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Academy Park

DRAINAGE UPGRADE AND GREEN INFRASTRUCTURE DRAFT 30% DESIGN REPORT PRESENTATION

July 2016

STORMWATER HAZARD MITIGATION
HMGP GRANT PROGRAM

site

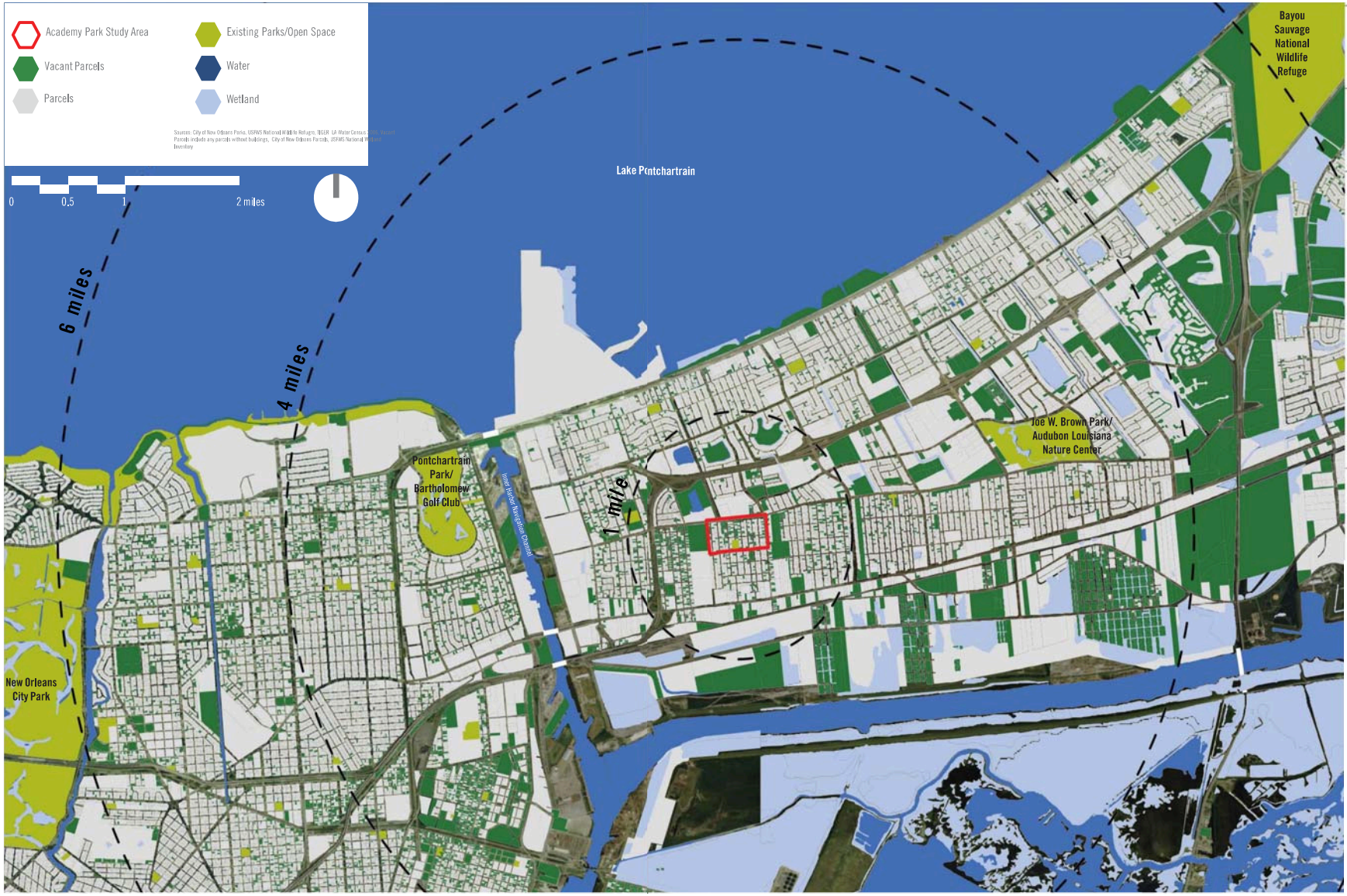

exhibit 1: context map

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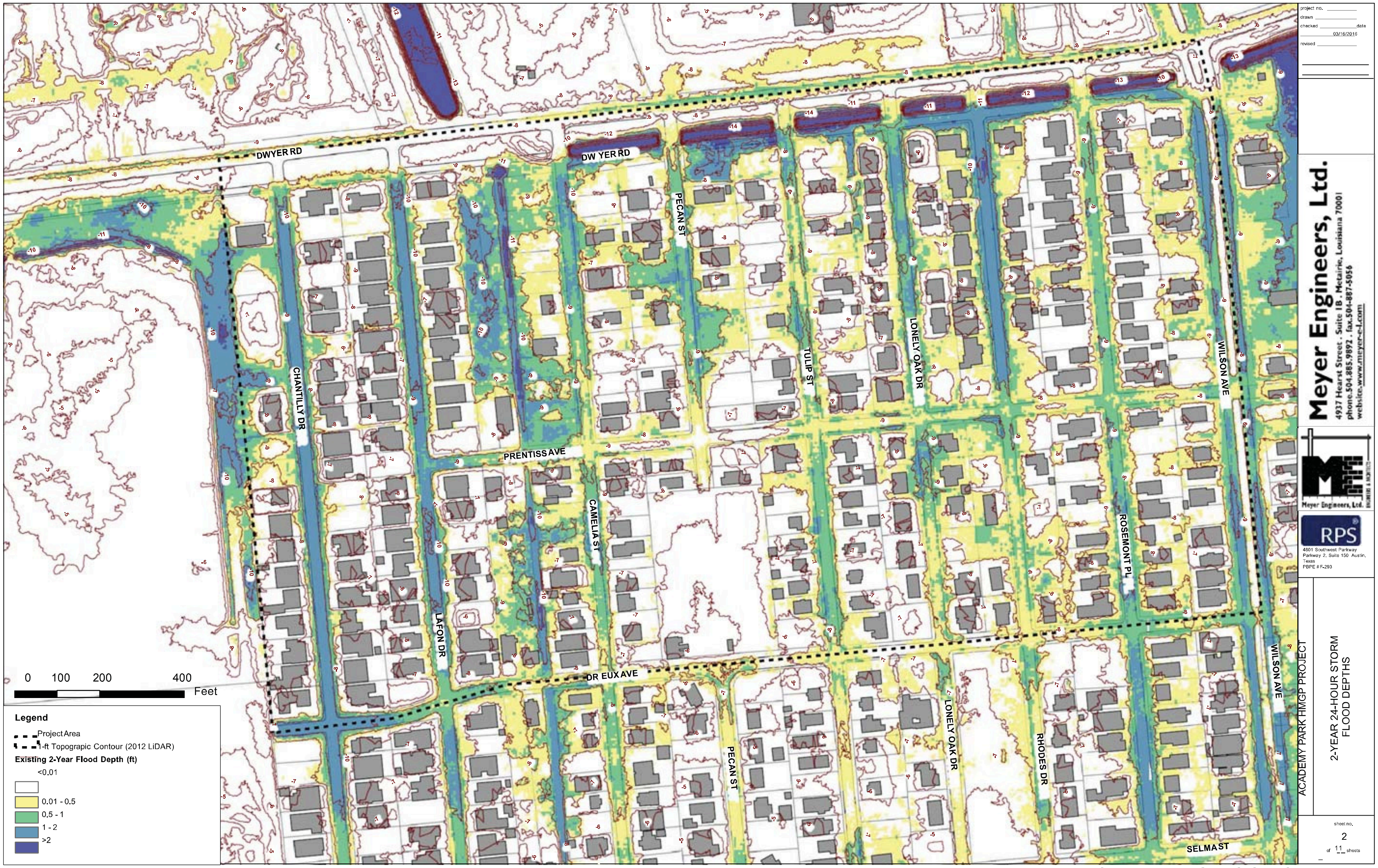
site

exhibit 9: impact area map

site

Storm Event	Average Water Surface Elevation (ft NAVD88)
	Existing
2-year	-8.52
5-year	-7.87
10-year	-7.37
100-year	-6.59

site



2-Year 24-hour storm flood depths

site

5-Year 24-hour storm flood depths

project no. _____
drawn _____
checked _____ date
03/16/2018
revised _____

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RPS
4801 Southwest Parkway
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ACADEMY PARK HMGP PROJECT

5-YEAR 24-HOUR STORM
FLOOD DEPTHS

sheet no.
3
of 11 sheets

site

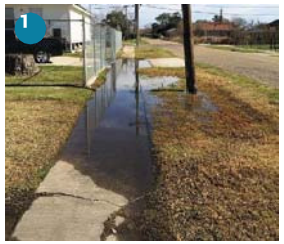
10-Year 24-hour storm flood depths

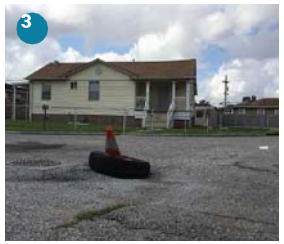
objectives

- **Flood Mitigation**
- Subsidence Reduction
- Stormwater Quality
- Neighborhood Revitalization
- Ecosystem Benefits

DESIGN PROCESS

process





1. Standing water at Prentiss Ave. and Pecan St.; 2. vacant lot, Camelia St. at Dwyer Rd.; 3. Subsidence on Dreux St.; 4. Dwyer Rd. canal and Livingston School; 5. Chantilly St. vacant lot; 6. Large oak; 7. Small playground at Dreux Ave. and Chantilly Dr.; 8. Urban forest on Chantilly Dr.; 9. West side of Camelia St. at Dwyer Rd.; 10. Private residence; 11. Pine tree stand; 12. Private residence

exhibit 7: existing vacant sites by ownership

process

Storm Event	Average Flood Reduction in Inches for Project Area			
	Existing	Scenario A 100% Gray Infrastructure	Scenario B 100% Green Infrastructure	Scenario C 90% Green 10% Gray Infrastructure
2-Year		5.1	0.82	1.48
5-Year		2.53	1.37	1.46
10-Year*		1.2	1.33	1.4
100-Year		0.1	0.88	0.89

* Design Scenario

Storm Event	Average Water Surface Elevation (ft NAVD88)			
	Existing	Scenario A 100% Gray Infrastructure	Scenario B 100% Green Infrastructure	Scenario C 90% Green 10% Gray Infrastructure
2-year	-8.52	-8.95	-8.59	-8.64
5-year	-7.87	-8.08	-7.99	-7.99
10-year	-7.37	-7.47	-7.48	-7.49
100-year	-6.59	-6.60	-6.66	-6.66

Opinion of Probable Cost:	$ 20,000,000	$ 5,200,548	$ 8,200,548
HMGP Project Funding:		$5,206,500	

conclusions

Based on these three scenarios and the H/H modeling results, maximizing dispersed storage using green infrastructure is the most effective option to reduce 10-year flood surfaces within the study area as a local solution. Conveyance via gray infrastructure drainage improvements provides little benefit for the comparatively high cost as it simply shifts flooding elsewhere without improving overall results.

Any gray infrastructure solution would need to address the regional issues with the Dwyer Canal before increased pipe sizes could create a cost-effective solution at a neighborhood scale. Therefore, we have selected the **100% Green Infrastructure, Scenario B** to recommend for the 30% Design Report.

In addition to maximizing flood mitigation, the green infrastructure approach encourages the following benefits:

- **Diminishes subsidence by re-hydrating area soils**
- **Provides numerous ecological benefits and habitat for pollinators, invertebrates, birds, wildlife**
- **Creates park-like spaces on vacant lots that will appeal to neighbors**
- **Provides a larger, park-like space on the St. Mary's Academy site that will increase the development value of a future campus expansion or other development**
- **Allows excavated fill to be used to elevate future building pads**

future considerations

- **Replacing damaged roadways**, especially in low lying, flood prone areas with **permeable paving** and a deep, gravel sub-base will decrease impermeable surface within the study area, increase water table hydration, diminish subsidence and is especially well suited to accommodate high plasticity clay soils.

- **Assembly and acquisition** of vacant and abandoned lots within the neighborhood to provide rebuilding opportunities for returning and new residents in an affordable neighborhood. These lots could utilize excavated fill to elevate future building pads in order to minimize future flood potential.

- Creating a **regional trail system** that ties this study area to area amenities such as the Bayou Sauvage National Wildlife Refuge, the Joe W. Brown Park and Audubon Louisiana Nature Center, Pontchartrain Lake and Park and New Orleans City Park. Dwyer Road is a candidate corridor to consider for a regional ped/bike trail.

- Consider adding **shallow swales** along east-west local roadways throughout the neighborhood to further slow and accommodate stormwater infiltration.

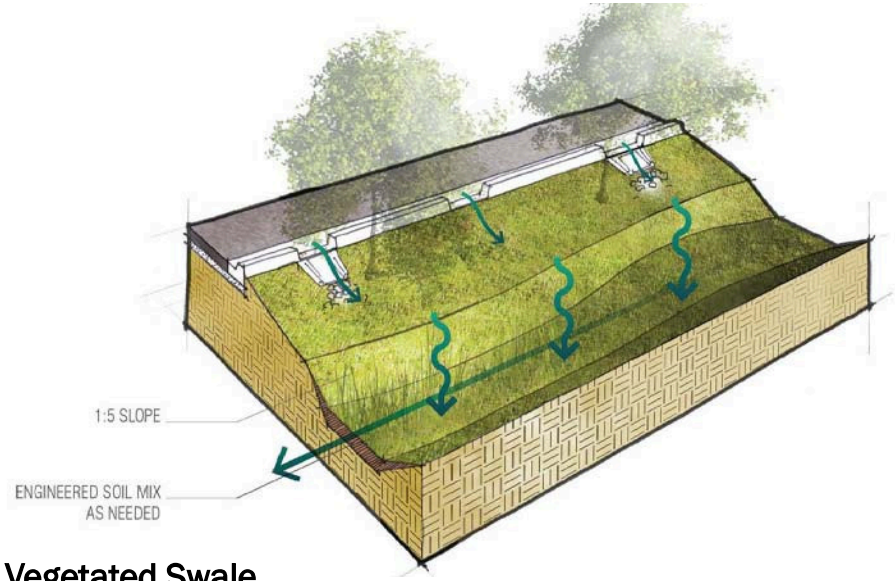
- Evaluate the benefits of **duplicating** this green infrastructure approach to areas at **higher elevations** within the watershed to further accommodate, disperse and slow stormwater rates to the Dwyer Canal and pumping stations. The subject area lies in a low area of the watershed which is most prone to backwater flooding. By replicating this approach to mid and upper elevations within the watershed, the backwater flooding issue will be further mitigated.


CONCEPT

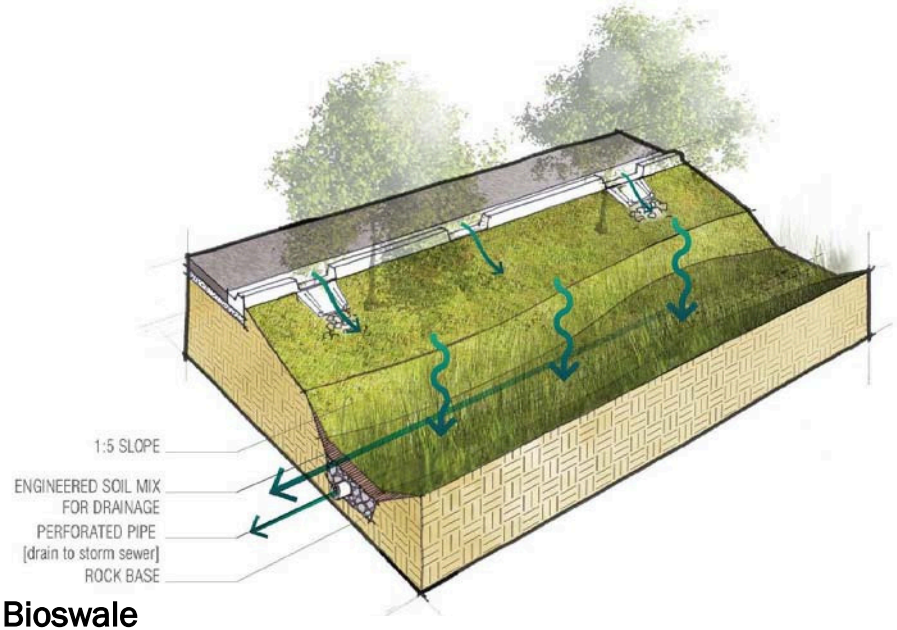
concept

flood reduction toolkit

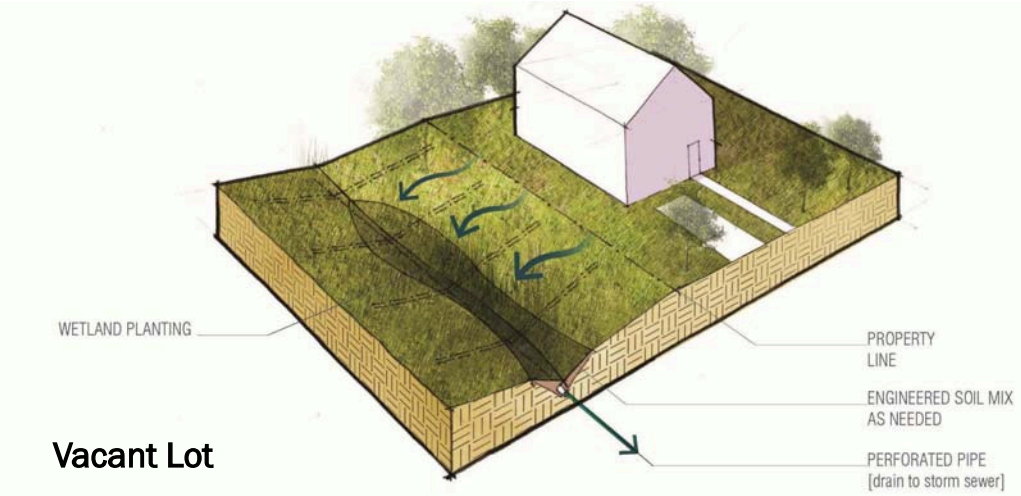
BMP type 1: bio-infiltration cells
BMP type 2: forested bio-infiltration cells
BMP type 3: constructed stormwater wetland
BMP type 4: swale systems



Vegetated Swale



Bioswale

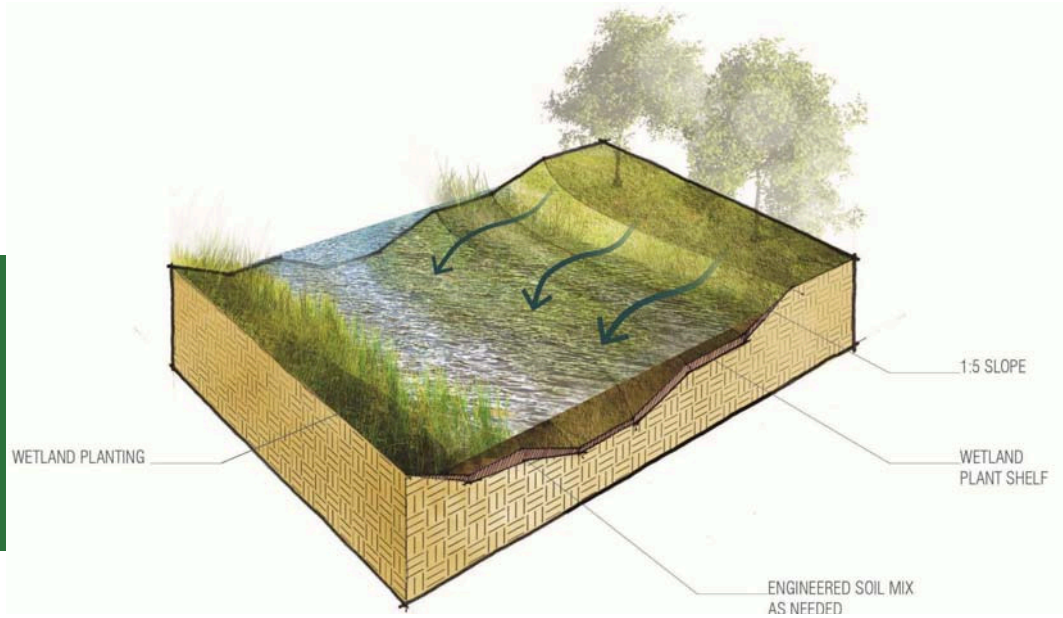


Vacant Lot

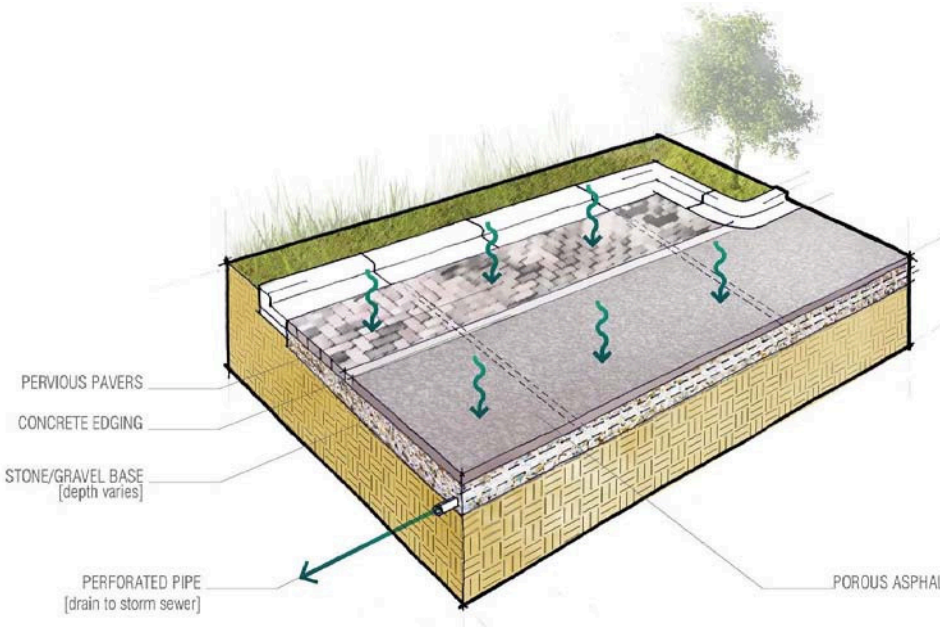
concept

flood reduction toolkit

BMP type 1: bio-infiltration cells
BMP type 2: forested bio-infiltration cells
BMP type 3: constructed stormwater wetland
BMP type 4: swale systems



Constructed Wetland



Permeable Hardscape

concept

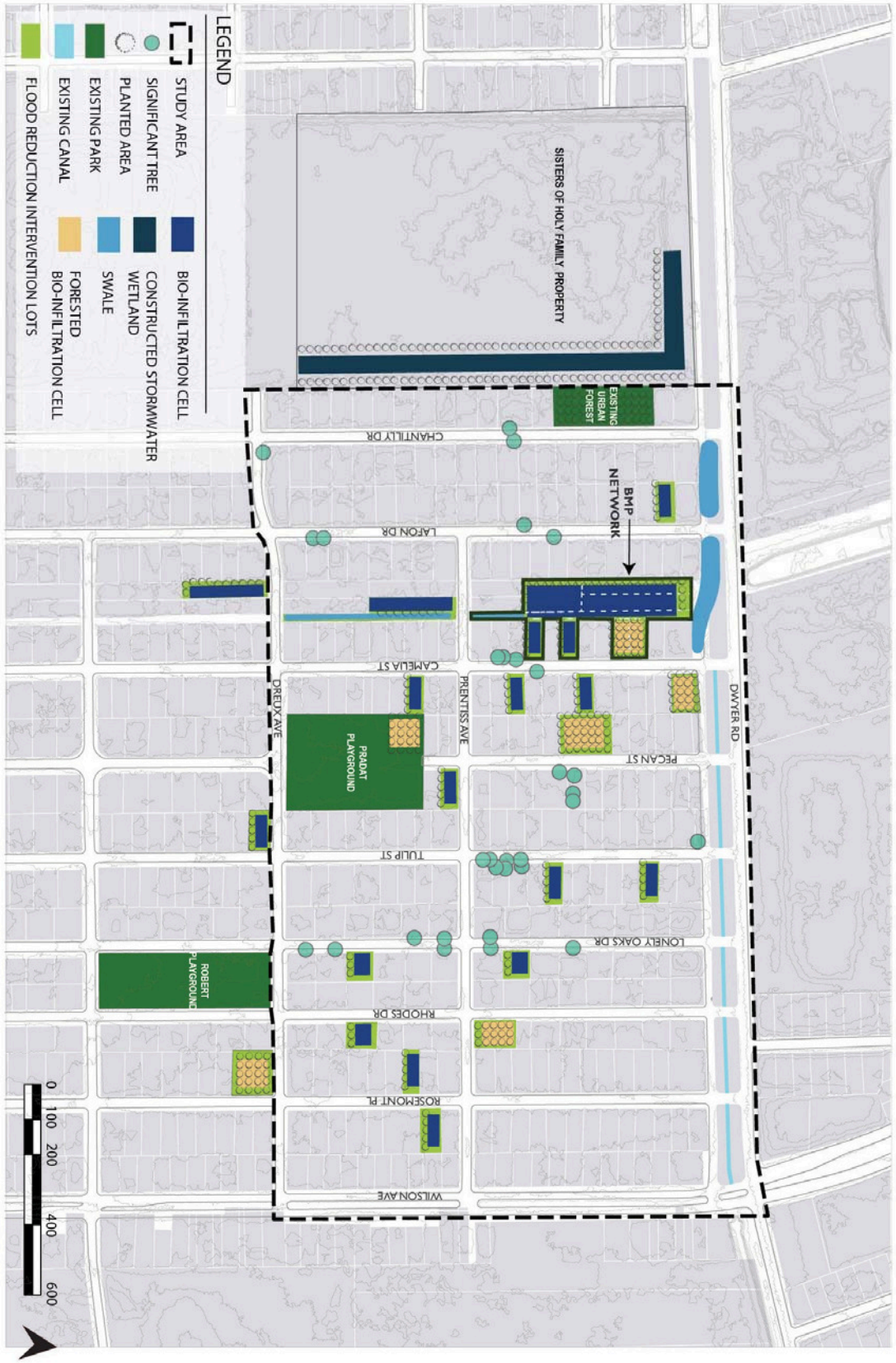


exhibit 8: concept plan

sasakura robinson

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20-1547 Academy Park - Opinion of Probable Cost			
BASINS			
	Number	*Unit Cost*	*Total Cost*
Bio-infiltration Cells	15	$ 45,758.00	$ 686,370.00
Bio-infltration Cells with Forestation	5	$ 59,896.00	$ 299,480.00
Networked Bio-infiltration Cells	1	$ 202,745.00	$ 202,745.00
Constructed Stormwater Wetland	1	$ 997,000.00	$ 997,000.00
Total Cost of Basins			**$ 2,185,595.00**
SWALES			
	SF	*Cost Per SF*	*Total Cost*
Vegetated Swale	35,000	$ 61.38	$ 2,148,195.00
Total Cost of Swales			**$ 2,148,195.00**

Subtotal	$ 4,333,790.00
Contingency (20%)	$ 866,758.00
TOTAL	**$ 5,200,548.00**

concept

maintenance

1. **Watering** new trees and plantings during hot, dry weather for vegetation establishment. This establishment period is often 6 months - 1 year and included in the construction/ installation contract.
2. Periodic **mowing** if turf planted
3. Periodic **weeding** and **mulching**, if groundcovers, perennials and shrubs planted
4. **Staking** for trees for 2-3 years.
5. Periodic **trash** removal
6. Swales should be **inspected** annually to assure drainage is functional and to assess mulch replacement
7. Inspection **ports** may be installed at high-flow bio-infiltration cells and spaced along perforated pipes for annual inspection and clean-out, when warranted.
8. Wetland plantings should be **inspected** annually for under- or over-growth and maintained as necessary.
9. Wet and dry drainage basins should be **inspected** annually for excess sedimentation and re-dredged, as necessary.
10. BMP's generally require little to no irrigation and applied watering than traditional turf or landscaped areas as they are designed to capture and absorb more stormwater than higher areas.

next steps

1. Obtain Benefit Cost Analysis (**BCA**) to confirm project meets 1:1 BCA or better

2. Prepare **Schematic Design Package** for proposed improvements and update opinion of probable cost. (Consultant, City)

3. Identify **funding** sources for amenity improvements not covered by HMGP funds. (City)

4. Prepare an illustrative plan and sketches to present to **Sisters** regarding potential use of their vacant land for a stormwater detention basin with wetland filtration and park area. (Consultant and City)

5. Initiate **maintenance** and SWQ **monitoring** discussions (City departments & consultant

6. Initiate **environmental** study, **geotechnical** samples & **survey** (City to evaluate proposals)

concept