

# Green Infrastructure and Stormwater

Village of Niles

Oak Park Bioswale and  
Permeable Pavement



# Introduction

- Historic Stormwater context
- Stormwater Program
- Village wide projects
- Focus On Green Infrastructure
- Oak Park Case Study





# Historic Context

Niles experienced extensive flooding in:

- 1987 and years prior
- 1996
- 1998
- 2002
- **2008 \***
- **2010**
- 2011
- **2013**



**Disaster declarations by President**

\*Straw that broke the camels back?

Following 2008 storms there appeared to be a paradigm shift.....



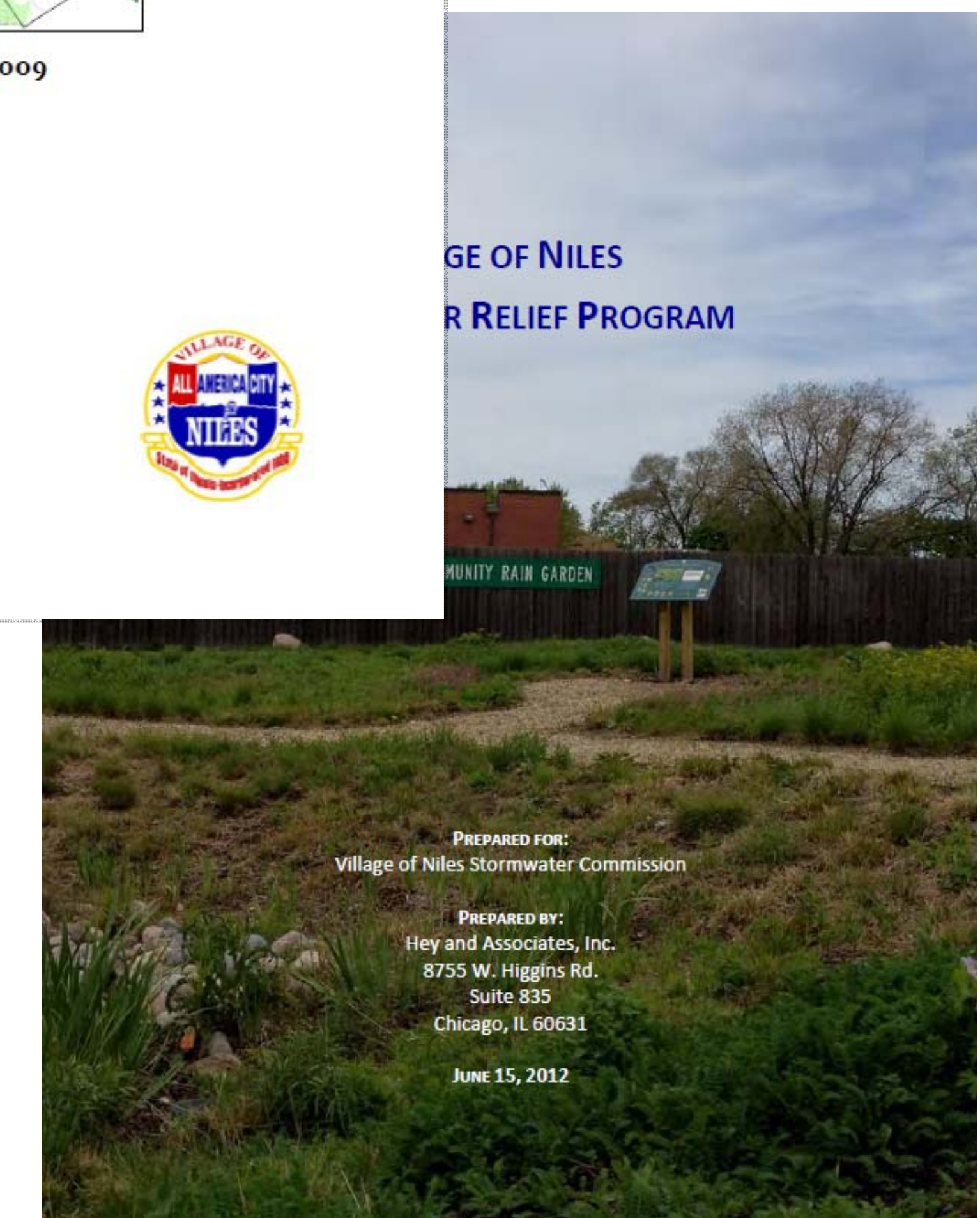
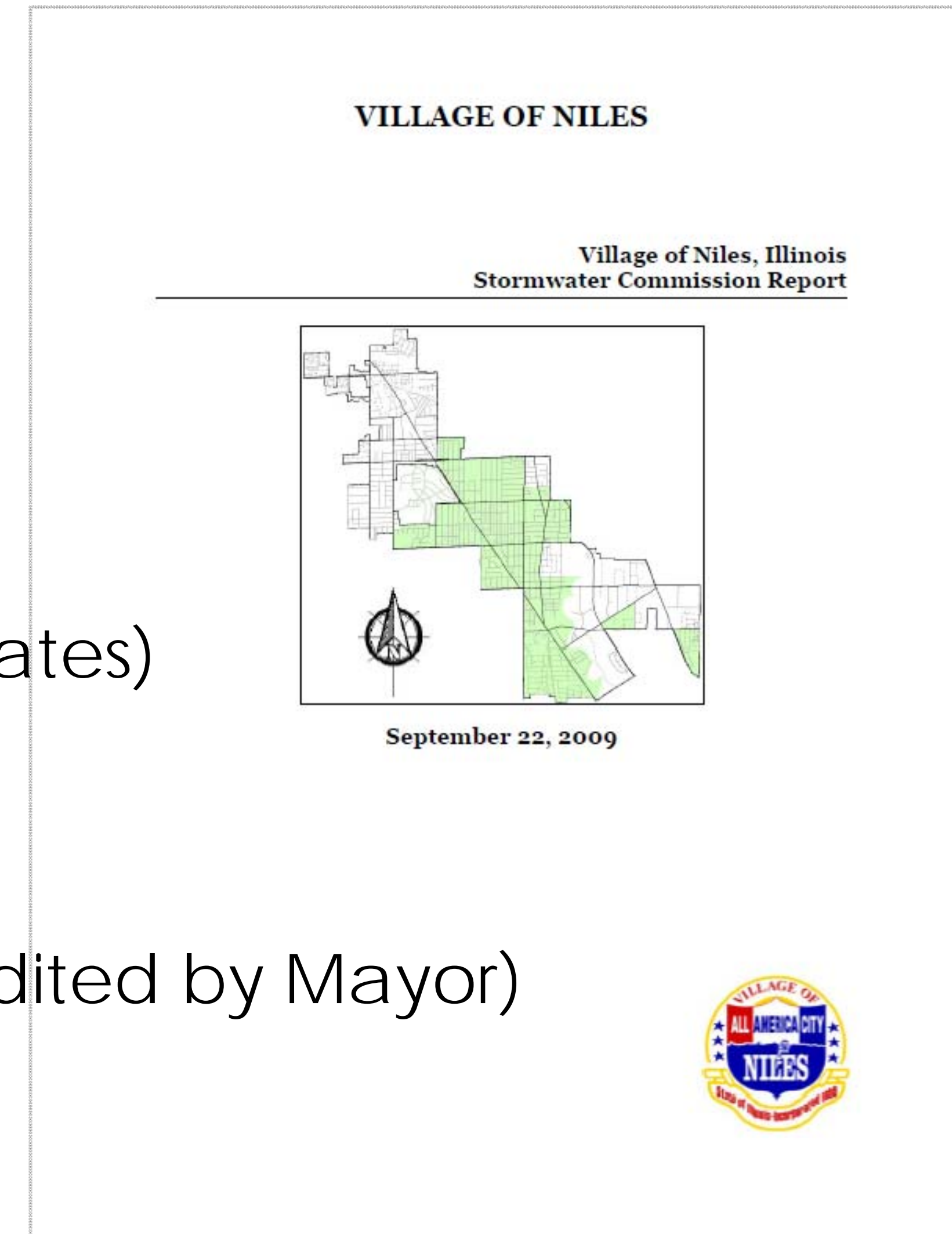


# Historic Context

## Paradigm Shift

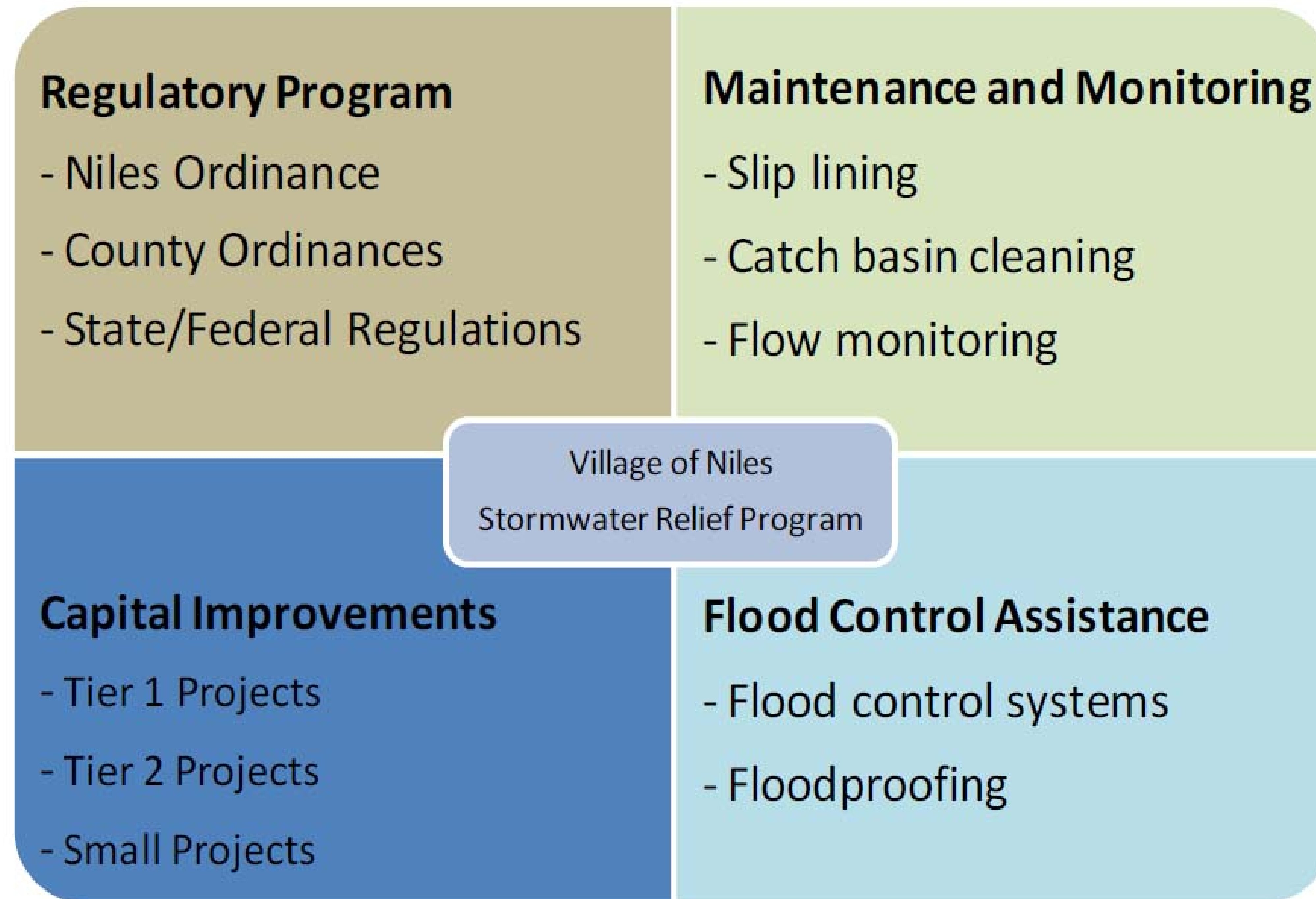
- Stormwater Commission
- Stormwater Commission Internal Report 2009
- Hired Professional Stormwater Experts (Hey & Associates)
- Stormwater Relief Program 2012
- Major Stormwater Projects Construction 2014 (expedited by Mayor)

Implemented many other incremental steps and programs as well. Multi faceted program approach including traditional and green infrastructure projects





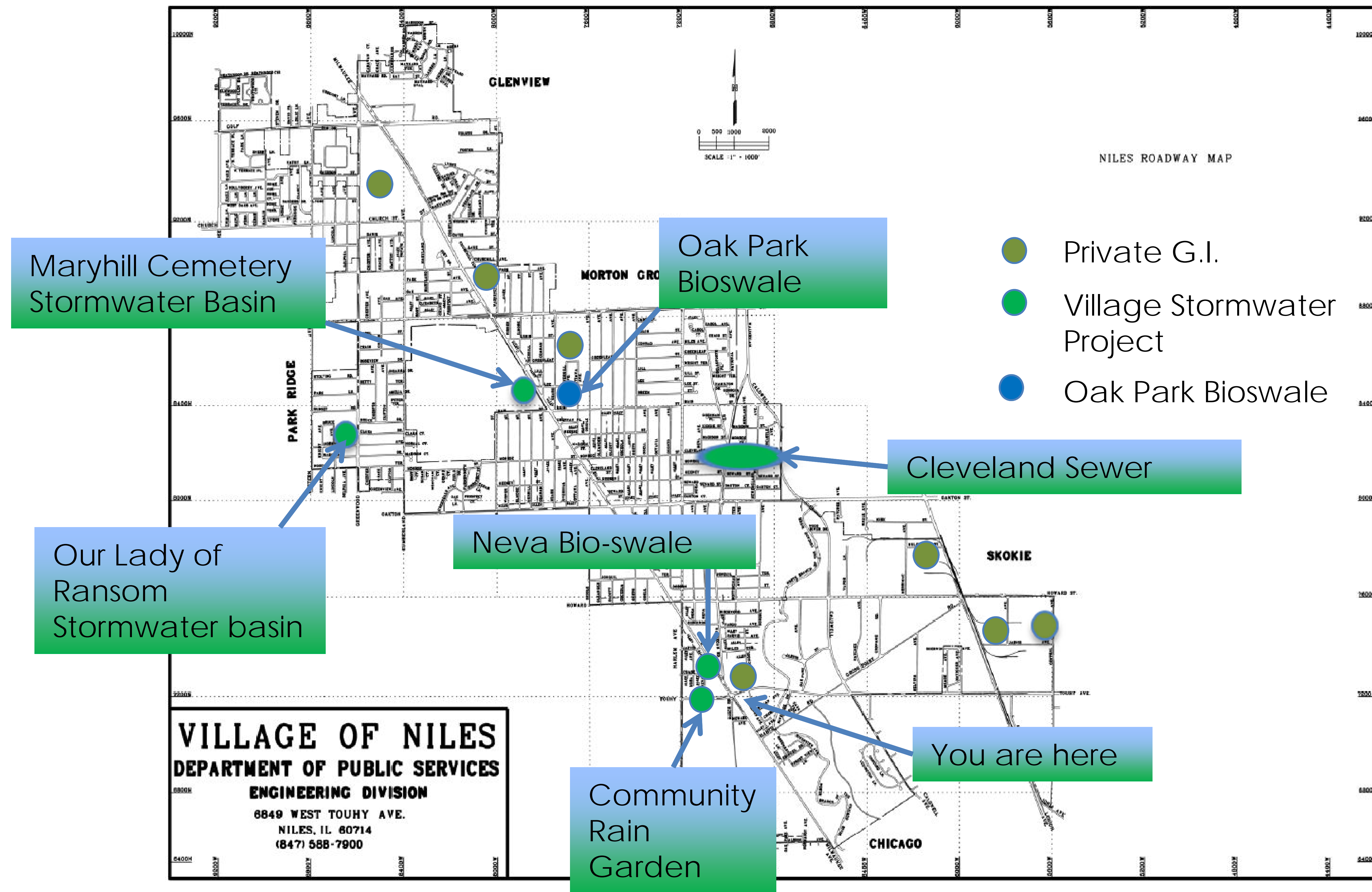
# Stormwater Program Approach



Oak Park projects falls under capital improvement category



# Projects Completed and in Progress





# Projects Completed and in Progress

## Traditional Projects



## Green Infrastructure Achievements

- Community education
- Conversation starter
- Volunteerism
- High visibility (Touhy Ave)
- Chloride treatment
- Stormwater relief
- Public-Private Partnerships



## Green Infrastructure

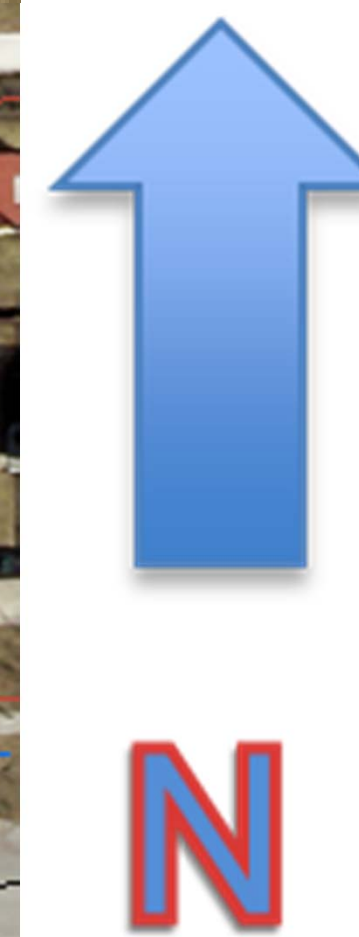




# Oak Park Existing Conditions

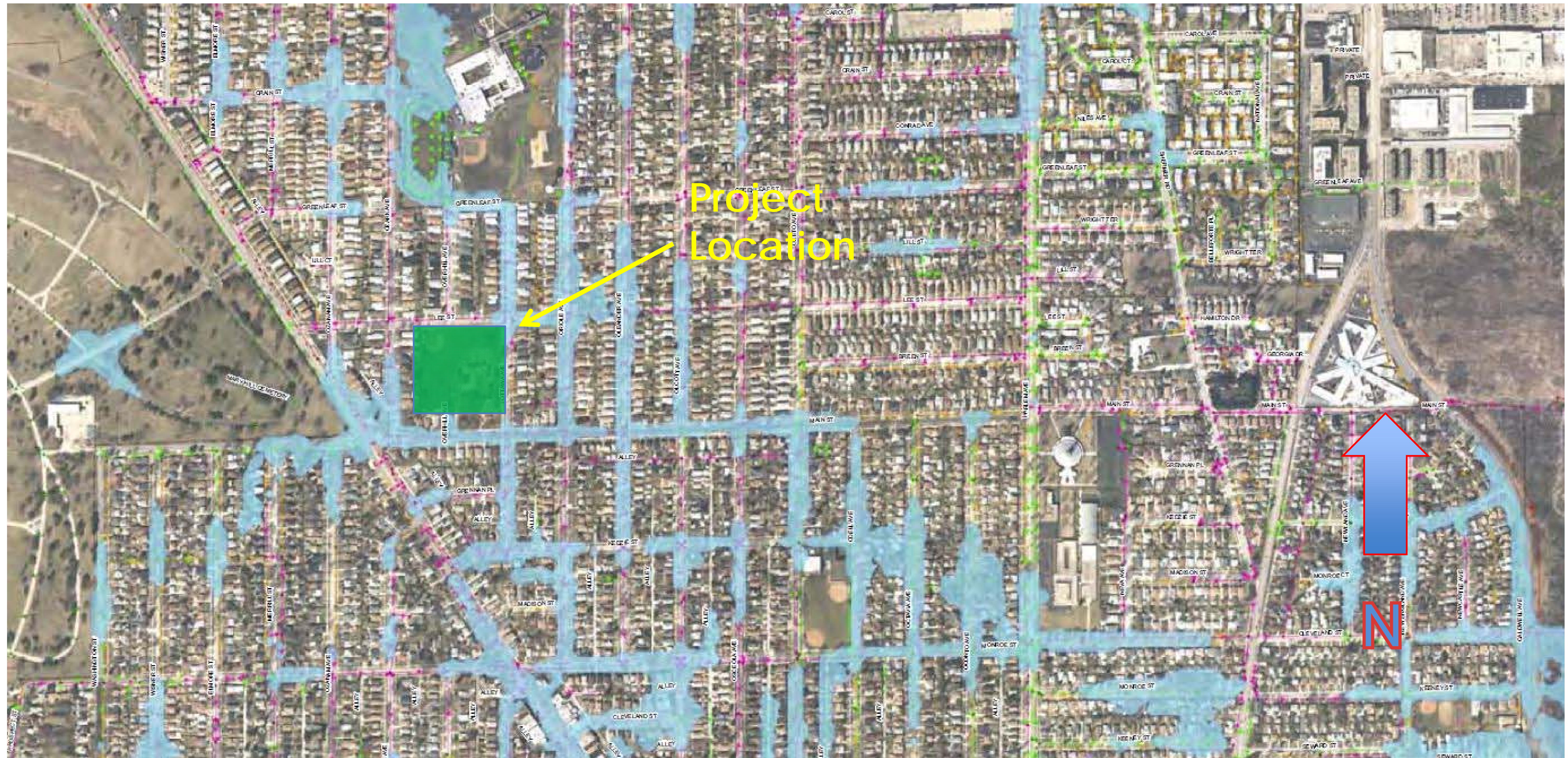


- Combined Sewer Area
- Naturally Tributary to North Branch of the Chicago River
- "Upland " Zone
- Heavily used Public Park





# Flood Projections





# Traditional Solutions



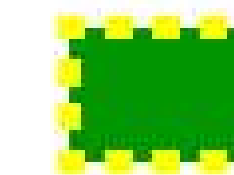


# Green Infrastructure Solutions

VILLAGE OF NILES, OAK PARK

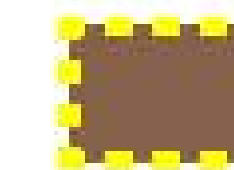
GREEN INFRASTRUCTURE COMBINED SEWER OVERFLOW CONTROL PROGRAM

PRELIMINARY SITE PLAN



BIOSWALE (APPROX. 3,200 SQFT):

FLAT / GENTLY SLOPING BOTTOM  
SALT / MOISTURE TOLERANT VEGETATION  
ENGINEERED TOPSOIL (MINIMUM 12")  
AGGREGATE STORAGE (24" CA 16 GRAVEL)



PERMEABLE PAVEMENT (APPROX. 9,200 SQFT):



STORMWATER FLOWPATH

Sponsored By:



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Engineering, Ecology and Landscape Architecture



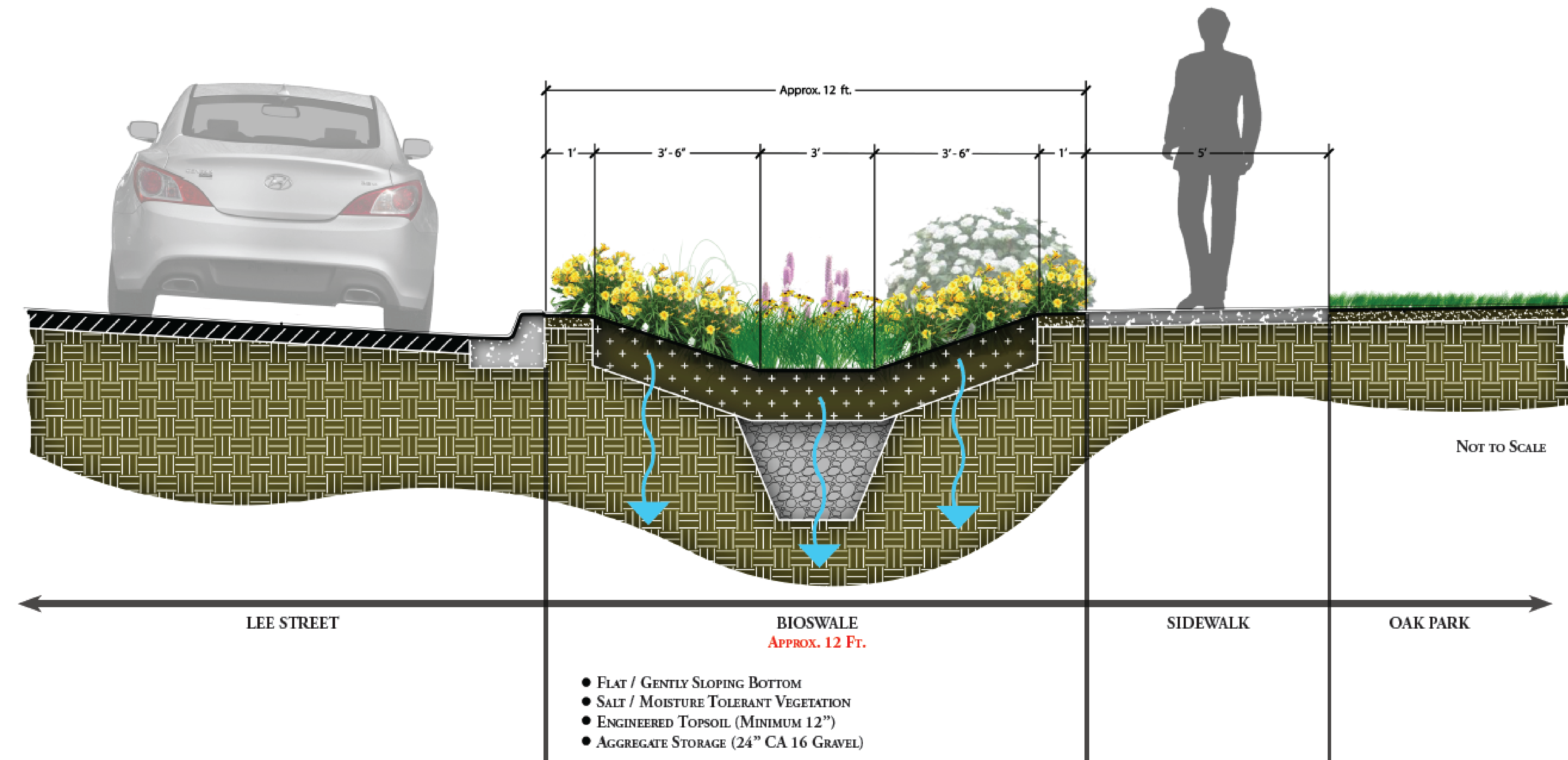


# Bioswale

VILLAGE OF NILES

GREEN INFRASTRUCTURE COMBINED SEWER OVERFLOW CONTROL PROGRAM

BIOSWALE TYPICAL CROSS SECTION [LEE STREET WEST OF OTTAWA AVENUE]

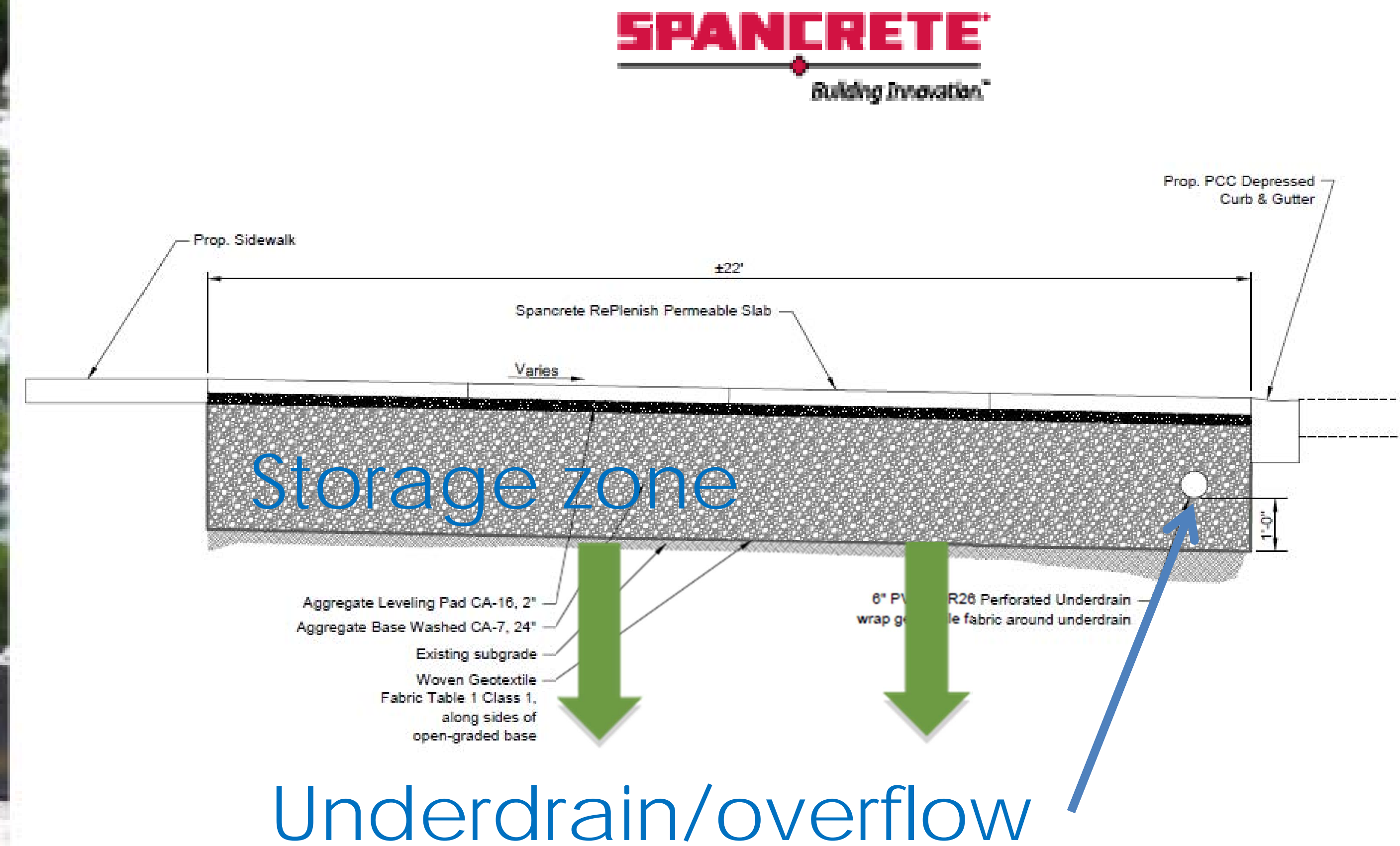


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# Permeable Pavement



## RePlenish Features:

- Pervious Precast Strength – Exceeds traditional concrete strength
- Withstands Freeze and Thaw
- Industry-Leading Infiltration – up to 500 inches/hour
- Contaminant Removal – Up to 85% of dissolved metals and more than 65% of phosphorous
- Interlocking Hollowcore Sections
- Flood Mitigation – A great way to manage and reduce flood conditions
- Low Maintenance
- ADA Compliance
- Credit for Green Building Standards

③

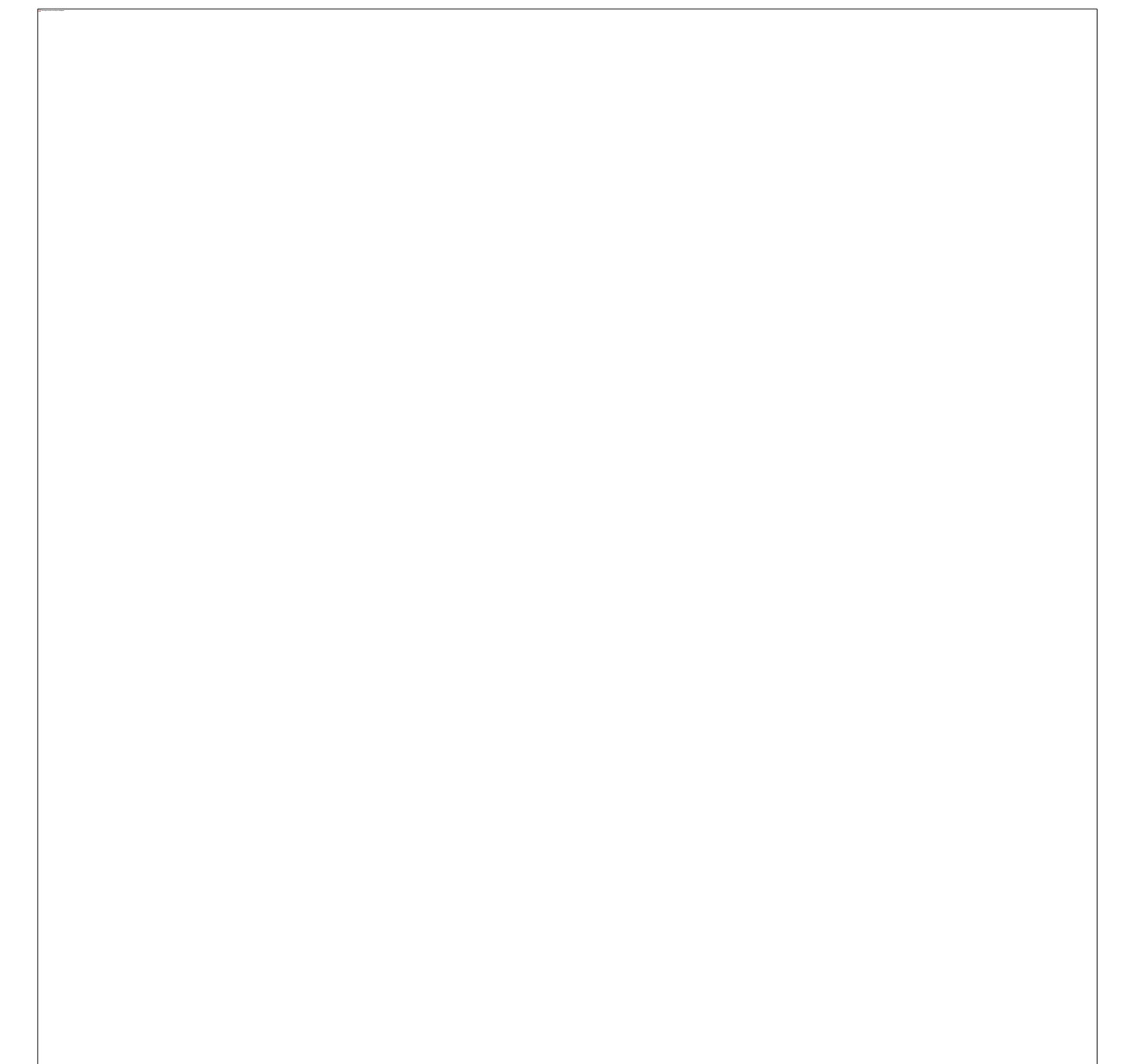
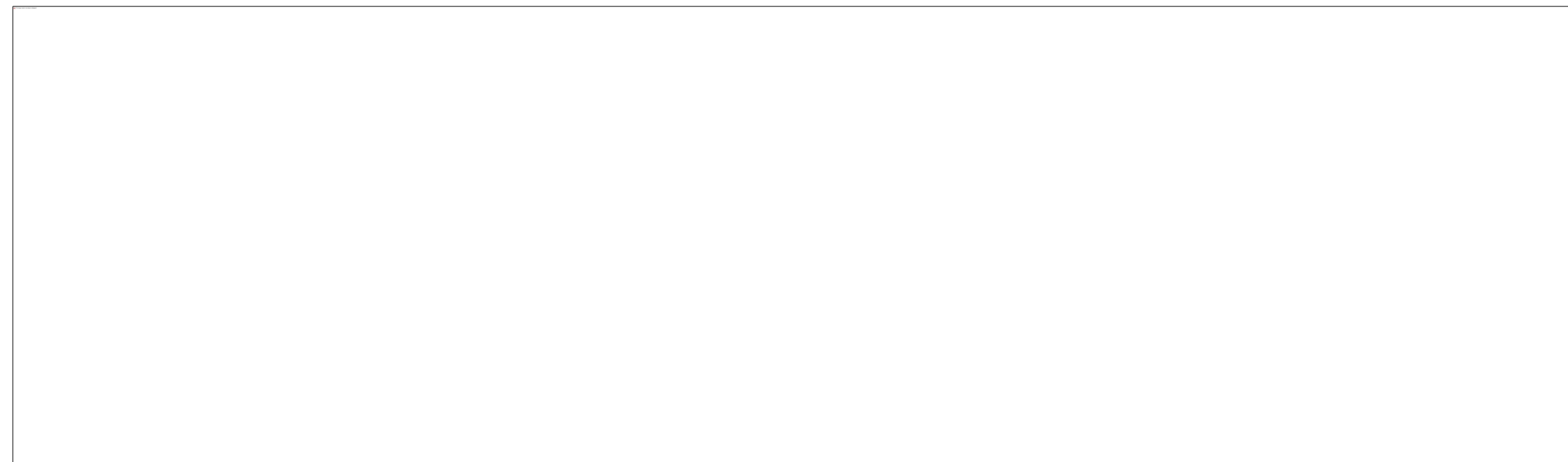
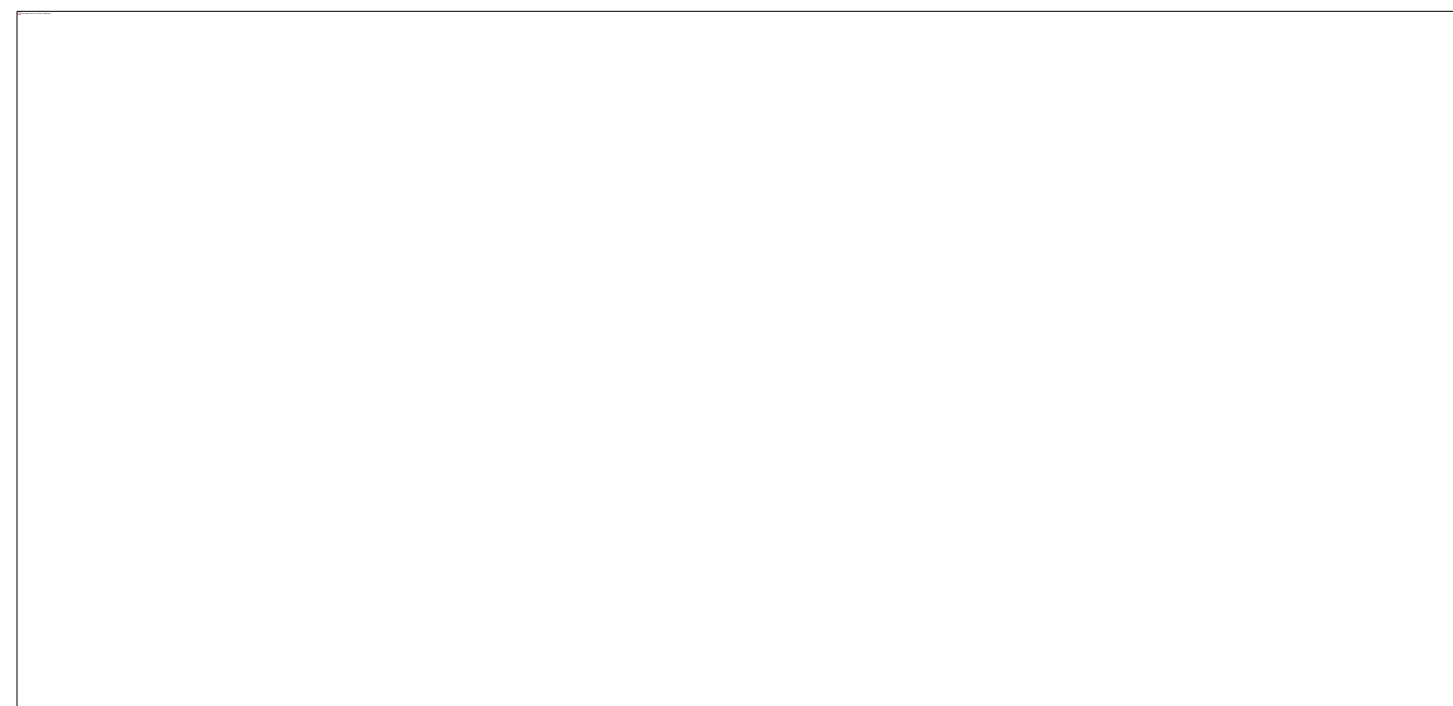
Typical Permeable Paver Pavement Section  
(Not to Scale)





# Unique Project Features

- 53,811 Gallons of Storage as certified by MWRD
- Equivalent to almost 1000 Rain Barrels
- Park District Cooperation and Coordination
- Multiple Funding Sources Royal Bank of Canada and MWRD
- Spancrete debut in Illinois –Road Trip to Summer fest
- CSO Volume reduction
- Reduced Waterway Impacts





# Project Take Aways

- Persistence Pays
- Local agency coordination
- Incremental solution – Tool for the tool box
- Used in combination with traditional solutions
- Retrofit possibilities
- Cost premium offset by infrastructure replacement cost
- Maintenance Considerations – 3 years
- Stormwater does infiltrate! Even in clay!
- Combined Sewer Area appropriate
- Add to grant applications when possible





# Thank you

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Questions?

