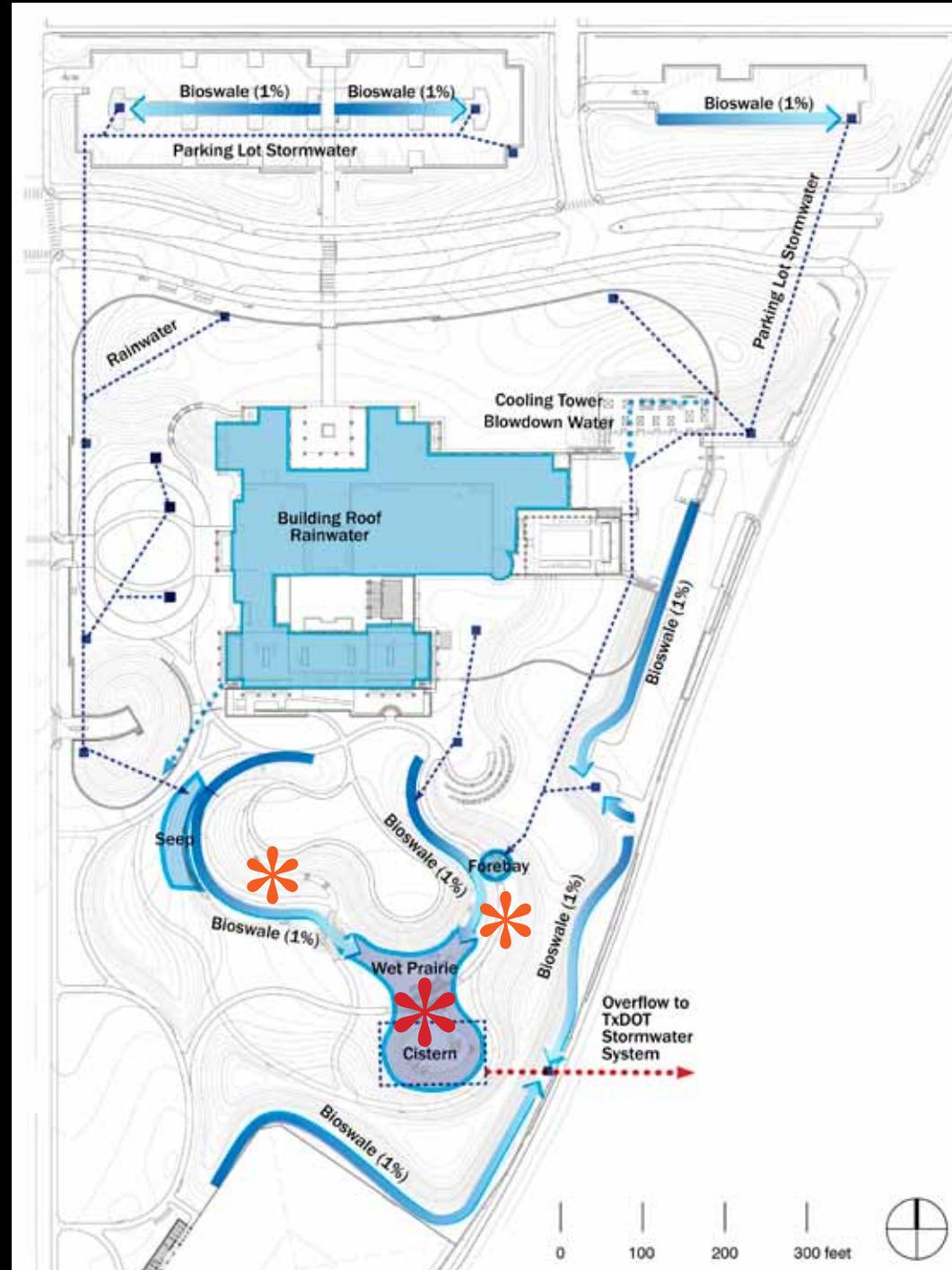
East Branch: bioswales and pipes outfall to stone forebay



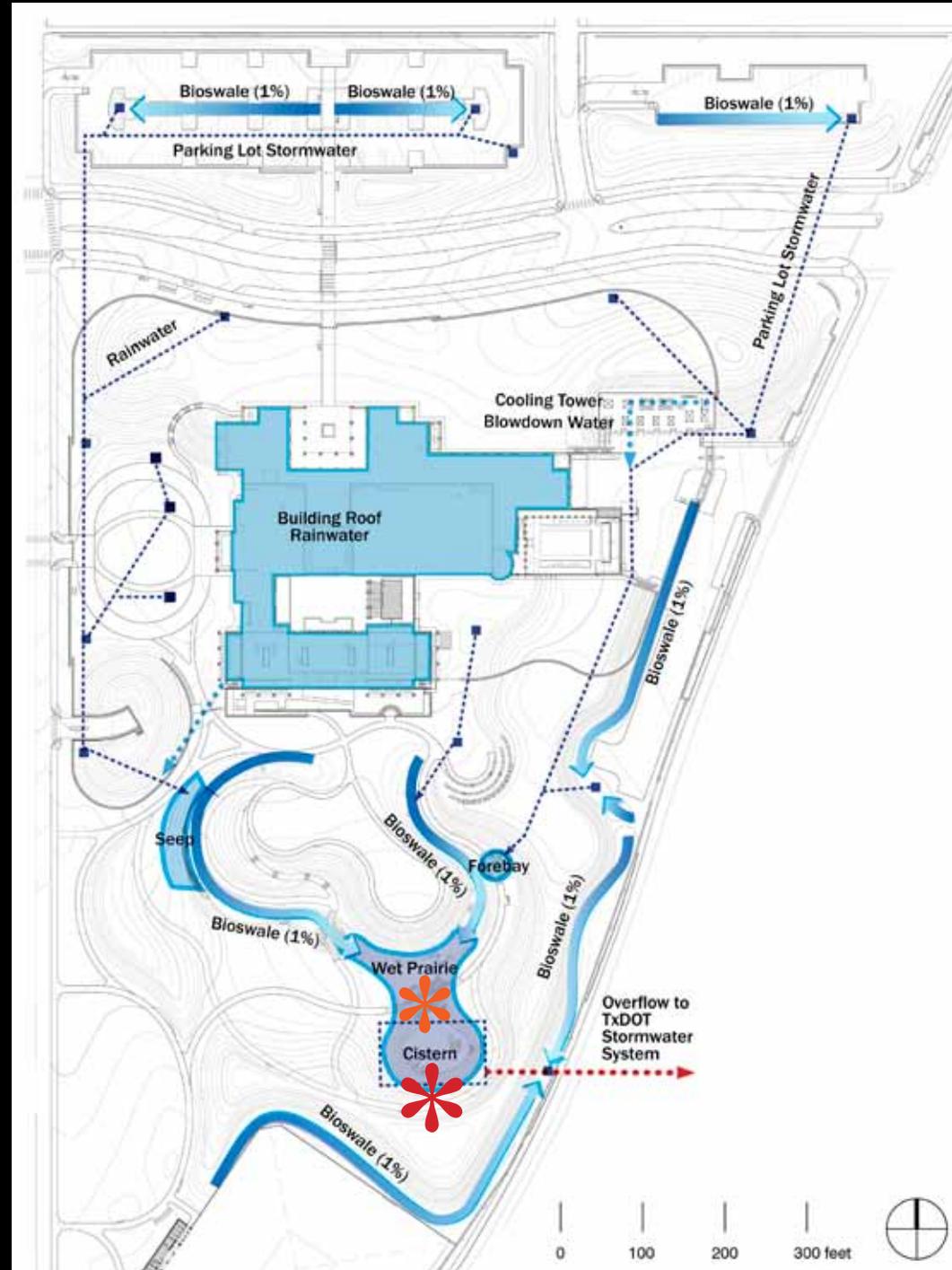
West Branch: piped water outfalls to stone seep



South Branch: east and west bioswales outfall to wet prairie



South Terminus: wet prairie fills 250K gallon irrigation tank



MARCH 20, 2012



BEFORE RAINSTORM



TWO HOURS AFTER RAINSTORM

Wet Prairie 2013



Corktown Commons

Toronto, ON



Stormwater Opportunity: leveraging waste water

Fast Facts

- 2005- 2013
- 16 Acres
- City Park
- Flooded Brownfield
- Flood Protection Landform Enabled Development
- Organic maintenance



Design Elements: water play, play hill, marsh, open lawn



Design Factors: 100% new soil, native plants, topography



Lake Ontario

Downtown Toronto

Central Lawn

Marsh

Play Hill



Future Development

Bayview Avenue

Marsh

Central Lawn

Play Hill

Water Play
378,541 Litres
per week

Pavilion

Recreation Field

Flood Crest

GO/CN Railroad Tracks

Don River

Future Development

Water Collection
Diagram

0 10 25 50

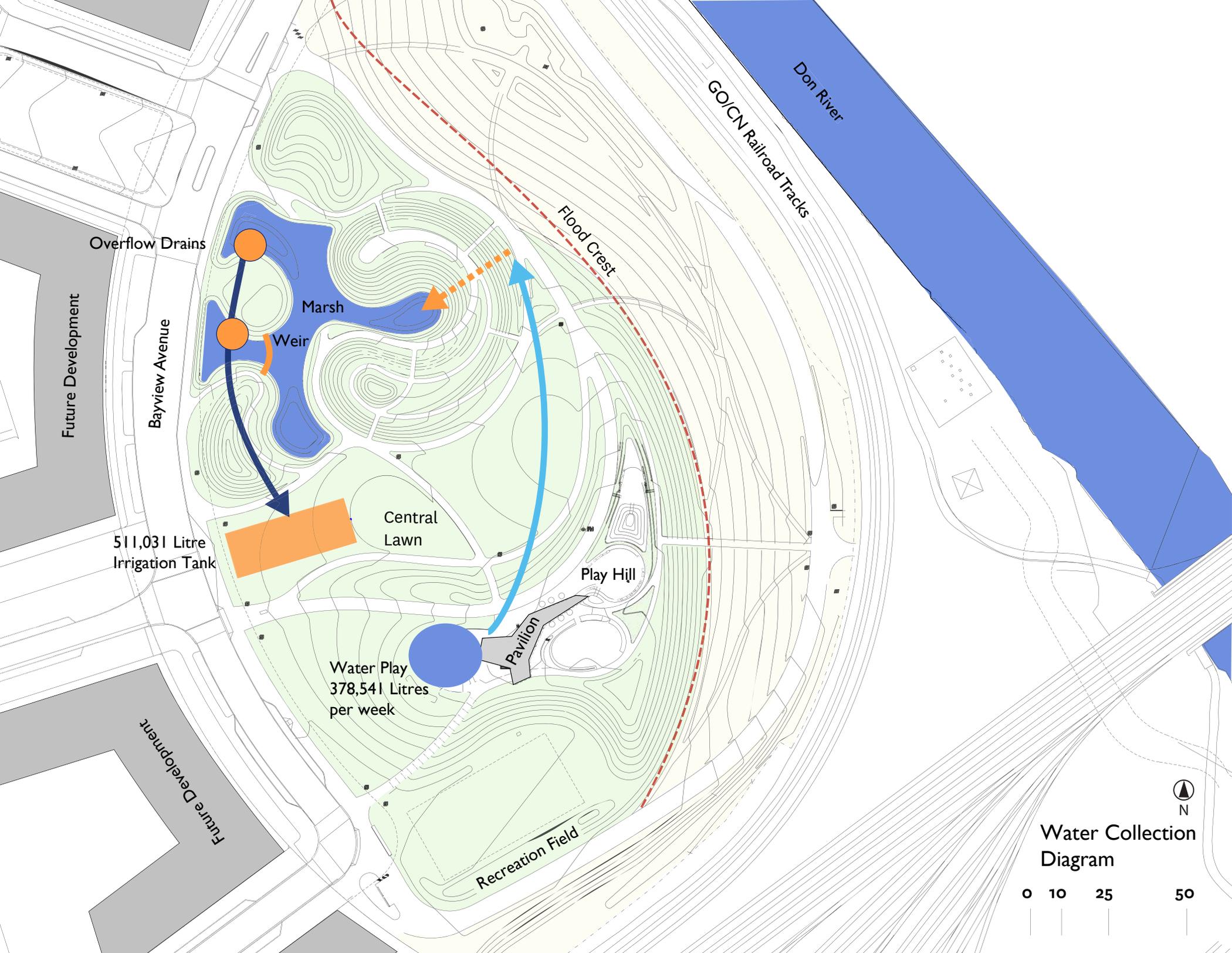


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Water Collection Diagram





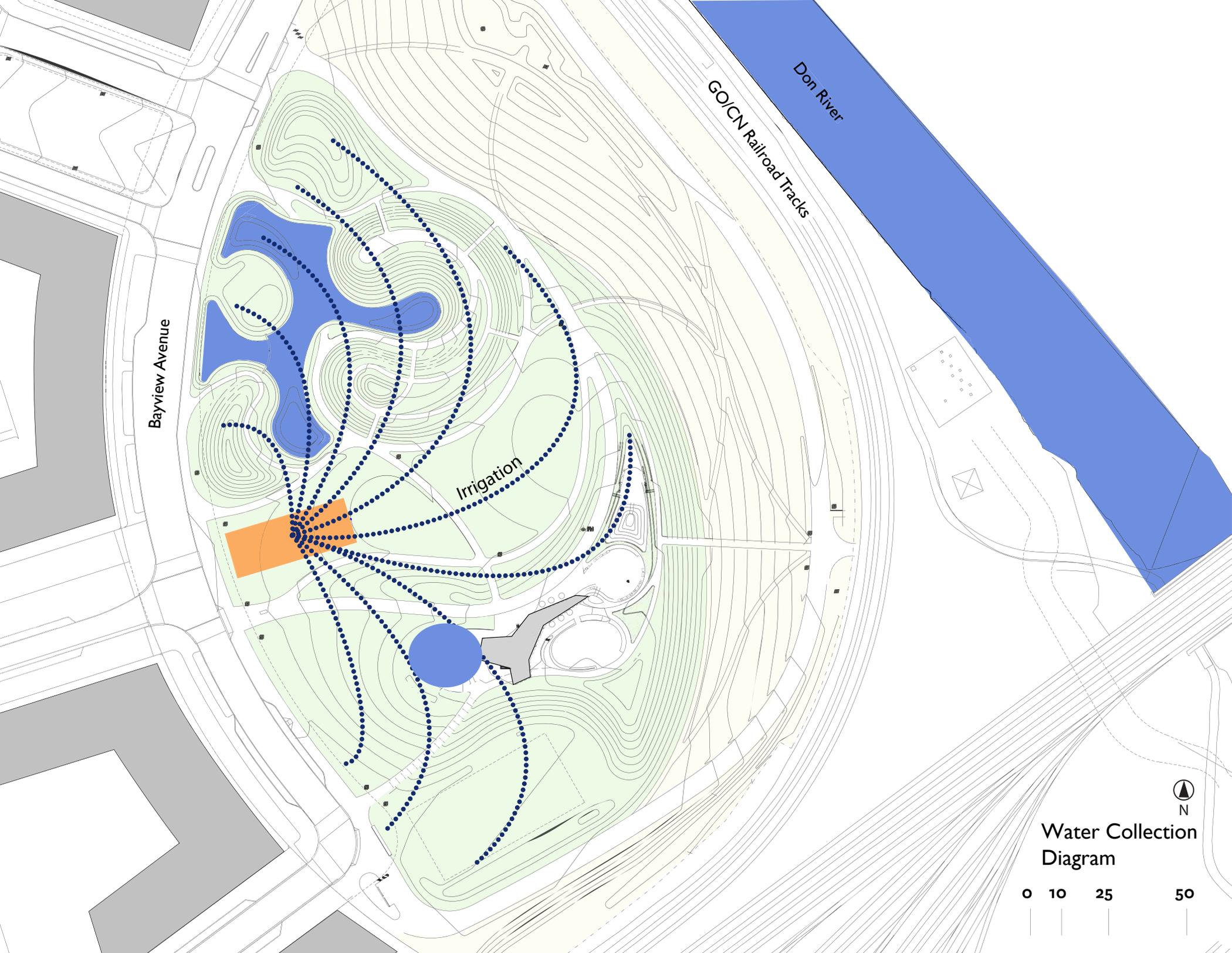
Water Collection Diagram





Water Collection Diagram





Bayview Avenue

GO/CN Railroad Tracks

Don River

Irrigation

Water Collection Diagram

0 10 25 50



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The Marsh 2012



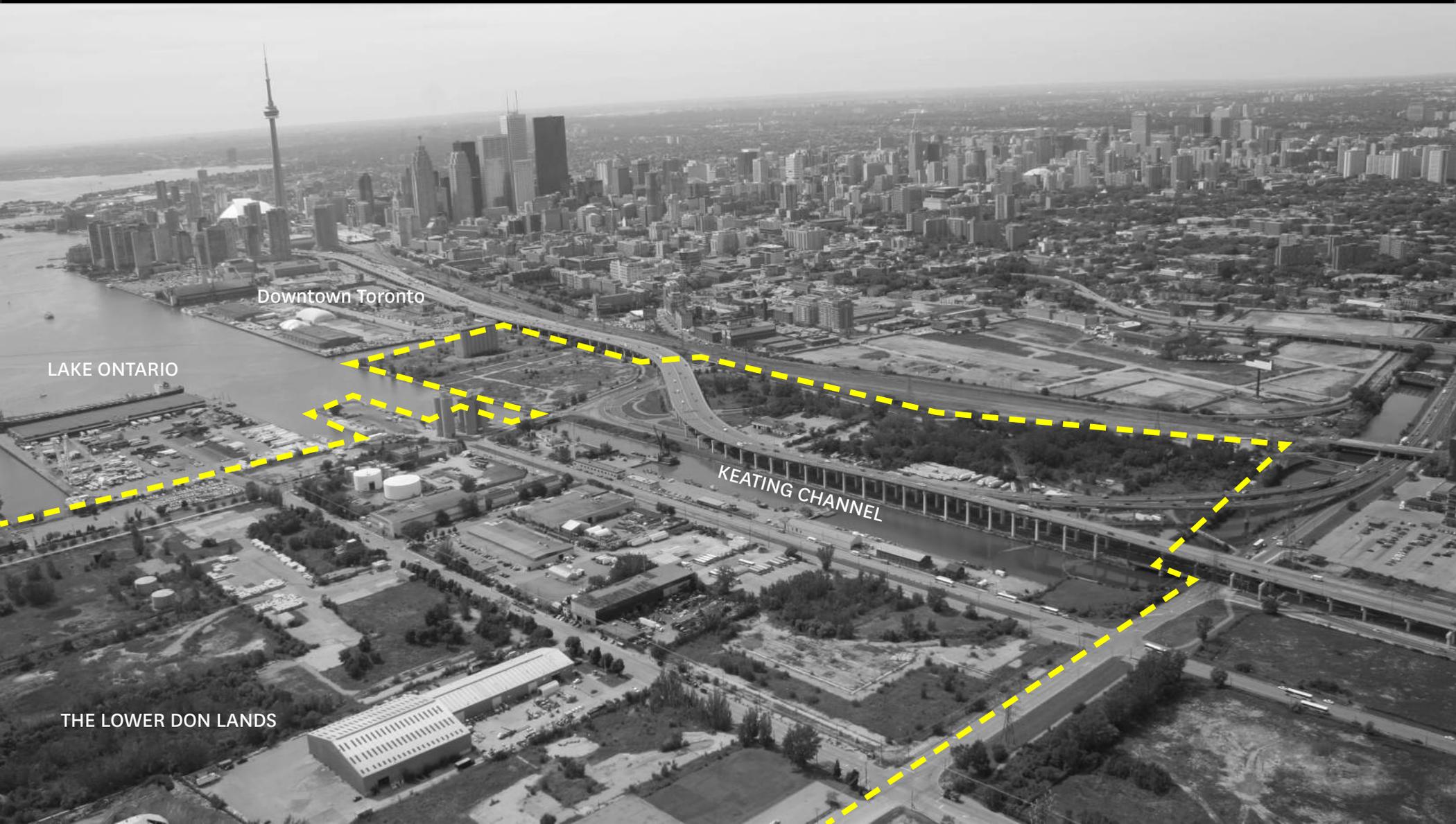
The Marsh 2013





The Port Lands

Toronto, ON

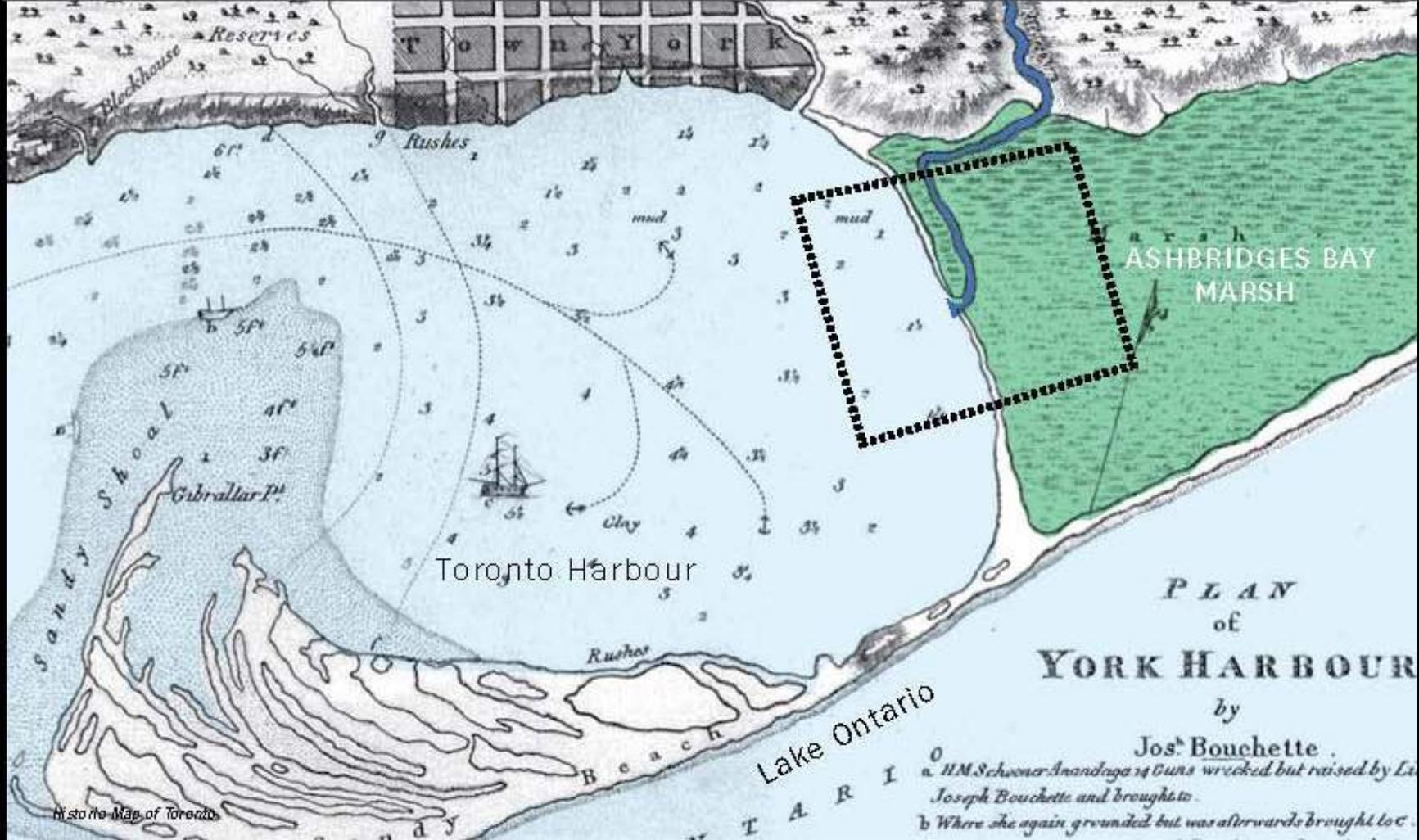


Downtown Toronto

LAKE ONTARIO

KEATING CHANNEL

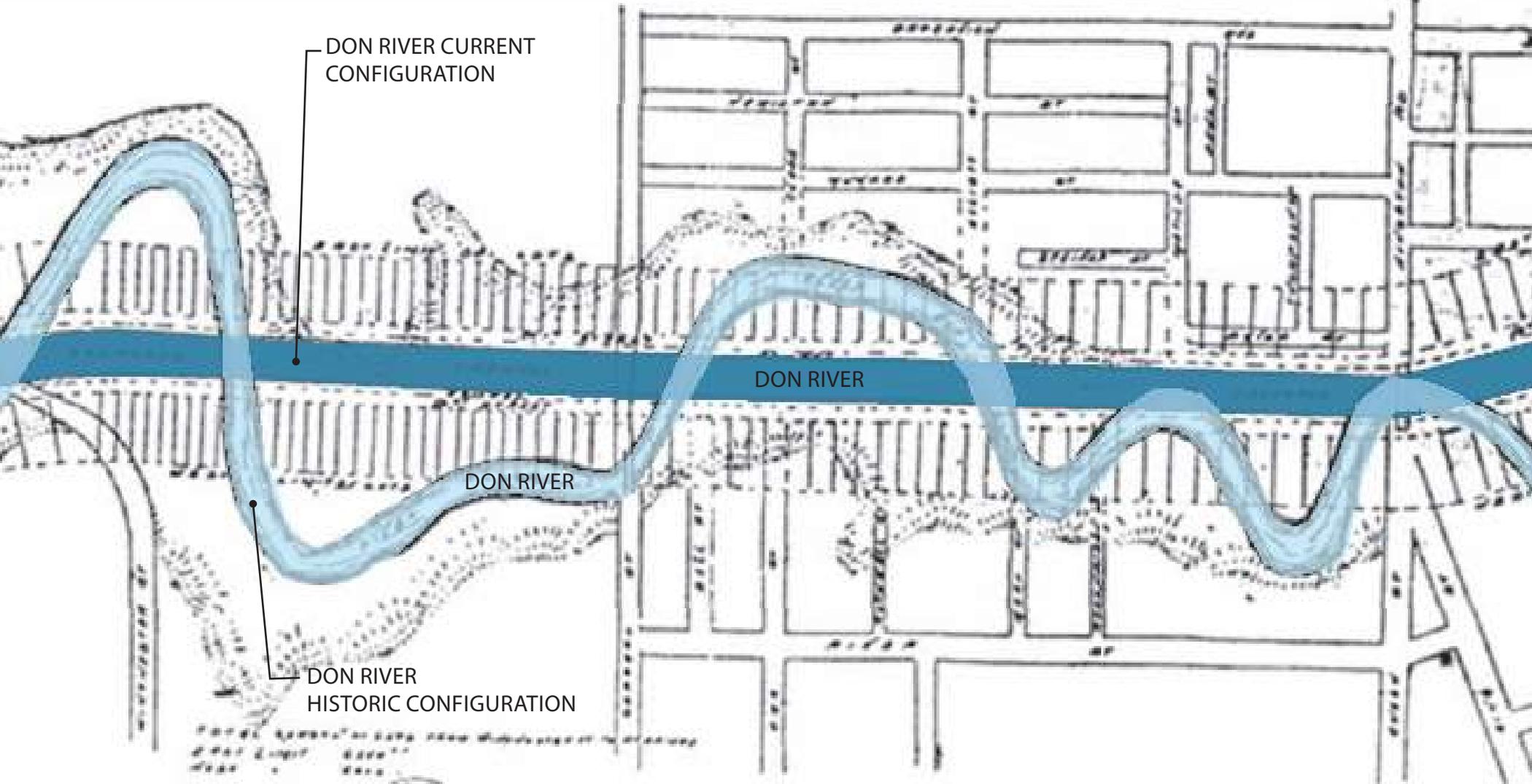
THE LOWER DON LANDS



Historic Map of Toronto



The Altered Don River Geomorphology





DON RIVER VALLEY

DON RIVER

KEATING CHANNEL

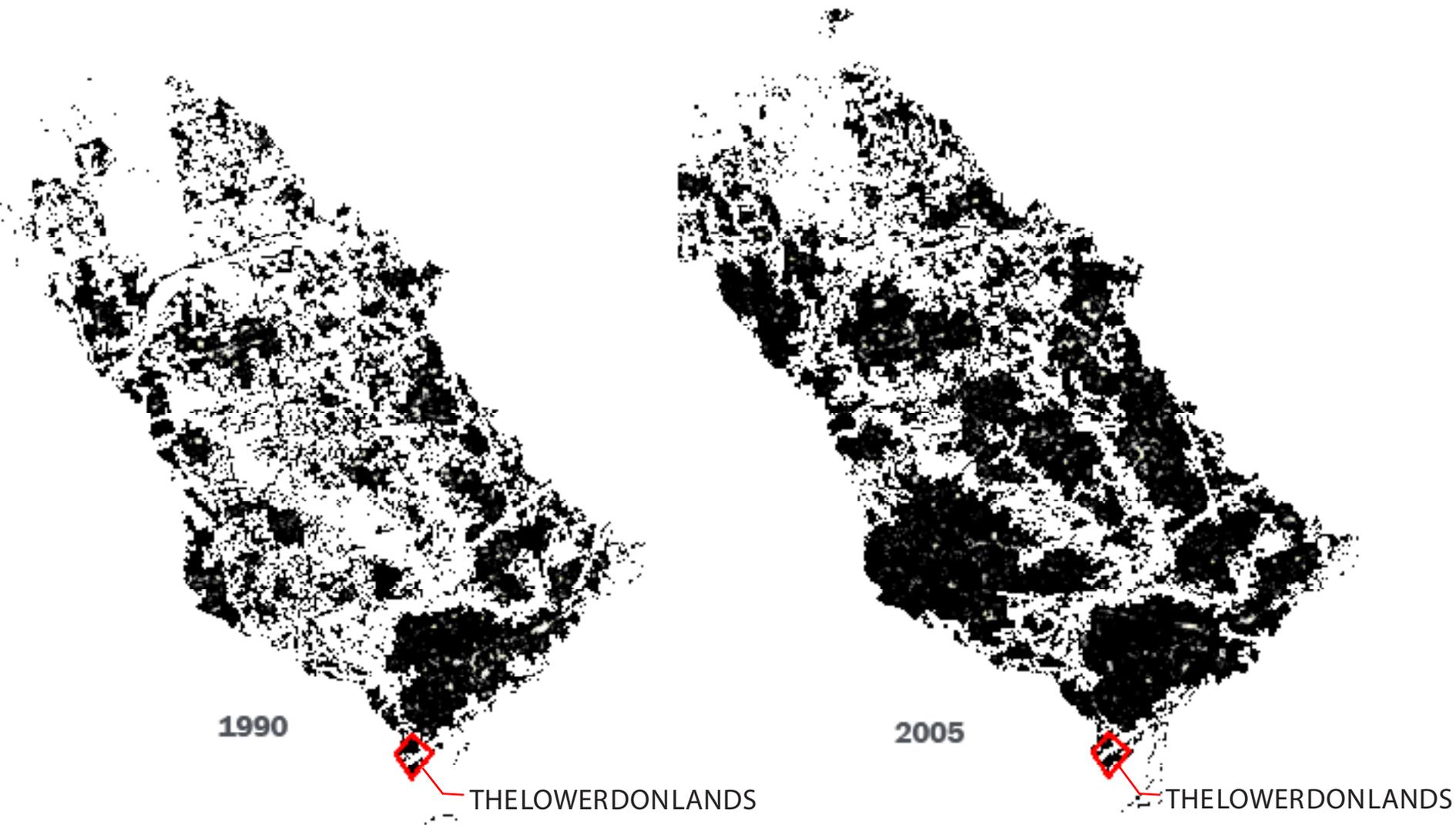
DOWNTOWN
TORONTO

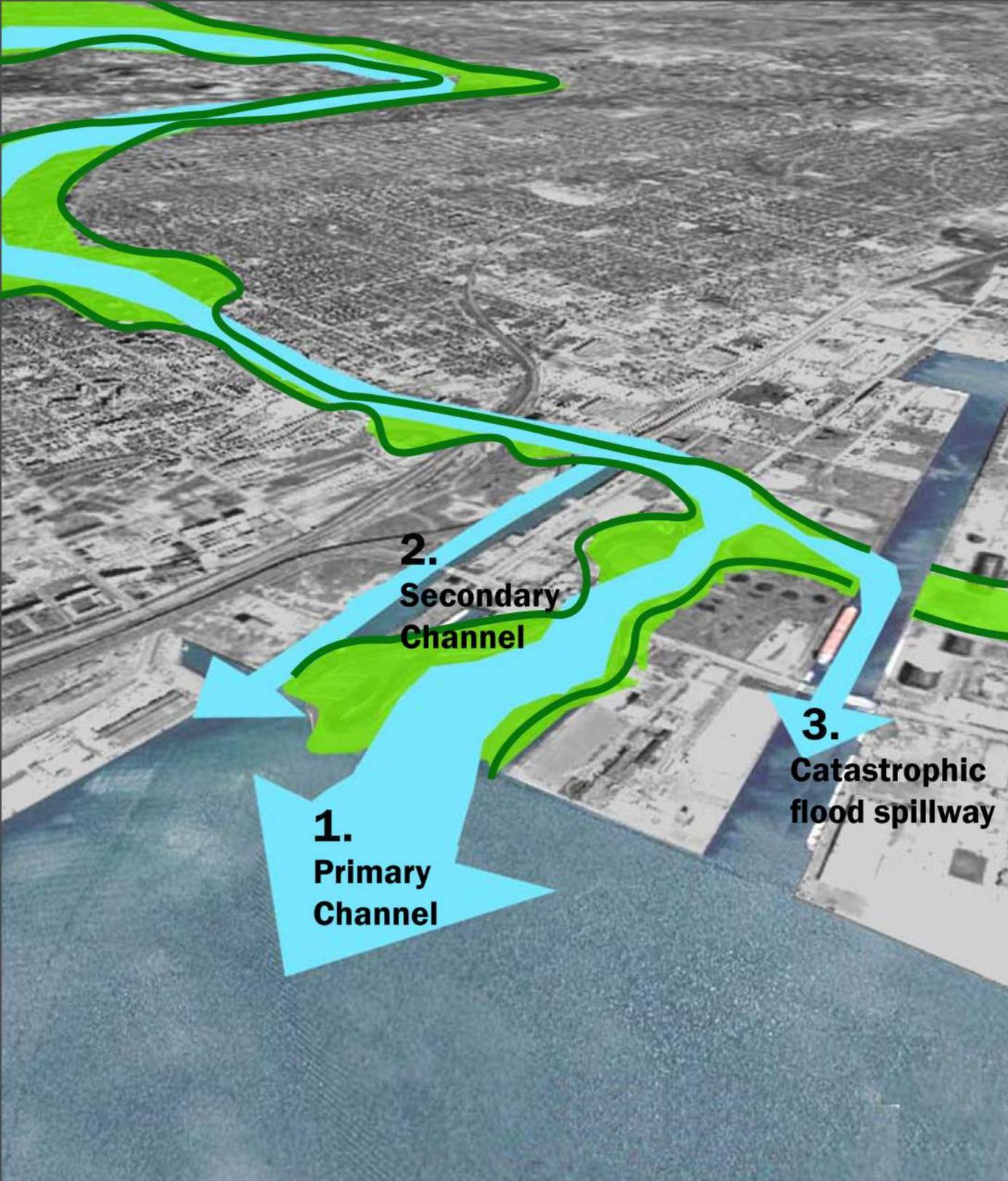
LAKE ONTARIO



Damage Caused by Hurricane Hazel - 1954
Emphasized the need for restructuring the relationship between Toronto and the Don

Impervious surface in the Don River Watershed results in an urban river system of extremes.





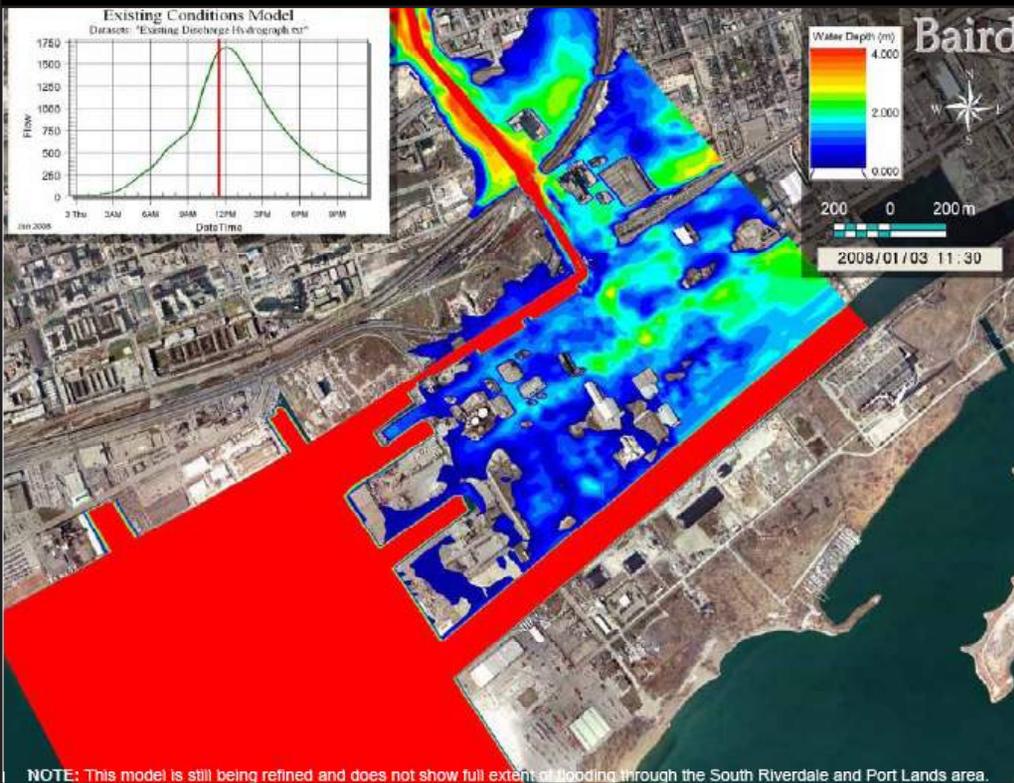
1.
Primary
Channel

2.
Secondary
Channel

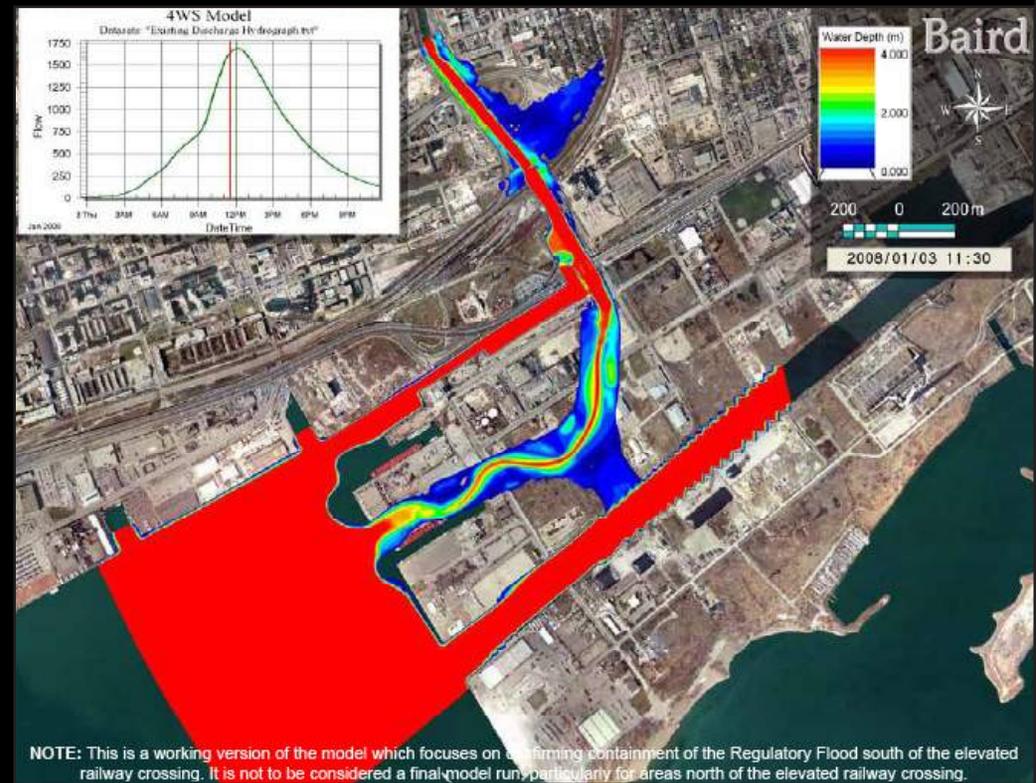
3.
Catastrophic
flood spillway

**Design for and Achieve
Flood Protection
Through a Three Tier
Strategy**

Modeled Flood Depths



Existing Condition

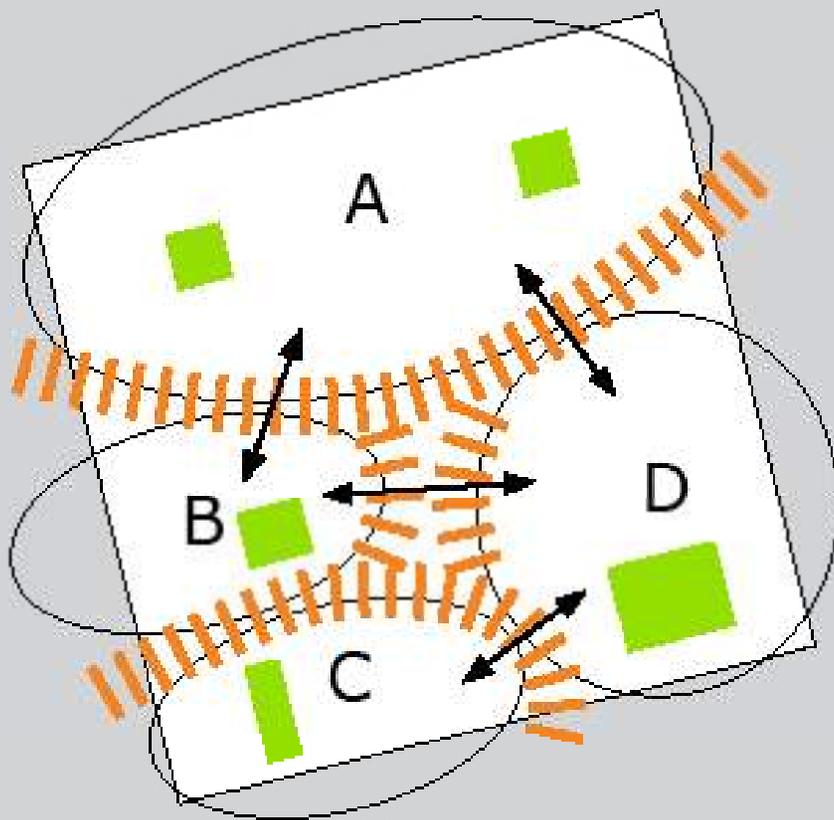


Proposed Condition

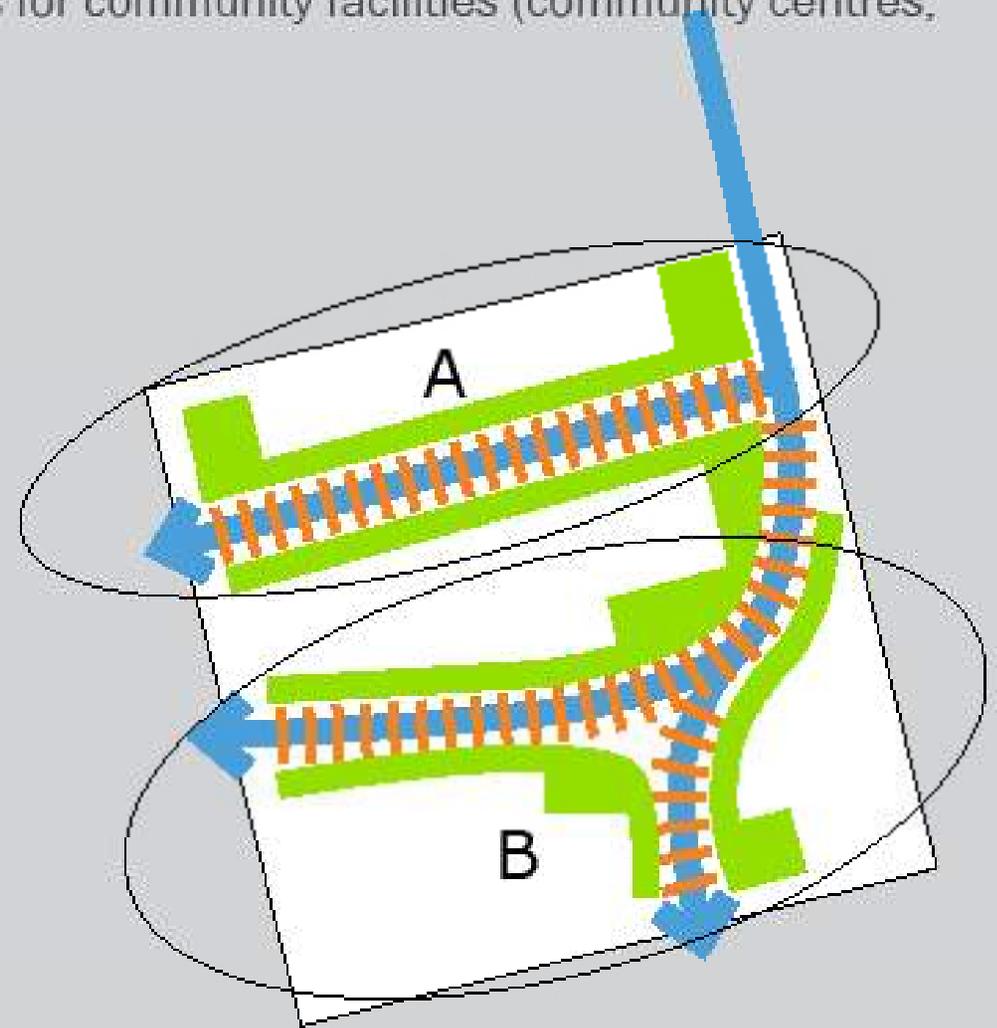
Planning in a Unique Riverine Context

Community Formation

Creating a sense of place through connectedness—the watercourses and the associated public realm developments provide tremendous sites for community facilities (community centres, schools, park spaces, etc.)



Community edges form and reform over time with development



The waterway becomes the centre of the community by collecting infrastructure connections back to the city







