RainReady Midlothian

Plan

CNT

RainReady Midlothian Plan

PREPARED BY
THE CENTER FOR NEIGHBORHOOD TECHNOLOGY
MOLLY OSHUN, MANAGER, RAINREADY COMMUNITY

JANUARY 2016

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A Citizen's Guide to a RainReady Midlothian

What would a RainReady Midlothian look like? It would be a community where residents and businesses benefit from flood relief in a way that also brings neighborhood beautification, retail activity, jobs, recreation, and habitat conservation.

In order to better understand Midlothian's flood risk, the Center for Neighborhood Technology, U.S. Army Corps of Engineers, Floodlothian Midlothian, and the Village of Midlothian joined together in January 2015. Throughout 2015, this group met monthly, hosted three community meetings, conducted a survey of 253 residents, and published the *RainReady Midlothian Interim Report*, an account of existing flood risk in the village. Together, we have established a shared vision for a RainReady Midlothian, summarized in this document, *A Citizen's Guide to a RainReady Midlothian*.

PURSUING THE SOLUTION

The RainReady team has achieved several key wins to date, including the following outside grants:

- ✓ ***Active Transportation Alliance Healthy Hot Spots Program***
  Complete Streets Policy - $39,000
- ✓ ***Center for Neighborhood Technology*** RainReady Midlothian Community Planning
- ✓ ***Chicago Metropolitan Agency for Planning Local Technical Assistance***
  147th Street Corridor Study - $80,000
  Update: Development of a Village-wide stormwater management plan - $TBD
- ✓ ***The Department of Commerce and Economic Opportunity***
  Enterprise Zone Certificate
- ✓ ***Illinois Department of Natural Resources Coastal Waters Program***
  Village Greenway Project- $20,000
- ✓ ***Illinois Green Infrastructure Grant from the IEPA Bureau of Water***
  Village Greenway Project (Permeable Parking Lot + Rain Garden) - $68,000
- ✓ ***Morton Arboretum Emerald Ash Borer Replacement*** - $18,000
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- ✓ ***Openlands-ComEd Green Region Program***
  Village Greenway Project- $10,000
- ✓ ***RTA Access to Transit Grant*** - $980,000
- ✓ ***South Suburban Mayors and Managers Association Planning Technical Assistance*** Natalie Creek Trail Plan
- ✓ ***U.S. Army Corps of Engineers Silver Jackets Illinois Program***
  RainReady Midlothian - $50,000
  U.S. Geological Survey Streamflow Gauge Installed on Natalie Creek- $65,000
- ✓ **Update:** ***National Fish & Wildlife Foundation Grant***
  Permeable lot by Rain Ready Community Garden - $150,440
- ✓ **Update:** ***Metropolitan Water Reclamation District (MWRD)***
  Midlothian Permeable Parking Lot/Green Infrastructure Project, $TBD

TOTAL: $1,330,000 UPDATED TOTAL: $1,480,440

Update: An additional $8.3 million for flood mitigation on Natalie Creek has been proposed by the Metropolitan Water Reclamation District (MWRD) is in the final stages of design, and construction is projected to start in the spring of 2018.

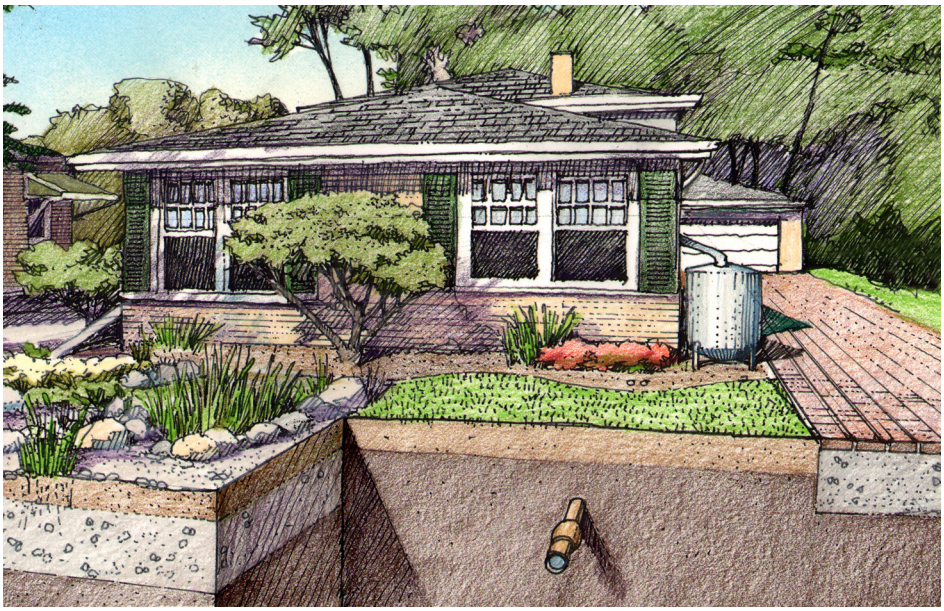
STRATEGIES FOR A RAINREADY MIDLOTHIAN:

The RainReady Midlothian Plan sets the Village on a path to greater resilience through improved stormwater management, economic opportunity, and community beautification.

It's a plan that requires residents, business owners, and municipal leaders to join together to pursue solutions at multiple scales:

HOME

- Reduce home flood risk through the Home Floodproofing and Lateral Repair Program.
- Provide immediate relief for flood victims through ongoing community education.



STREET + NEIGHBORHOOD

- Create a more resilient downtown by integrating transportation improvements, storm water best management practices, and economic investment in a new plan for 147th Street. **Update**: The Chicago Metropolitan Agency for Planning (CMAP) completed the 147th Street Corridor Study, focusing on storm water management, and Christopher B. Burke Engineering has provided designs and specifications for three rain garden installations on 147th Street. The Village is seeking funding to construct those rain gardens on Village parkways.
- Identify a strategy to alleviate flooding in the Jolly Homes and Belly Button Hill neighborhoods. The strategy will integrate green and grey infrastructure improvements, contingent on funding.

UNDERSTANDING THE PROBLEM

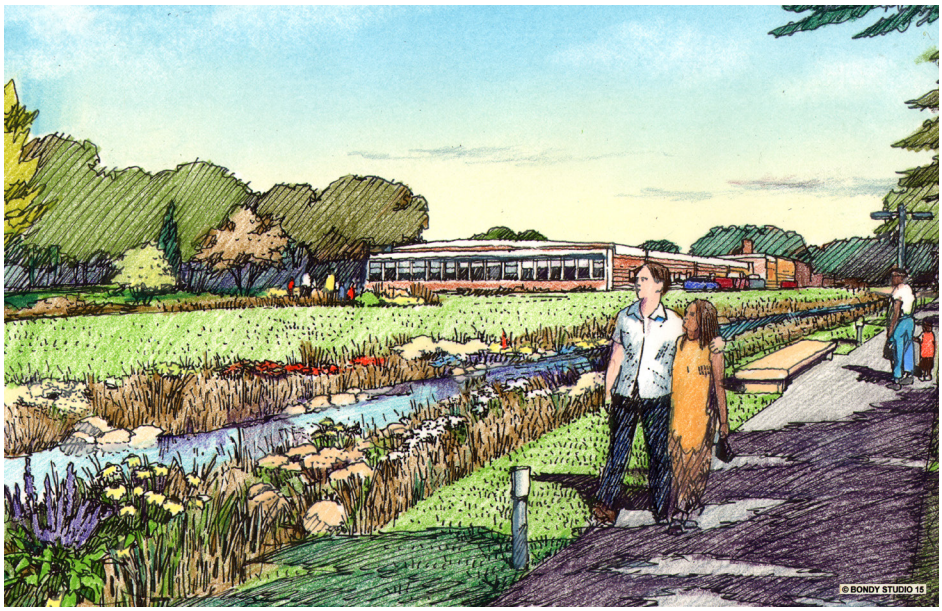
The Village of Midlothian has experienced flooding since it was first incorporated in 1927, but the scope and severity of impact has increased significantly in recent years. Unrestricted development, deferred maintenance of infrastructure, and changes in regional climate have converged in Midlothian, leaving residents vulnerable to flooding across the village.

THROUGH THE RAINREADY PROCESS, FOUR TYPES OF RESIDENTIAL FLOODING WERE IDENTIFIED IN THE VILLAGE

1. OVERBANKING FROM NATALIE CREEK
2. SANITARY SEWER BACKUP
3. STORM SEWER BACKUP
4. GROUNDWATER SEEPAGE

CREEK

- **Update:** Reduce flood risk on Natalie Creek with an $8.3 million MWRD projectprojected to start in the spring of 2018.
- Build a biking and walking trail along Natalie Creek in partnership with the Village, the South Suburban Mayors and Managers Association (SSMMA), Floodlothian Midlothian, and the National Park Service (NPS). **Update:** The Natalie Creek Trail Steering Committee meets monthly and is applying for grant funding Phase I engineering for the proposed trail.
- Minimize flooding across the village by installing green infrastructure on public streets and private property.



VILLAGE

- Secure a dedicated funding source for the Home Floodproofing Program and green infrastructure projects through the Illinois Environmental Protection Agency (IEPA) State Revolving Loan Fund.
- Build a transportation network that reduces runoff and serves all users by adopting a new Complete Streets ordinance.
- Reduce flood insurance costs to homeowners and free up the area near the Metra Station to developers by pursuing a modification to the Midlothian Creek floodplain.
- Hire dedicated staff to oversee implementation of the RainReady Midlothian Plan.
- Maximize opportunities for volunteer support and resident leadership through ongoing community engagement.

The measures outlined in this plan describe a coordinated path forward to increase community resilience to flooding in Midlothian. In addition to these strategies, Midlothian must commit to a fundamental shift in the patterns of urban development that have caused flooding in the village. This includes protective ordinances for improved stormwater management on private property, transportation infrastructure retrofits, and green infrastructure installations across the village.

THE VILLAGE RAIN FUND

A Rain Fund is a strategy to generate funding to help communities fight flooding without raising property taxes or unfairly impacting residential property owners. It also ensures that dedicated funds are available to finance the Home Flood-proofing program and green infrastructure projects across the Village.

The Midlothian Rain Fund would launch with an initial investment from the IEPA State Revolving Loan Fund, through which the Village is eligible for a low-interest loan for storm water management. This fund would then be used to help homeowners pay for home improvements to reduce flood risk, install green infrastructure like trees and rain gardens across the village, and identify solutions to flooding in Jolly Homes and Belly Button Hill.

The loan would be repaid through a nominal monthly fee on all property owners, calculated based on the area of impervious surface on their properties. For most homeowners, the fee would be $3-$7 each month. The fee is higher for properties that contribute larger volumes of runoff to the sewer system, such as buildings with large parking lots. An incentive program would allow property owners to receive rebates if they capture their storm water runoff on site, e.g. by installing rain gardens.

These funds would be used exclusively to finance storm water management solutions in the village while bringing wider recreational and economic benefits to the community. **Update:** The new CMAP LTA grant will fund the development of a capital plan for storm water management/infrastructure projects, budget, and proposed time line for implementation of a storm water utility fund.

RainReady is an initiative of the Center for Neighborhood Technology (CNT), a Chicago-based non-profit. Our staff include engineers, landscape designers, lawyers, planners, outreach specialists and community organizers.

If you live in Midlothian and would like more information about RainReady, contact Village Trustee Karen Kreis: kkreis@villageofmidlothian.org.

If you do not live in Midlothian and would like to learn about getting a RainReady Plan in your community, see **WWW.RAINREADY.ORG** to learn more about our services.

INTRODUCTION

What would a RainReady Midlothian look like? It would be a community where residents and businesses benefit from flood relief in a way that also brings neighborhood beautification, retail activity, jobs, recreation, and habitat conservation. The following document outlines a plan for making Midlothian RainReady and builds upon our earlier publication, *RainReady Midlothian Interim Report* (June 2015), which summarizes the scope and severity of flood risk currently faced by the Village of Midlothian.

Recommended improvements made in this plan are organized according to the scale of intervention: the individual property, the street and neighborhood, the creek, and the village as a whole. Together, these strategies reflect a coherent plan of action to make Midlothian a rain ready community.

RainReady is an initiative of the Center for Neighborhood Technology (CNT) designed to help communities fight flooding. RainReady Midlothian was launched in January 2015 as a partnership between CNT, the U.S. Army Corps of Engineers (USACE), the Village of Midlothian, and Floodlothian Midlothian. The resulting plan of action reflects the diverse priorities, opportunities, and innovative strategies identified through that process.

Throughout the planning process, opportunities for flood mitigation have been leveraged to bring broader benefits to the community through strategic partnerships and creative planning. Among the collaborative actions outlined in this plan, several have gained immediate traction, such as:

- The creation of a trail for cyclists and walkers alongside engineered conveyance improvements on the Village's flood-prone creek
- Financial support to homeowners who wish to decrease flood risk on their property
- A complete streets project that brings improvements to the Village's commercial area, making it more pedestrian friendly, while also capturing stormwater

In addition to these shorter term strategies, Midlothian must commit to a fundamental shift in the patterns of urban development that first caused flooding in the Village. This commitment includes protective ordinances to restrict impervious surface installation on new development, improvements to roads and public lands to better capture stormwaters, and green infrastructure installations on Village-owned property. All solutions presented herein are technically feasible. The potential barriers to implementation are social and economic.

A Note from CNT

CNT thanks the Village and its partners for collaborating on this innovative approach to stormwater planning. We are grateful to the Village for taking this work forward, and we look forward to discussing ongoing opportunities for collaborating on the implementation of the plan.

The strategies recommended herein reflect an experimental and innovative approach. We recommend monitoring solutions and conducting further research to continue building out the strategy outlined for Midlothian.

> We have to stay alert when the water starts coming in. If our pump can't keep up or goes out, the water will raise too high and drown our furnace, water heater, washer and dryer. Therefore whenever it rains, someone needs to be here to monitor the pump. Our ears stay tuned to the running pump as we sleep.

PARTNERS AND ACKNOWLEDGEMENTS

The RainReady Community planning process in Midlothian was a truly collaborative effort. Award-winning resident leadership first brought attention to the issue of flooding in Midlothian in 2013 when Helen Lekavich formed Floodlothian Midlothian with her neighbors on Natalie Creek. In September of 2014, Floodlothian Midlothian partnered with Illinois General Representative Will Davis and the Center for Neighborhood Technology (CNT) to bring together key decision makers from public agencies and community leaders.

RainReady Midlothian draws upon the leadership of Helen Lekavich, her Floodlothian teammates, the Village of Midlothian Board of Trustees and Public Works Department, CNT, USACE, and the Metropolitan Water Reclamation District (MWRD).

RAINREADY MIDLOTHIAN STEERING COMMITTEE

CO-CHAIRS

Karen Kreis	Resident + Village Trustee
Joe Sparrey	Resident + Public Works Superintendent

MEMBERS

Mary Chiz	Resident + Floodlothian Midlothian
Jerry Gillis, Jr.	Resident + Village Trustee
Jacquelyn Hill	Property Owner + Floodlothian Midlothian
Carl Ivan	Resident + Chairman, Midlothian Beautification Committee + Village Trustee
Jeff Koza	Village Engineer, Robinson Engineering
Helen Lekavich	Resident + Founder of Floodlothian Midlothian
Chris Parker	Business owner + Floodlothian Midlothian
Ruben Pesina	Resident + Floodlothian Midlothian

FLOODLOTHIAN MIDLOTHIAN, CNT 2015

Additional gratitude to Mary Debacker, the National Park Service, South Suburban Mayors and Managers Association, Active Transportation Alliance, Midlothian Public Library, Chicago Metropolitan Agency for Planning, High Bridge, OAI Workforce Development, the Morton Arboretum, Intel Research, the Illinois Department of Natural Resources, South Suburban Land Bank and Development Authority, United State Geological Survey, Forest Preserves of Cook County, and the Illinois Department of Transportation.

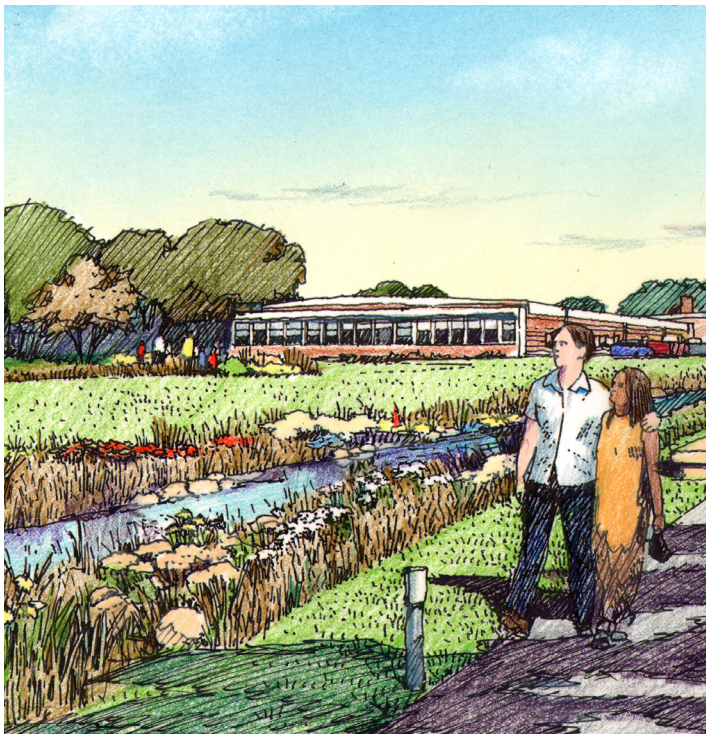
EXECUTIVE SUMMARY

Purpose of the RainReady Plan

CNT began developing Midlothian's RainReady plan in early 2015 with the following objectives:

1. Establish a shared understanding of community flood risk: how, where, and why flooding occurs.
2. Articulate a unified vision to reduce the negative impacts of flooding.
3. Achieve consensus on priorities within that vision, incorporating both rigorous risk assessments and a degree of pragmatic opportunism.
4. Provide a roadmap for program implementation, including key partners and financing strategies.
5. Create a reference document to guide future planning, grant pursuits, and capital planning.

The Center for Neighborhood Technology (CNT) partnered with the U.S. Army Corps of Engineers (USACE) to lead this planning process. Through our work in Midlothian, we hope to establish replicable RainReady services to help other communities in the United States pursue collaborative solutions to water management challenges.



Planning Priorities

Midlothian is facing a set of complex and interrelated challenges. The village is vulnerable to multiple types of residential flooding, which is made worse by years of deferred maintenance on public infrastructure. There has been economic divestment in the downtown, and there are lingering impacts of the 2009 housing crisis, with clusters of vacant and foreclosed homes throughout Midlothian. Residents report a loss of community pride and municipal identity.

With this in mind, the following planning priorities were established:

1. Reduce flood risk for the highest possible number of residents in the most cost-effective ways
2. Bring investment to the community
3. Restore a unique sense of place in Midlothian

Given these priorities, we have recommended solutions that bring multiple benefits to the community, including economic development, recreation, and beautification. The plan is intended to appeal to all Midlothian residents, regardless of individual household flood risk. As such, implementing the plan will involve a wide range of government and community groups, including the Beautification Committee, Village Public Works, the Midlothian Park District, and Midlothian Police and Fire Departments.

> "Solving this issue will help return some of our lost home values, and improve the atmosphere for economic development within the village."

Planning Process

The frequency and intensity of flooding during the spring and summer of 2013 inspired the creation of the "Floodlothian Five," a group of Midlothian flood victims united to advocate for relief from the Natalie Creek flooding they continually experienced in their homes and community. In September 2014, Floodlothian Midlothian partnered with Illinois General Representative Will Davis and CNT to convene key decision makers from public agencies and municipal staff to develop a path to flood resilience for the village.

In order to better understand the severity and impact of flooding in the community, CNT, USACE, and the newly formed RainReady Steering Committee joined together in January 2015. The resulting process included the following:

- Three community meetings
- Monthly steering committee meetings throughout 2015
- Community survey completed by 253 residents
- Flood risk analysis conducted by USACE
- *RainReady Midlothian Interim Report* published
- Municipal Tree Ordinance passed
- Twelve grant applications submitted
- Nine grant applications approved
- Two rain gardens constructed
- Over 30 partner organizations engaged

ILLINOIS GENERAL REPRESENTATIVE WILL DAVIS WITH FLOODLOTHIAN MIDLOTHIAN AT THE JULY 4 PARADE IN MIDLOTHIAN, HELEN LEKAVICH 2015

PURSUING THE SOLUTION

The RainReady team has achieved several key wins to date, including the following outside grants:

- ✓ ***Active Transportation Alliance Healthy Hot Spots Program*** Complete Streets Policy - $39,000
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- ✓ ***U.S. Army Corps of Engineers Silver Jackets Illinois Program*** U.S. Geological Survey Streamflow Gauge Installed on Natalie Creek- $65,000

TOTAL: $1,330,000

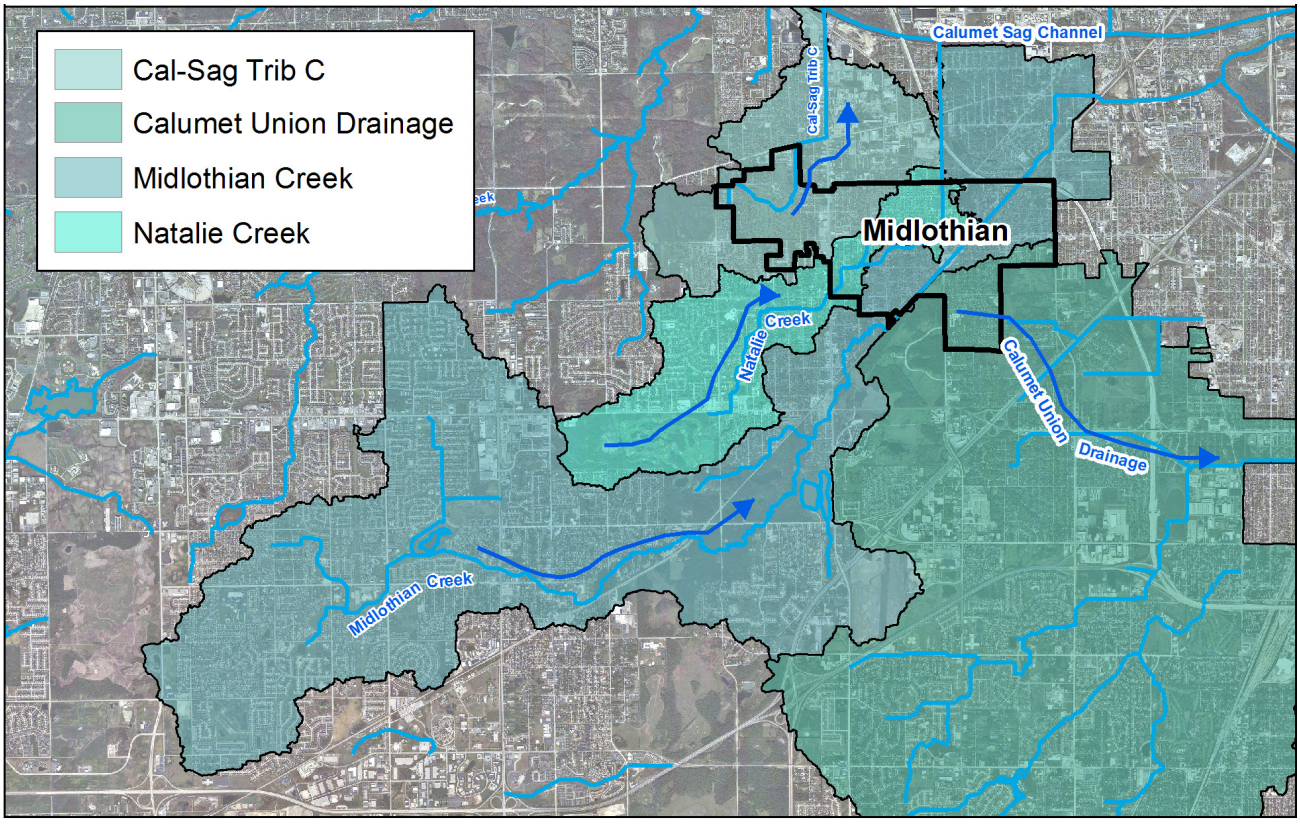
An additional $8.3 million for flood mitigation on Natalie Creek has been proposed by the Metropolitan Water Reclamation District (MWRD). The MWRD Board is expected to approve the project in January 2016.

COMMUNITY CONTEXT

Midlothian is a suburb of Chicago located in southern Cook County. The Village of Midlothian was first incorporated in 1927, after the quiet stop along the Rock Island Railroad grew in popularity among Chicago industrialists (Midlothian History, Village of Midlothian website 2015). Today, Midlothian is home to 14,911 residents. Of those residents, approximately 65% are white, 21% are Latino and 11% percent are black. The largest age cohort in the village is under age 18 and make up 31.5% of the village's population. The median income is just slightly higher than that of Cook County at almost $63,000 (U.S. Census 2014). The village's housing stock is 71% single-family homes, most of which were built between 1940 and 1970. The village is facing some challenges, as more than 8% of its housing stock sits vacant, and the unemployment rate in 2012 was measured at 13.7% (CMAP, 2014).

Like many suburban communities in Chicagoland, Midlothian was developed with separate storm and sanitary sewer systems. Stormwater is serviced by a combination of below-ground storm sewers and open ditch drainage systems, which drain to one of Midlothian's four waterways: Midlothian Creek, Natalie Creek, Tributary C of the Cal-Sag Channel, and a tributary to the Calumet Union Drainage Ditch (Proposal for PE Services, Robinson Engineering 2014).

Like much of Chicago, the local ecology was characterized by meandering creeks and marshland prior to urbanization. When the area began to develop in the mid-20th century, the creeks were channelized and much of each watershed was paved over, creating an additional challenge for urban water management. In the last decade, the flood risk inherent to Midlothian's natural ecology and its increasingly impervious watershed has been amplified by aging infrastructure and higher-intensity storm events.



VILLAGE OF MIDLOTHIAN WATERSHEDS, USACE 2015

Floodlothian Midlothian

The frequency and intensity of flooding during the rainy season in 2013 inspired the creation of the "Floodlothian Five," a group of Midlothian flood victims united to advocate for relief from the Natalie Creek flooding they continually experienced in their homes and community. As numbers grew, the group changed its name to "Floodlothian Midlothian," and their activities expanded to include a regular periodical of updates on flooding and activism, community parades, an active Facebook group, crafts made from repurposed creek debris, and community bike rides.

Floodlothian helped to organize a key event in September of 2014, for which State Representative William Davis convened elected leaders and public agency staff to identify a path to flood resilience for Midlothian.

The group and its leader, Helen Lekavich, have unparalleled knowledge of the scope and severity of flooding in the village. They are regular participants in activities at Village Hall; volunteers on various Village planning processes, including RainReady; and the voice of Midlothian flood victims.

FLOODLOTHIAN MIDLOTHIAN SHARING THEIR STORIES OF FLOODING, CNT 2014

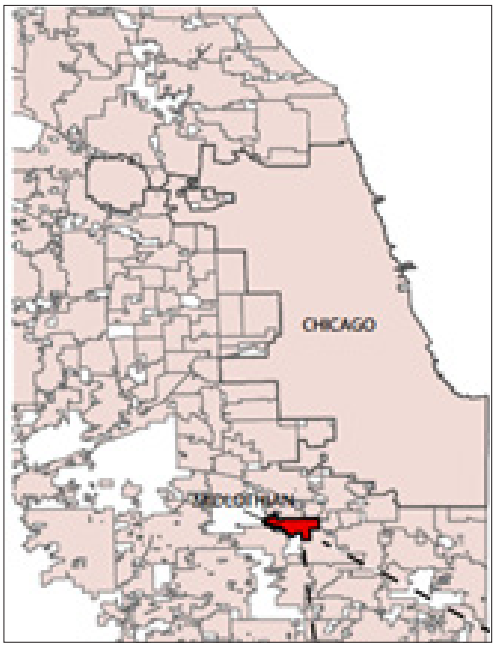
FLOODLOTHIAN MIDLOTHIAN HEADQUARTERS DURING A MEETING, CNT 2014

Regional Context

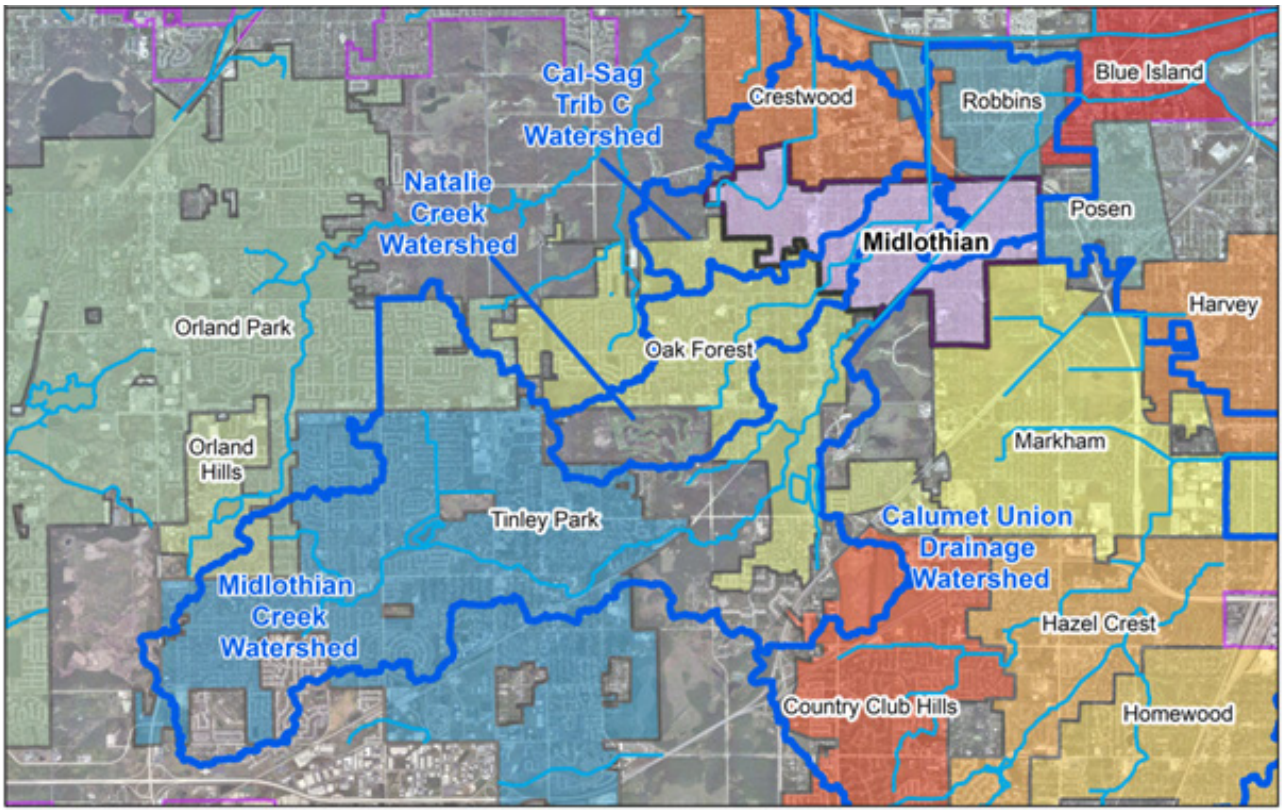
Midlothian is a middle-income community positioned between more affluent communities to the west, and lower-income communities to the east. Chicago's south suburbs were severely impacted by predatory sub-prime lending practices and the resulting widespread mortgage foreclosures. Southern Cook County has the highest rate of foreclosure in the state of Illinois (*About SSMMA*, SSMMA 2015).

The sewers in Midlothian drain into the Metropolitan Water Reclamation District of Chicago (MWRD) network. Financial and planning support comes from Cook County, the South Suburban Mayors and Managers Association (SSMMA), and the Chicago Metropolitan Agency for Planning (CMAP).

MIDLOTHIAN IN CONTEXT



COMMUNITIES IMPACTING AND IMPACTED BY MIDLOTHIAN WATERSHEDS, USACE 2015



EXISTING FLOOD CONDITIONS

According to the historic record, flooding in Midlothian is not a new problem. Stories of flooding in the village date back to its earliest settlement in the 1920s. The photos below show community clean-ups in response to flooding in the 1960s and 1970s.

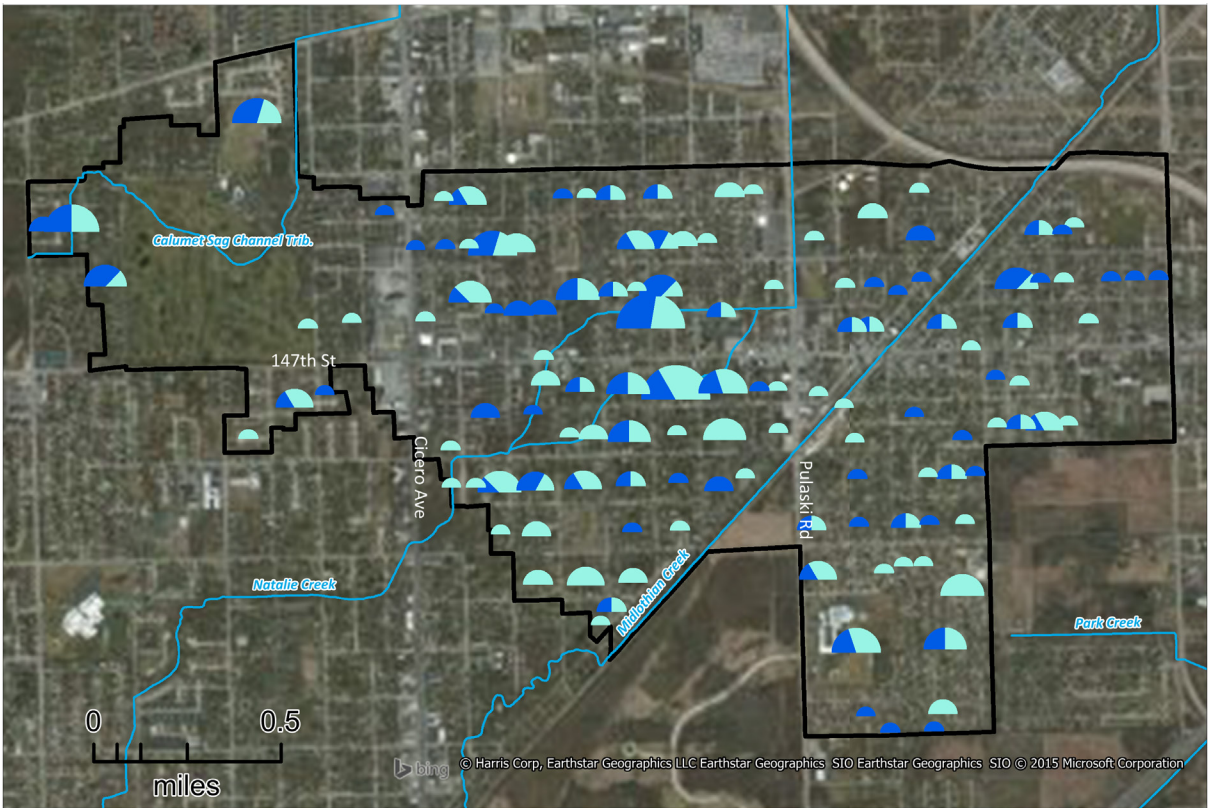
In recent decades, however, residents say the frequency and severity of flooding in the village has increased at an alarming rate. In a 2015 RainReady survey, more than 72% of residents reported flooding on their property. Flood damages were cited as a common cause of foreclosures and abandoned properties in the village, particularly among homeowners adjacent to Natalie Creek. Flood victims reported feelings of isolation and anxiety associated with flooding, sleeplessness on rainy nights from fear of basement flooding, and general frustration with the perceived inaction of municipal leaders (*RainReady Midlothian: Interim Report*, 2015).

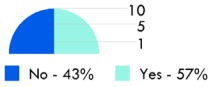
JUNE 5, 1969
Workers clear debris and vegetation from Midlothian Creek at 147th Street and Hamlin Avenue.

MAY 17, 1974
Don Krueger and Fred Lange clear the Midlothian Creek near 146th Street after heavy rains caused flooding in the village.

MAY 17, 1974
A car drives down the 14500 block of Karlov Street after heavy flooding hit Midlothian.

RESULTS FROM RAINREADY SURVEY, 2015





FLOODED STREETS IN MIDLOTHIAN AFTER A STORM, CNT 2014

> When a storm of any magnitude is predicted on the weather, I become ill with stress as I know that I will have either a sleepless night or will be worried while out or at work.

URBAN FLOODING TAKES FOUR PRIMARY FORMS IN MIDLOTHIAN

1 OVERBANKING FROM NATALIE CREEK

Relatively minor storm events upstream in the watershed can cause overland flooding near the banks of the creek, causing destruction and distress for those who live in the vicinity. An early study identified 130 at-risk structures, but the actual number is likely much higher (Little Calumet River Detailed Watershed Plan, MWRD 2009). Many residents affected by creek overbanking experience overland flooding on their properties and in their basements and garages.

2 SANITARY SEWER BACKUP

Much of Midlothian experiences backup in the sanitary sewer caused by aging infrastructure in both the public and private rights of way. Damaged or improperly connected lateral lines, including roof downspouts, overwhelm the sanitary sewer with rainwater during storm events ("infiltration and inflow"). The resulting sewage backup into basements or through overflowing manholes is both a nuisance and a health hazard.

3 STORM SEWER BACKUP

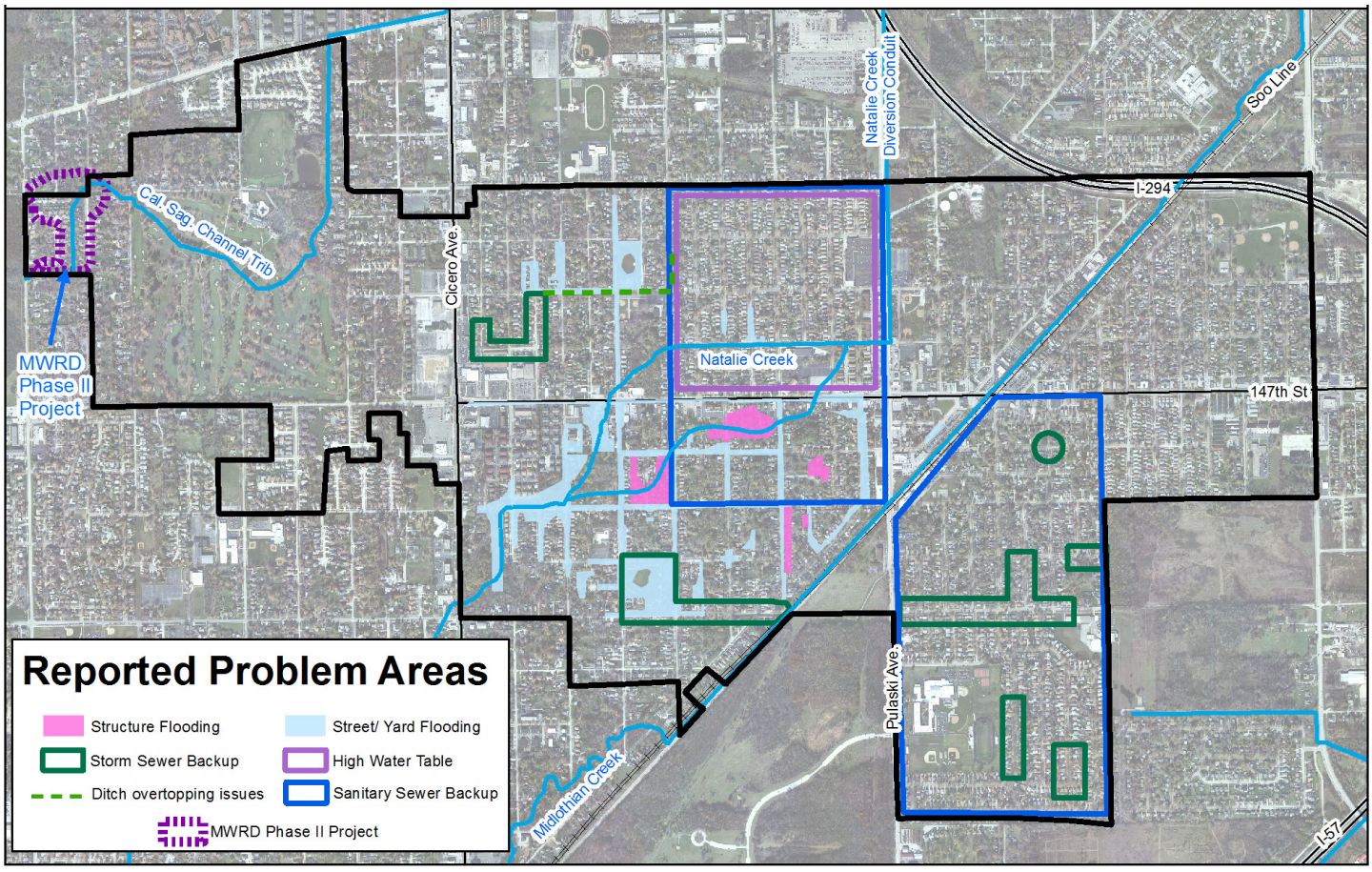
Portions of the local storm sewer are also susceptible to backup, causing street and yard flooding as water overtops ditches and overflows from storm drains along residential streets. This can be observed in the Jolly Homes neighborhood, especially on 151st Street between Pulaski Road and Central Park Avenue, and the area near Belly Button Hill, concentrated near 150th Street and Kostner Avenue. This kind of overland flooding is primarily caused by undersized ditches and issues with the outfall to the creek downstream.

4 GROUNDWATER SEEPAGE

In some parts of the village, high groundwater levels and water pooling in yards cause basement seepage, contributing to foundation rot and seepage into basements.

Types of Flooding

Midlothian is affected by four primary types of flooding, depicted in the figure below, *Summary of Known Problem Areas*:



SUMMARY OF KNOWN PROBLEM AREAS, USACE 2015

Causes of Flooding

Just as there are several types of flooding that affect the village, there are several factors contributing to the rising floodwaters. As can be seen throughout the Chicagoland region, increased urban flooding can be attributed to four primary factors:

1. Flat, low-lying topography
2. Increasing impervious surfaces
3. Changing climate
4. Aging infrastructure

Each of these factors contributes to the four types of flooding in Midlothian to varying degrees.

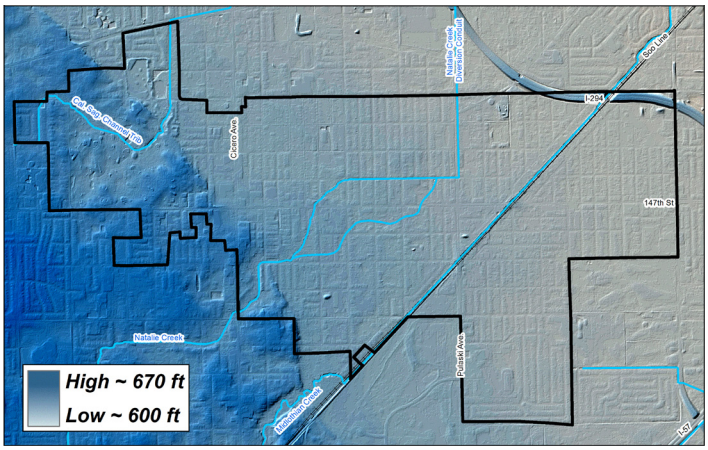
NATALIE CREEK OVERBANKING FILLS BACKYARDS, CNT 2014

FLAT, LOW-LYING TOPOGRAPHY

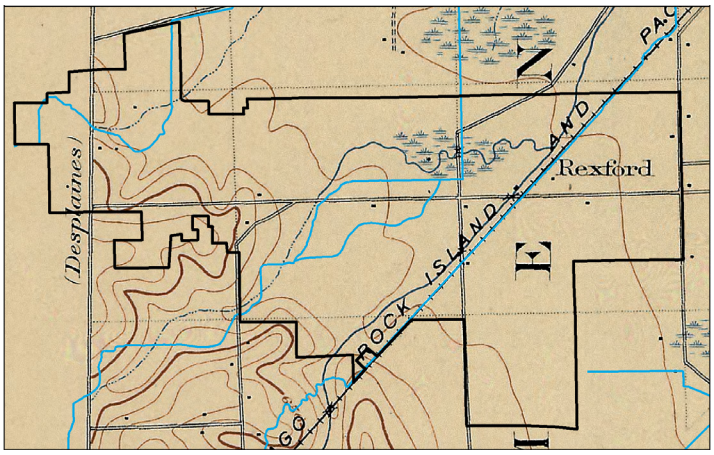
On the western edge of the village, the boundary of ancient Lake Chicago forms a small shelf in the topography, and most of the village is located in the former lake bed (*Village Topography*, USACE 2015). West of this line, on the former lakeshore, very little flooding occurs. East of this line, the former lake bed is sunken and relatively flat, making it difficult for water to drain eastward to exit the village. This flatness contributes to backup in the storm sewer network and water pooling in the streets. The low elevation likely also contributes to the high groundwater table that causes foundation seepage.

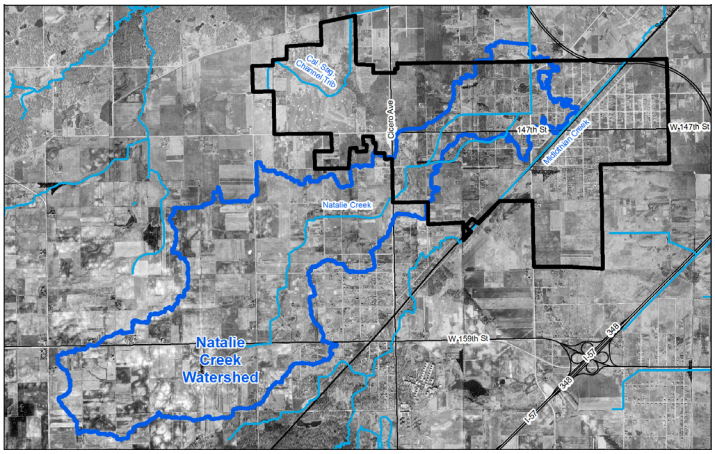
In much the same way, Midlothian's topography slows the eastern flow of Natalie and Midlothian Creeks. Prior to development, these creeks spread across the flat plateau of central and eastern Midlothian, forming marshlands and meandering creeks (*USGS Quad Map from 1901*, USACE 2015). During the suburban development boom of the mid-20th century, these creeks were channelized and their respective watersheds largely paved over. Large volumes of fill were imported to elevate the footings of new development. When storms cause a surge in Natalie Creek, the low-lying areas that surround the creek are vulnerable to overbanking.

VILLAGE TOPOGRAPHY, USACE 2015

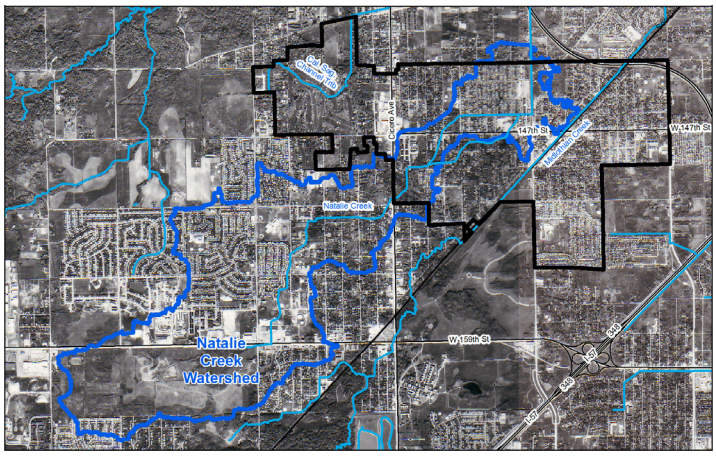


USGS QUAD MAP FROM 1901 (10 FOOT CONTOURS), USACE 2015

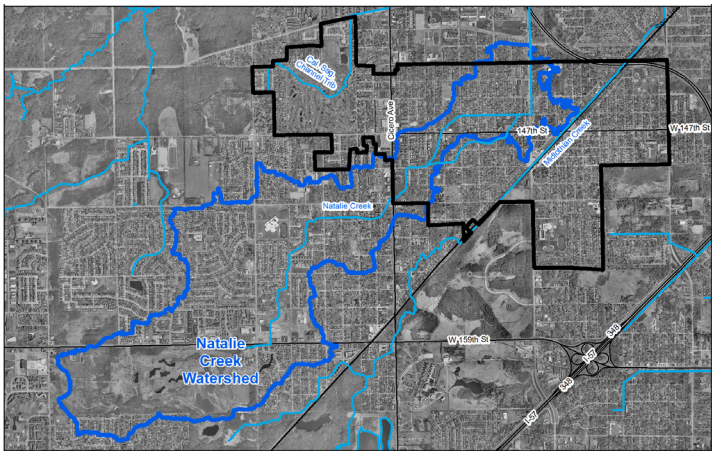




NATALIE CREEK WATERSHED DEVELOPMENT 1939, USACE 2015



NATALIE CREEK WATERSHED DEVELOPMENT 1978, USACE 2015



NATALIE CREEK WATERSHED DEVELOPMENT 2003, USACE 2015

Midlothian Boundary
Natalie Creek Watershed
Waterways

INCREASING IMPERVIOUS SURFACE

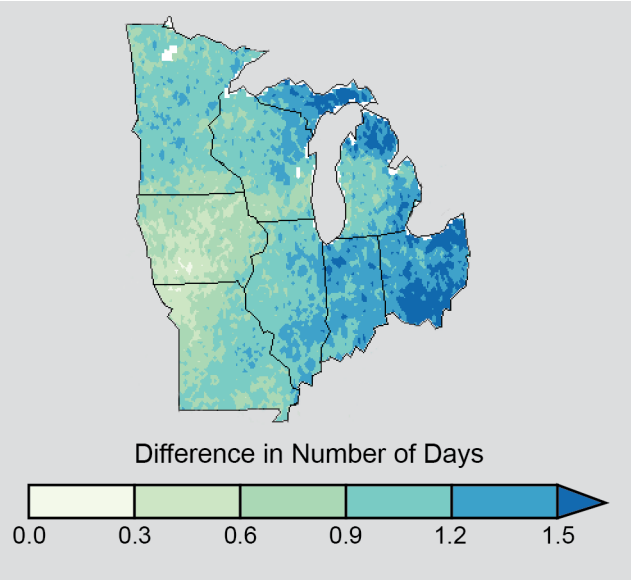
In the second half of the 20th century, uncontrolled urban development occurred within natural floodplains, paving over wetlands and low-lying areas to meet demand for residential and commercial development. Like many suburban communities, the watersheds that drain into Midlothian waterways transformed rapidly from open, permeable marshlands into impervious residential and commercial development. Consider the aerial photos at left, which depict development in the Natalie Creek watershed in 1939, 1978, and 2003. Up until the mid-20th century, stormwater was slowed and stored in the ground by native grasses, trees, ponds, and even agricultural fields. Today, rainwater now runs off paved parking lots, buildings, streets, sidewalks, and turf grass, overwhelming the storm sewer network.

The rapid disappearance of permeable surfaces in Midlothian and its upstream neighbors is a primary factor contributing to all four types of flooding in the village. When stormwater cannot find its way into the earth, it floods basements, overflows streets, seeps through walls, and spills over the top of creeks.

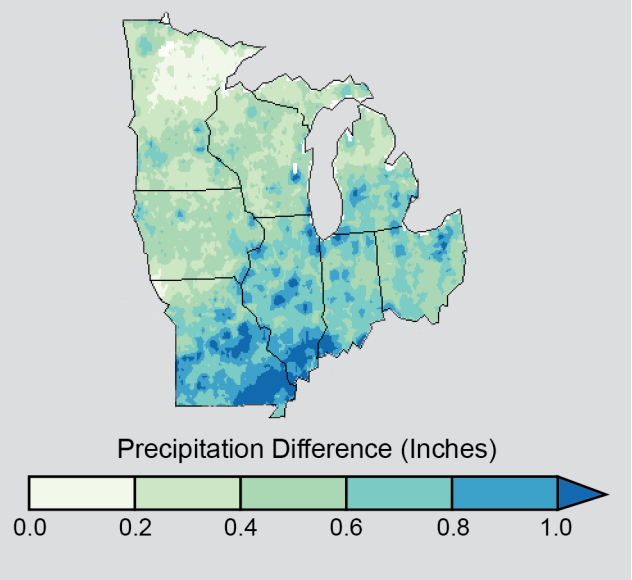
CHANGING CLIMATE

Recent years have been defined by a marked increase in precipitation, particularly the high-intensity, short-duration storms associated with global climate change. According to the 2014 report from the National Climate Assessment, heavy downpours have been increasing nationally, especially over the last three to five decades. In the Midwest and Northeast in particular, the heaviest rainfall events have become heavier and more frequent. The maps on the next page depict climate projections for the midwest. They show an anticipated increase in the number of days with heavy rain, and the amount of rain during big storms.

The climate is changing, and Midlothian residents are experiencing a “new normal” in weather patterns.



HEAVY PRECIPITATION: projected increase in the number of days with very heavy precipitation (top 2% of all rainfalls annually) from 1971-2000 to 2041-2070, National Climate Assessment 2014



WETTEST 5-DAY PRECIPITATION: projected increase in the amount of rain falling in the wettest 5-day period over a year from 1971-2000 to 2041-2070, National Climate Assessment 2014

AGING INFRASTRUCTURE

Much of Midlothian's stormwater infrastructure was constructed before the corresponding watersheds were paved over. As a result the ditches, creeks, and pipes that are meant to capture and convey stormwater through the village are no longer up to the challenge.

Deferred maintenance on village infrastructure contributes to all four types of flooding in Midlothian.

DEFERRED MAINTENANCE ON NATALIE CREEK

According to the Metropolitan Water Reclamation District of Chicago (MWRD), Natalie Creek currently provides only a two-year level of service, or less (Natalie Creek Preliminary Engineering Project, MWRD 2015), meaning a two-year storm maxes out the capacity of the infrastructure (for more information on design storms, see *What is a 100-Year Flood?* on page 30). In recent years, this has left creekside residents with frequent flooding in basements, garages, streets, and yards, often up to four feet deep. In 2014, residents and businesses on 147th Street reported flooding nine times in 15 weeks, filling homes with flood waters reported to be 18 to 24 inches deep.

Upstream in Oak Forest, culverts along Natalie Creek have been replaced in recent years to allow larger volumes of runoff to flow freely through the creek. In 2010, culverts in Midlothian were replaced at Keeler Avenue, Karlov Avenue, and Keystone Avenue. In other areas of Midlothian, old culverts have become pinch points where water backs up and overflows the creek bed. Trash, branches, sediment and other debris also constrict flow through these culverts (*Natalie Creek Preliminary Engineering Project*, MWRD 2015). Floodlothian Midlothian and Midlothian Public Works both work to keep these culverts unblocked, but a comprehensive maintenance program is needed.

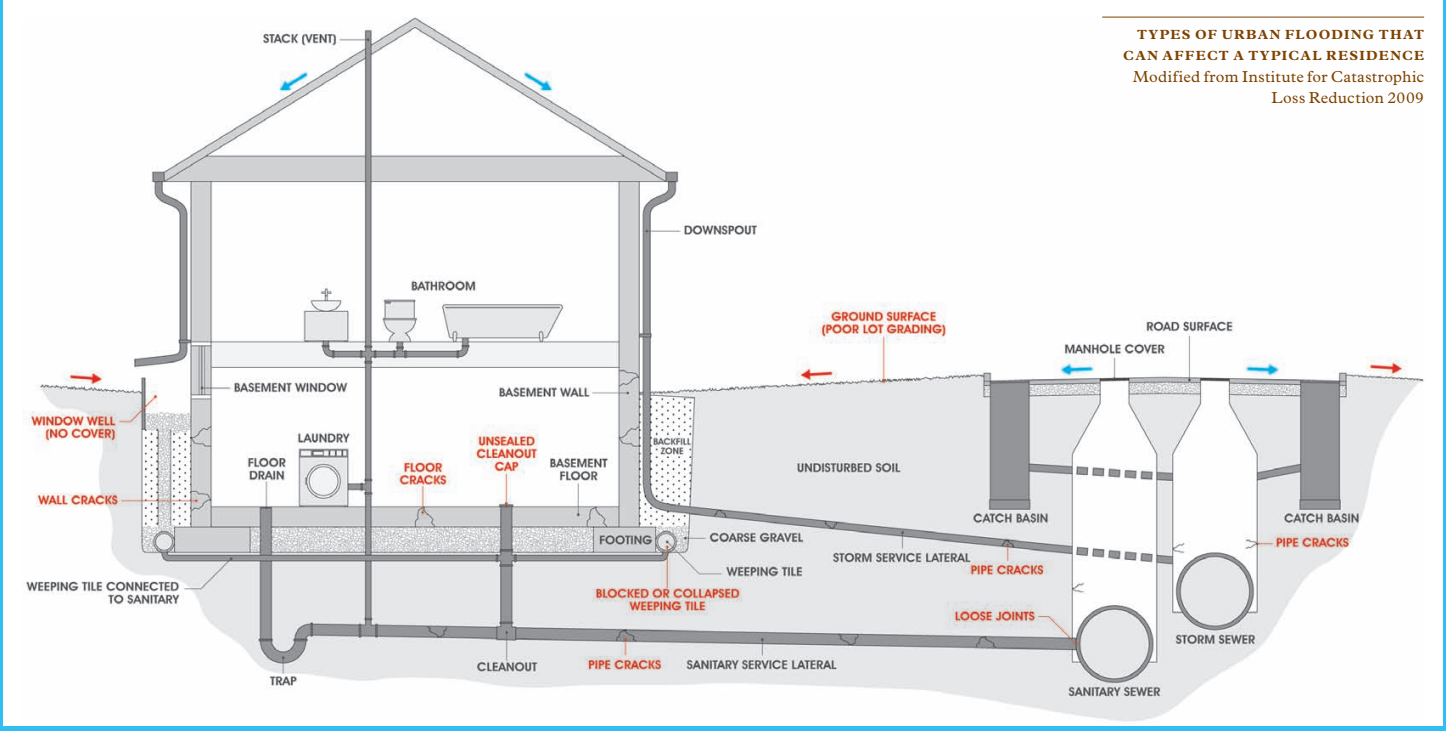
LEAKING SANITARY SEWER INFRASTRUCTURE

Across the village, residents experience backup from the public sanitary sewer into their basement through floor drains or below-ground toilets. The sanitary system is also known to back up into streets through manholes. The primary cause of backup is infiltration and inflow (I/I), the process by which rainwater enters the sanitary sewer line, exceeding the capacity of the sewer (see *What is Infiltration and Inflow* on page 15). Deferred maintenance of both public sewers and private lateral lines – which are owned and maintained by homeowners – has left structures and streets vulnerable to raw sewage discharge into homes and public spaces. Sanitary sewer backup is most severe in older homes with below-grade floor drains and toilets, as in the area between 151st Street, 147th Street, Central Park Avenue, and Pulaski Road, as well as between 147th Street, 149th Street, Pulaski Road, and Kostner Avenue. Some individual homeowners have been able to reduce their risk by installing overhead sewers.

OUTMODED STORM SEWER BACKUP

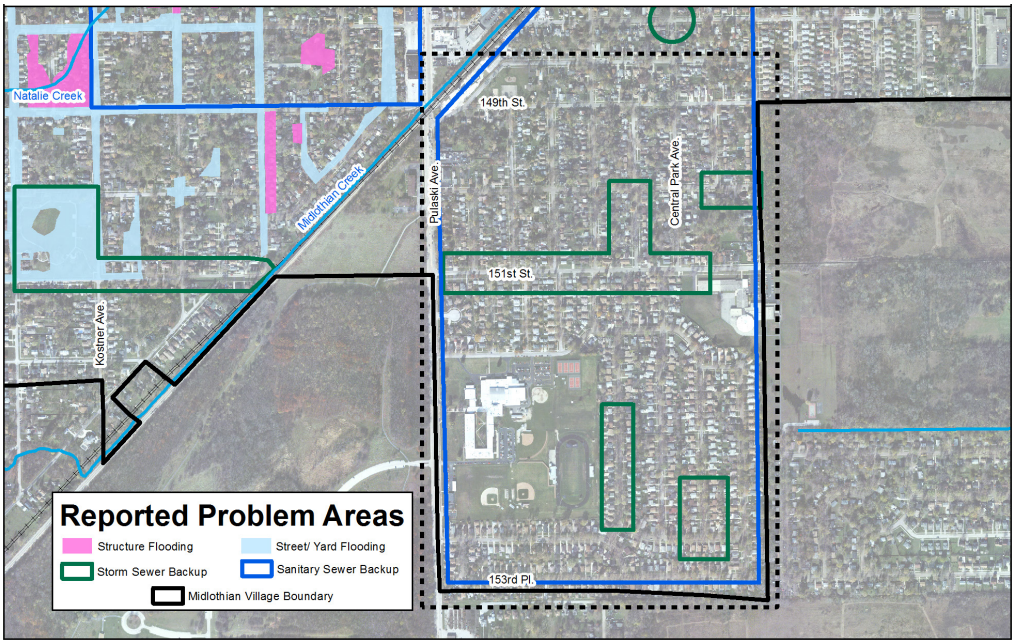
Midlothian's sanitary sewers are not the only ones that cause problems. In several Midlothian neighborhoods, backup in the local storm sewer also causes flooding in streets, yards, and driveways. In some areas, flood waters enter structures through ground-level doors and windows.

Jolly Homes Neighborhood: The Jolly Homes subdivision is located in the southeast portion of the village. The area is defined by Pulaski Road to the west, Central Park Avenue to the east, 151st Street to the north, and 153rd Place to the south. There are approximately 350 single-family homes in the Jolly Homes subdivision. The area is serviced by a below-ground storm sewer network, which outlets to a tributary of the Calumet Union Drainage Ditch (CUDD) northwest of Birch Road/Roesner Drive and to an unnamed open ditch east of Central Park, along 151st Street (Proposal for PE Services, Robinson Engineering 2014).



TYPES OF URBAN FLOODING THAT CAN AFFECT A TYPICAL RESIDENCE
Modified from Institute for Catastrophic Loss Reduction 2009

During heavy rainfall events, water backs up in the local storm sewer, overflowing into streets, yards and, occasionally, structures. Jolly Homes residents cite the floods as a major nuisance and safety hazard, as floodwaters can fill driveways and yards, leaving residents stranded at home.



JOLLY HOMES PROBLEM AREAS, USACE 2015

What is Infiltration and Inflow?

In communities with separate sewer systems, the sanitary sewer collects and conveys wastewater from homes, businesses, and other institutions to the wastewater reclamation plant. In theory, the sanitary sewer should be water-tight; its performance should not depend on rainfall. Over time, however, it is common for the sanitary sewer to acquire cracks (infiltration) or improper connections, such as from a sump pump or driveway drain (inflow), that allow stormwater to enter the sanitary sewer. Infiltration and inflow (I/I) can occur in the public sewer or within the private lateral lines that connect each building to the mainline public sewer.

Since the Midlothian sanitary sewer is designed to only convey wastewater, it is typically much smaller than a sewer meant to collect and convey stormwater. During a storm, rain water fills the sanitary sewer line through I/I, overwhelming the system and causing backup into basements and manholes in the street.

In 2014, MWRD adopted new requirements to reduce I/I in all tributary municipalities (see *Infiltration/Inflow Control Program* on page 19).

Diagram on previous page: Three types of basement flooding: seepage, basement backup, and overland flooding, Institute for Catastrophic Loss Reduction 2009

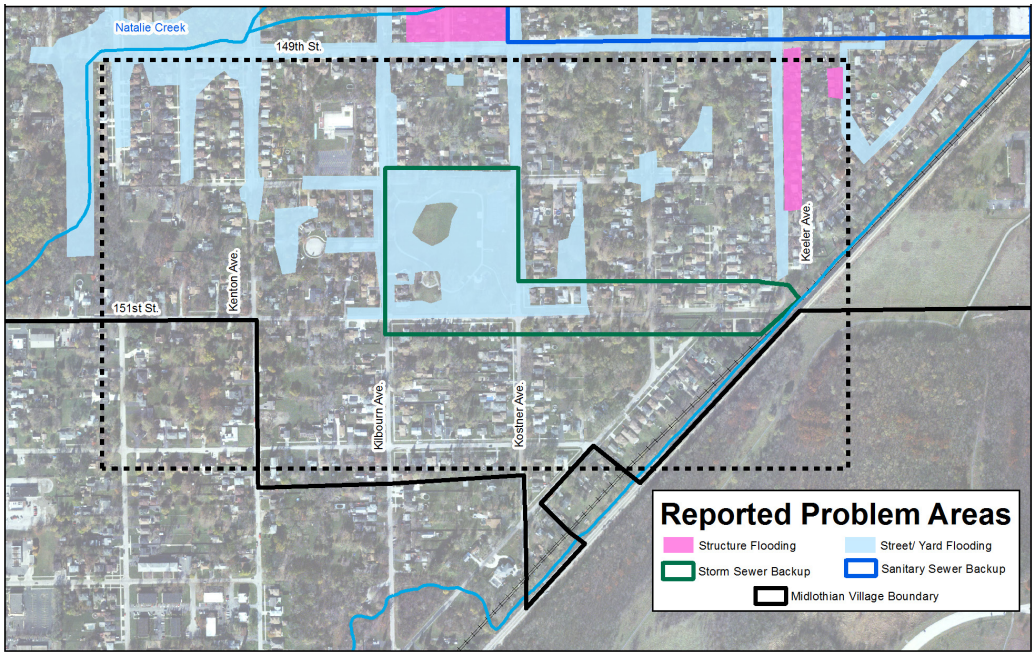
The most heavily impacted portion of the village is along 151st Street where water backs up from the CUDD outfall in Sundrop Prairie Nature Preserve on the eastern edge of the village. When this system backs up, 151st Street and Ridgeway Avenue frequently flood, sometimes as far west as Pulaski Avenue.

Backup in the neighborhood storm sewer has been linked to the condition of this sewer where it drains into the CUDD in the Sundrop Prairie. The slope of the CUDD tributary is flat, making it difficult for the waterway to drain, creating a backup within the local storm sewer. During a storm, water levels in the CUDD rise up above the Jolly Homes outfall, making it impossible for water to drain out of Jolly Homes.

Belly Button Hill: A similar challenge affects the neighborhood near Belly Button Hill, also known as Kostner Park, located at 150th Street and Kostner Avenue. Here, water destined for Midlothian Creek backs up in above-ground ditches along 151st Street from the outfall near Keeler Avenue. The park, defined by 150th Street to the north, Kilbourn Avenue to the west, 151st Street to the south, and Kostner Avenue to the east, often floods completely during storms. The issue is again caused by the condition of the drainage outfall where the ditch meets Midlothian Creek. During a storm, the water level of Midlothian Creek rises up above the Belly Button Hill outfall, making it impossible for water to drain out of the local sewer.

The overland flooding that occurs in the Belly Button Hill neighborhood is a nuisance and a hazard, as it often floods the street and sometimes floods yards. However, because the water flooding the streets and yards rarely enters the homes in this neighborhood, flooding in this neighborhood is considered a less urgent priority than flooding in the Jolly Homes neighborhood.

145th and Kenton: The open ditch storm sewer network serving the area between Cicero Avenue, Kostner Avenue, 143rd Street, and 147th Street are also susceptible to backup during heavy storms. Most commonly, water backs up at 145th Street and Kenton Avenue as a result of undersized and outmoded geometry in the local network.



BELLY BUTTON HILL PROBLEM AREAS, USACE 2015

EXISTING STORMWATER REGULATIONS

National Flood Insurance Program

The Village participates in the Federal Emergency Management Agency's (FEMA) National Flood Insurance Program (NFIP), through which insurance is made available for structures vulnerable to overbank flooding. The NFIP requires that participating municipalities pass floodplain management regulations, and that the owners of properties in Special Flood Hazard Areas (SFHAs) purchase insurance through NFIP.

FLOODPLAIN ORDINANCE

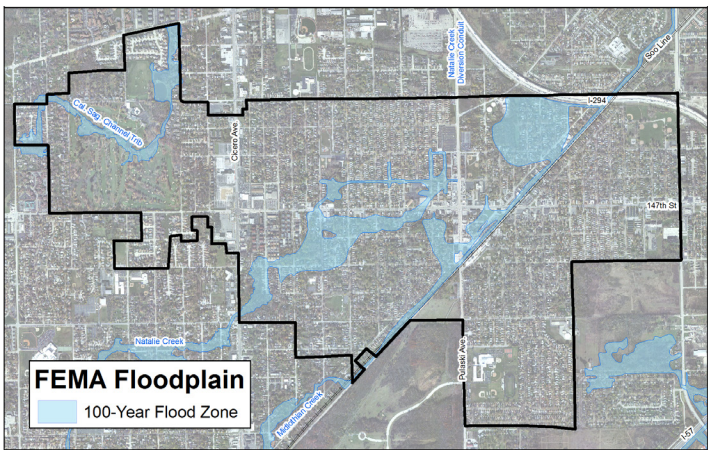
Midlothian's floodplain ordinance (Title XII, Chapter 2) requires that all proposed developments in the mapped floodplain are reviewed for compliance with all state, county, and local permits. In this instance, development includes any new activity that could be damaged by flood water or could divert flood water. For each new construction, the Village must maintain records of building permits and elevation certificates demonstrating compliance with the ordinance. For new buildings, the ordinance requires that the lowest floor of the building be at least one foot above the SFHA. For existing building stock, the floodplain ordinance requires that buildings damaged by flooding be assessed after each flood event and a record of cumulative damage on each property be maintained.

SPECIAL FLOOD HAZARD AREAS

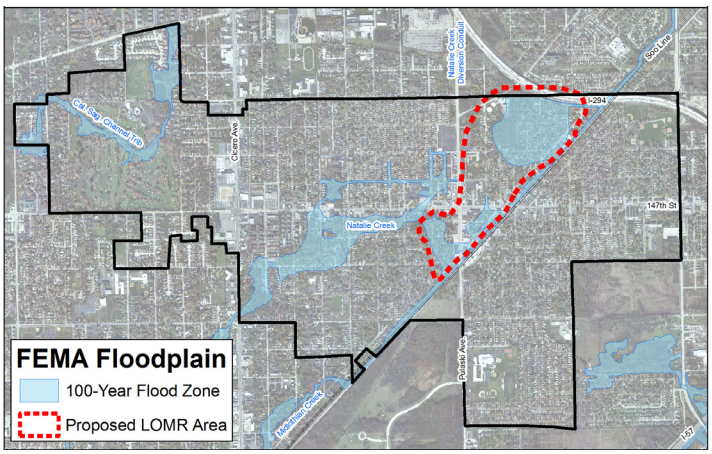
The NFIP requires that property owners and renters located in a SFHA with mortgages from federally regulated or insured lenders purchase flood insurance (FloodSmart.gov, 2015). SFHAs are defined as having at least a one-in-four chance of flooding during a 30-year mortgage. This is also commonly referred to as a *100-year flood zone*. See *What is a 100 Year Flood?* on page 30 to learn more about this classification.

There are SFHAs associated with both Natalie Creek and Midlothian Creek in the village (See *FEMA Floodplain*, below). Homeowners with a mortgage in this area are required to pay for flood insurance through the NFIP. According to residents, insurance premiums have doubled in the last year; in some instances, homeowners are paying more for flood insurance than for the mortgage on their home. Others identified the rising cost of

FEMA FLOODPLAIN, USACE 2015



FEMA FLOODPLAIN WITH THE PROPOSED AMENDMENT, USACE 2015



NFIP as a cause of home foreclosures in the community (*RainReady Midlothian: Interim Report*, CNT 2015).

According to public works officials and residents, there are areas within Midlothian Creek's SFHA that never flood (see *FEMA Floodplain with the Proposed Amendment*, page 17). As a result, homeowners who do not flood are paying for a costly service that they do not need. This inaccurate mapping also impacts opportunities for transit-oriented development in the village, since the area surrounding the Metra station is mapped into the SFHA and is therefore subject to development restrictions.

In contrast, some sections of the Natalie Creek SFHA are subject to much higher risk from the creek. In the section of the floodplain located between Keeler Avenue and Kenton Avenue, for example, the base elevation for the 100 year floodplain (the SFHA) closely resembles the base elevation for the 10 year floodplain (*Flood Profiles Natalie Creek*, FEMA). This risk is reflected in the extremely flat slope within the reach of Natalie Creek.

Urban Flooding and the NFIP

The NFIP was established to provide insurance coverage to structures vulnerable to riverine flooding, but it does not cover structures vulnerable to urban flooding. Urban flooding is typically defined as non-riverine flooding, caused by urban drainage issues and runoff from impervious surfaces. In Midlothian, urban flooding includes basement backup, storm sewer backup, and seepage.

In Illinois, 92% of flooding occurs outside of Special Flood Hazard Areas (*Report for the Urban Flooding Awareness Act*, IDNR 2015). In Midlothian, 66% of flooding occurs outside of the SFHA (*RainReady Midlothian: Interim Report*, CNT 2015). Property owners outside of the SFHA are not required to purchase insurance through the NFIP, but those who experience riverine flooding may choose to do so.

NFIP COMPLIANCE

In June of 2015, the Illinois Department of Natural Resources (IDNR) deemed the Village out of compliance with the village floodplain ordinance, and therefore with the NFIP. This was Midlothian's first Community Assistance Visit (CAV) since 1997.

In particular, the Village was identified as being out of compliance with the following requirements:

- Conducting damage determination of flooded buildings after storms and maintaining records of cumulative damage
- Enforcing ordinance requirements for new development

The CAV report from IDNR indicated that the Village's participation in NFIP would be in jeopardy if these issues were not addressed promptly (*Midlothian CAV Follow-Up Letter*, IDNR 2015). Removal from the NFIP would impact property owners' ability to purchase flood insurance which is often a requirement of mortgage lenders. Moreover, it said that the Village must come into full compliance with NFIP to be eligible for FEMA's Community Rating System (CRS), a voluntary municipal incentive program that lowers homeowners' insurance costs in places with floodplain management activities that exceed the minimum NFIP requirements.

Watershed Management Ordinance

MWRD's Watershed Management Ordinance (WMO) was updated in July 2014 to include requirements for stormwater management and reduction of Infiltration/Inflow in sanitary sewer lines. These regulations apply to all tributary municipalities that discharge wastewater into MWRD facilities, including Midlothian.

STORMWATER MANAGEMENT REQUIREMENTS

WMO Article 5 restricts all development in its tributary communities, including Midlothian, from:

1. Increasing flood elevations or decreasing flood conveyance capacity upstream or downstream
2. Causing any increase in flood velocity or impairment of the hydrologic and hydraulic functions of streams
3. Degrading surface or ground water quality

A set of development standards accompany this ordinance, including specifications for runoff control, volume control, and storage. These requirements will be phased in over a period of five years. In 2019, the allowable release rate will become 0.15 cubic feet per second per acre for the 100-year storm event. Where on-site detention is not practical, the WMO permits offsite detention within the same subwatershed. Single-family homes and multi-family or subdivision developments sized less than 0.5 acres and one acre, respectively, are exempt from the 2015 WMO (*Watershed Management Ordinance: Summary*, MWRD 2014).

INFILTRATION/INFLOW CONTROL PROGRAM (ICAP 2)

The WMO includes regulations for a new Excessive Inflow and Infiltration Control Program (ICAP 2), applicable to all tributary communities with separate sewer systems. The program outlines two phases to reducing sanitary sewer overflows and basement backups.

In Phase I, from 2015-2019, municipalities are required to:

- Assess conditions of high-risk public sanitary sewers and begin rehabilitation by 2017
- Undertake rehabilitation of the highest-priority areas
- Develop *Private Sector Program* for implementation in Phase II
- Develop a long-term *Operation and Maintenance Program*

In Phase II, municipalities are required to:

- Implement the Private Property Investigation Plan and associated rehabilitation program
- Develop basement backup and sanitary sewer overflow
- Continue ongoing inspection, maintenance, cleaning, and rehabilitation of public sewers

MIDLOTHIAN VILLAGE CODE

Additional restrictions on large development are in place through the municipal code. According to the Midlothian code book: no development can adversely affect the flow of surface waters to or from neighboring properties. The code also prohibits obstructing flow path or diverting stormwater from one watershed to another. Specific Best Management Practices and design methods are outlined in the code (Title 12, Chapter 2, Midlothian Village Code).

RECOMMENDED SOLUTIONS FOR A RAINREADY MIDLOTHIAN

Home Improvements

Objective: Decrease the risk of damages and increase the real estate value of homes by reducing basement flooding through coordinated action on private property

HOME FLOODPROOFING + LATERAL REPAIR PROGRAM

Led by: The Village of Midlothian
Approximate cost: $6,000—$20,000 per home
Proposed timeline: Near-term

POTENTIAL FUNDING SOURCES

- Illinois Environmental Protection Agency (IEPA) State Revolving Loan Fund financed by a **Village RainFund** (see *The Case for a Village Rain Fund* on page 34)
- Individual homeowners
- Existing sewer fund

DESCRIPTION

Residential floodproofing programs provide coordinated services to help homeowners reduce the risk of damaging floods on their property. In Midlothian, the Home Floodproofing and Lateral Repair Program will target flooding from seepage, as well as basement backup caused by infiltration and inflow (*What is Infiltration and Inflow?* on page 15). Midlothian's program will have the additional benefit of ensuring compliance with MWRD's ICAP 2 requirements (see *Infiltration/Inflow Control Program* on page 19). Under ICAP2, plans for a Private Sector Program (PSP) to repair lateral lines, disconnect downspouts from sanitary systems, and mitigate residential flood risk must be submitted by July 2019 (*Watershed Management Ordinance*, MWRD 2014).

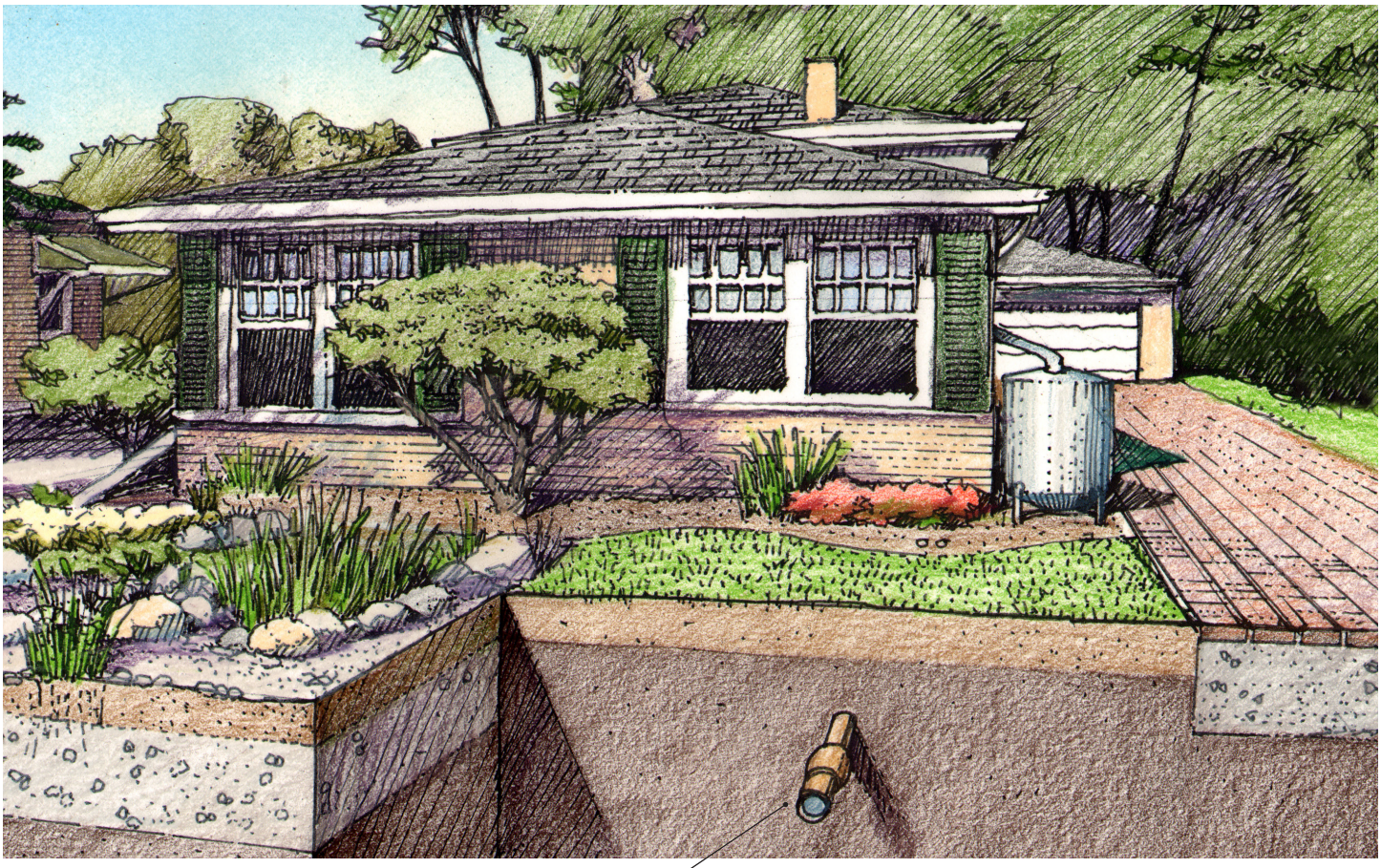
IMPLEMENTATION STRATEGY

Midlothian Public Works will complete a survey of property owners wishing to apply for program assistance and undertake an inventory of existing private and public sewer lines to determine the highest priority areas. Based on the results, Public Works will work with a contractor to design a floodproofing program and Private Sector Program, which will include plans for community outreach, financing, and flood mitigation measures to complement I/I repair and downspout disconnection. This plan will be developed in partnership with the South Suburban Mayors and Managers Association, employing the shared GIS portal to identify and track priority areas.

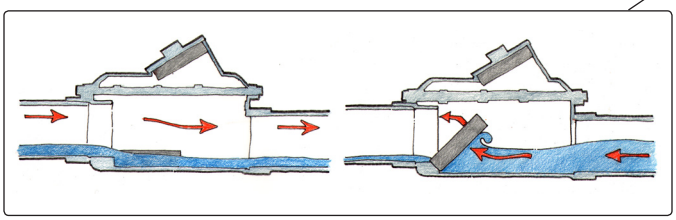
The floodproofing program will include a municipal cost-sharing component to assist residents with property risk assessments and implementation of mitigation measures, which could include:

- Re-grading yards to reduce pooling near structure foundations
- Sealing foundation cracks
- Installing backwater valves or overhead sewers
- Smoke testing sewer lines to evaluate systems for I/I
- Cleaning, repairing, and/or lining lateral lines to reduce infiltration
- Disconnecting improper connections to the sanitary sewer, including roof downspouts
- Directing roof runoff into green infrastructure on-site

To finance this program and incentivize residential participation, Midlothian will explore dedicated financing options, such as the establishment of a municipal grant fund accessible to homeowners. The fund will be established using an initial investment from the Illinois Environmental Protection Agency (IEPA) State Revolving Loan Fund (see *The Case for a Village RainFund*, on page 34) and repaid by adding a line item to residents' existing water bills. CNT would be interested in helping the Village set up a home floodproofing program. This could be pursued in conjunction with a RainFund.



RENDERING OF A RAINREADY HOME, CNT 2015



RENDERING OF A BACKWATER VALVE TO PREVENT BASEMENT BACKUPS, CNT 2015

Results from similar municipal I/I programs have determined that as much as 70% of inflow/infiltration comes from private connections rather than public sewer defects *(Flood Risk Reduction Program,* Glenview 2010*).*

MIDLOTHIAN RAIN GARDEN, CNT 2015

LOW-COST SOLUTIONS FOR HOMEOWNERS

Led by: The Village of Midlothian + Floodlothian Midlothian
Approximate cost: Low
Proposed timeline: Near-term

POTENTIAL FUNDING SOURCES

- Volunteer
- Grants and partnerships

DESCRIPTION

Some of the recommendations in this plan may take several years to implement. Meanwhile, the floodwaters continue to rise in the homes of residents and business owners. A thoughtful outreach program to help flood victims reduce their risks through low-cost, resident-driven solutions will minimize ongoing loss in the short-term.

A public education campaign could include workshops, fact sheets, and community events on topics such as:

- **Understanding Flood Insurance:** Saving money and improving coverage
- **Avoiding Seepage:** Using green infrastructure to direct water away from your home
- **Living with Water:** Low-cost tips to reduce risk in your basement and garage
- **Investing in Residential Solutions:** How to diagnose and reduce flood risk in your home
- **Trees, Rain Gardens, and Dry Wells:** Doing your part to reduce runoff

IMPLEMENTATION STRATEGY

The Village of Midlothian will partner with Floodlothian Midlothian on a public education series. Floodlothian Midlothian is the community voice for flooding and thus a natural choice for this kind of educational campaign. With support from Floodlothian and CNT, the Village will disseminate knowledge of short-term risk reduction measures to Midlothian residents.

FLOODLOTHIAN MIDLOTHIAN IN ACTION, CNT 2015

NEXT STEPS

Midlothian Public Works will work with a contractor to design and plan the Home Floodproofing Program in 2016. They will also launch a campaign to educate homeowners on the new requirements for private lateral line repair under MWRD's ICAP 2. This outreach program will lay the groundwork for setting up dedicated financing in early 2017.

Also in 2016, Public Works will identify high-priority areas in the sewer network for maintenance and rehabilitation.

Floodlothian Midlothian is already active in providing community outreach and education to flood victims in the community.

RENDERING OF A RAINREADY 147TH STREET, CNT 2015

Streets and Neighborhood Improvements

Objective: Roll out an improvement plan to make village streets and neighborhoods safe and walkable for all users, while simultaneously reducing flooding in streets and yards

147TH STREET PROJECT

Led by: CMAP and the Village of Midlothian
Outside funds secured: $80,000
Anticipated cost of corridor study to the Village: $8,000
Anticipated cost of construction: High
Proposed timeline: Medium-term

POTENTIAL FUNDING SOURCES

- Grants
- Village of Midlothian
- IEPA State Revolving Loan Fund financed by a **Village RainFund** (see *The Case for a Village RainFund* on page 34)
- MWRD
- Cook County

DESCRIPTION

147th Street is the main east-west arterial in Midlothian and an economic hub for many small businesses and two local schools. It is part of the Illinois Department of Transportation's IL-83. In Midlothian, most of the roadway drains into Natalie Creek, which crosses over 147th Street at Kilbourn and Keeler Avenues. The roadway frequently floods during storms.

IMPLEMENTATION STRATEGY

In October 2015, the Chicago Metropolitan Agency for Planning (CMAP) approved a RainReady-sponsored application for Local Technical Assistance (LTA) to conduct a corridor study on 147th Street between Cicero and Kedzie Avenues. The Village will receive $80,000 in services with a municipal match of $8,000.

CMAP's LTA for 147th Street will begin in early 2016. The corridor study will determine a plan for integrated investment in transportation amenities, stormwater infrastructure, and economic development throughout the corridor. This will be the first Complete Streets plan inclusive of stormwater management in the region, and a model for similar development throughout Cook County. Through close coordination with the Illinois Department of Transportation (IDOT), this project could also become a model for reconstruction of IDOT roads.

Once the plan is completed, the Village will complete preliminary engineering to finalize designs for project implementation. These designs can be used to seek additional grant funding or federal support to cover some of the construction costs.

FLOODS ON 147TH STREET, CNT 2015

Safe, Walkable, and RainReady Streets Across the Village

The Village of Midlothian is currently creating a Complete Streets policy to ensure that village streets are safe, accessible to all users, and help to alleviate flooding. Elements of street design such as visibility, striping, maintenance, signs, and landscaping can make the difference between what is safe and what is unsafe, as well as the extent to which roadways cause or alleviate flooding.

In July 2015, the Active Transportation Alliance (Active Trans) approved a RainReady-sponsored application for the Healthy Hot Spot Complete Streets Technical Assistance Program. Through this program, Active Trans will help the Village design and adopt a Complete Streets policy (see Transportation Infrastructure and Stormwater BMPs on page 36). Active Trans will also provide two years of assistance to help the Village incorporate this policy into roadway designs for new construction and routine maintenance. As of November 2015, the Complete Streets policy was in development.

RENDERING OF POTENTIAL RETROFITS TO THE JOLLY HOMES NEIGHBORHOOD, CNT 2015

JOLLY HOMES NEIGHBORHOOD IMPROVEMENTS

Led by: Village of Midlothian
Approximate cost of engineering study: $21,500
Approximate cost of retrofits: Moderate
Proposed timeline: Long-term

POTENTIAL FUNDING SOURCES

- Village of Midlothian
- MWRD
- IEPA State Revolving Loan Fund financed by a **Village RainFund** (see *The Case for a Village RainFund* on page 34)

DESCRIPTION

Backup in the storm sewer causes street and yard flooding in the Jolly Homes subdivision, sometimes leading to structural flooding in homes. The precise cause of backup is not yet understood. More information on the problem can be found on page 14, in the section *Jolly Homes Neighborhood*.

IMPLEMENTATION STRATEGY

A preliminary engineering study of the drainage network from Jolly Homes into the Calumet Union Drainage Ditch (CUDD) will be completed to determine the cause of flooding, identify potential improvements, and develop estimated costs for each of the alternatives developed.

This will be accomplished through a hydrologic and hydraulic study of the existing drainage. When this study is undertaken, we recommend dedicating resources to reviewing the inclusion of residential green infrastructure improvements throughout the neighborhood to reduce runoff into the CUDD.

In the spring of 2015, the Village of Midlothian requested financial assistance from MWRD to complete this study. MWRD indicated it was unable to provide funding due other ongoing commitments such as the Natalie Creek project, but it may reconsider a request in the future. If MWRD funding is not available for this study, the Village will pursue alternatives. CNT would be interested in helping the Village identify opportunities for residential retrofits and green infrastructure in the public and private rights of way through its RainReady Neighbors program. This could be pursued in conjunction with a RainFund.

BELLY BUTTON HILL NEIGHBORHOOD IMPROVEMENTS

Led by: Village of Midlothian
Approximate cost: Moderate
Proposed timeline: Long-term

POTENTIAL FUNDING SOURCES

- Village of Midlothian
- MWRD
- IEPA State Revolving Loan Fund financed by a **Village RainFund** (see *The Case for a Village RainFund* on page 34)

DESCRIPTION

Backup in the storm sewer causes street and yard flooding in the area near Belly Button Hill/Kostner Park, but the precise cause of backup is not yet understood. More information on the problem can be found in the section *Belly Button Hill* on page 16.

IMPLEMENTATION STRATEGY

A preliminary engineering study will be completed to determine the cause of flooding, identify potential improvements, and develop estimated costs for each of the alternatives developed. This will be accomplished through a hydrologic and hydraulic study of the existing drainage. When this study is undertaken, we recommend dedicating resources to reviewing the inclusion of residential green infrastructure improvements throughout the neighborhood to reduce runoff into Midlothian Creek.

CAL-SAG TRIBUTARY C PROJECT

Led by: MWRD
Proposed timeline: Near-term

POTENTIAL FUNDING SOURCE: MWRD

DESCRIPTION

MWRD is conducting a preliminary engineering design study for a project near 143rd Street and Linder Avenue in northwestern Midlothian. This project is expected to reshape, widen and regrade the Cal-Sag Tributary C Channel in the Village, as well as modify the existing detention pond at 143rd Street. Existing culverts will likely be replaced. This project is being pursued to reduce overbanking on the creek and reduce risk to downstream residents in the Village of Crestwood.

NEXT STEPS

The corridor study on 147th Street will kick off in early 2016 with support from CMAP, the Active Transportation Alliance, CNT, MWRD, and SSMMA.

Improvements in the storm sewer drainage network are near-term priorities. Given the prevalence of structural flooding in the Jolly Homes area, this is considered a higher priority challenge than the street and yard flooding in the area near Belly Button Hill. In both areas, the first step is to conduct hydrologic and hydraulic engineering studies to better understand the problem.

RENDERING OF A RAINREADY NATALIE CREEK, CNT 2015

Restoring the Creek

Objective: Restore the community value of Natalie Creek while reducing the risk of destructive overbank flooding

MWRD PHASE II PROJECT

Led by: MWRD
Outside funds anticipated: $8.3 million in capital investment from MWRD
Village funds anticipated: $700,000 in operations and maintenance
Proposed timeline: Medium-term

POTENTIAL FUNDING SOURCE: MWRD

DESCRIPTION

Natalie Creek currently floods after two-year storms (see *What is a 100-Year Flood?* on page 30). As a result, residents experience frequent and severe flooding. In 2014, residents on 147th Street reported flooding nine times in 15 weeks, each time between 18 – 24 inches. More information on the problem can be found on page 13, in the section *Deferred Maintenance on Natalie Creek*.

IMPLEMENTATION STRATEGY

MWRD has completed a Phase II Preliminary Engineering Study of Flood Mitigation Improvements on Natalie Creek. The project area is defined by 153rd Street and Lavergne Avenue in Oak Forest to 146th Street and Pulaski Road to the north and west, respectively, where the creek drops below grade to an outfall linking the waterway to the Cal-Sag Channel.

According to MWRD's benefit-to-cost analysis, the preferred project provides protection from a 25-year storm. In Midlothian, a 25-year storm is defined by five inches of rain over a 24-hour period (*Natalie Creek Preliminary Engineering Project*, MWRD 2015).

Proposed improvements include:

- **Conveyance improvements:** widening and stabilizing the creek's banks to prevent erosion along 5,500 feet of the waterway.
- **Detention pond construction at Kostner Avenue:** Construction of a one-million gallon pond that is three to four feet in depth
- **Culvert replacement:** Replacement of six bridges to give them larger clearance

In addition to the project to be constructed by MWRD, the Village will commit to performing long-term operations and maintenance of these proposed improvements, and will include regular cleaning and monitoring to prevent blockages in the creek.

The proposed project recommended by MWRD project staff, and approved by the Village of Midlothian and the City of Oak Forest will be submitted to the MWRD Board of Commissioners in early 2016. If board approval is granted for the project, MWRD will proceed with final design in 2016 and the project will go out to bid in 2017 (*Natalie Creek Preliminary Engineering Project*, MWRD 2015).

MWRD's Phase 2 project would raise the level of service on Natalie Creek from two-year to 25-year, greatly improving flood resilience but leaving some creekside properties vulnerable to major storms. Additional protection will be provided through both coordinated and opportunistic green infrastructure installation in the watershed (see *Reducing Runoff with Green Infrastructure Across the Village*, page 32).

Raising the Alert – Overbanking on Natalie Creek

After flood victims shared stories of sleepless nights spent watching waters rise, USACE, CNT and Intel Research began exploring flood warning systems for Natalie Creek flood victims. In October 2014, USACE and the U.S. Geological Survey (USGS) installed a stream gauge on Natalie Creek at 149th Street and Knox Avenue. Using USGS's WaterAlert program, participants can now receive notification every time stream elevation exceeds the base gage height of six feet. Midlothian Public Works staff and flood victims have made use of the system, setting alarms to go off when the waters reach 7.5 and eight feet. With this assurance, flood victims report sleeping through the night with confidence that they will receive notification in time to prepare their homes for flooding.

RECREATIONAL TRAIL AND WILDLIFE HABITAT

Led by: Village of Midlothian, National Park Service and SSMMA
Approximate cost: Moderate
Proposed timeline: Long-term

POTENTIAL FUNDING SOURCES

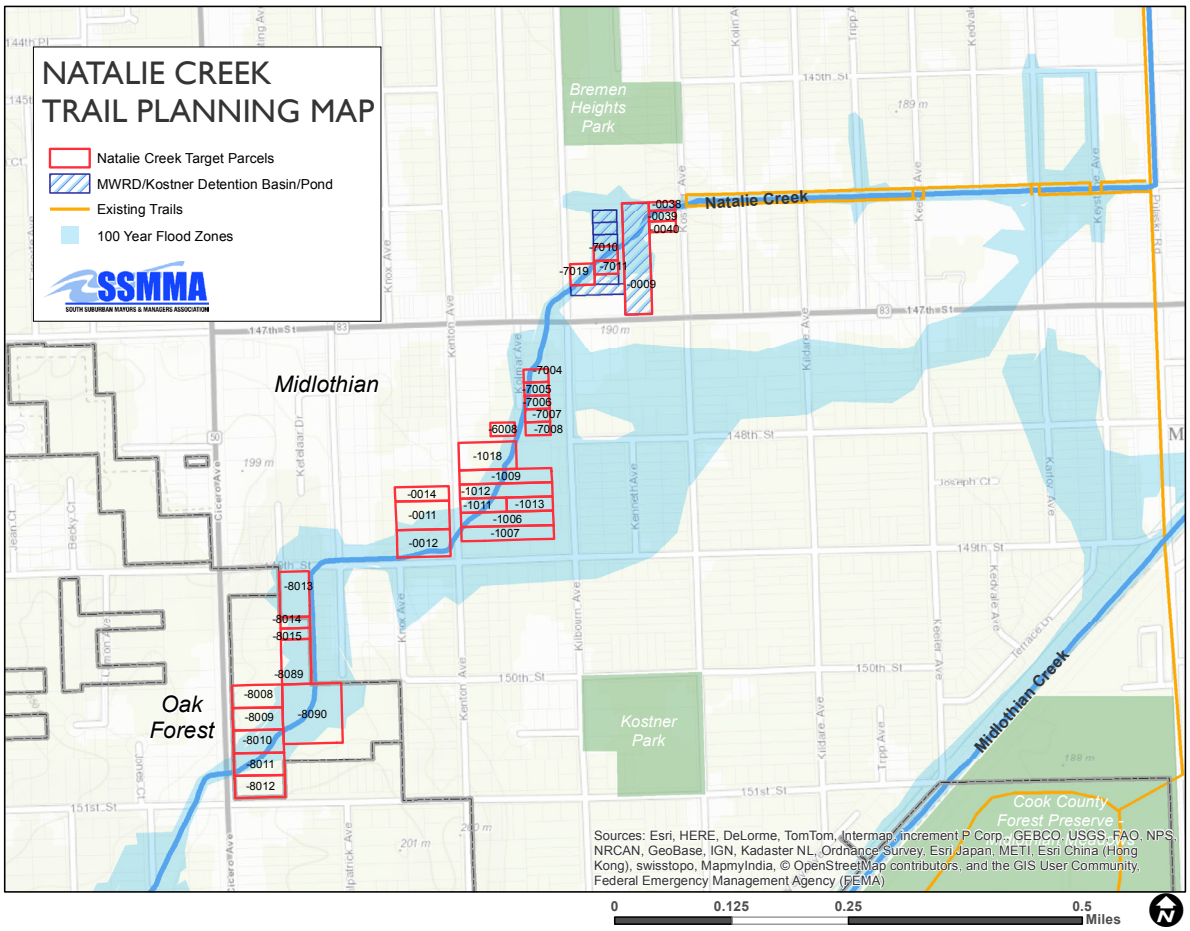
- Village of Midlothian
- IEPA State Revolving Loan Fund financed by a **Village RainFund** (see *The Case for a Village RainFund* on page 34)
- Grants
- South Suburban Land Bank

DESCRIPTION

Today, Natalie Creek is mostly seen as a flood-prone nuisance. However, a group of residents, Village staff, partner agencies, and nonprofit partners have a vision for transforming the creek into a beautiful habitat and multi-use trail, creating opportunities for recreation and economic activity along its banks.

IMPLEMENTATION STRATEGY

We recommend leveraging MWRD's planned investment in conveyance improvements along Natalie Creek (see *MWRD Phase II Project* on page27) to install a multi-use trail with lighting, benches, and signage. We also recommend incorporating green infrastructure landscaping improvements to improve water quality in



INITIAL PLANS FOR THE TRAIL ALONG NATALIE CREEK, SSMMA 2015

the creek and reduce runoff to provide a higher level of flood protection.

A coalition has formed to pursue this vision for a regional trail along Natalie Creek that links the Cook County Forest Preserve at the George Dunne Golf Course to the Cal-Sag trail. The trail would pass through Oak Forest, Midlothian, Crestwood, and Robbins. This coalition includes representatives of Midlothian Public Works, Midlothian Board of Trustees, Floodlothian Midlothian, the South Suburban Mayors and Managers Association (SSMMA), the National Park Service (NPS), Active Transportation Alliance, and the Center for Neighborhood Technology (CNT).

This coalition is working on a trail plan that would assist in pursuing grant funding, incorporating municipal partners like Oak Forest and Robbins, acquiring vacant and foreclosed properties, and formalizing an approach that will complement MWRD's Natalie Creek project.

PURSUE BUY-OUTS IF NEEDED

Led by: Village of Midlothian
Approximate cost: High
Proposed timeline: Long-term

POTENTIAL FUNDING SOURCES

- MWRD
- Village of Midlothian
- IEPA State Revolving Loan Fund financed by a **Village RainFund** (see *The Case for a Village RainFund* on page 34)
- Grants and partnerships
- South Suburban Land Bank

DESCRIPTION

MWRD's proposed Natalie Creek project will provide protection to 237 vulnerable properties up to a 25-year storm. Under the same improvements, 154 of those buildings will remain vulnerable to flooding from storms

What is a 100-Year Flood?

Stormwater engineers frequently discuss *two-year floods, 25-year floods, and 100-year floods,* but this term can be misleading. A 100-year flood has a one in 100 chance of occurring each year. Over a 30-year period, there is actually a 26% chance of a 100-year flood occurring at a given site (*100-Year Flood, It's All About Chance,* USGS 2010). 100-year floodplains form the basis of NFIP's Flood Insurance Rate Maps (FIRM) for Special Flood Hazard Areas (see *Special Flood Hazard Areas* on page 17).

The trick to this terminology is that there is an independent probability of a 100-year flood occurring each day. A 100-year flood today does not decrease the probability of a 100-year flood tomorrow (*100-Year Flood, It's All About Chance,* USGS 2010). Moreover, global climate change is predicted to increase the intensity of short-duration storms in the Chicago region (National Climate Assessment, 2014). If this is the case, engineers may soon announce that yesterday's 100-year storm has been reclassified as a 50-year storm.

On Natalie Creek, a 100-year flood is induced by 7.5 inches of rain over a 24-hour period. A 25-year flood is induced by five inches of rain in 24 hours. The destructive April 2013 floods were a 25-year event in the Natalie Creek watershed (*Natalie Creek Preliminary Engineering Project,* MWRD 2015).

larger than a 25-year event.. We recommend a program to buy out remaining high-risk properties, as well as a municipal cost-sharing program to floodproof those properties with moderate risk.

IMPLEMENTATION STRATEGY

Properties within the Natalie Creek floodplain can be acquired and rehabilitated to store and retain stormwater. This work will be led by the Village of Midlothian through a potential partnership with MWRD's flood-prone property acquisition program and the South Suburban Land Bank. In some cases, buy-outs would cover a portion of the yard but leave the home itself, since it is positioned outside the floodplain. On vacant properties, however, land could be more readily repurposed.

A thorough review of impacted properties will be conducted to determine high-risk areas and establish a plan to provide direct assistance.

NEXT STEPS

MWRD will send the Natalie Creek Phase II project to the MWRD Board of Commissioners for approval in early 2016. Pending approval, MWRD will proceed with final design in 2016 and the project will go out to bid in 2017.

Planning for the Natalie Creek Trail project is currently underway. This work is being expedited in order to pursue implementation phased to match the MWRD project.

Bringing Best Practices to George Dunne Golf Course

Golf courses provide a unique setting for water features like wetlands and retention ponds that can be used to provide both environmental benefits and beautiful aesthetics. Installing these kinds of waters features can also bring new recognition to the course and revenue for its operators.

Natalie Creek originates in the George W. Dunne National Golf Course owned by the Forest Preserve District of Cook County. Runoff from upstream communities, including the golf course, contributes to the large volume of water overwhelming Natalie Creek during storms. CNT and the Forest Preserve met to discuss opportunities to incorporate stormwater best management practices while improving the overall beauty and quality of the course. Strategies to store and infiltrate water upstream reduce the risk of overbanking along Natalie Creek in Midlothian. The Village will seek to partner with the Forest Preserve to secure grant funding to review potential improvements to the course, working alongside the George W. Dunne community of golfers.

> We recently excavated...the inside and side perimeter of our home to put a sophisticated drainage system (cost $32,000). We now have four sump pumps that run constantly. Even when there is little rain.

> People do not realize that this block, which becomes the dumping ground of rain runoff from other communities, experiences mini Katrinas yearly.

RainReady Village

Objective: Improve local capacity to finance, design, and implement the RainReady plan

INCREASE VILLAGE CAPACITY

In order to pursue the solutions outlined herein, the Village will need additional staff dedicated to program implementation. Based on discussions with Village staff and trustees, the following hires are recommended:

- Qualified **Village Administrator** to oversee the day-to-day activities of the Village, ensure integrated stormwater management planning, and manage municipal budgets.
- Qualified **Village Planner** to pursue economic investment opportunities, grant funding, regional partnerships, and integrated transportation, land-use, and stormwater planning.
- Qualified **Building Superintendent** to bring the Village into compliance with its stormwater ordinance (see *NFIP Compliance and Watershed Management Ordinance* on pages 18 and 19, respectively), lead the *Home Floodproofing and Lateral Repair Program* (see page 20), and partner with the **Village Engineer** to reduce residential flood risk and home insurance costs.

While this requires substantial upfront investment from municipal coffers, these positions will quickly pay for themselves through grants, partnerships, and economic investment in the village.

RAIN GARDENS HELP SINK STORMWATER WHERE IT LANDS, SSMMA 2015

REDUCING RUNOFF WITH GREEN INFRASTRUCTURE ACROSS THE VILLAGE

Led by: Village of Midlothian
Approximate cost: Moderate
Proposed timeline: Near-term

POTENTIAL FUNDING SOURCES

- MWRD
- Village of Midlothian
- IEPA State Revolving Loan Fund financed by a **Village RainFund** (see *The Case for a Village RainFund* on page 34)
- Grants and partnerships
- South Suburban Land Bank
- Individual homeowners and businesses

DESCRIPTION

The measures outlined in this plan describe a coordinated path forward to increase community resilience to flooding in Midlothian. In addition to these strategies, Midlothian commits to becoming a leader in the region by supporting a fundamental shift in the patterns of urban development that have contributed to flooding in the village.

The Village will pursue both coordinated and opportunistic green infrastructure installations in the watershed, giving priority to installations in the Natalie Creek watershed.

IMPLEMENTATION STRATEGY

Midlothian will lead by example, installing green infrastructure outside of the Public Library, at Village Hall, and on publically owned parking lots, including the lot south of Midlothian's Veterans of Foreign Wars

(VFW) Hall. In 2015, Midlothian Public Works secured $18,000 from Morton Arboretum to replace ash trees on public property lost to Emerald Ash Borer.

Through public education and strategic partnerships, the Village will also pursue opportunities for green infrastructure with area schools, transportation infrastructure, and private homes and businesses. Midlothian will also approach municipal leaders in Oak Forest to introduce green infrastructure programs to residents located in the Natalie Creek watershed. A *Beautiful Green Infrastructure Awards* program will be established by the Village Beautification Committee to encourage participation across the community.

Maintenance for green infrastructure is unlike typical landscaping care and requires specialized training. Municipal staff and interested members of the public will need to receive free and mandatory green infrastructure maintenance training.

PUBLIC SEWER REHABILITATION PROGRAM

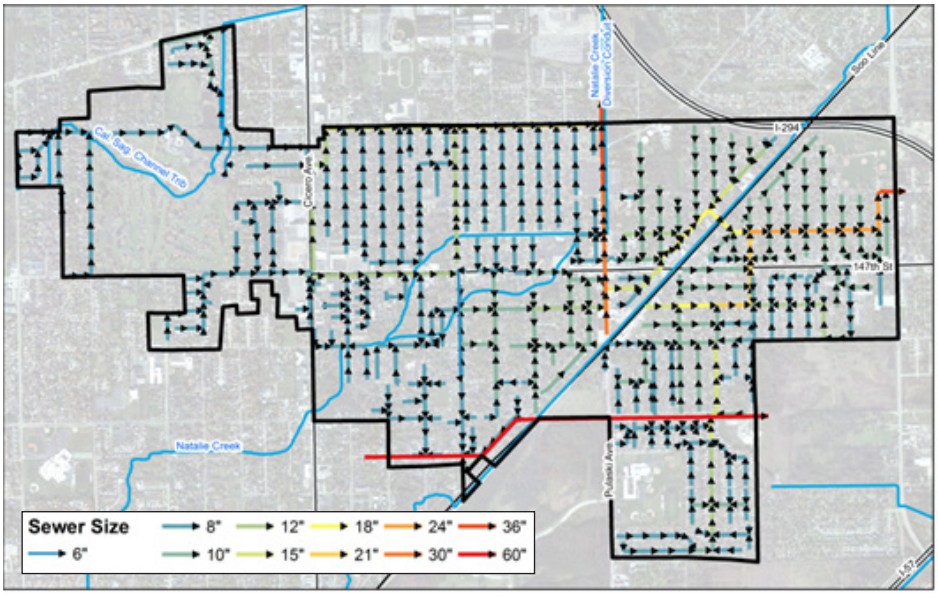
Led by: Village of Midlothian
Approximate cost: Moderate
Proposed timeline: Medium-term

POTENTIAL FUNDING SOURCES

- Village of Midlothian
- IEPA State Revolving Loan Fund financed by a Village RainFund (see The Case for a Village RainFund on page 34)
- Village Sewer Fund

DESCRIPTION

Infiltration and inflow (I/I) affects both Midlothian's public sanitary sewer and private lateral lines (see *Leaking Sanitary Sewer Infrastructure* on page 14 and *Home Floodproofing and Lateral Repair Program* on page 20). In order to reduce basement backup, Midlothian will implement a public sewer rehabilitation program. This action is also required under MWRD's 2014 Watershed Management Ordinance.



SANITARY SEWER IN MIDLOTHIAN, USACE 2015

IMPLEMENTATION STRATEGY

Midlothian Public Works will first investigate the conditions of all public sewers in order to reduce basement backup caused by infiltration and inflow. High-risk areas will be identified and repair will begin in 2017. Midlothian Public Works and the Village Engineer will create a public sewer rehabilitation program to be adopted by 2019 in partnership with the GIS consortium at SSMMA.

This program will include plans for:

- Continued repair of high priority areas in the public sewer
- Long-term operations and maintenance, which will include inspection, maintenance, cleaning, and rehabilitation of all public sewers in the village.
- Launching a *Private Sector Program* (see *Home Floodproofing and Lateral Repair Program*, page 20)
- Formalizing the *Emergency Response Program* for basement backup and sanitary sewer overflow
- Allocating financial resources for staff and program implementation

Funding adequate maintenance and repair of public sanitary sewers is a long-standing challenge in Midlothian. The rising frequency of high-intensity storms paired with long-deferred maintenance of public infrastructure have elevated this challenge into a top priority for flood resilience in the Village. In order to fund repair of the public sewer and implement the Home Floodproofing Program, the Village must pursue a dedicated financing mechanism.

The Case for a Village RainFund

Across the nation, communities are pursuing creative ways to finance protecting homes and neighborhoods from flooding. One way to acquire resources is through a RainFund. A RainFund can generate funding to help communities fight flooding without raising property taxes or unfairly impacting residential property owners. CNT would be interested in partnering with the Village to set up a RainFund.

A CNT-managed RainFund would launch with an initial investment from the IEPA State Revolving Loan Fund, through which the Village is eligible for a low-interest loan for stormwater management. This fund would be used to provide partial grants to property owners through the Home Floodproofing Program, as well as to support implementation of the rest of the RainReady plan. The loan would be repaid through a nominal monthly fee on all property owners, calculated based on the area of impervious surface on their properties. For most homeowners, the fee is likely to cost three to seven dollars each month. The fee is higher for properties that contribute larger volumes of runoff to the sewer system, such as buildings with large parking lots. An incentive program would allow property owners to receive rebates if they capture their stormwater runoff on site, e.g. by installing rain gardens.

These funds would be used exclusively to finance stormwater management solutions in the village while bringing wider recreational and economic benefits to the community. The first step to set up the RainFund would involve identifying the scope and costs associated with these projects.

REVISING THE MIDLOTHIAN CREEK FLOODPLAIN

Led by: Village of Midlothian
Approximate cost: $20,000 - $40,000
Proposed timeline: Medium-term

POTENTIAL FUNDING SOURCES

- Village of Midlothian
- Cook County
- Community Development Block Grants (CDBG) administered by Cook County

DESCRIPTION

According to public works officials and residents, the Special Flood Hazard Area (SFHA) associated with Midlothian Creek does not flood and may be above the base elevation for the 100-year floodplain (see *Special Flood Hazard Area,* page 17). As a result, homeowners who do not flood are paying for a costly service that they do not need. The inaccurate mapping also restricts opportunities for transit-oriented development in the village, since the area surrounding the Metra station is subject to the Village floodplain ordinance.

IMPLEMENTATION STRATEGY

The Village will conduct an elevation survey of the Midlothian Creek SFHA. If properties are located above the 100-year floodplain (see What is a 100-year flood? on page 30), they are eligible for removal from the SFHA (see *Special Flood Hazard Area,* page 17).

Pending results of the elevation survey, the Village will submit a Letter of Map Amendment (LOMA) to FEMA. If approved, residents in the Midlothian SFHA would be freed from burdensome insurance premiums, and development near the transit-oriented downtown could go forward without the restrictions of Midlothian's floodplain ordinance.

If the elevation certificate demonstrates that these properties are within the floodplain, a Letter of Map Revision (LOMR) could be pursued. LOMRs require a detailed hydraulic study of the creek to lower the base elevation of the floodplain.

Community Rating System

There has been interest among Floodlothian Midlothian leaders and Village staff in joining FEMA's Community Rating System (CRS), a voluntary municipal incentive program to bring down homeowners' insurance costs through floodplain management activities. However, until the Village is brought into full compliance with its existing floodplain ordinance, it will not be eligible for participation in CRS.

Moreover, there may be more cost-effective ways to reduce flood insurance rates in the Village. NFIP representatives in Illinois recommend that Midlothian homeowners negotiate with insurance providers for ways to reduce their premiums, request an elevation survey in locations where homeowners believe they may be eligible for removal from the floodplain, and refinance their houses so that flood insurance rates may apply only to the portion of the house still under mortgage. Homeowner education on insurance options will be provided through the process outlined in *Low-Cost Solutions for Homeowners,* page 21.

MUNICIPAL WATERSHED MANAGEMENT

In addition to the strategies outlined above, Midlothian must commit to a fundamental shift in the patterns of urban development that have contributed to flooding in the village. This commitment includes protective ordinances to restrict impervious surface installation on new development, new programs to retrofit transportation and recreation infrastructure, and a capital program to install and maintain green infrastructure on Village-owned property. IDNR maintains a database of model stormwater management ordinances that can assist the Village with policy implementation (IDNR, September 2015).

TRANSPORTATION INFRASTRUCTURE AND STORMWATER BEST MANAGEMENT PRACTICES (BMPS)

We recommend adopting policy requiring that Village-owned transportation infrastructure be evaluated for potential stormwater best management practices prior to routine maintenance and repair. This should include parking lots, streets, sidewalks, and alleys. Staff will review local drainage systems in order to prioritize high-risk areas for potential stormwater detention improvements. At the time this plan was finalized, a stormwater-inclusive Complete Streets policy developed through Active Transportation Alliance's Healthy Hot Spots program was under consideration (see *Safe, Walkable, and RainReady Streets Across the Village* on page 24).

RECREATION FACILITIES AND STORMWATER BMPS

Midlothian should adopt policy requiring that publically-owned recreation facilities be evaluated for potential stormwater best management practices prior to routine maintenance and repair. This is to include tennis courts, athletic fields, patios, and parks. Staff will review local drainage systems in order to prioritize high-risk areas for potential stormwater detention improvements.

RESIDENTIAL INCENTIVE PROGRAM

Establish a residential stormwater incentive program to encourage residents to proactively manage stormwater on their properties through best management practices in green infrastructure. BMPs to consider include underground cisterns, permeable pavers, dry wells, rain gardens, or rainwater harvesting systems. Note that this program may be most effectively introduced in tandem with the Village RainFund (see *The Case for a Village RainFund* on page 34).

PURSUE REGIONAL PARTNERSHIPS

Damaging floods are not unique to Midlothian, though Midlothian is one of the most heavily impacted communities in the region. Regional partnerships are in development among similarly impacted communities, SSMMA, the South Suburban Land Bank and Development Authority, the Calumet Stormwater Collaborative, and others. Midlothian must commit to "showing up at the table" to seek support, ideas, and collaborative problem solving.

MAINTAIN PUBLIC ENGAGEMENT

This program begins and ends with public-private partnership. The tremendous leadership of Floodlothian Midlothian in bringing awareness to flooding in the village cannot be overstated. The Village commits to ongoing education and engagement through workshops, public events, collaborative planning and partnerships with community groups. This will be particularly crucial throughout the planning and implementation of any dedicated financing program.

The Village acknowledges that the success of this plan and the future of Midlothian relies on community leadership and collaborative partnership.

NEXT STEPS

At the time of plan adoption, the Village Board of Trustees was pursuing hire of a qualified Building Superintendent. The Village will seek to hire a Village Administrator in the first half of 2016.

The RainReady Midlothian solutions identified in this section are all high priority items. Investigation and repair of the public sewer network will begin in spring 2016. Green infrastructure installation is being actively pursued across the village, with new grant proposals going out each month.

In order to secure dedicated financing for the program outlined herein, the Village RainFund should be advanced as a priority. The first step in this process involves determining a scope and budget for the proposed projects in order to determine capital needs.

Coordination of a potential Letter of Map Amendment (LOMA) or Letter of Map Revision (LOMR) to FEMA on Midlothian Creek is a critical short-term goal that could bring substantial cost savings to residents with minimal upfront cost for the Village. If a LOMA is determined infeasible due to base floodplain elevation, a hydraulic study of the creek should be commissioned to pursue a LOMR.

Finally, public engagement and widespread partnerships have been the foundation of Midlothian's initial success becoming RainReady. The Village must commit to ongoing engagement with regional networks of flood-prone municipalities, collaboration with nonprofit partners, and creative knowledge sharing with the public.

A RAINREADY FUTURE

Many of the challenges facing Midlothian can be reframed as opportunities for creative collaboration. Vacant properties can be reclaimed for stormwater management and public spaces, infrastructure investment can be leveraged to inspire economic investment and recreation, transportation infrastructure can be retrofitted to encourage biking and walking while sinking water where it lands. Through the RainReady process, Midlothian has positioned itself as a leader in collaborative and creative stormwater management planning.

ACRONYMS

ACTIVE TRANS – Active Transportation Alliance
BMP – Best Management Practice
CAV – Community Assistance Visit
CDBG – Community Development Block Grants
CMAP – Chicago Metropolitan Agency for Planning
CNT – Center for Neighborhood Technology
CRS – Community Rating System
CUDD – Calumet Union Drainage Ditch
EAB – Emerald Ash Borer
FEMA - Federal Emergency Management Agency
FIRM – Flood Insurance Rate Map
ICAP 2 – Excessive Inflow and Infiltration Control Program
IDNR – Illinois Department of Natural Resources
IDOT – Illinois Department of Transportation
IEPA – Illinois Environmental Protection Agency
I/I – Inflow and Infiltration
LTA – Local Technical Assistance
LOMA – Letter of Map Amendment
LOMR – Letter of Map Revision
MWRD – Metropolitan Water Reclamation District
NFIP – National Flood Insurance Program
NPS – National Park Service
PSP – Private Sector Plan
RR – RainReady
SFHA – Special Flood Hazard Area
SSMMA – South Suburban Mayors and Managers Association
USGS – United States Geological Survey
USACE – United States Army Corps of Engineers
WMO – Watershed Management Ordinance

ABOUT CNT

RainReady is an initiative of the Center for Neighborhood Technology (CNT). As an award-winning innovations laboratory for urban sustainability, CNT is dedicated to taking on big challenges, starting in small places. CNT helps make neighborhoods, cities, and regions work better, for everyone.

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