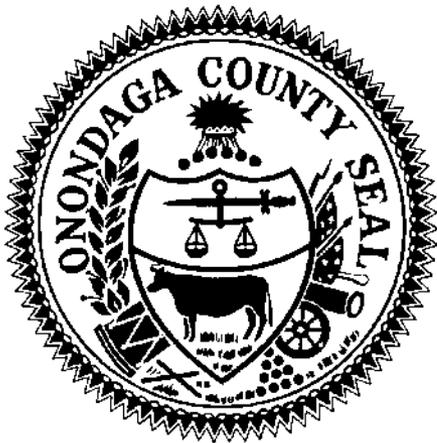


Save the Rain Program Overview

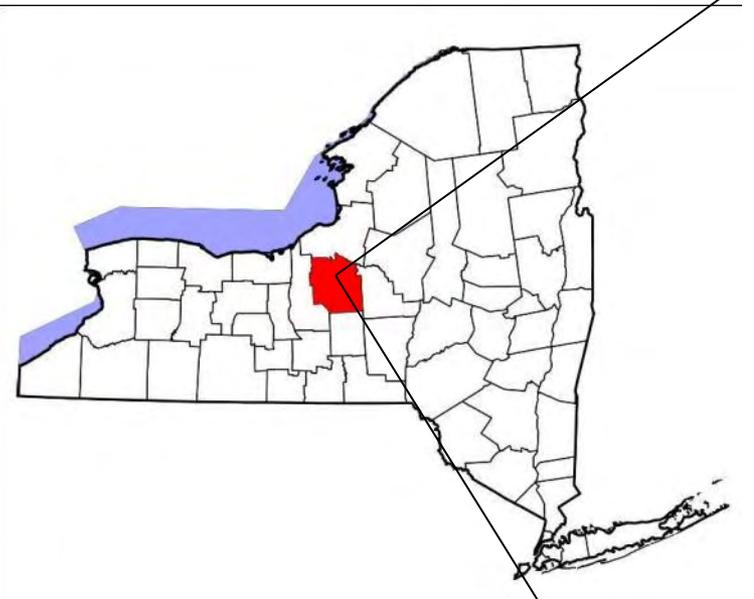
Joanne M. Mahoney, County Executive



Onondaga Lake
Amended Consent Judgment (ACJ)
Compliance Program,
April 2011

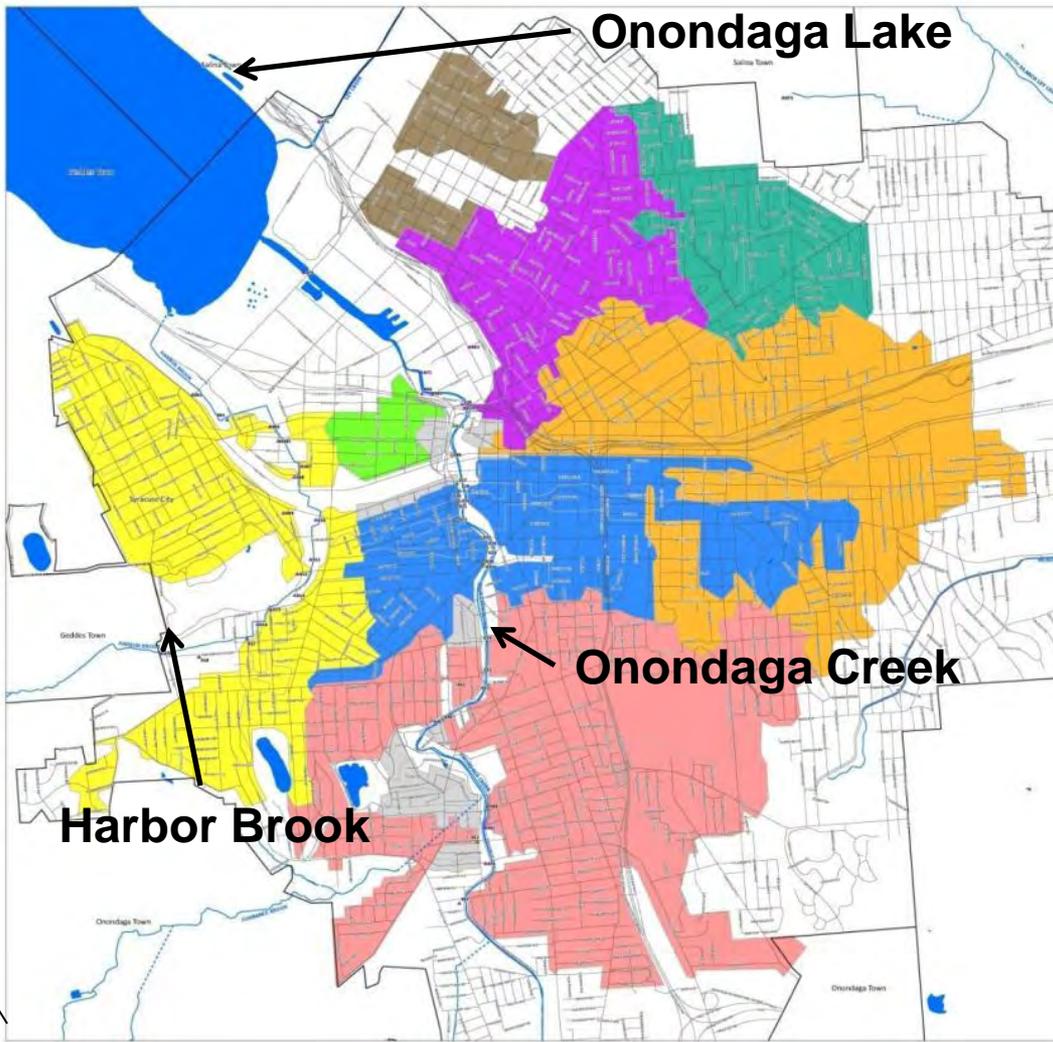
Save the Rain 

Onondaga County, New York



- 8 CSO sewersheds
- 7,660 acres
- 49 CSOs
- 380 million gallons/year CSO

City of Syracuse



History

- 1988 – Atlantic States Legal Foundation files lawsuit against County
- 1989 – Litigation settled through METRO consent judgment
- 1998 – METRO consent judgment replaced with Amended Consent Judgment (ACJ)
- 1st ACJ amendment May 1998
- 2006 ACJ Amended to include consolidation of ammonia and phosphorus treatment and Harbor Brook conveyances and RTF
- 3rd Amendment April 2008 (Extension)
- 2009 ACJ amended to authorize use of Gray and Green infrastructure

Onondaga Lake Facts

Watershed: 285 Square Miles

1 Mile Wide – 4.6 Miles Long

Average Depth: 35 feet

Max Depth: 63 feet

1940 – Swimming Banned

1970 – Fishing Banned

Metropolitan Syracuse Wastewater Treatment Plant

ACJ Related Improvements

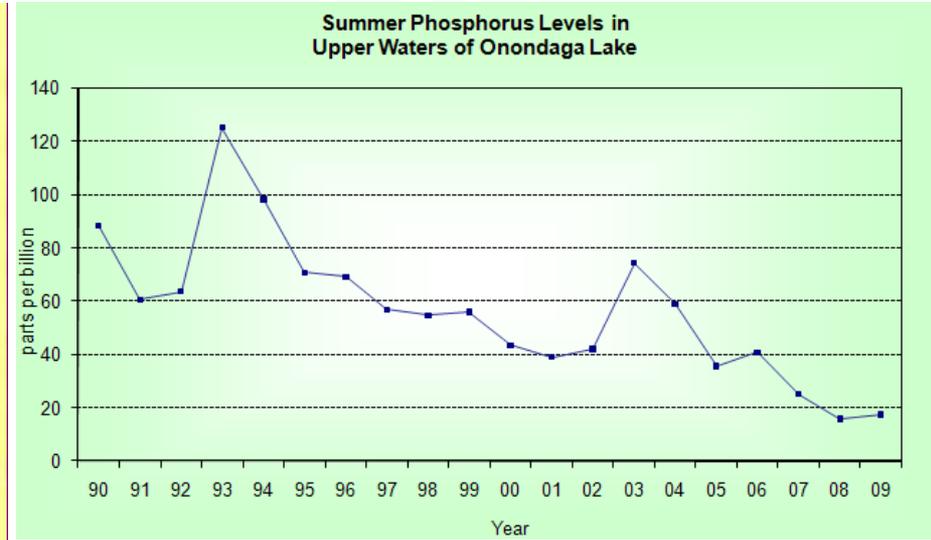
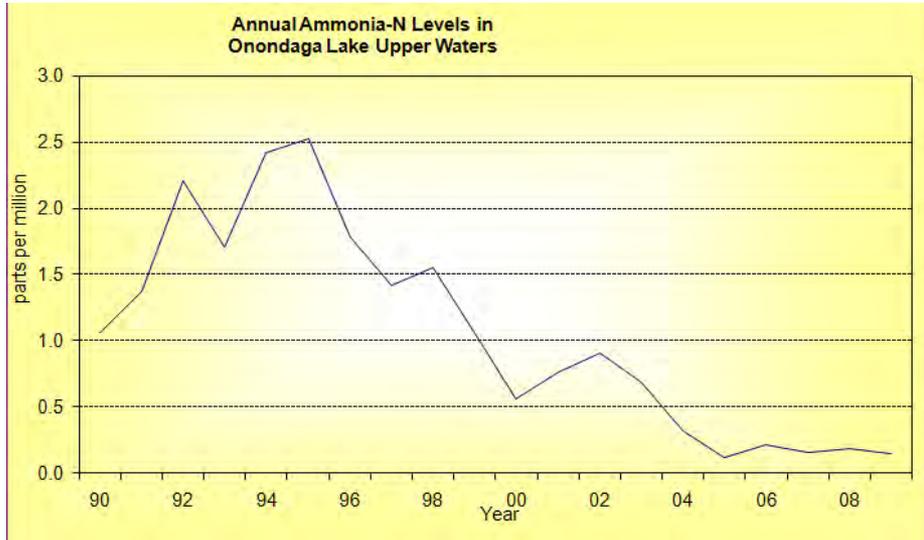


Metropolitan Syracuse Treatment Plant

- Largest Biological Aerated Filter Process in US
- First large scale ballasted flocculation process for phosphorus removal in North East
- Project modified in two phases to save time and money; built on Brownfield site
- Meeting/Exceeding All Permit Requirements
- Upgrades Cost - \$175,000,000



Water Quality Improvements



Ammonia decreased from 8,000 ppd to less than 50 pounds ppd

Phosphorus decreased from 300 ppd to 50 ppd

Combined Sewer Overflow Abatement

ACJ Compliance 1998-2008



CSO Abatement Accomplishments

- Developed and Verified System Model (SWMM)
- **Separated and closed 12 CSO's**
- Constructed 4 Floatables Control Facilities
- Completed 2 Regional Treatment Facilities (Midland, Hiawatha)
- Completed 1 storage facility (Erie Blvd)
- Completed Clinton Conveyances



Midland Ave RTF

CSO
Storage,
Treatment
and
Conveyance
Project

5.5 Million Gallons of storage (sub-surface)

Swirl Concentrators



Captures CSOs 039, 041, 042, 043, 044

Midland Regional Treatment Facility under construction



CSO 044

Conveyance Trench

Conveyance Piping Awaiting Installation

Conveyance project under construction through south side neighborhood causing significant disruption



Large diameter conveyance pipeline dwarfs front end loader and operator

Midland Performance (2009 -10)



Flow to Facility	228.8 MG
Treated/Creek Discharge	123.2 MG
METRO Treatment	99.6 MG
Bypassed	6 MG

Total Cost \$79 Million

4th Stipulation

Gray Infrastructure Program

Balancing Gray & Green



Save the Rain Program: 2009-2018

04/15/11
15

Regulatory Goals

- Capture and Treat 95% of the Annual CSO Volume via Gray & Green Infrastructure
- Achieve water quality standards in tributaries and lake

Community Impacts/Goals

- Improve quality of life
- Promote Sustainability
- Ensure cost effectiveness in compliance with ACJ milestones

Major Milestones

- 89.5% capture/elimination by 12/31/2013
- 95% capture/elimination by 12/31/2018

Gray Infrastructure Program Summary

Gray Projects

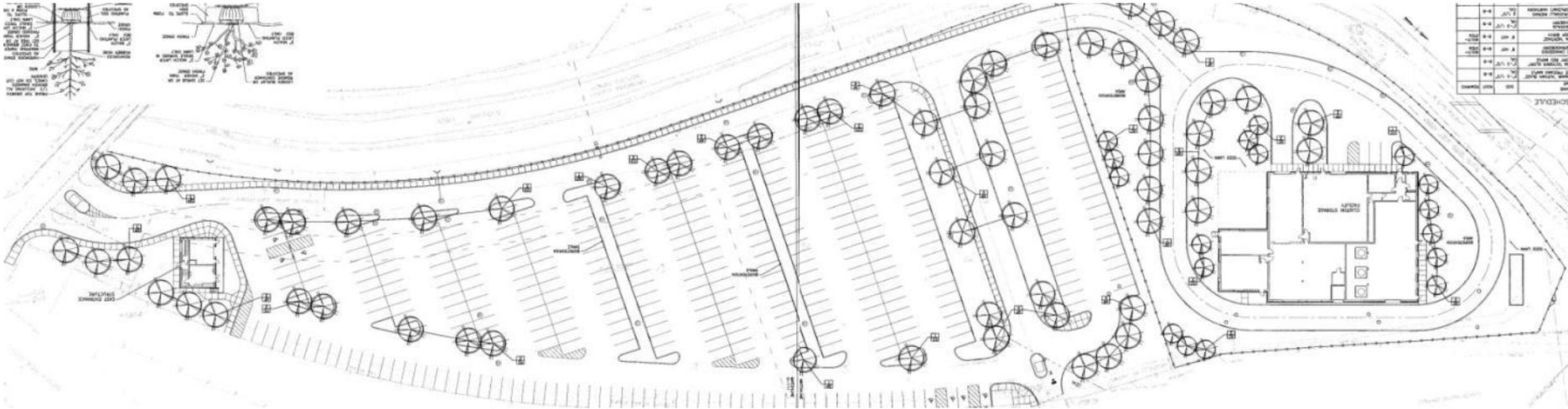
- Harbor Brook Interceptor (ARRA)
- Midland Conveyance (CSO 044)
- Clinton Storage Facility
- Harbor Brook Storage Facility and Conveyances
- Erie Boulevard Storage System (EBSS) Gate Chamber #3 Improvement
- Sewer separation projects

Facilities Planning

- Floatable Control
- Remaining CSO Facilities Plan



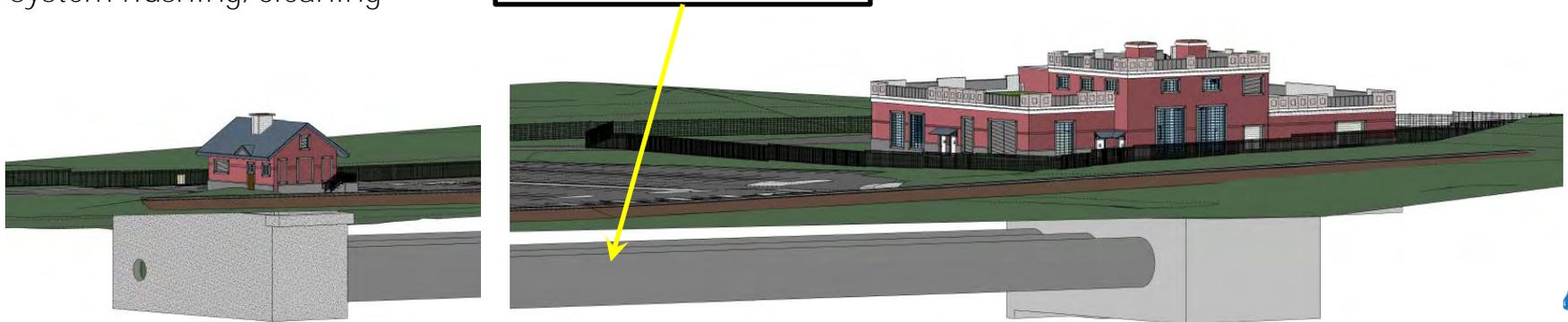
Clinton Storage Project



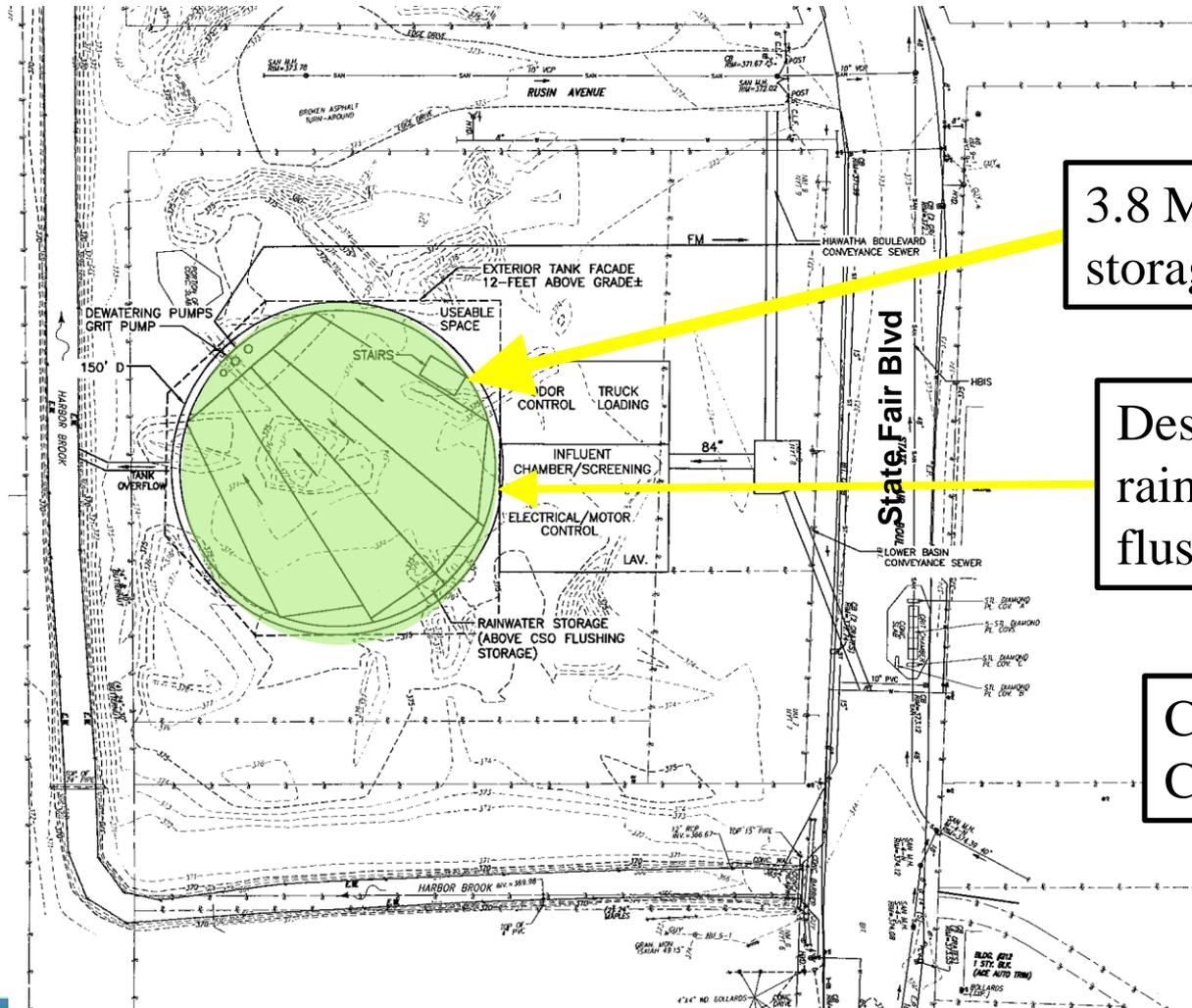
Designed to capture rain water for system flushing/cleaning

6 Million Gallons of storage (sub-surface)

Captures CSOs 028, 030, 031, 032, 033, 034, 035, 036, 037



Harbor Brook Storage Project



3.8 Million Gallons of storage (sub-surface)

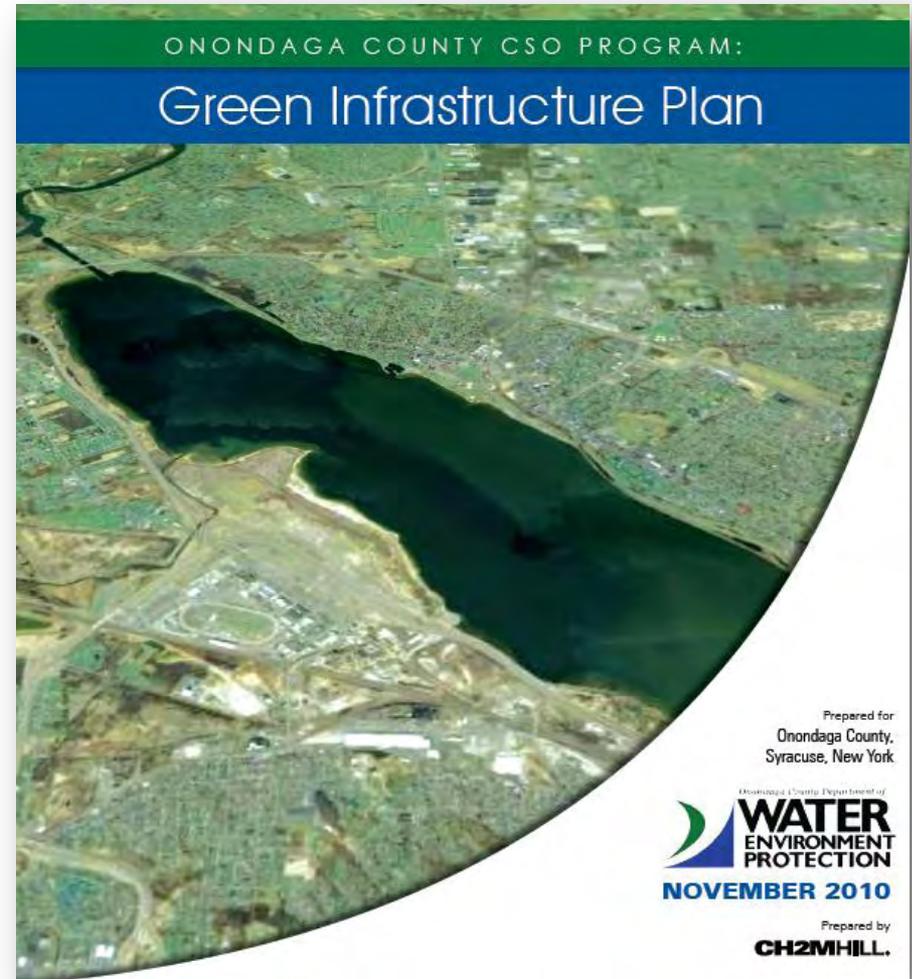
Designed to capture rain water for system flushing/cleaning

Captures CSO 003, 004, 063

Green Infrastructure Program

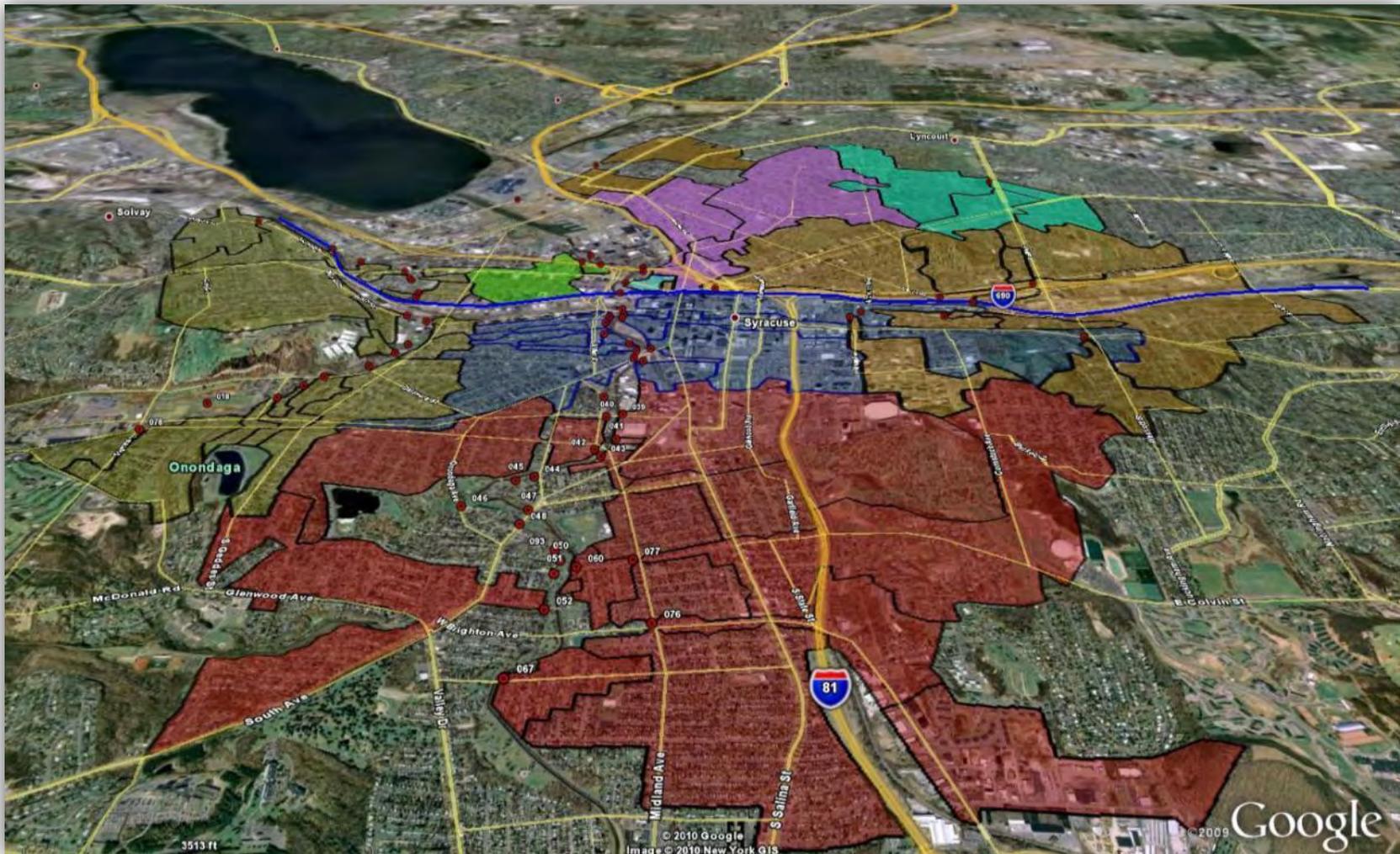
Save the Rain Program

50 Projects 2011



6.3% Capture Using Green Infrastructure

- Green 470 acres and reduce 247 MG/yr of CSO by 2018



System-wide GI CSO Reduction - 2011 Target

04/15/11
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	Target CSO Volume Reduction (gal)	Target CSO Volume Reduction (% of Total)	CSO Reduction: Projects Completed/ Under Construction (gal)	CSO Reduction: 2011 Candidate Projects (gal)	Additional CSO Reduction Required through 2018 (gal)
Streets	89,940,000	36%	2,165,000	13,895,000	73,880,000
Parks & Open Space	13,992,000	6%	1,069,000	16,711,000	-3,788,000
Parking	12,184,000	5%	2,543,000	2,977,000	6,664,000
Public Facilities	14,003,000	6%	418,000	9,482,000	4,103,000
Roofs	3,201,000	1%	63,000	3,657,000	519,000
Impervious Area Data	29,800,000	12%	29,800,000	0	0
Voluntary	11,372,000	5%	520,000	2,750,000	8,102,000
Green Improvement Fund (GIF)	11,372,000	5%	1,132,000	1,318,000	8,922,000
Ordinance	46,257,000	19%	3,334,000	0	42,923,000
Impervious Area Based Rate Incentive	3,452,000	1%	0	0	3,452,000
Non GIF Incentive	11,372,000	5%	305,000	1,555,000	9,512,000
TOTAL	247,000,000	100%	41,350,000	52,350,000	153,300,000

Parking Lots - City Lot #21



Dept. of Transportation Parking Lot



Manages adjacent impervious areas



23,000 sq. ft. of streets and on-ramp disconnected to infiltration bed

40,000 sq. ft. previously impervious parking lot managed w/ porous pavement

10,000 sq. ft. of I-81 (bridge over S. Salina St.) disconnected to infiltration bed

City Lot #3 - Before



Parking Lot #3



Porous Concrete
Captures over 700,000 gallons of stormwater annually

Townsend Street Parking Lot



Planted 90 Trees

Improved:

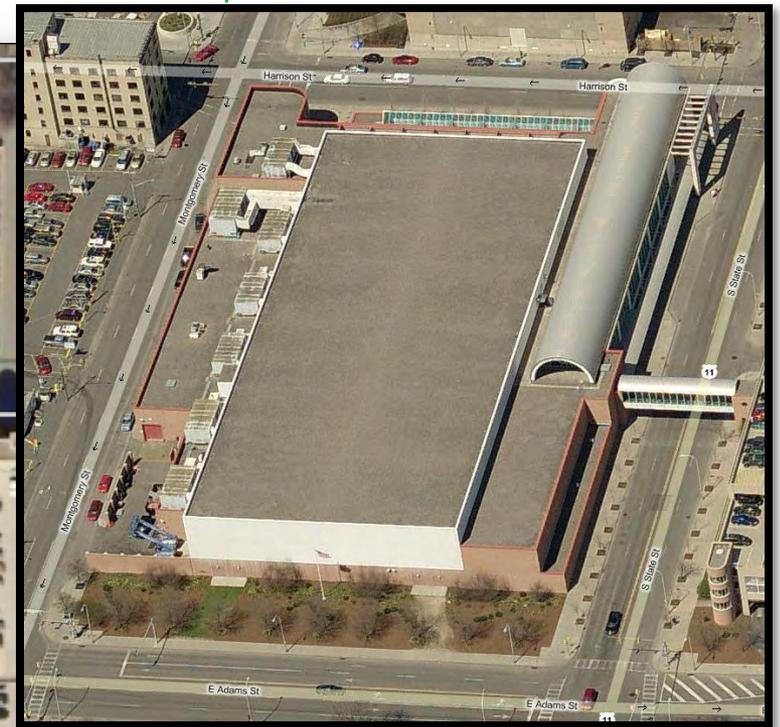
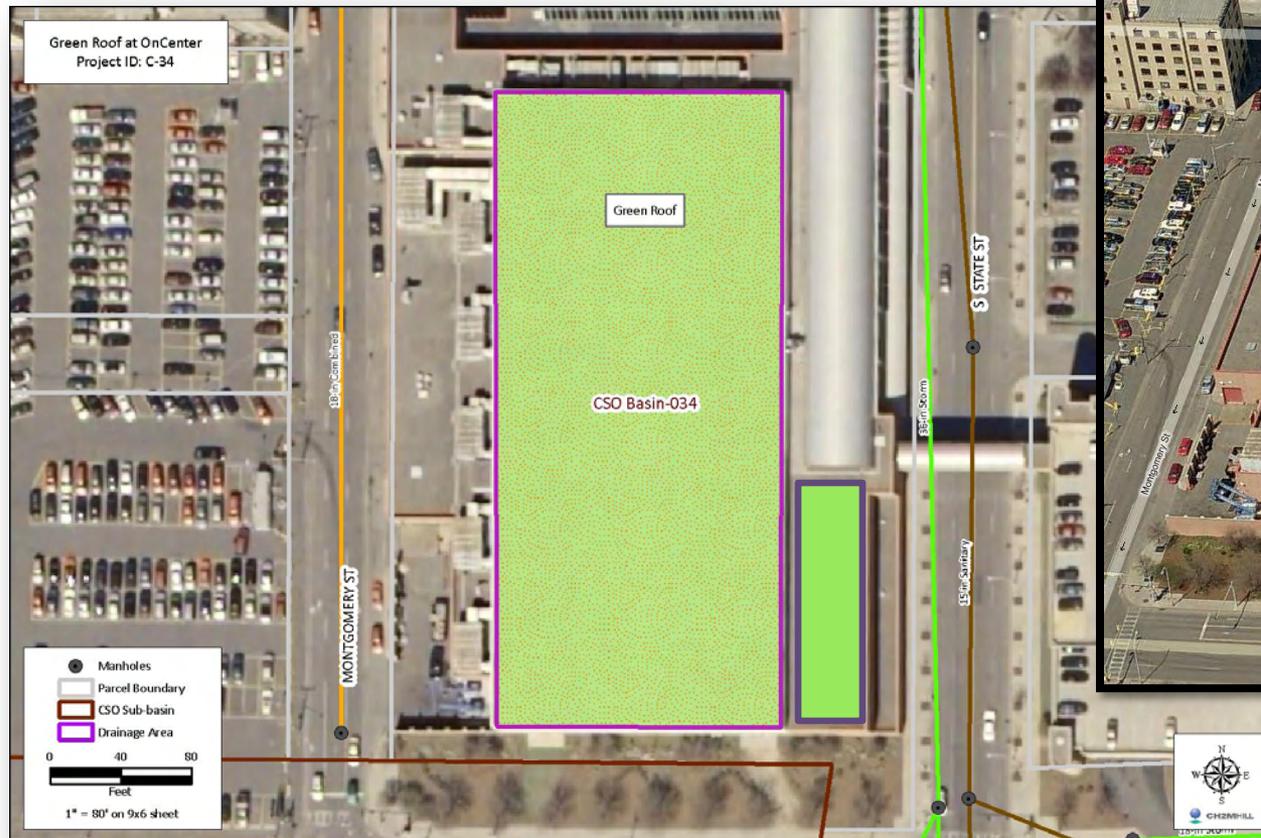
- **Pavement Condition**
- **Access**
- **Space Organization**
- **ADA Spaces**

Flat Roof Tops - Green Roofs



Green Infrastructure 2011 Signature Projects

OnCenter Convention Center 60,000 sq ft. Green Roof



Onondaga County Civic Strip

Greening County Facilities Utilizing Multiple Green Infrastructure Technologies

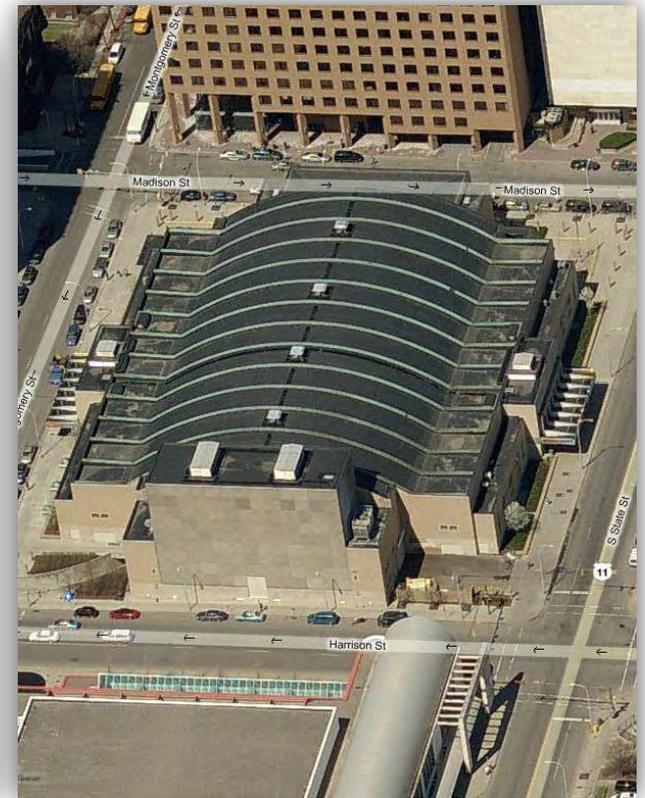
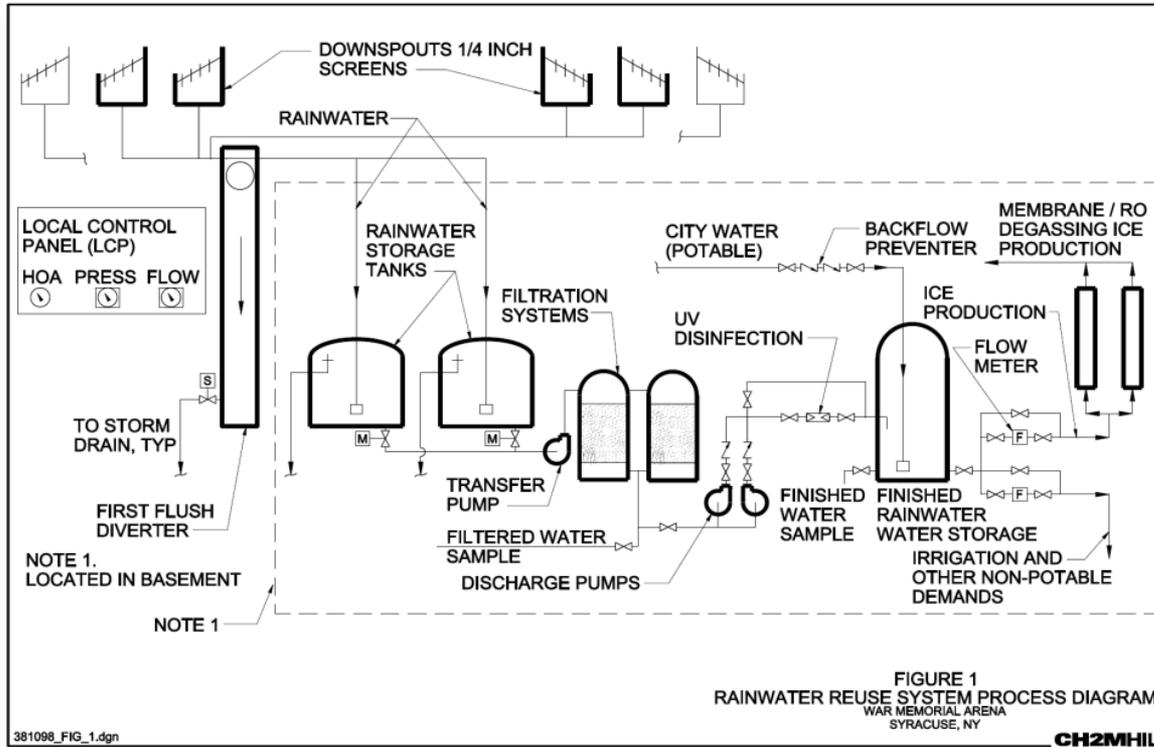


Location	Green Technology	Impervious Drainage Area (sq. ft.)	Estimated CSO Volume Reduction (gallons)
Court House	Bioretention, Enhanced Street Trees	6,100	88,072
Civic Center	Vegetated Roof	68,600	990,444
War Memorial	Cistern System	20,300	293,090
Convention Center	Vegetated Roof	58,700	847,508
	Pavement Removal/Bioretention	9,650	139,326
	Bioretention	15,100	218,013
Sheriff's Headquarters	Vegetated Roof	15,100	218,013
	Porous Parking Lot	11,550	196,628
Criminal Court House	Vegetated Roof	22,400	323,410
	Porous Parking Lot	30,750	523,491
Public Safety Building	Vegetated Roof	29,000	418,701
Justice Center	Vegetated Roof	53,200	768,099
Steam Station	Vegetated Roof	3,400	49,089
Community Plaza	Bioretention	43,000	620,832
County Parking Lot B	Porous Parking Lot	53,940	918,280
Convention Center Parking Lot	Porous Parking Lot	95,950	1,633,462
Convention Center Garage	Downspout Diversion to Bioretention	72,500	1,046,752
	Pavement Removal/Bioretention	6,650	96,012
S. Townsend St. Median	Enhanced Street Trees	20,520	252,988

TOTAL 656,510 9,642,210

Green Infrastructure 2011 Signature Projects

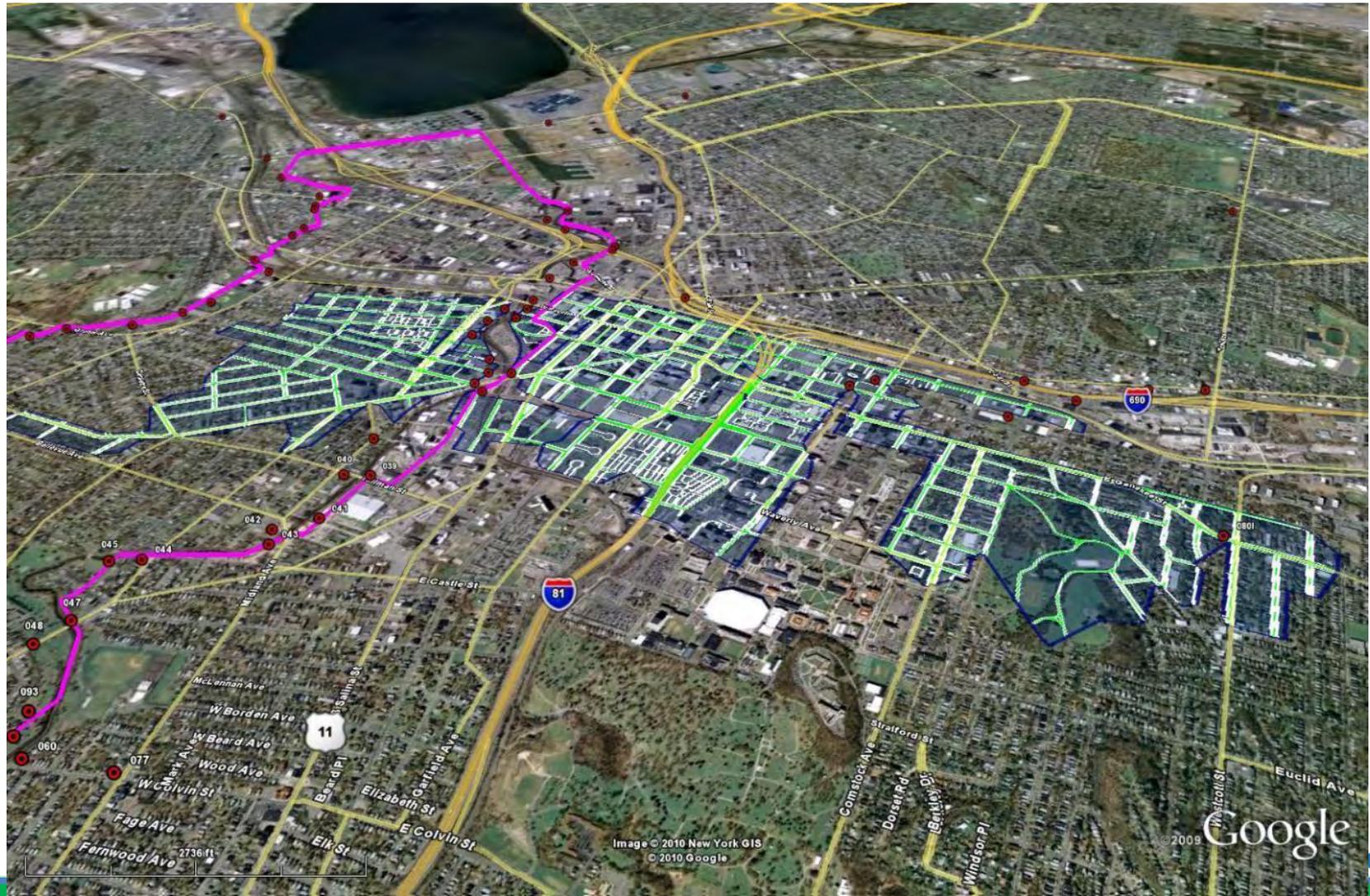
Water Reuse at OnCenter War Memorial



Reusing rainwater allows the ice making to occur one to two degrees warmer than using potable water - significant energy savings.

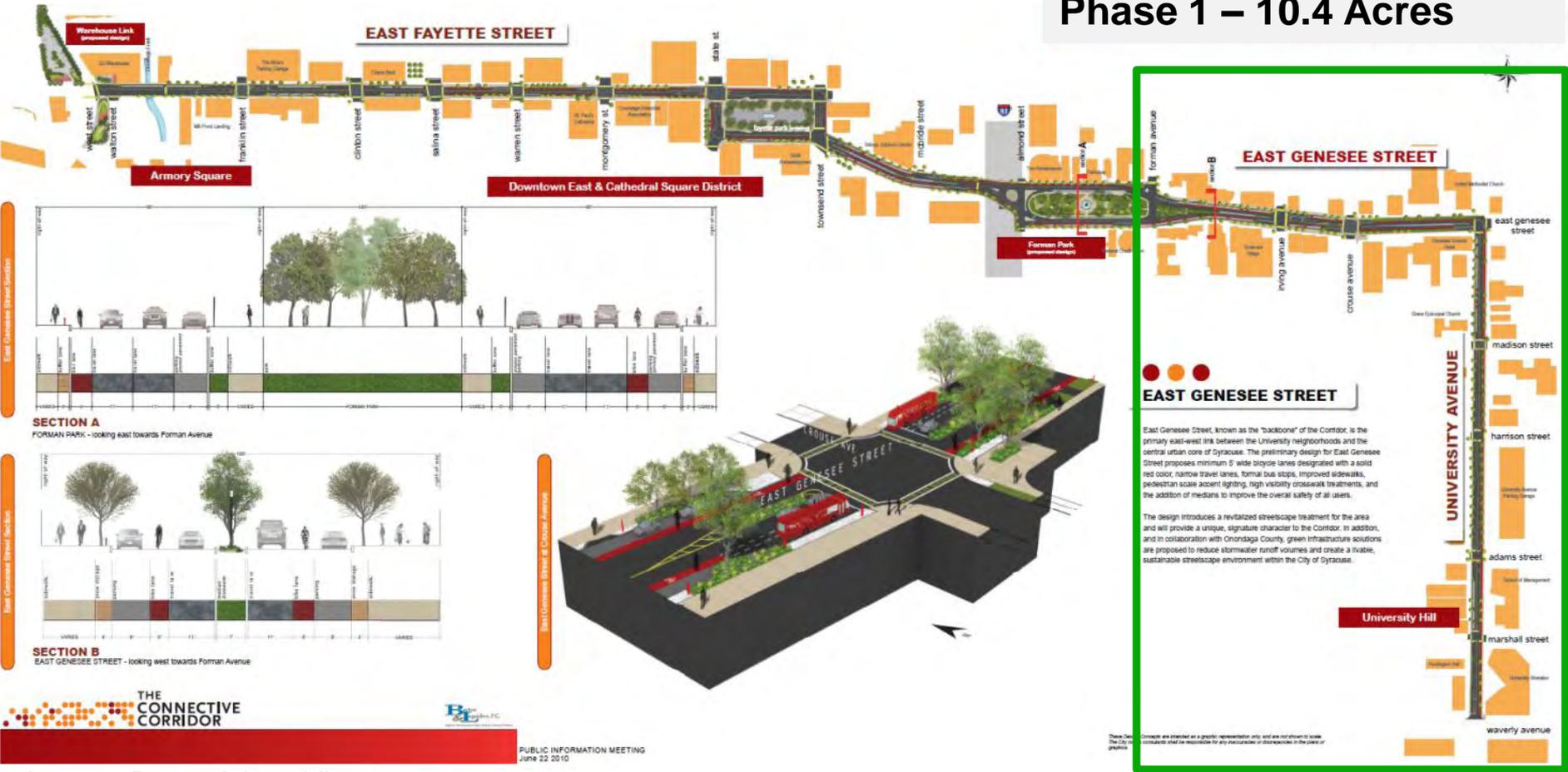
Roadways - Green Streets for Road and Utility Improvement / Reconstruction

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33

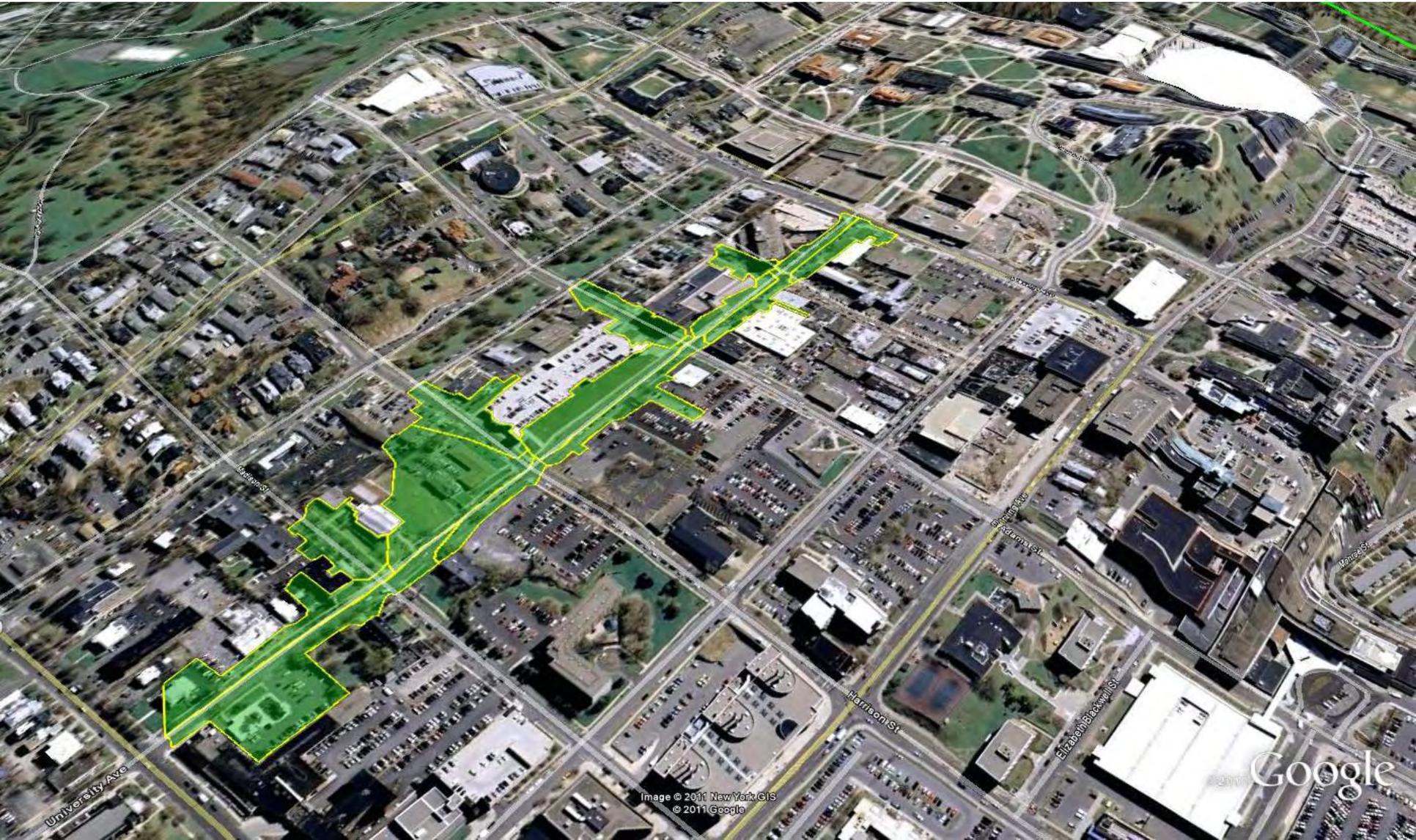


Linking with Major Transportation Reconstruction Creates Green Progress (Phase 1 - 10.4 Acres)

Phase 1 - 10.4 Acres



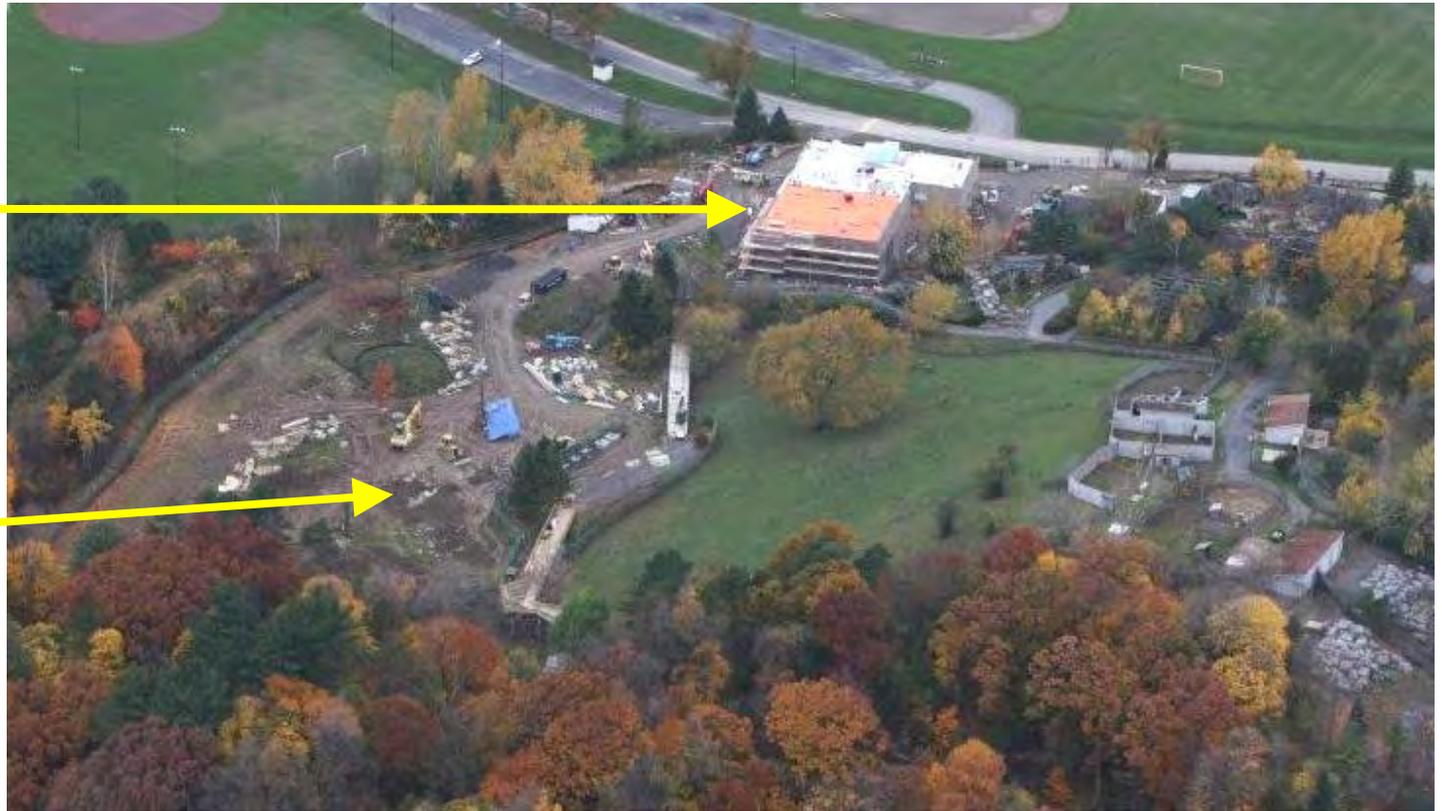
Connective Corridor



Rosamond Gifford Zoo Elephant Exhibit (summer 2011)

6,000 sq.ft.
Green Roof

Enhanced
Stormwater
Management



Rosamond Gifford Zoo

Primate Exhibit and Courtyard



Rain Barrels and
Cisterns to harvest
runoff from rooftops

Porous Pavement
in Courtyard

Rain Garden along
Primate Exhibit

CSO Treatment Wetland Project



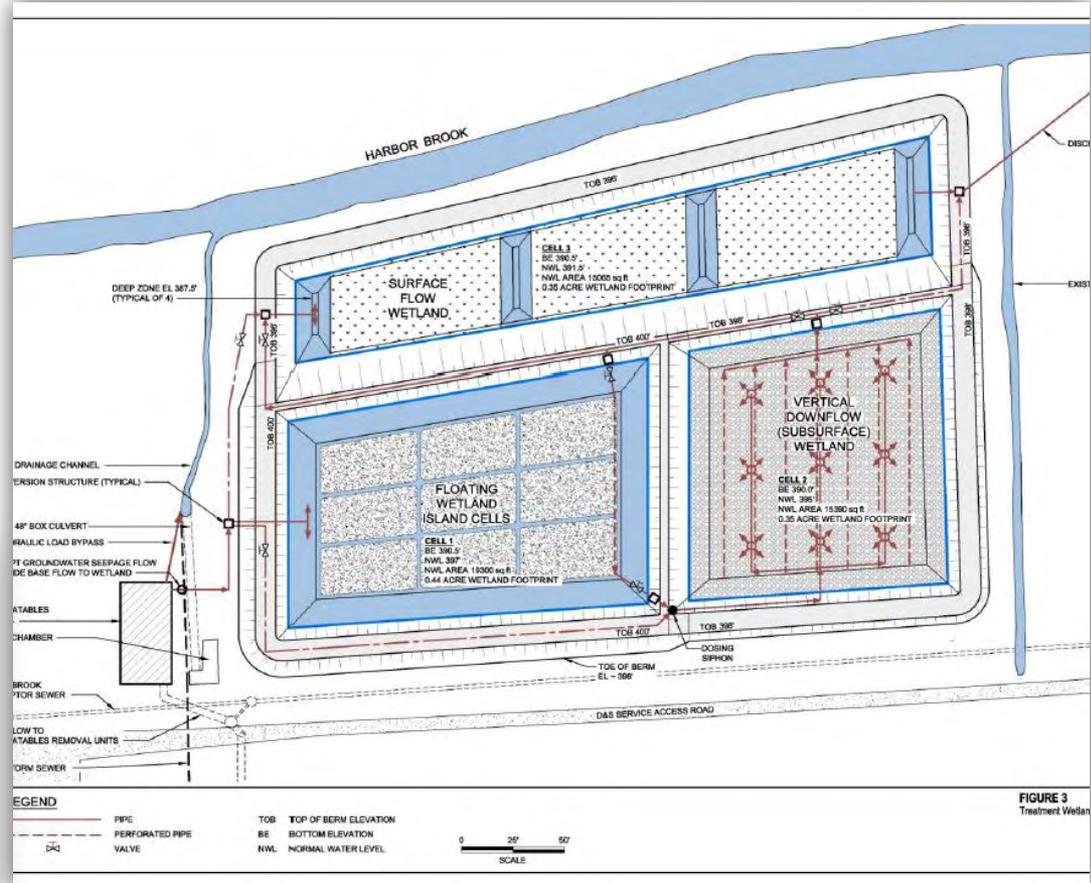
CSO 018

Constructed
Wetland

Harbor
Brook

Treatment Wetland Eliminates CSO 018

- 144 Acre CSO basin
- 40 overflows / year
- Significant Nutrient Removal
- Partner with SUNY ESF



Green Improvement Fund(GIF)

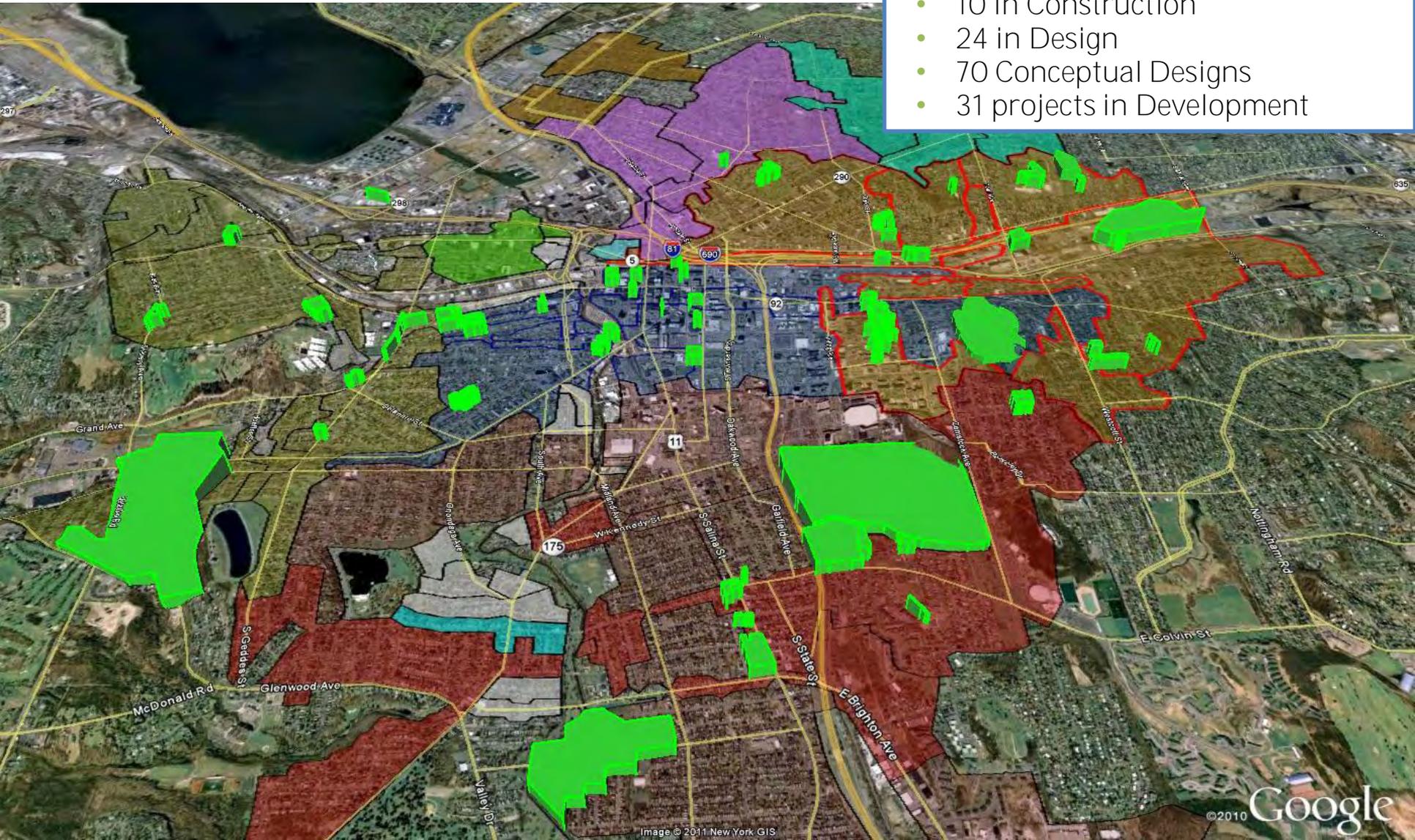
Adaptive Management Requires Private Participation



Where		What	How	Who	How Much	
Program	Area / Impervious Source	Primary Green Infrastructure Technology	Implementation Strategy	Owner	Target CSO Reduction Volume (gal)	Target CSO Volume Reduction (% of Total)
Green Improvement Fund (GIF)	All	All	Review / Administer / Track Awards	OCWEP	11,372,000	5%

Projects in Progress

- 17% of projected green capture is complete or in construction
- 22% additional capture from 2011 projects
- 35 projects Constructed
- 10 in Construction
- 24 in Design
- 70 Conceptual Designs
- 31 projects in Development



4th Stipulation Final Approved Budget



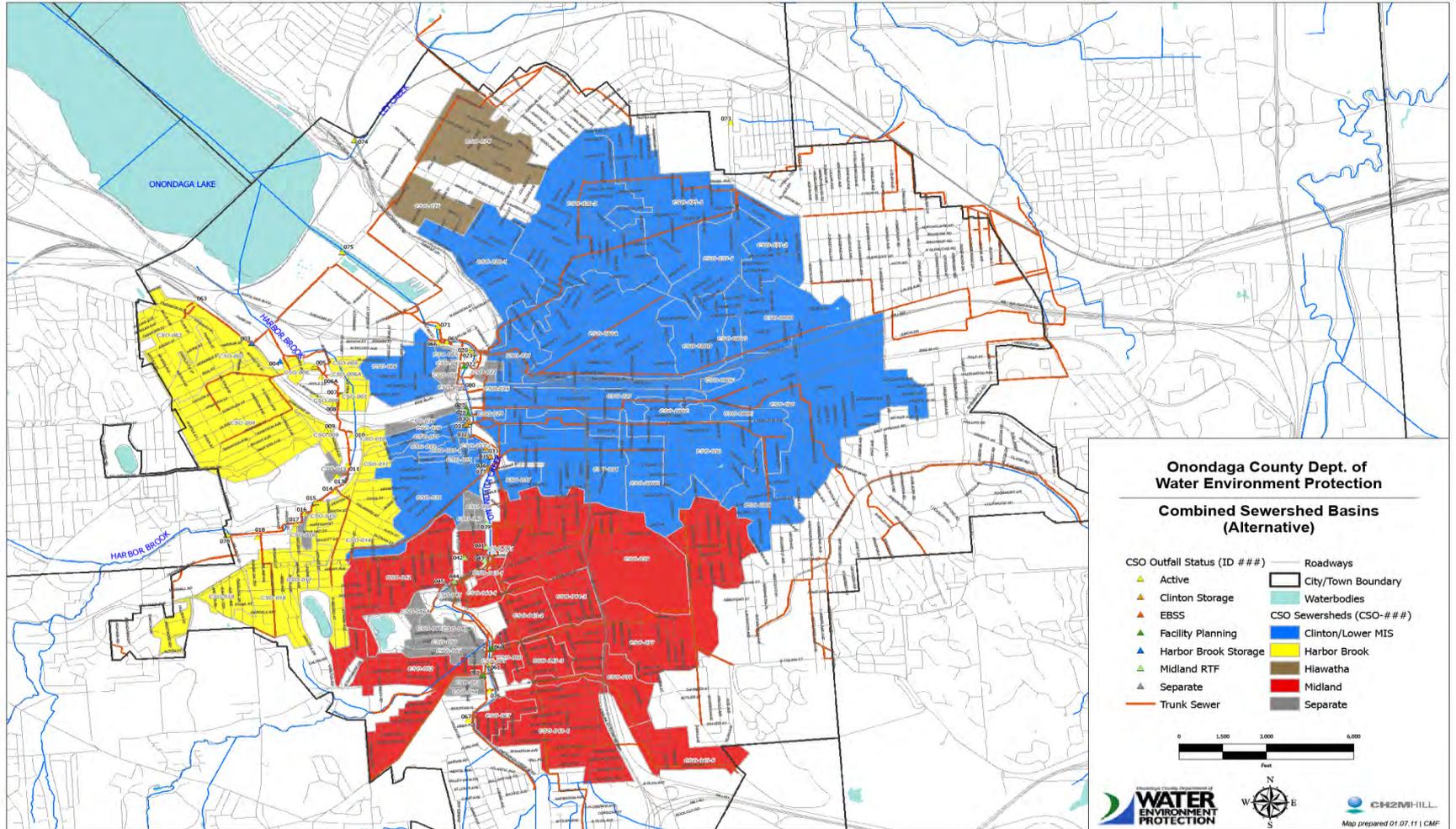
CSO Abatement Program Costs*

(\$ Millions)

	2nd Stip**	4th Stip
Harbor Brook	\$150	\$104.8
Clinton/Lower MIS	\$122.7	\$165.4
Midland	\$148.4	\$131.3
Sewer Separation	\$27.7	\$27.7
Total	\$448.8	\$429.2

* All Program Costs based upon current, best available data

** Indicates Pre/Post-Bid Project Estimates





Thank You!

Please Visit us at
www.SaveTheRain.us



Save the Rain 