



Flooded to resilient communities



Harriet Festing | Center for Neighborhood Technology, 2015

Meeting purpose

- Clarify 2015 goals
- Clarify partner involvement, identifying overlaps/opportunities
- Consider partner expansion framework

RainReady 2015 Goals

1. Expand **education and outreach** to priority communities: the City of Chicago, Cook County, select US cities
2. Expand **RainReady Home** service in context of the **community**
3. Continue design of **RainReady Community** prototype
4. Design and test a **RainReady Alert** prototype
5. Advocate for supportive **state & federal policies**



Urban flooding research

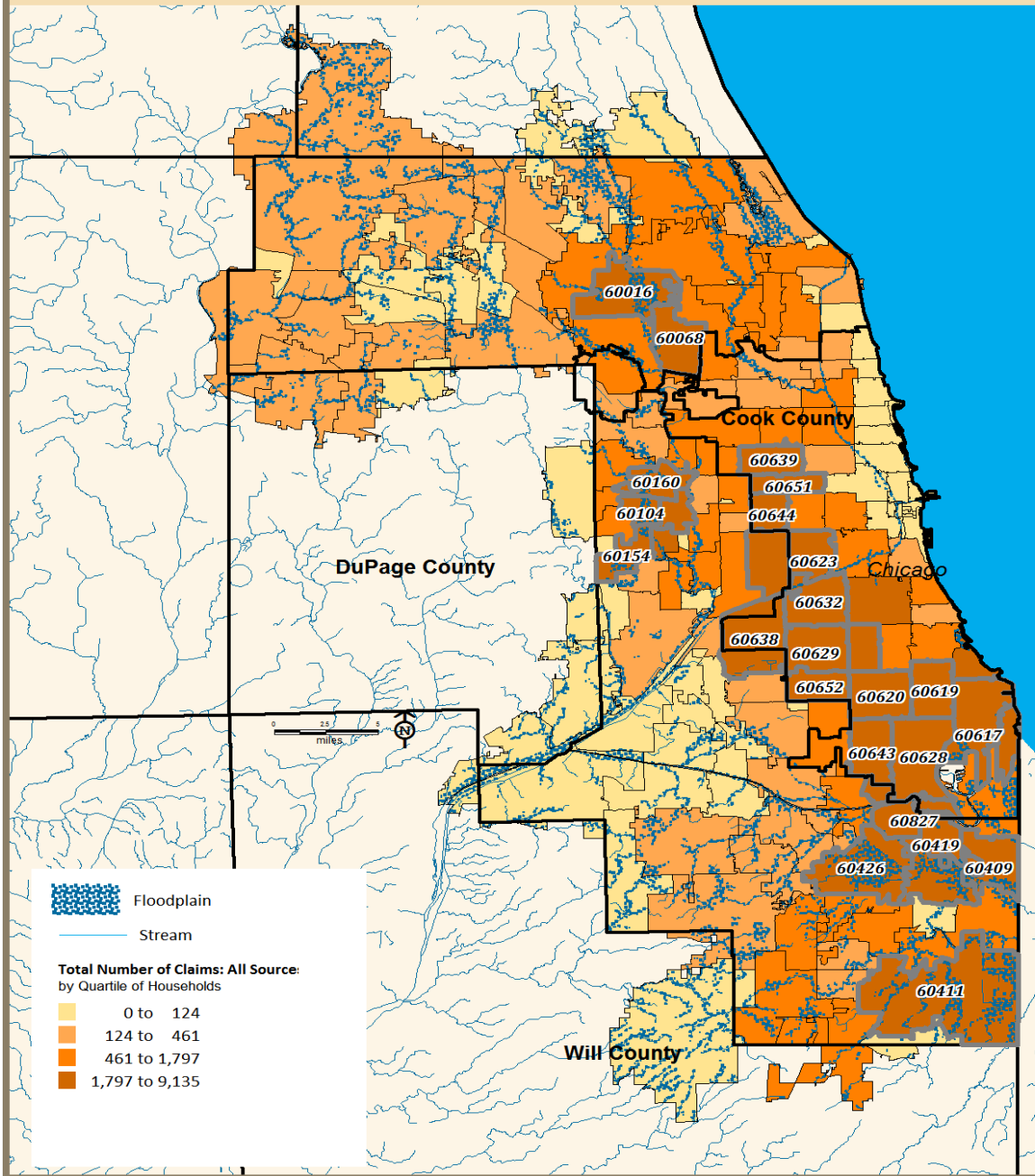




1. Analysis of claims data

- Flood claims payouts, Cook County, IL
- Private insurance, FEMA (NFIP, disaster relief), SBA
- 2007-11, aggregated by zip code

Total Combined Payout: Private Insurance, National Flood Insurance Policy, Disaster Relief Assistance



Urban flooding claims in 97% of Cook County zip codes



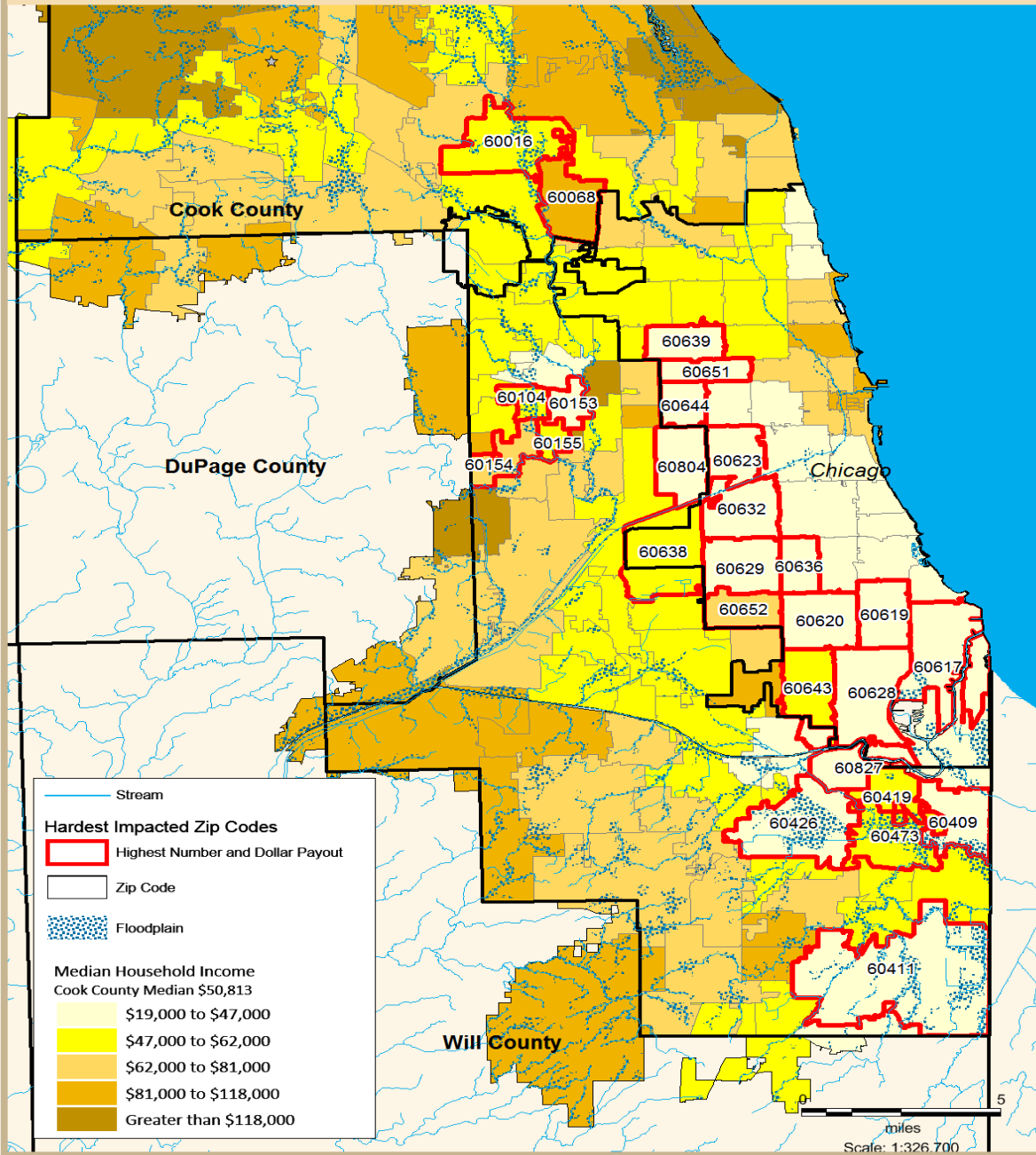
Average payout = \$4,000+

Urban flooding affects 1 in 6 properties

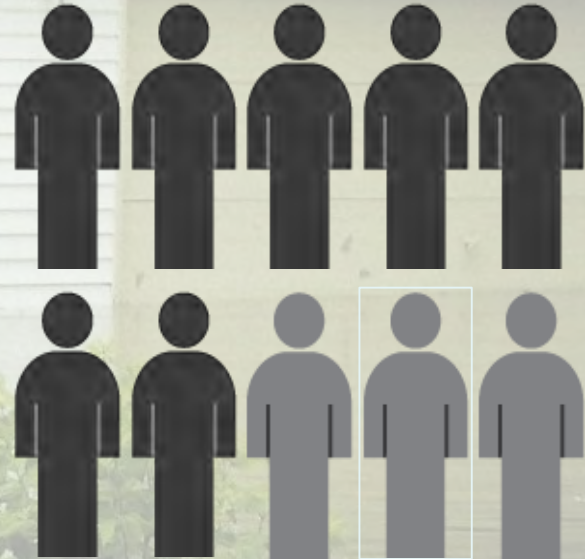


No correlation to floodplains

Median Income and Highest Concentrated Damage



2. Survey of flood victims



70% flooded 3 or more times in 5 years

Wider impacts

- 84% suffered stress
- 13% ill health
- 41% lost the use of part of their property



3. Diagnostic property assessments



CNT Wetrofit Property Flood Assessment



Address	2010 W Superior St
City, ST	Chicago, IL
Owner(s)	Joe Harrow
Initial Assessment	10/4/2013
Assessor(s)	Ryan Wilson, Nick Fornak, Jessica Miller
Prepared by	Ryan Wilson

On 10/4/2013 the Center for Neighborhood Technology's Wetrofit team conducted a flood assessment of your property to assess your risk of repeat flooding, and to identify measures that may reduce your flood risk. During this visit to your property, our team conducted a visual assessment of your basement and yard, and a camera inspection of your sump pump discharge line. The results of these inspections and our prioritized recommendations are included in this report.



TO BE REMOVED
BY CONSULTANT ONLY

LAMOSA
1990









4. Flooding in major U.S. cities

- Flash flooding warning: “imminent” or “in progress”
between 2007-11 in the counties of 10 major U.S. cities,



CHICAGO 198 flood warnings



BOSTON 133 flood warnings



DENVER 81 flood warnings



HOUSTON 145 flood warnings



KANSAS CITY 192 flood warnings



LOS ANGELES 136 flood warnings



MEMPHIS 227 flood warnings



NEW YORK 222 flood warnings



PHILADELPHIA 199 flood warnings



SEATTLE 82 flood warnings

Urban flooding

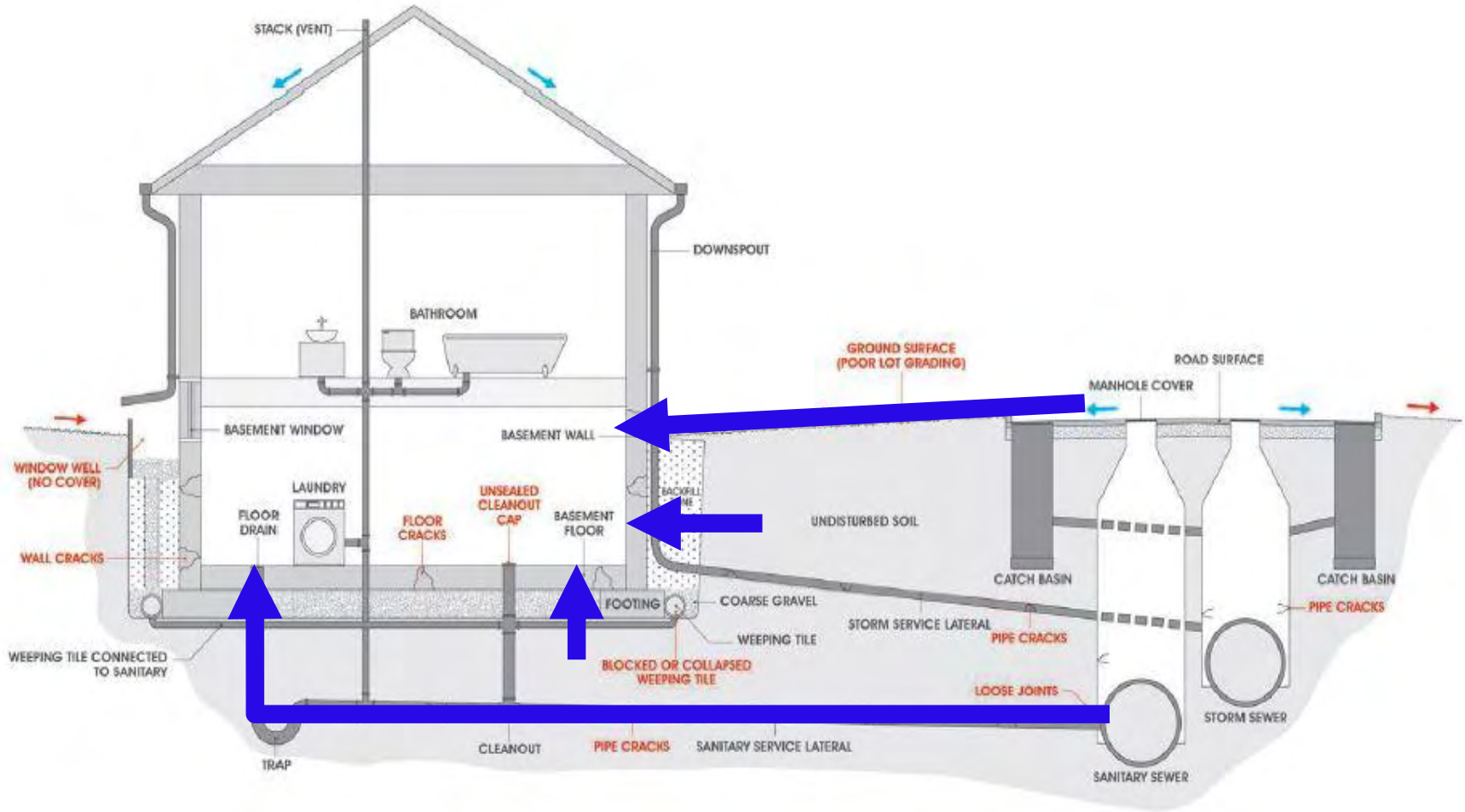
- Problem that is often **private & hidden** from public view
- **Prevalent, repetitive** & affects cities across the region and nationally
- **Low income communities** in Cook County worst most vulnerable
- **Chronic impacts:** raw sewage, mold, foundation cracks, health and stress
- Evidence: **foreclosures, businesses re-locating**
- Will get considerably **worse with climate change**




Defining urban flooding

The inundation of property in a built environment, caused by rainfall overwhelming the capacity of drainage systems

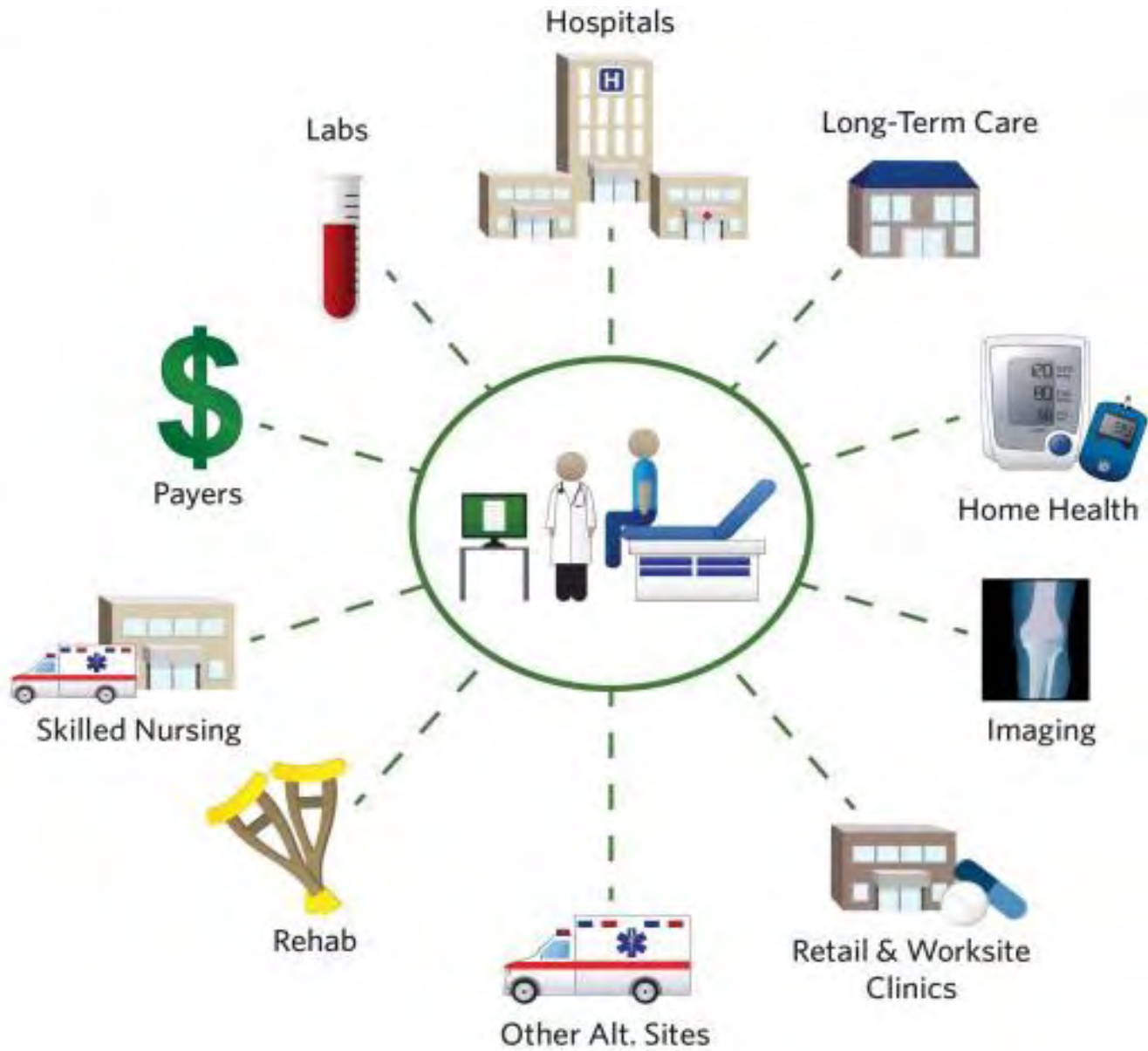
The many ways that water can enter your home...





Designing solutions

06/15/2011



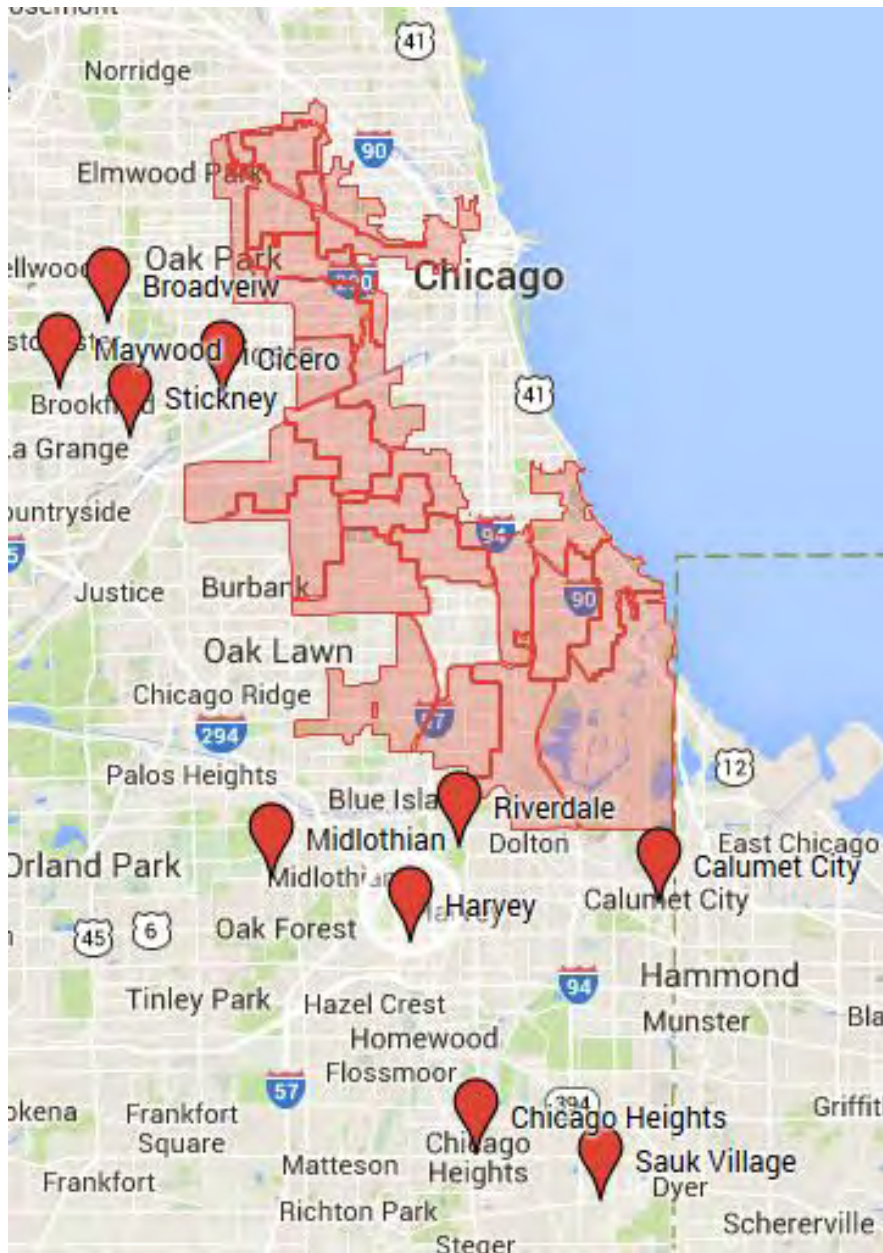
RainReady principles

- **Solutions that are affordable/quick to install**
- **Reduce damage** (versus volume stormwater captured)
- **Community-based**/residents are advocates & participants
- **No negative downstream impacts**
- **Add economic/social/environmental value** to the community

- **Approach easily replicated**, “tool box of solutions”
- **Standardized/accredited** – market value
- Leverages multiple **investment sources**: homeowners, banks, insurance sector, real estate
- Leverage **public investment in infrastructure** with actions on private property
- **Cumulative risk assessments** & holistic risk reduction³³

A man wearing a white shirt, a white cap, and glasses is speaking into a microphone at a wooden podium. He is gesturing with his left hand. In the background, a diverse group of people is seated at tables in a large, bright room with large windows. A semi-transparent white box is overlaid on the image, containing the text "RainReady Outreach & Education" in green.

**RainReady
Outreach & Education**



2015-16 RainReady Outreach Plan

www.rainready.org

Four City of Chicago
communities in partnership
with HCBA & Greencorps

A photograph of a modern two-story house with light brown horizontal siding and white window frames. The house has a covered front porch with wooden columns. A gravel driveway leads from the foreground to the front of the house. The yard is filled with various green plants, including tall grasses and shrubs. A wooden fence is visible on the left side. The sky is clear and blue. A semi-transparent white box with green text is overlaid on the center of the image.

RainReady Home



Backwater valve



Downspout disconnection and dry well

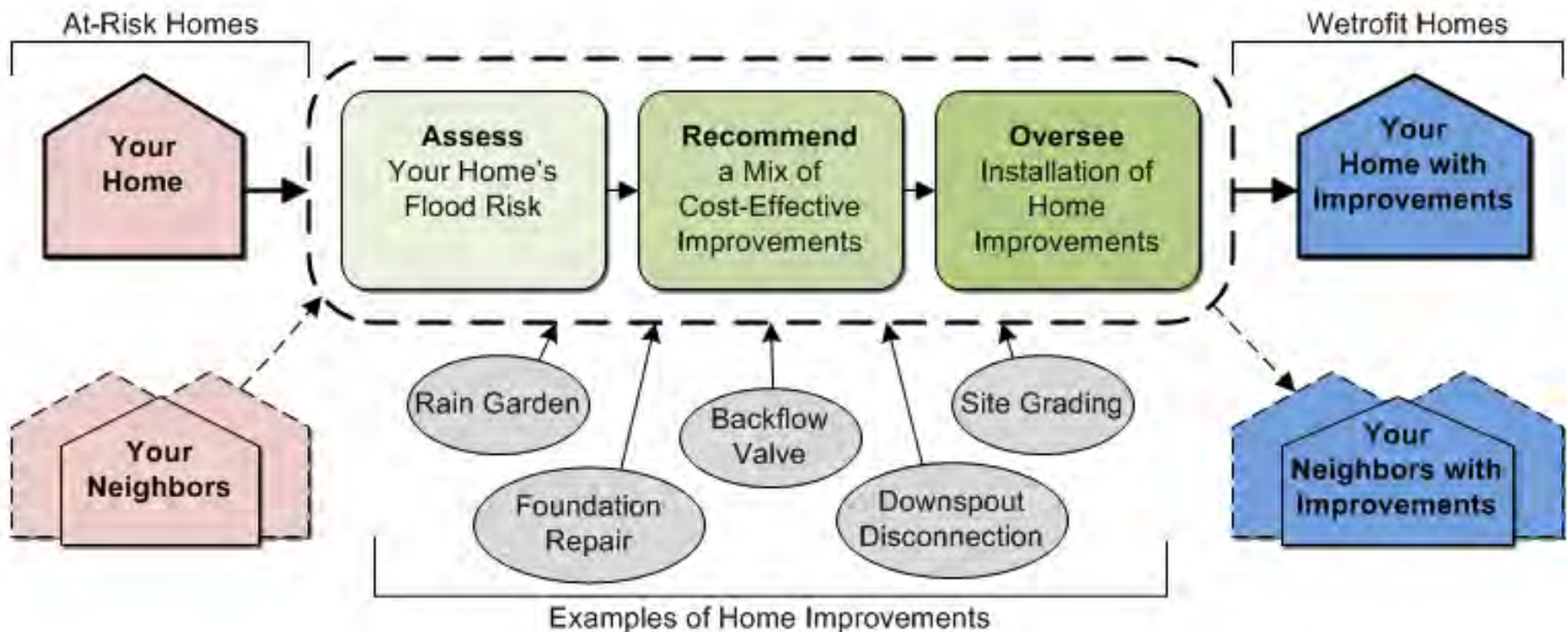


Regrading/French drain

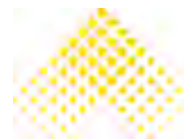


Rain gardens and bioswales

RainReady Home service



RainReady Home services are provided by:



ELEVATE ENERGY
Smarter energy use for all

Assessment Report

- Detail of Risk
- Home improvements: landscaping, plumbing, building

Wetrofit® Flood Assessment Report

On April 22 and April 24, 2014, our Wetrofit team—Nick Furtek and Ryan Wilson—conducted a flood assessment of your property. Our assessment included:

- Collection of previous flood experiences
- Observation of the building foundation, basement and landscape
- Camera inspection of the building sewer;
- Observation of the adjacent properties and right-of-ways

Based upon your experience with flooding, the cost of flooding in your neighborhood, and our assessment of your property, we recommend you prioritize the following home improvements:



1. Divert stormwater from entering property at alley
2. Capture rainwater in landscape areas
3. Drain flood water from sidewalk and under porch to catchbasin

Understanding Your Flood Risk

Homes in the Chicago region are commonly affected by three types of flooding:

- Sewage backup that comes up from floor drains, sinks, tubs, and toilets in your basement;
- Water seepage through floors or walls, or flows through cracks in your building foundation;
- Overland flooding of water that pools in your yard and against your foundation, or flows into your home through window wells and doors.

While considering the recommended improvements and maintenance, it is important to do so in the

Address	911 S Claremont Ave
City, ST	Chicago, IL
Building owner	Margaret O'Dell

IMPROVEMENTS			<i>Total Estimated Cost: \$5,000-\$7,300</i>
Projects	Measure	Detail	
1 Divert stormwater from entering property at alley.	<ul style="list-style-type: none"> • Install curb (~3-4") along extent of eastern property line at edge of parking pad. 	Anticipated Maintenance: N/A Cost Range Estimate: \$600-\$1,300 Optional: Reconstruction of existing stair. Notes: May require coordination with neighbors to ensure proper diversion.	
2 Capture rainwater in landscape areas	<ul style="list-style-type: none"> • Install rain garden with below-grade storage along eastern edge of patio. • Install permeable paving in place of existing patio area to drain to rain garden. 	Anticipated Maintenance: Seasonal weeding and care of rain garden. Removal of debris for permeable surface. Cost Range Estimate: \$3,600-\$4,800	
3 Drain flood water s from sidewalk and under porch to catchbasin	<ul style="list-style-type: none"> • Clean and repair floor drain • Clean silt and debris from existing catch basin. • Install area drain from sidewalk adjacent to south façade to catchbasin 	Anticipated Maintenance: Removal of debris contributing to area and floor drains. Cost Range Estimate: \$800-\$1,200	
MAINTENANCE			<i>Total Estimated Cost: \$300-\$700</i>
Projects	Measure	Detail	
1 Regular Building Sewer Inspection and Cleaning	<ul style="list-style-type: none"> • Televis building sewer • Rodding of building Sewer 	Anticipated Maintenance: Annual televising and cleaning, as recommended by reviewing contractor. Cost Range Estimate: \$200-\$500/year Optional: Chemical treatment of drain to prevent root growth.	
2 Regular Gutter Cleaning	<ul style="list-style-type: none"> • Removal of leaf and organic debris from gutter. 	Anticipated Maintenance: Annual televising and cleaning, as recommended by reviewing contractor. Cost Range Estimate: \$100-200/year	

- 
- Bid Solicitation/Construction Oversight
 - Pool of Qualified Contractors

RainReady Home: \$4,850

Cumulative flood damage: \$17,000

Upgrades:

- backwater valve
- disconnected downspout
- re-routed gutters
- rain garden

RainReady Home: \$1,700



Suffered cumulative damage

Upgrades:

- regraded the landscape
- rain garden

RainReady Home Plus...

- HCBA lead, funded by Illinois Coastal Management Program
- Calumet/East Side
- RainReady Home, plus education and outreach



RainReady Community



Bioswale



Porous paving



Green alleys



Town center street retrofit

Helping Communities Get *RainReady* Pilot Study, Chicago region – the Chatham Area and the Village of Midlothian



US Army Corps of Engineers
BUILDING STRONG[®]

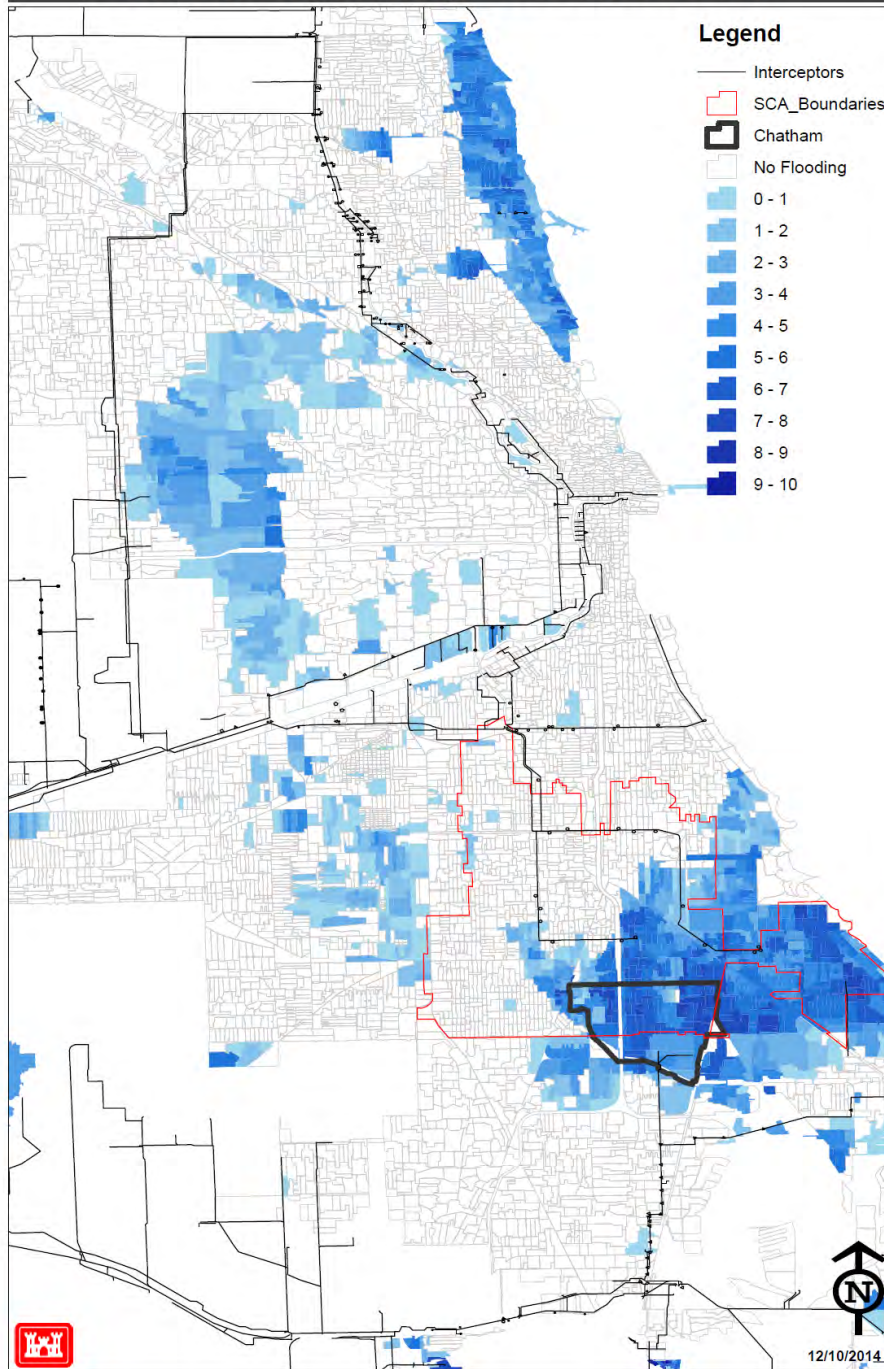


Project Purpose

- 1) To lead national collaborative, comprehensive and sustainable flood risk management practices that protect the public and reduce flood damages to the nation
- 2) To integrate and synchronize the ongoing flood risk management projects, programs and authorities of the Local, State and Federal agencies both internally and with counterparts.



Basement Flooding - Baseline 25 YR



Chatham



BUILDING STRONG®

Path: C:\Users\dhkja\Documents\FPM3_Rain Ready\basement_chat.mxd

Midlothian



Natalie / Midlothian Creek



RainReady

- *RainReady is an innovative national collaborative initiative aimed at helping communities prepare for rain - whether too much or too little — through better water management, with a focus on non-structural and green infrastructure solutions. Participating communities are guided on how to adopt RainReady plans aimed at keeping residences secure and dry, services running, and rivers and lakes clean.*



Implementation

- Communities to undertake a needs assessment and data gathering exercise to help residents and property owners understand their flood risks
- Based on this data, the community will review options for tackling the issues as part of a whole community, *Rain Ready plan such as:*
 - ▶ property elevation, relocation and acquisition;
 - ▶ the building of levees and floodwalls;
 - ▶ wet and dry flood proofing of properties;
 - ▶ the incorporation of green infrastructure in private residences and public rights of way; tree plantings and improved protection of land alongside lakes, rivers and streams;
 - ▶ flood warning systems; land use regulations; and more.
 - ▶ The adoption of stormwater fees and other local finance mechanisms are an important element of *Rain Ready* plans.



Community RainReady Plan

1. Summarizes the problem
2. Outlines the opportunities and limits to community scale action
3. Lists, maps and quantifies recommended solutions
 - Individual properties
 - Public rights-of-way & public property
4. Describes how to implement them
 - How to fund them
 - How to install them
 - The policies & incentives for widespread adoption



Timetable

- Feb/March: present back to communities our mapping and analysis of the **problems**
- April/June: present back to communities our mapping and analysis of **potential solutions** (plus RR Home assessments)
- September: **complete plan and move to support implementation**



Green Healthy Neighborhoods City-Owned Vacant Parcels



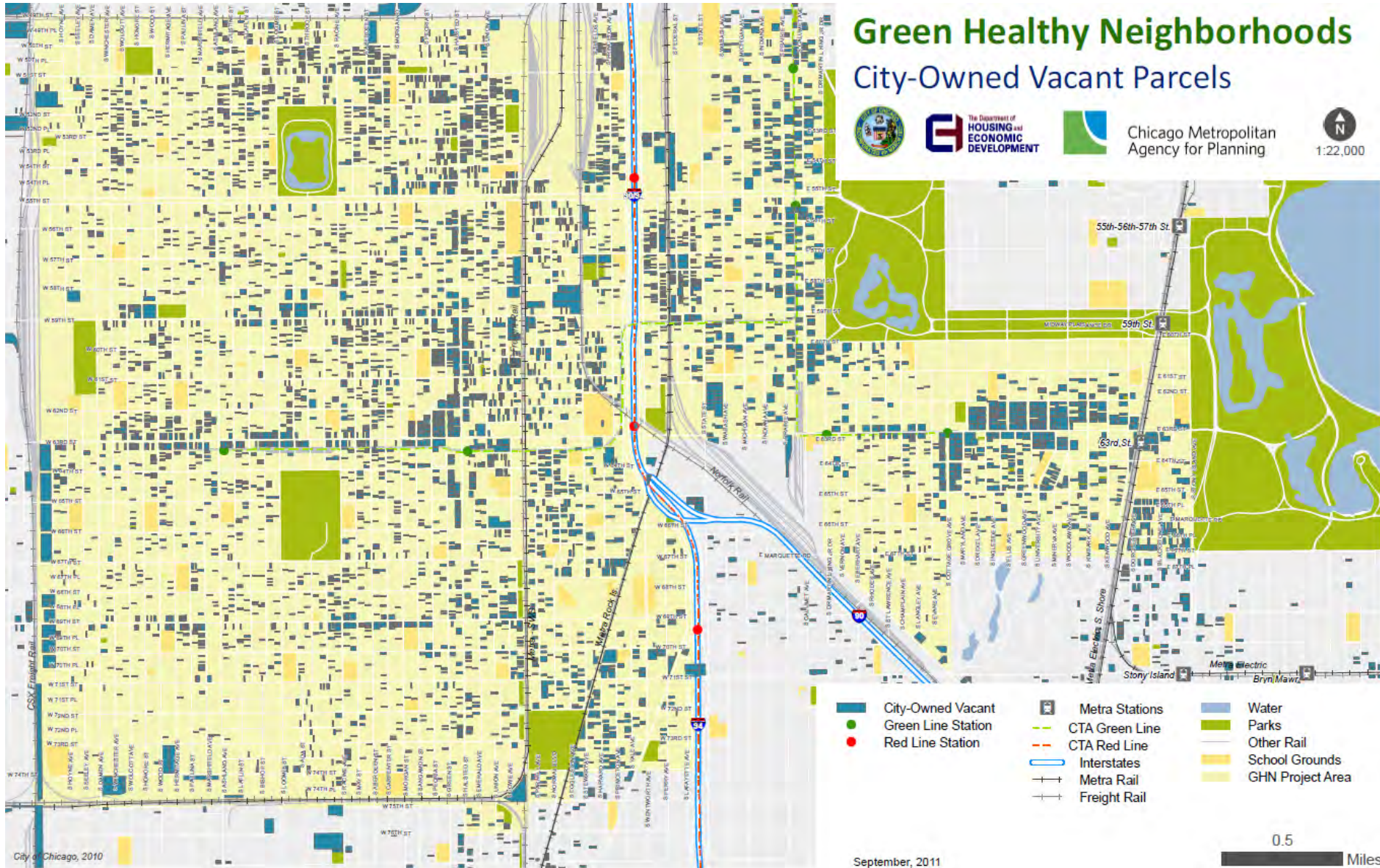
The Department of
**HOUSING and
ECONOMIC
DEVELOPMENT**



Chicago Metropolitan
Agency for Planning



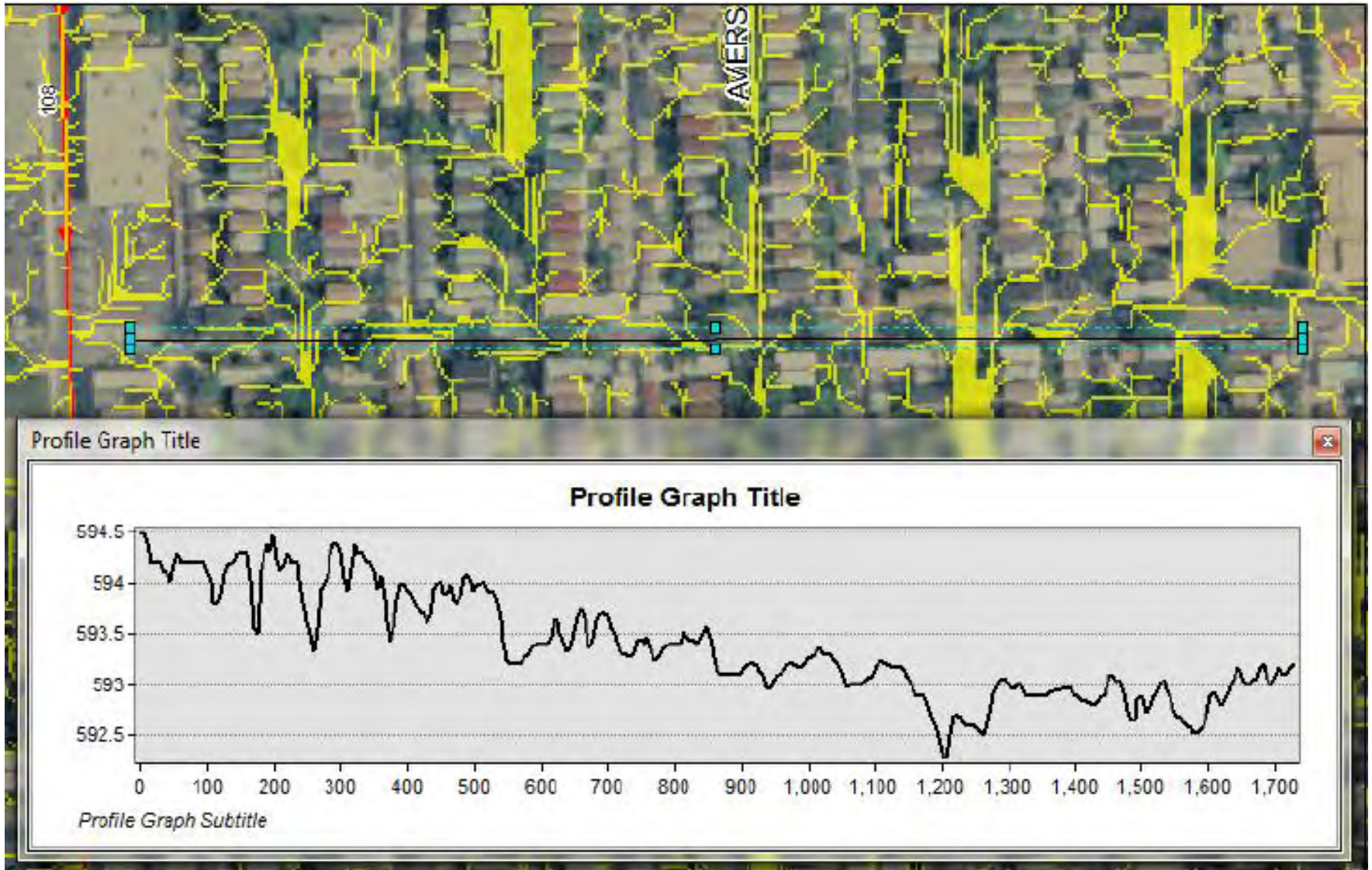
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Analyze potential sites in detail using flowpath diagrams and topographic data



With profile (topographic) data



End of Alley Rain Gardens



End of Alley Rain Garden Rendering



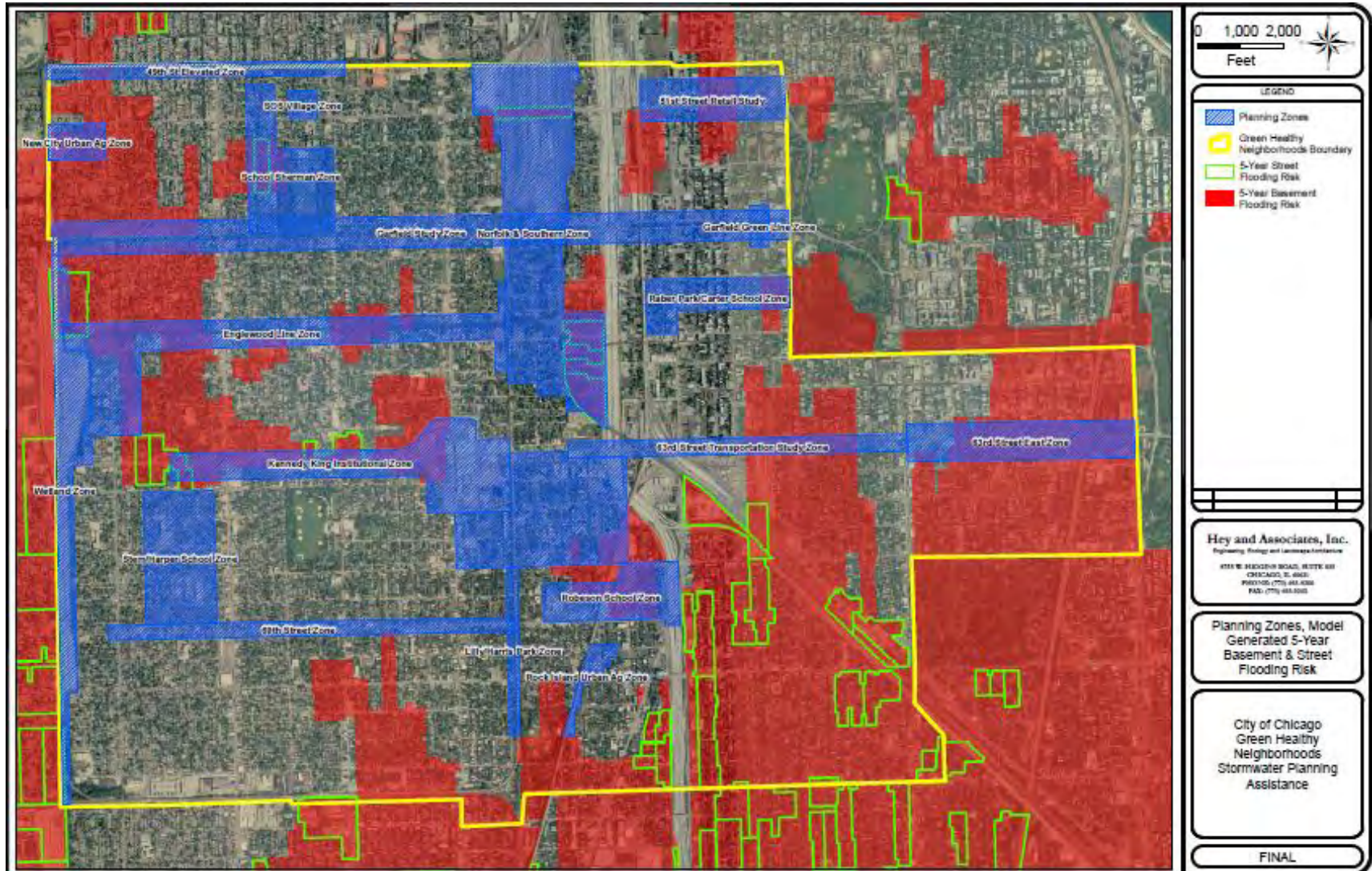
PROGRAMMING



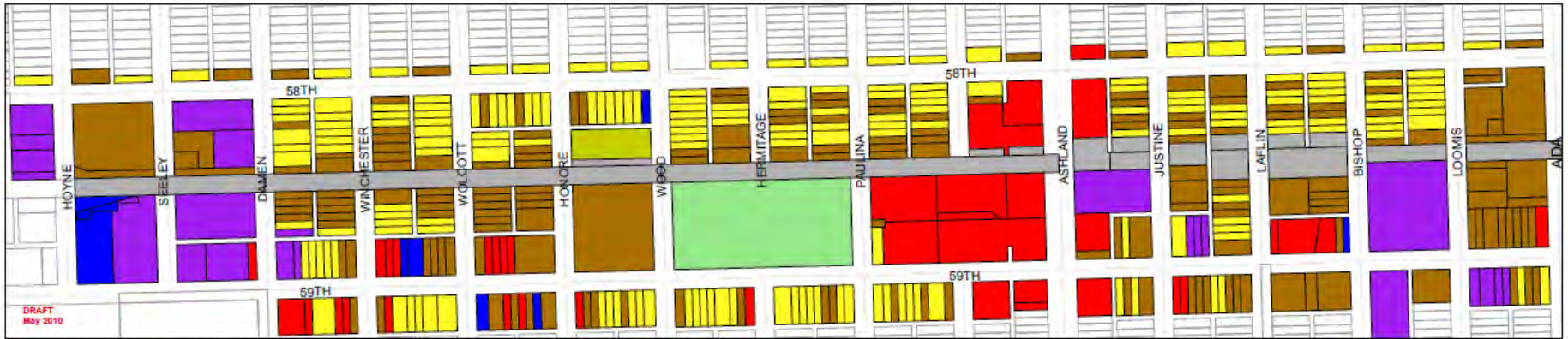
OPTION #1: TURF/TREE GROVE

- PLANNED MAINTENANCE DESIGN
- EDUCATIONAL OPPORTUNITIES
- IMPROVED WATER PENETRATION SURFACE BACKUP
- IMPROVED AESTHETICS OF VACANT PARCELS
- VACANT PARCEL STABILIZATION

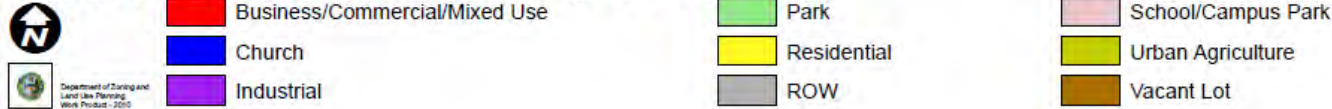
Review Sewer Modeling Results



Review GIS data for vacant lots and city owned parcels



Englewood Embankment Corridor - Existing Land Use

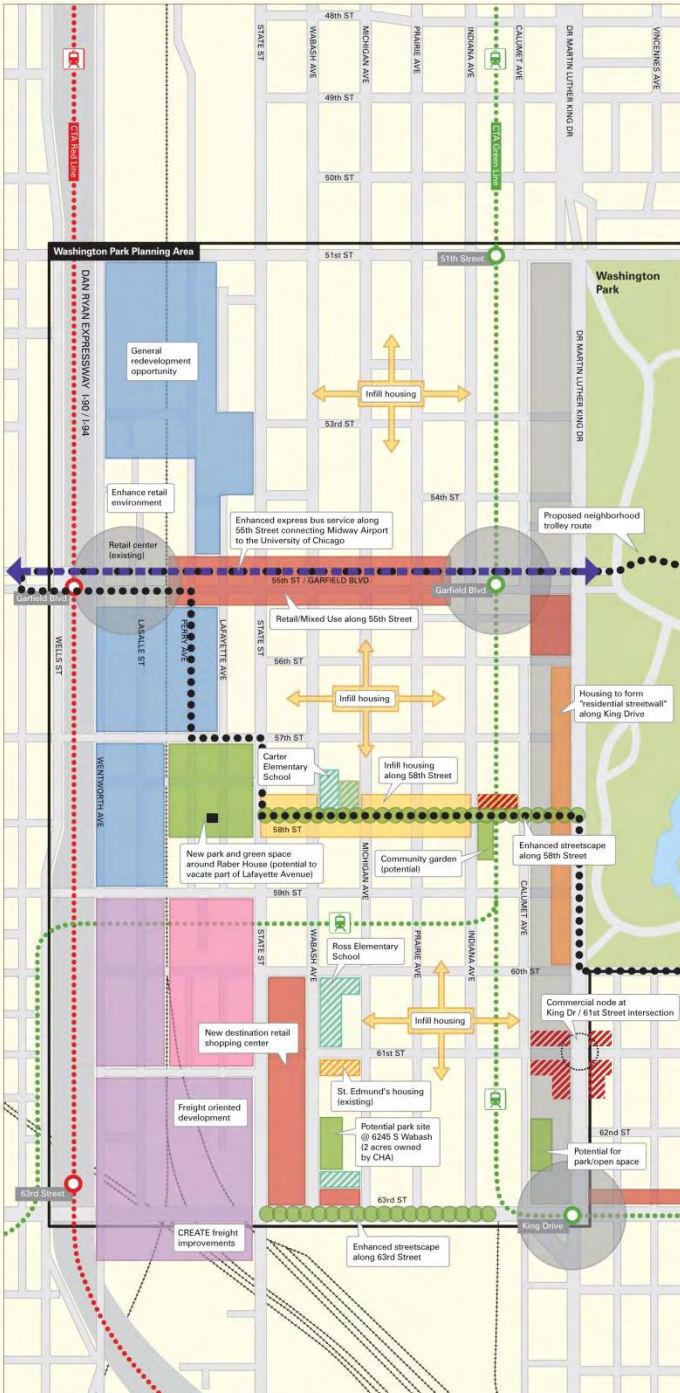


Washington Park LISC Plan

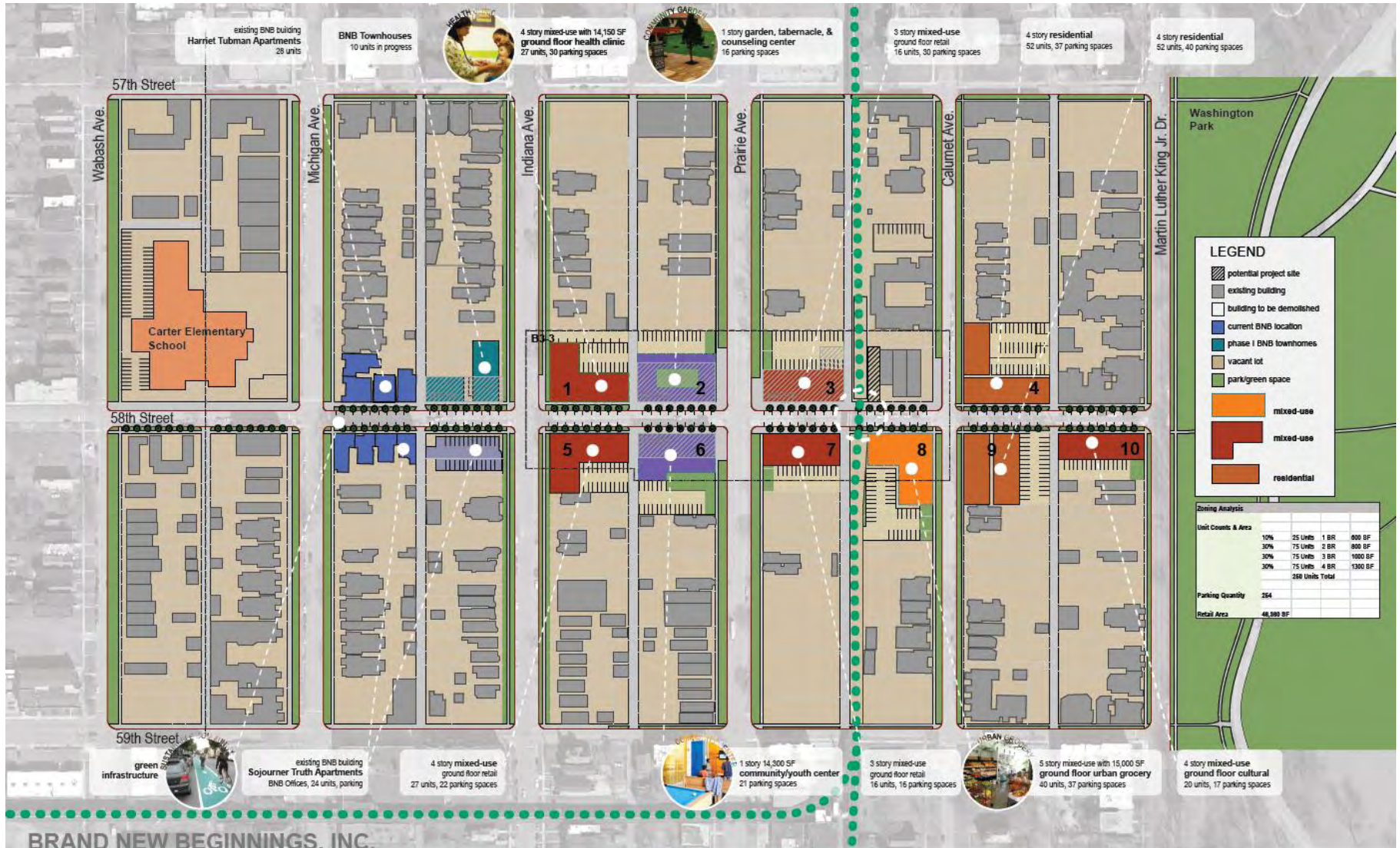
Figure 3 General guidelines for land use

This map provides general guidance on the types of land uses envisioned by community stakeholders.

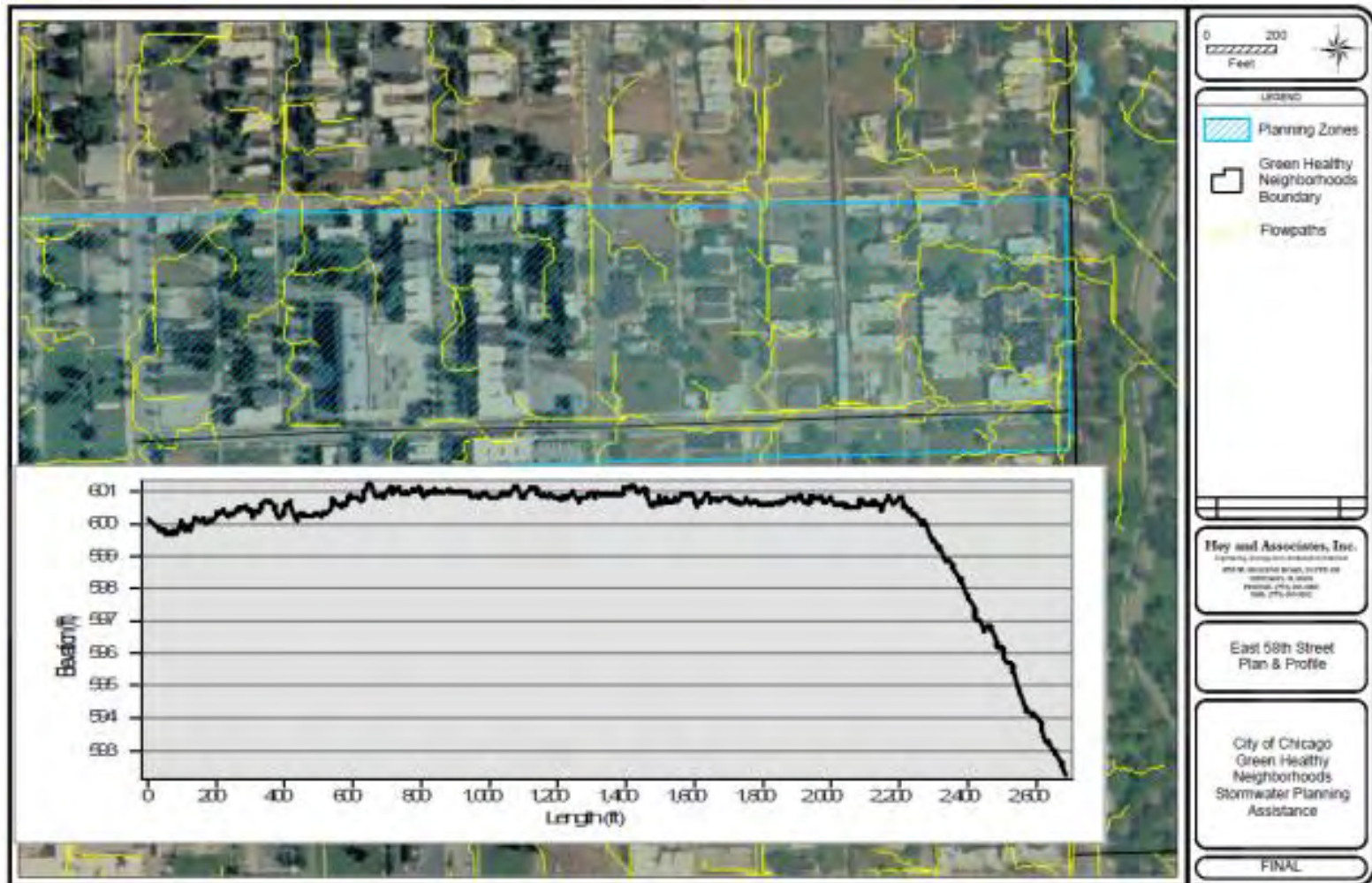
- Mixed-Use Transit-Oriented Development** Located near train stations, may include a mix of retail, office, and high-density residential uses like condos, townhouses, and apartments.
- Office/Light Industry** May include larger business offices, office parks and other light industry in a campus-like setting.
- King Dr Residential "Streetwall"** Homes along King Dr form a residential "streetwall," creating a strong street presence across from the park and along one of the neighborhood's most prominent thoroughfares.
- Infill Housing** Infill housing throughout the neighborhood would build upon the existing housing stock while providing opportunities for new or rehabbed housing.
- General Redevelopment** The vacant land south and north of 55th Street provides opportunities for redevelopment.
- Neighborhood Retail** While much of the retail would be concentrated near or around 55th St, there are also opportunities for smaller scale neighborhood retail within residential blocks.
- Potential Community Green Space** Vacant land provides opportunities to add park space, gardens and green corridors.
- Retail and Mixed Use** May include restaurants, professional offices (e.g. doctors, realtor), and businesses offering retail goods and services. Residential units may be placed above retail where appropriate.
- Freight/Heavy Industry** May include higher intensity industrial uses, including freight operations, warehousing, manufacturing, and other large-scale commercial/industrial.



Initial plan



Stormwater flowpath analysis and profile



New plan with green infrastructure



BRAND NEW BEGINNINGS
GENERATION JOSHUA PLAZA
SITE MASTER PLAN



LANDON BONE BAKER ARCHITECTS
1/3/2013
NTS

A photograph of a two-story house with a gravel driveway leading to the front entrance. The house has light brown siding and white window frames. The yard is filled with various green plants and trees. A semi-transparent white box is overlaid on the center of the image, containing the text "RainReady Alert" in green.

RainReady Alert

Ramp up program

How do you speed up adoption and implementation across multiple communities

- Information & outreach
- Services & tools
- Financing
- Jobs and training
- Regional, state & federal policies

A large crowd of people is gathered, many holding colorful umbrellas in various colors including red, blue, yellow, green, and white. The scene is dense and appears to be an outdoor public event or protest. The umbrellas are the most prominent feature, creating a vibrant, multi-colored canopy over the crowd. The people are dressed in casual to semi-formal attire, and the overall atmosphere suggests a significant public gathering.

Legislation

Urban Flooding Awareness Act

RainReady 2015 Goals

1. Expand **education and outreach** to priority communities in the City of Chicago, Cook County, select US cities
2. Expand roll-out of **RainReady Home** within context of the **community**
3. Design and test **RainReady Community** prototype
4. Design and early testing of **RainReady Alert**
5. Advocate for supportive **state & federal policies**

Working together...

- Clarify partner involvement, identifying overlaps/opportunities
- Does our geographical expansion framework make sense? Other places?
- Your interest/ability to work with us in this expansion?
- Other thoughts observations