



MINUTES

President and Board of Trustees
Village of Arlington Heights
Committee-of-the-Whole
Board Room
Arlington Heights Village Hall
33 S. Arlington Heights Road
Arlington Heights, IL 60005
January 20, 2016
7:30 PM

I. CALL TO ORDER

II. PLEDGE OF ALLEGIANCE

III. ROLL CALL

President Hayes and the following Trustees were present: Sidor, Blackwood, Rosenberg, LaBedz, Tinaglia, Scaletta, Glasgow. Trustee Farwell joined the meeting at 7:35 p.m.

Also present were: Randy Recklaus, Scott Shirley, Jim Massarelli, Cris Papierniak, Mike Pagones and Jeff Musinksi.

IV. NEW BUSINESS

A. Draft CDM-Smith Combined Sewer Findings/Open House

Mr. Shirley explained that residents who had come to a previous Village Board meeting to discuss the flood event of 2011 or who had notified the Village of flooding issues were sent an email or a letter inviting them to the meeting. The meeting was also publicized through a Daily Herald article and the Village's website, Twitter and Facebook accounts.

Two areas that experienced flooding are not included in tonight's presentation: Grove Street and Cypress. These areas had been previously studied.

Dan Lau from CDM Smith presented the Study results. The presentation is available on the Village's website.

Mr. Recklaus said the concepts presented still needed to be vetted and the costs evaluated. There is also no financing mechanism in place for the

suggested improvements. If a storm the size of the 2011 event happened again, even if all the improvements were made, flooding would still occur.

President Hayes said the study gives the Village a basis for understanding.

V. OTHER BUSINESS

VI. ADJOURNMENT

Trustee Tinaglia moved to adjourn the meeting at 8:15 p.m. Trustee LaBedz seconded the motion. The motion carried.

Residents and staff moved to break out sessions by neighborhood.

COMBINED SEWER TRIBUTARY AREA FLOOD STUDY

Scott Shirley, P.E.

Jim Massarelli, P.E.

Dan Lau, P.E, D.WRE

Open House Presentation
January 20th, 2016

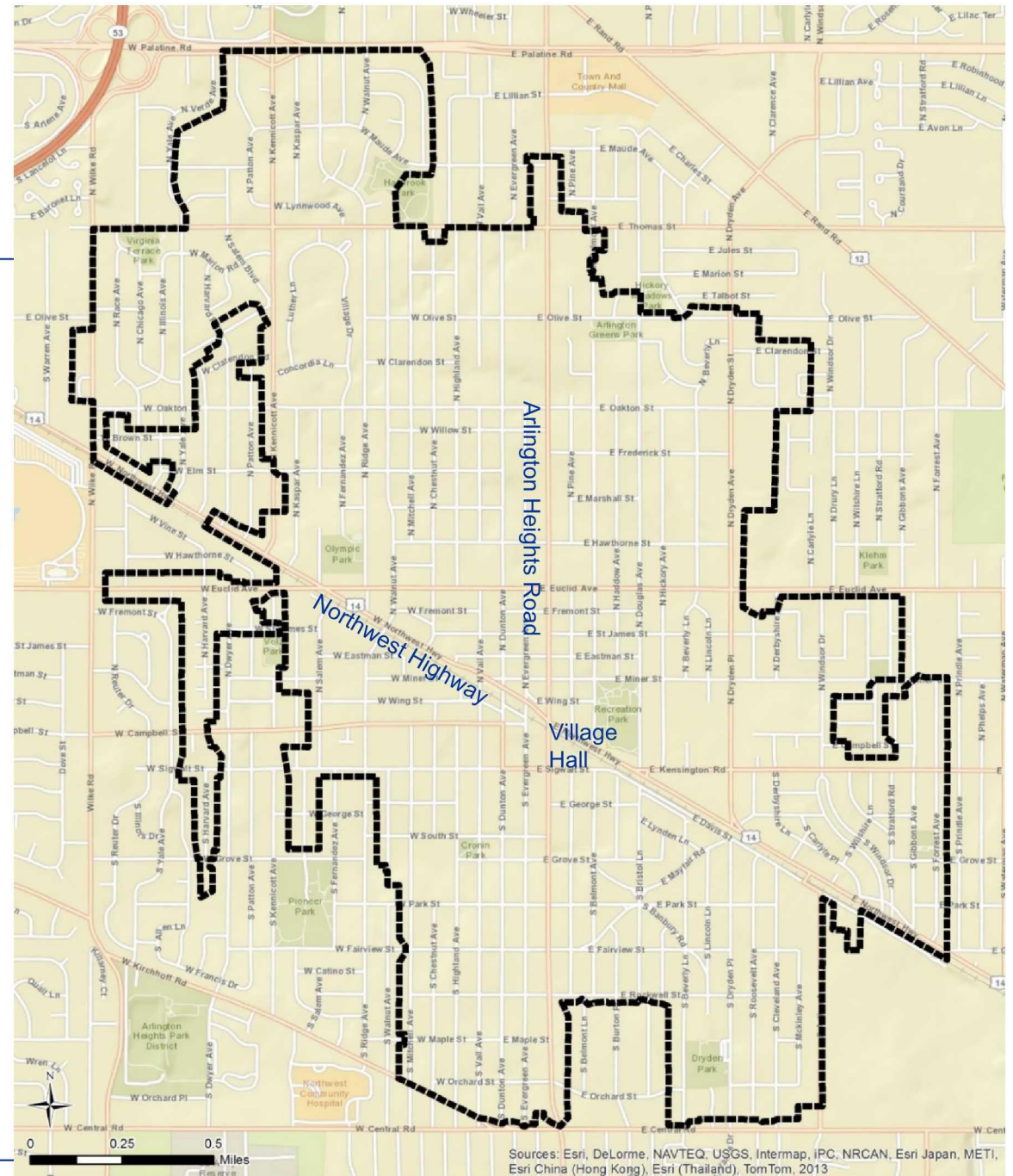


VILLAGE OF
ARLINGTON HEIGHTS
City of Good Neighbors **ILLINOIS**

CDM
Smith

OUTLINE

- Combined Sewer Tributary Area (CSTA) flood study objectives
- Village's completed sewer projects
- Existing sewer system
- Study approach and findings
- Next Steps



CSTA FLOOD STUDY OBJECTIVES

- Determine if the combined sewer system meets Village's design standard; and
- Identify effective measures for mitigating basement backups and meeting the required level of service.
- The Village Board will be reviewing the cost & benefits of the potential improvements at a later meeting to determine their feasibility and next possible steps

DESIGN STANDARD/LEVEL OF SERVICE

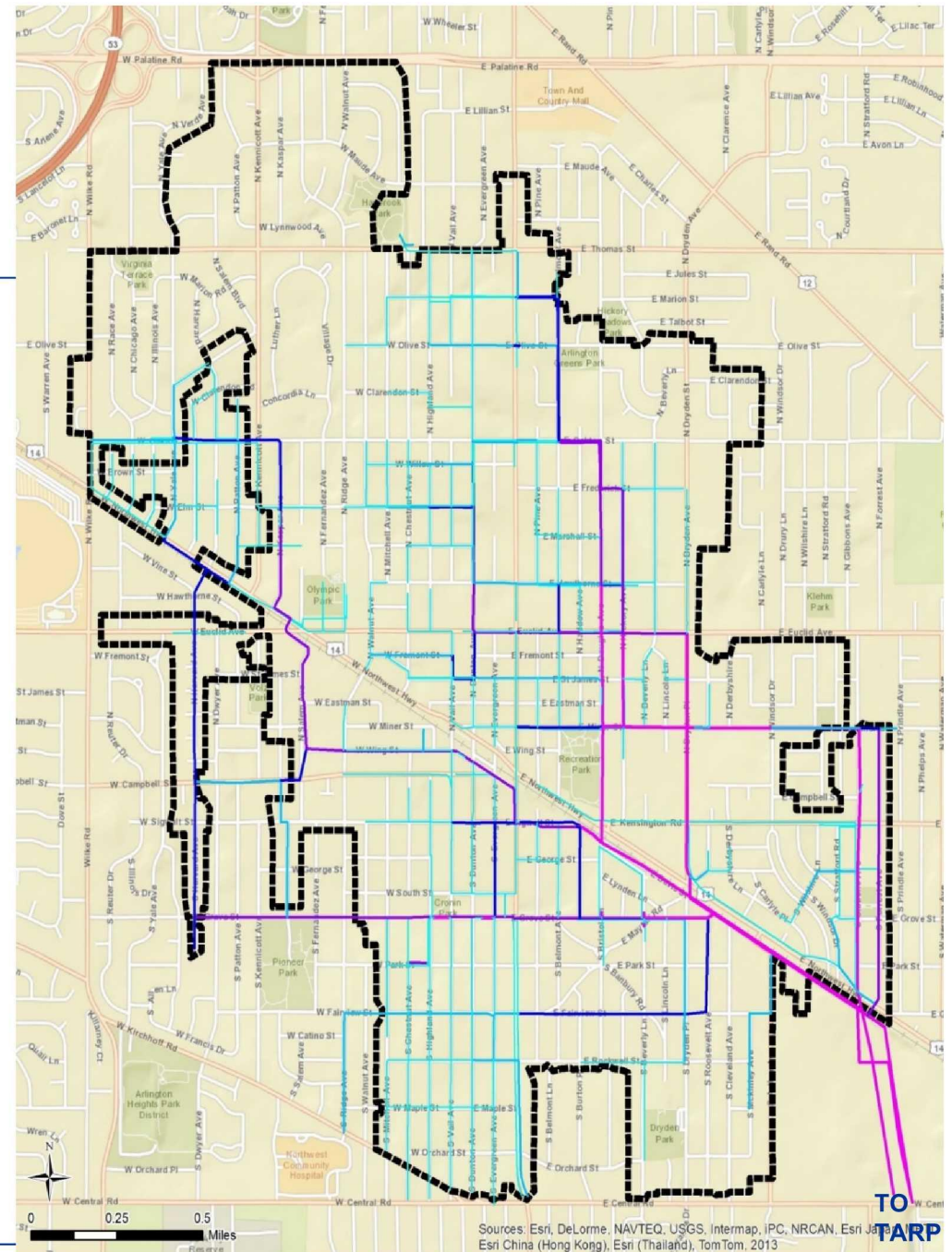
- Ten percent probability or 10-year level of service
- 2.1 inches in 1-hour rainfall event (current 10 year level of service)
- Consistent with industry standards
- Current design standards will not solve for the July 2011 Event
- Design criteria:
 - Reduce sewer water levels below basement floor elevation
 - Reduce sewer water levels below street grade
 - Reduce street ponding to 6 inches or less above street crown

VILLAGE'S COMPLETED SEWER PROJECTS

- 18 major studies and projects have been completed to reduce flooding and basement backups in a number of areas across the Village (Estimated cost of \$140.7 million):
 - 108 inch trunk sewer along Miner Street
 - Second Control Structure at MWRDGC Tunnel and Reservoir Plan (TARP) connection
 - 1,500 inlet controls
- Large storm water control projects:
 - Arlington Lakes Golf Course and Lake Arlington
 - Wilke-Kirchoff detention basins
- Overhead Sewer Rebate Program

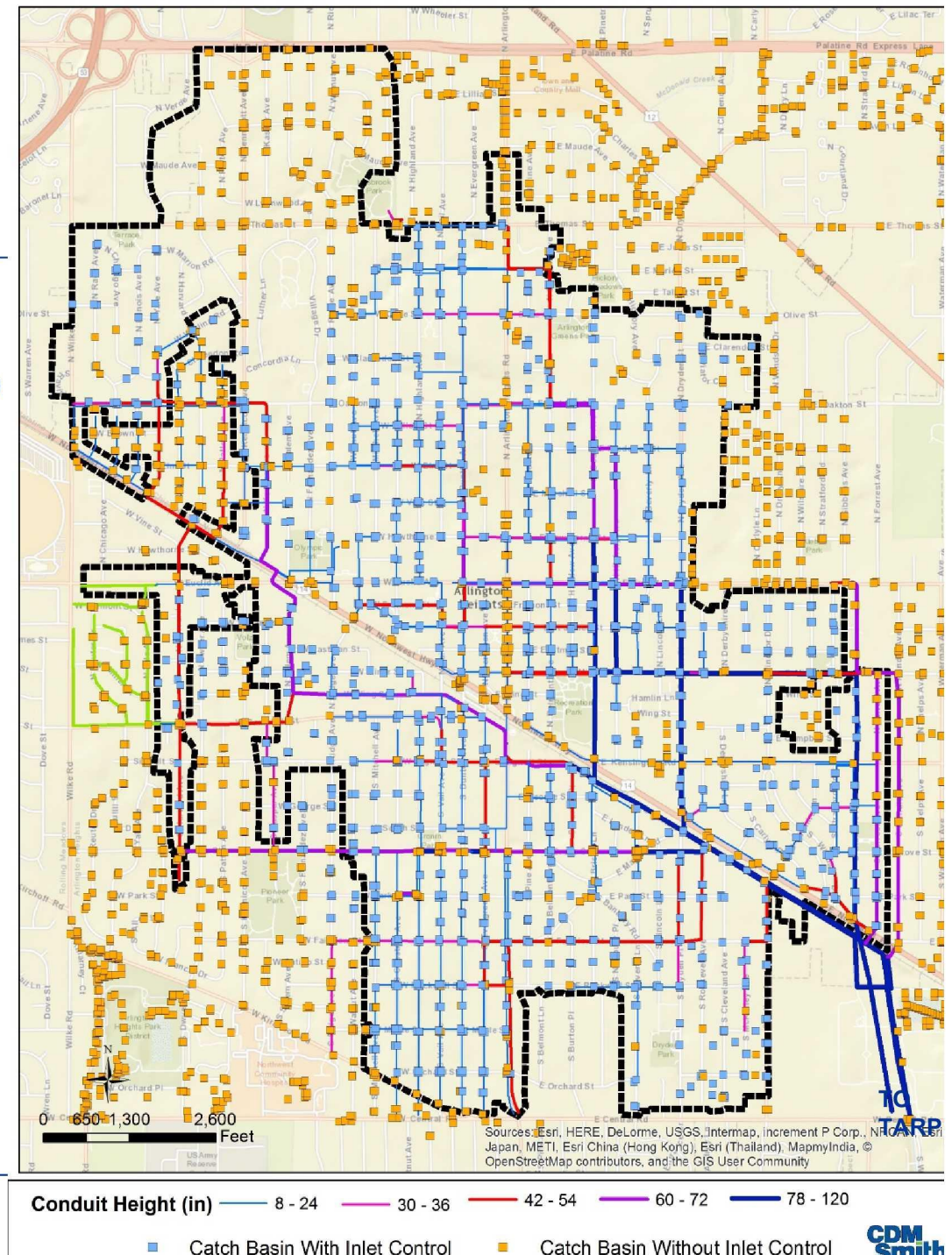
EXISTING SEWER SYSTEM

- 3.5 square miles of drainage area
- Combined sewers range from 8 inches to 144 x 96 inches in size
- Trunk sewers connect to MWRDGC's TARP system
- Downspout/Roof Drain connections are disconnected from combined sewer system in residential areas
- Roof drains are connected in Downtown area

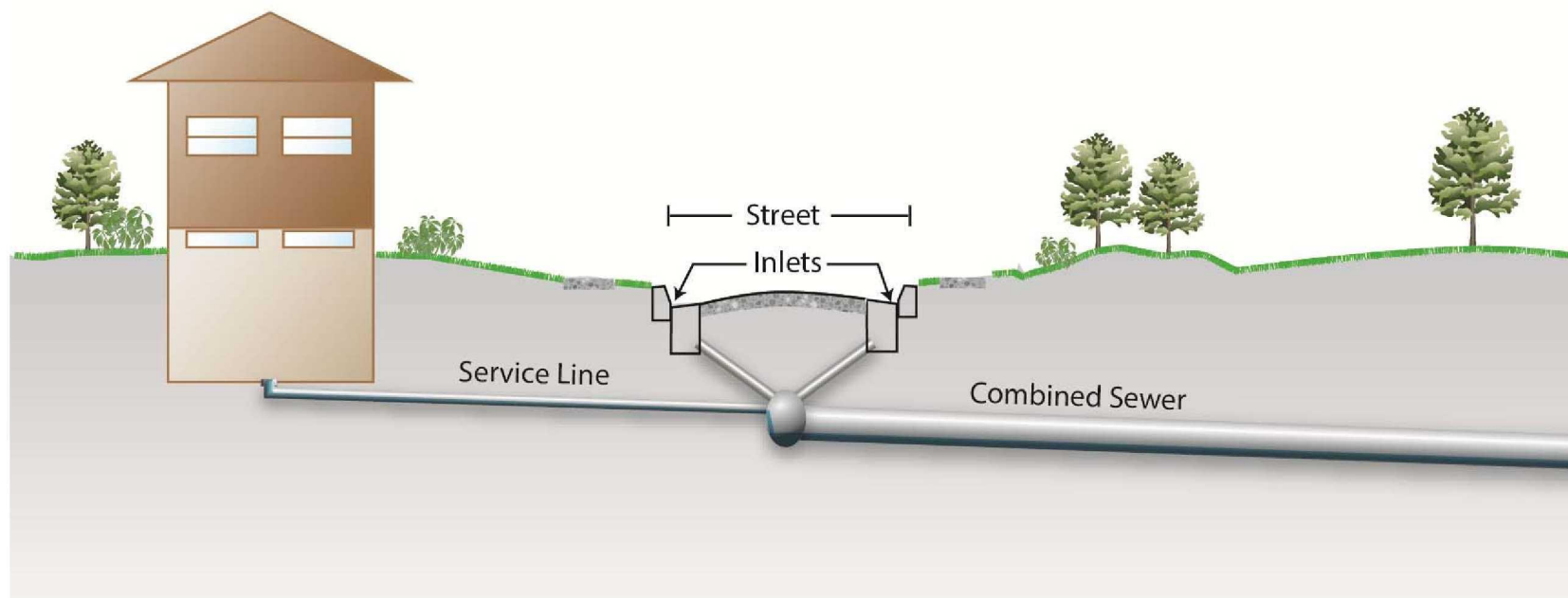


EXISTING SEWER SYSTEM

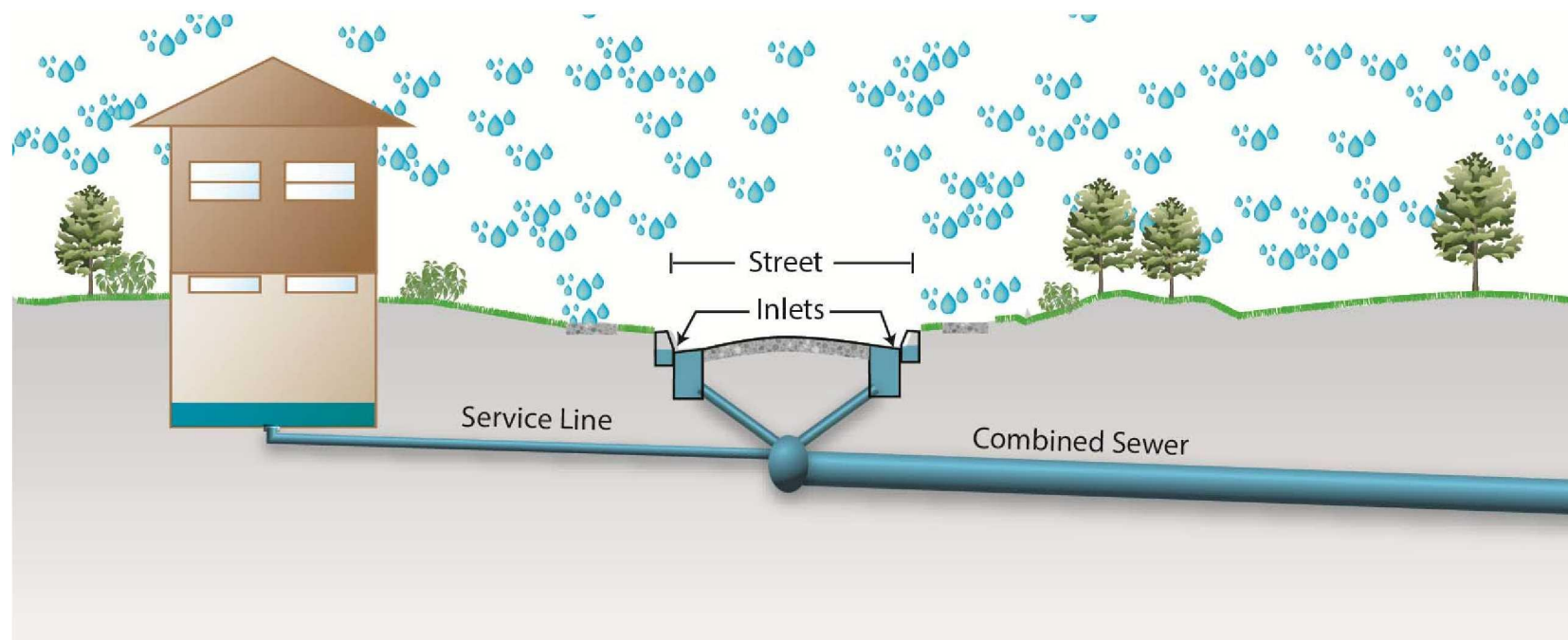
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- Trunk sewers connect to MWRDGC's TARP system
- Downspout/Roof Drain connections are disconnected from combined sewer system in residential areas
- Roof drains are connected in Downtown area
- Approximately 1,500 inlet controls



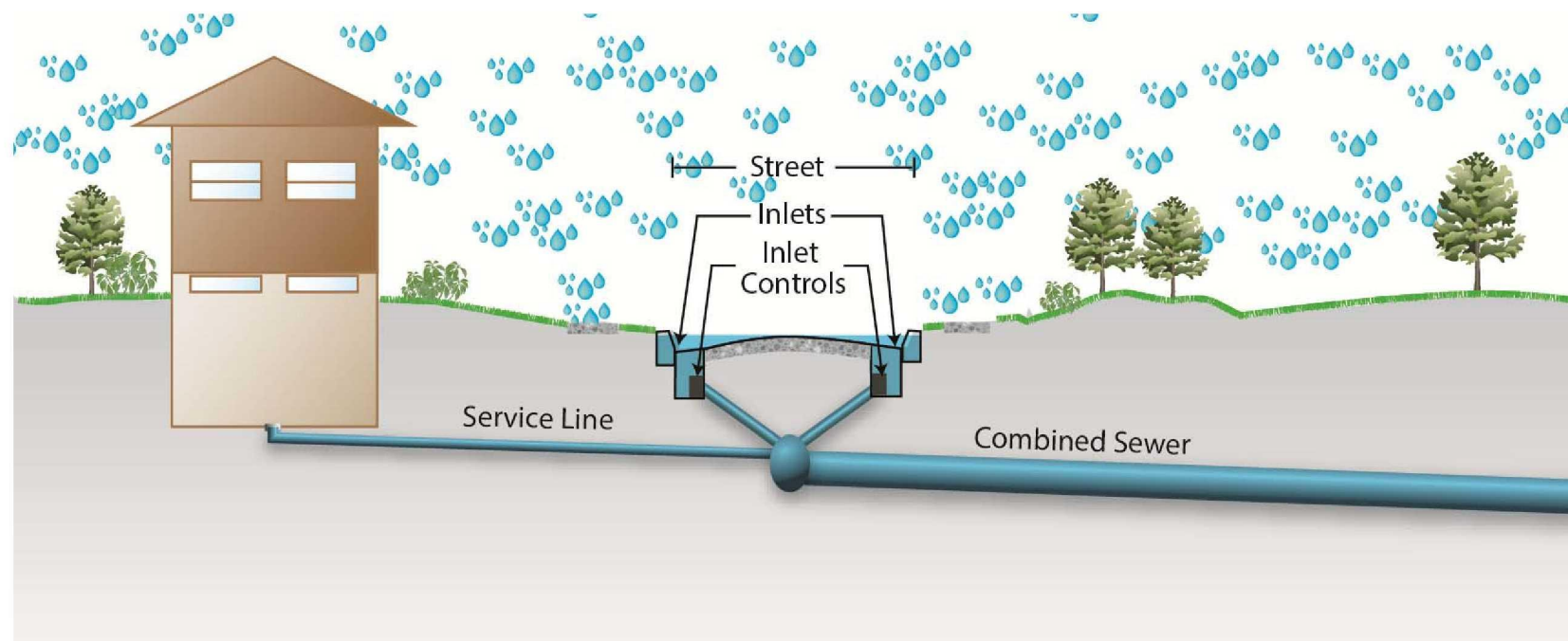
EXISTING SEWER SYSTEM



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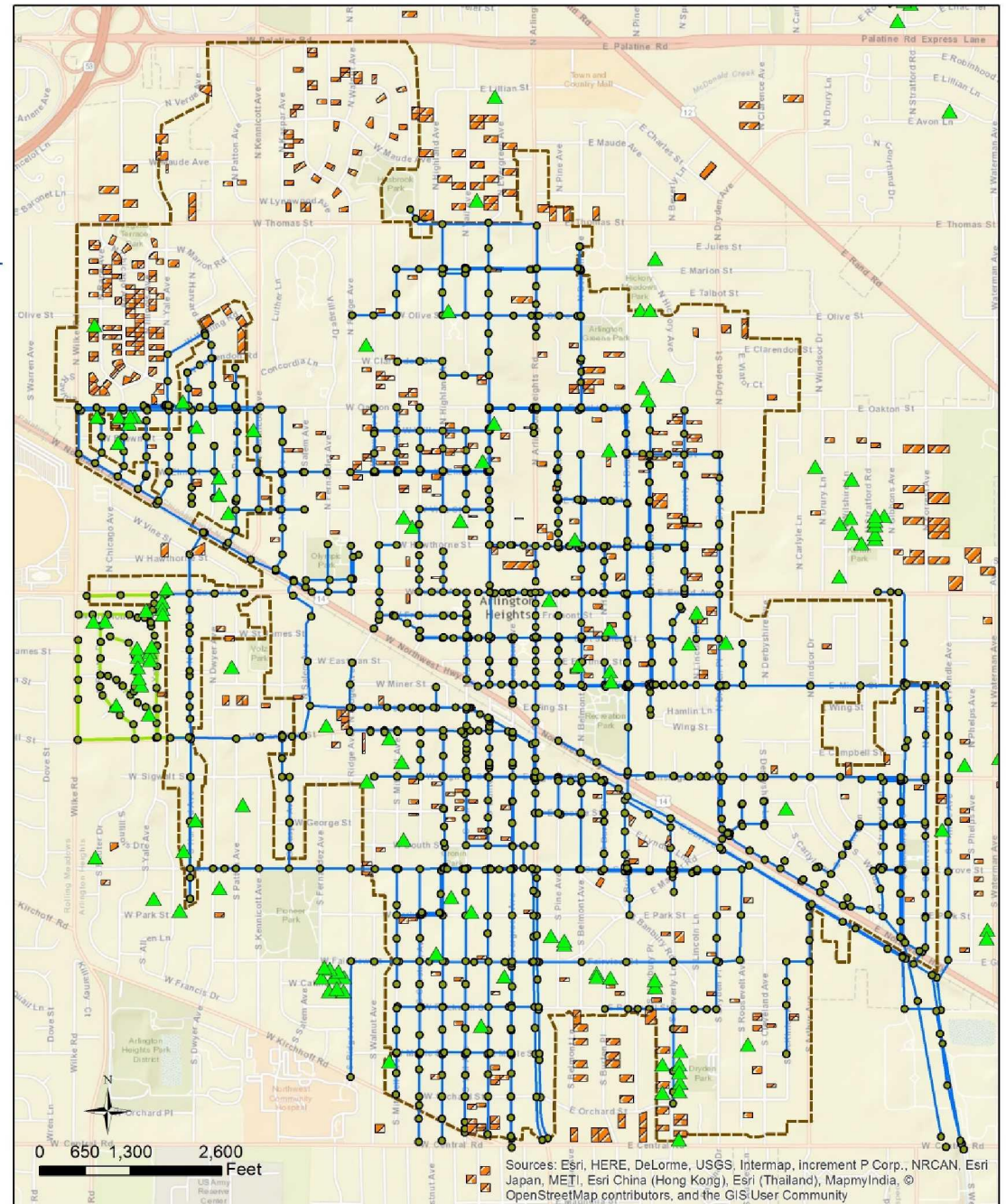


EXISTING SEWER SYSTEM

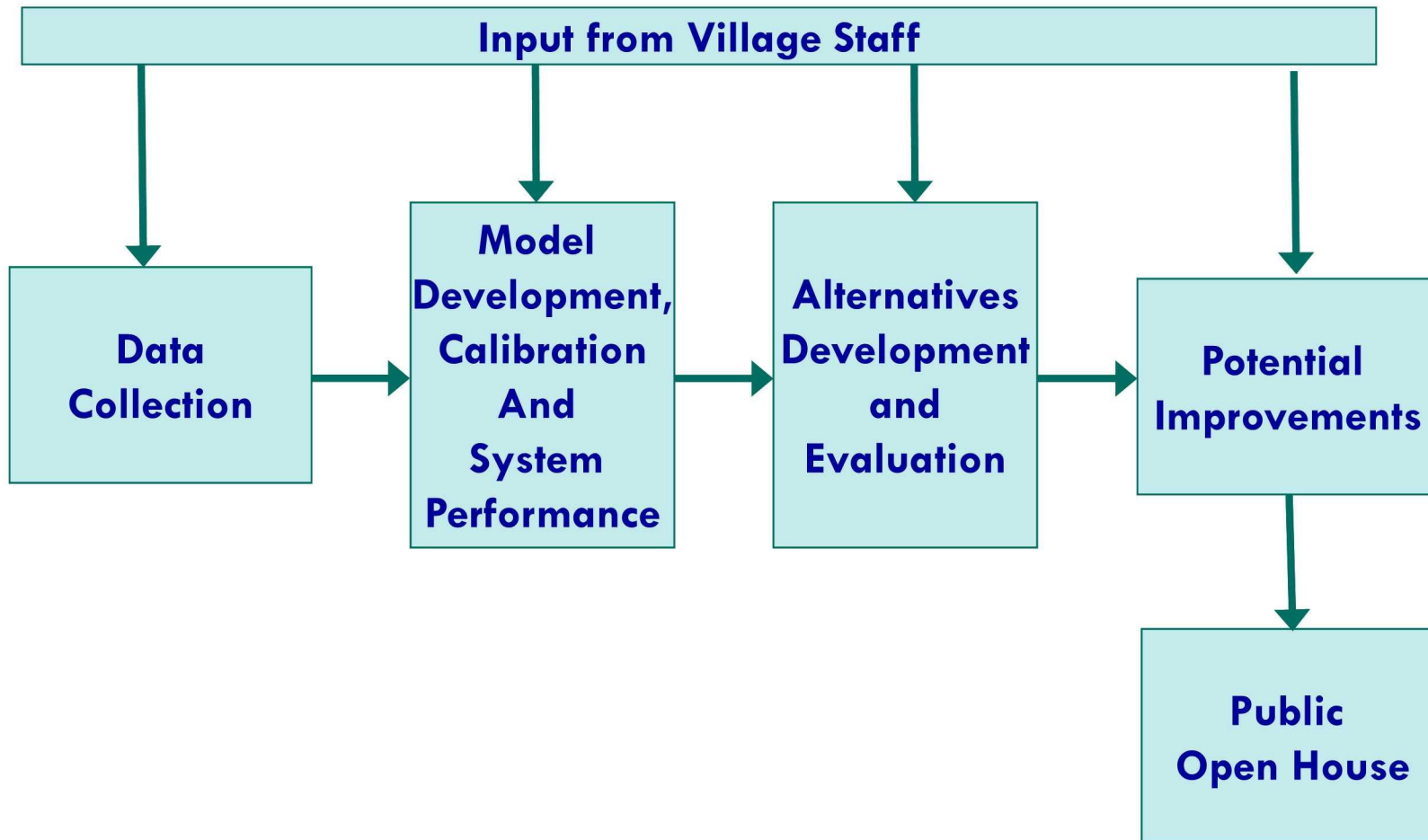


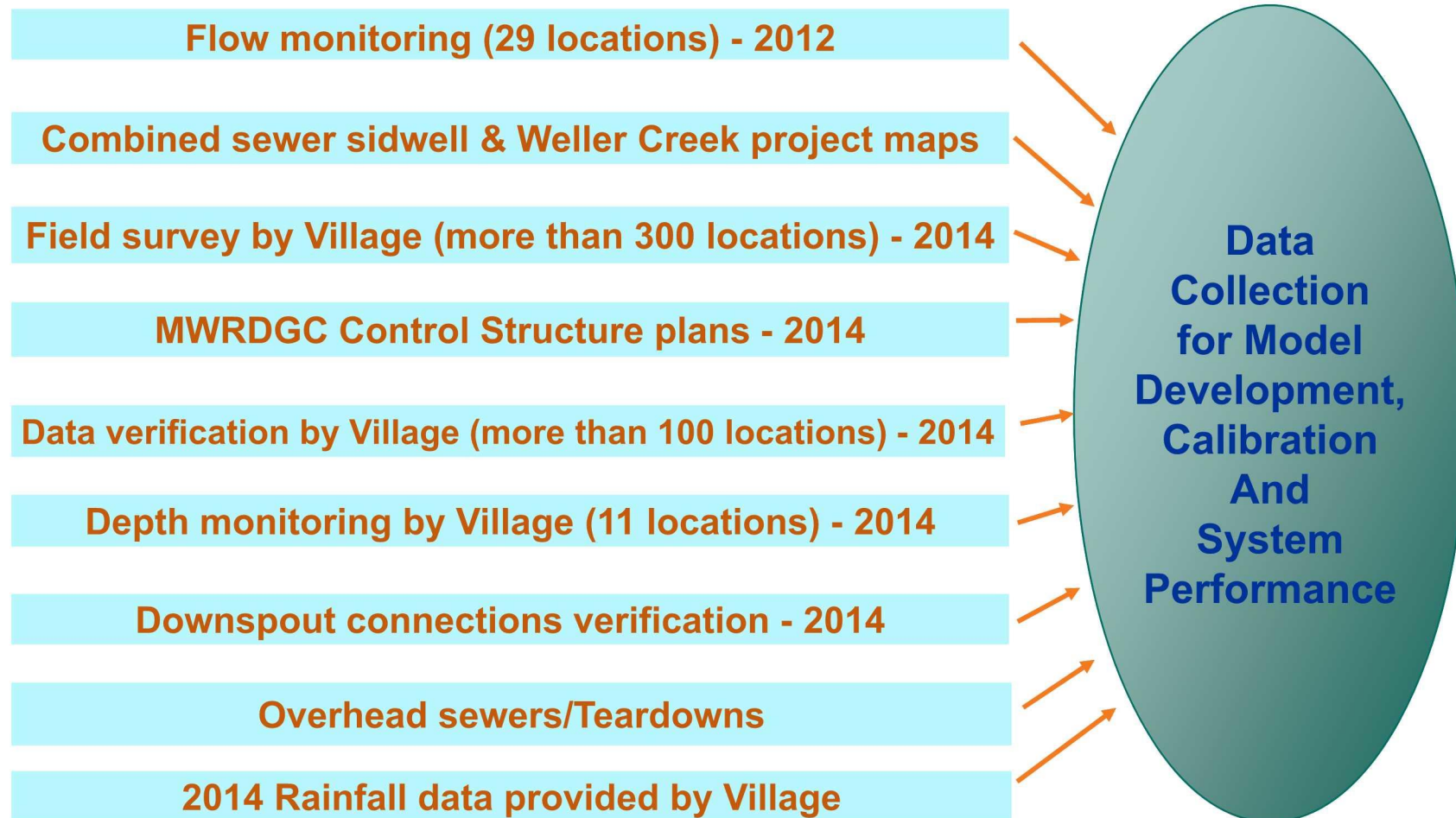
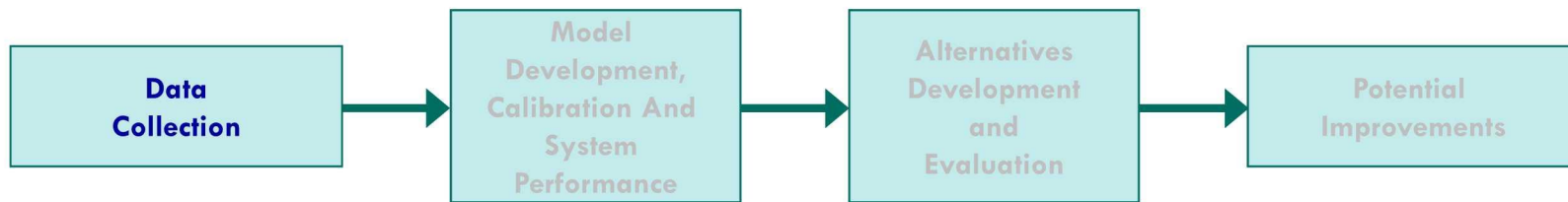
EXISTING SEWER SYSTEM

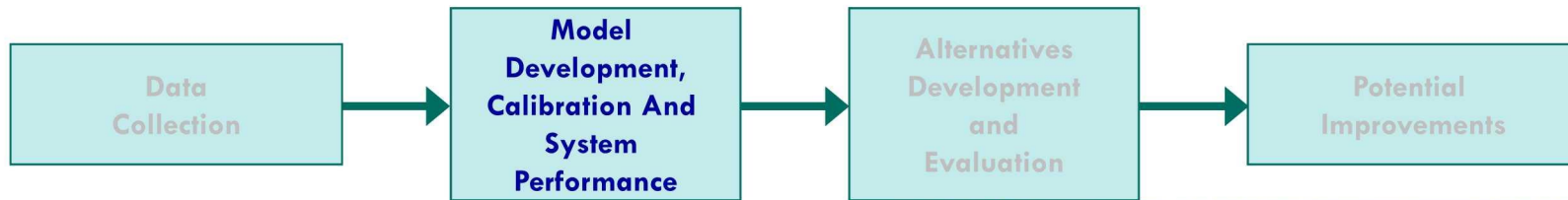
- 140 overhead sewer locations
- 530 teardown locations



STUDY APPROACH

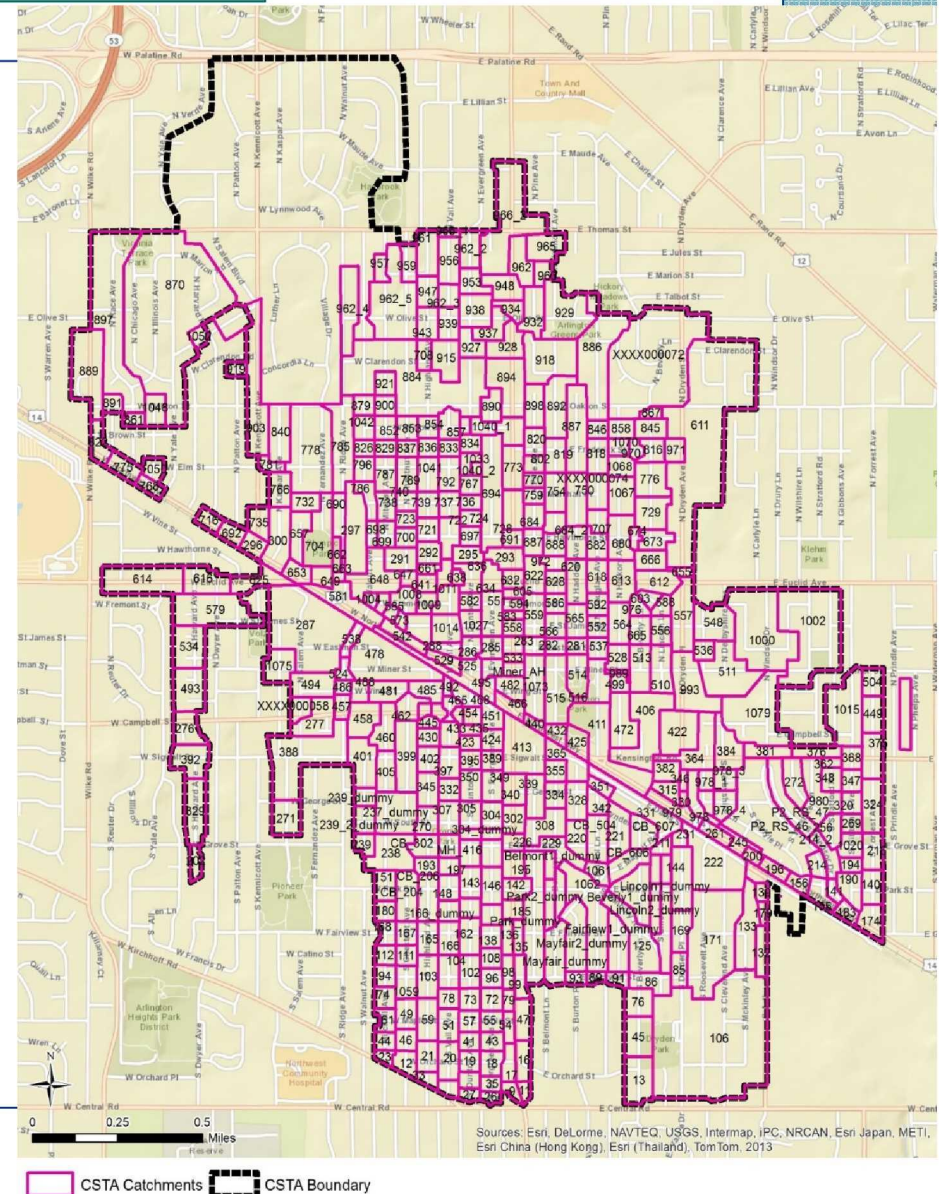


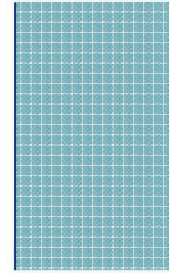
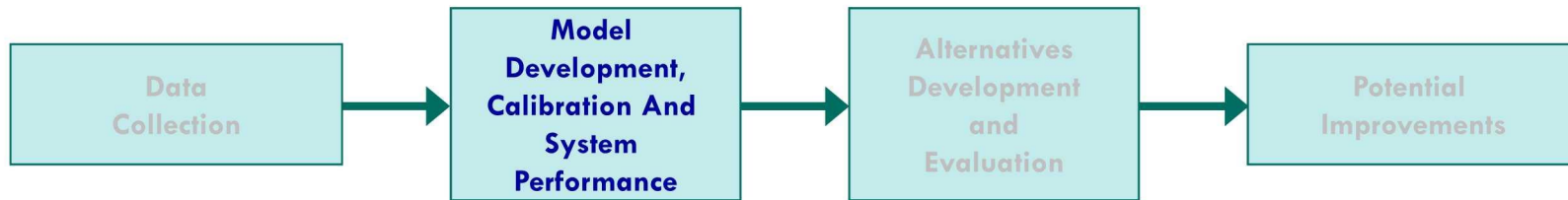




Model Development

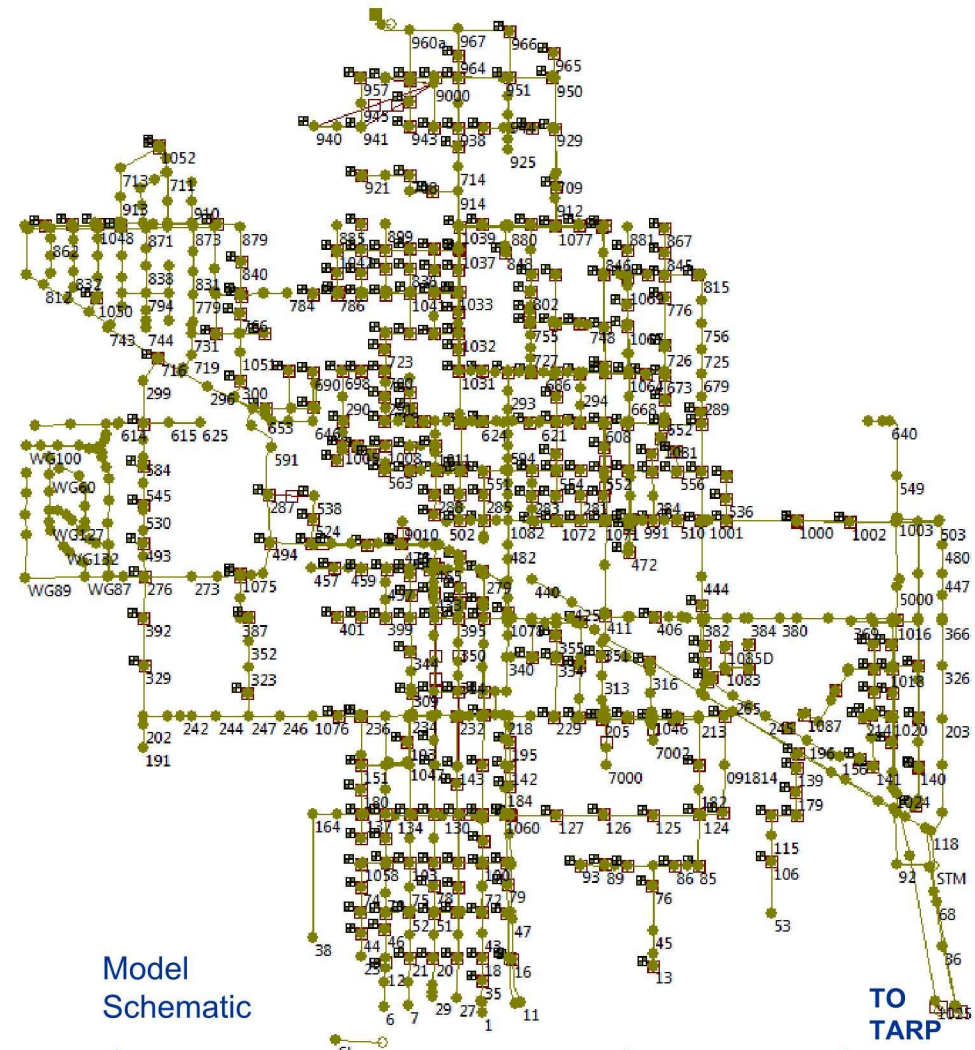
- Developed detailed model representing the CSTA system
- 2,270 acres of drainage area delineated in to smaller catchments, ranging from 0.6 to 70 acres
- Represented downspout connections in Downtown area and disconnections in residential areas

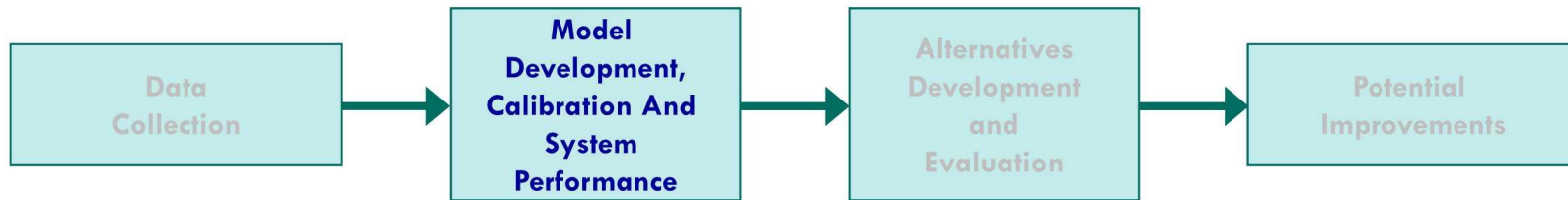




Model Development

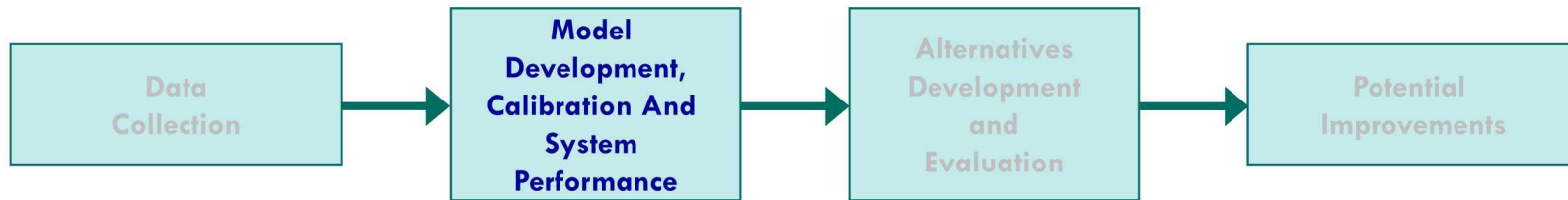
- Model included the combined sewers greater than 12 inches in diameter
- Represented catch basin inlet controls in the model
- Represented trunk sewer connections to MWRDGC's TARP system





MWRDGC TARP Connection

- To understand the operation of MWRDGC's Control Structures, Village staff and CDM Smith met with MWRDGC staff in 2014
 - TARP system
 - Sluice gates in the Control Structures are set to 25% opening
 - MWRDGC operates the sluice gate openings during storm events

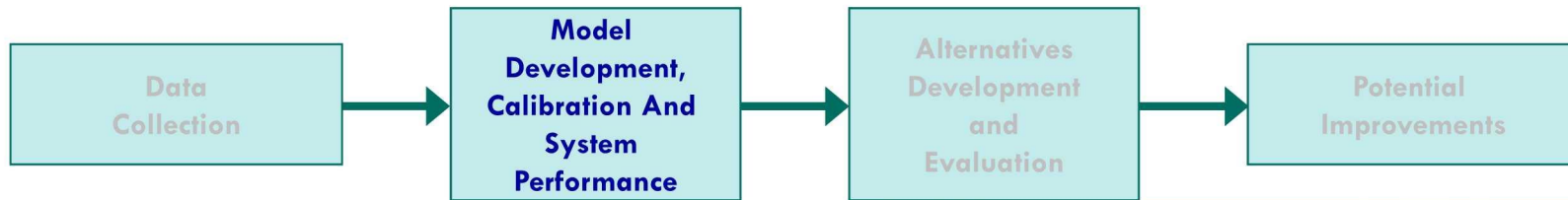


Model Calibration

- Industry calibration standard for flows and depths (15% and 0.4 feet)
- Model calibrated to 2012 flow and 2014 depth monitoring data
- Model results qualitatively validated with July 23rd, 2011 storm event observed data
- Model results validated by Village staff
- Model can be used for future analysis

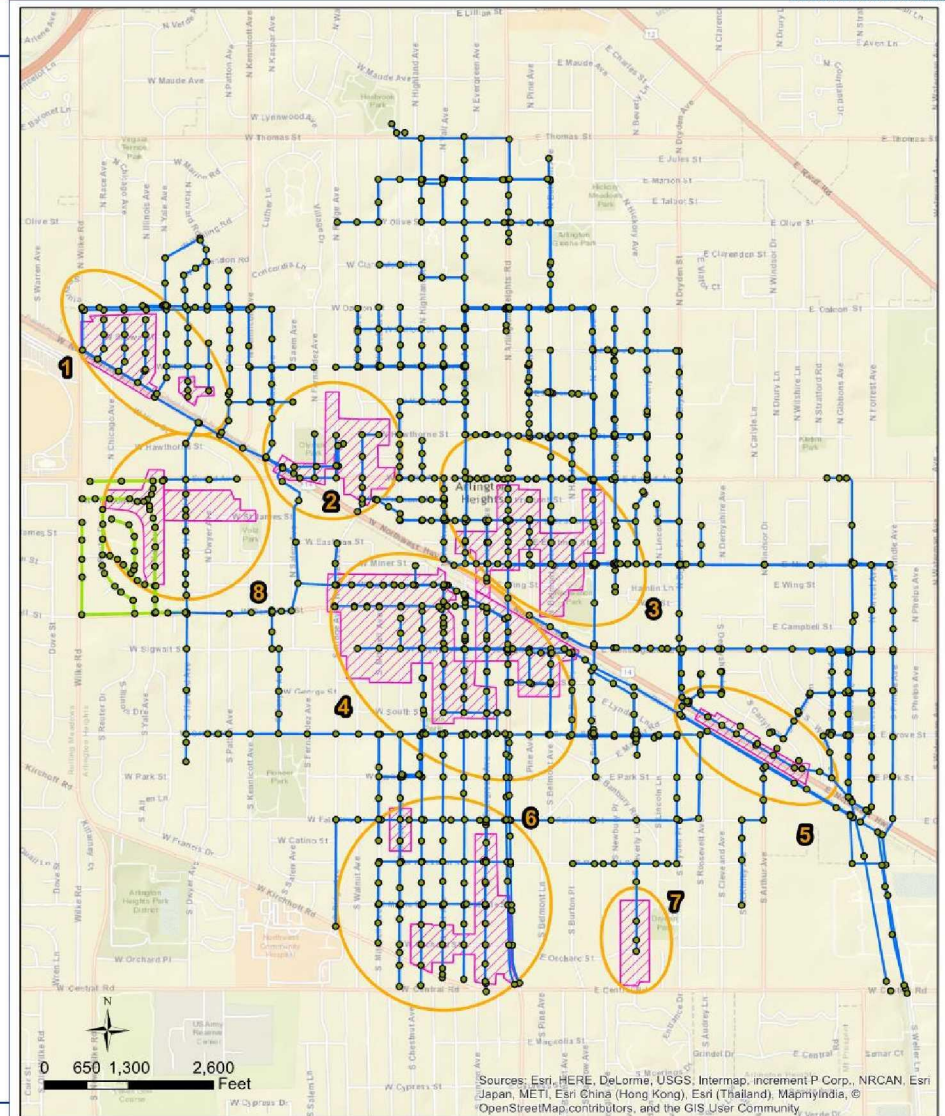
Meter ID	Difference (ft)
AH4	0.38
AH6	-0.23
AH7	-0.01
AH8	-0.11
AH10	-0.31
AH11	0.21
AH12	0.20
AH15	-0.16
AH16	0.05
AH18	-0.28
AH21	-0.24
AH22	-0.22
AH24	-0.03
AH27	-0.20
AH28	-0.22
AH29	0.28

Example of depth calibration at metered locations (model results versus observed data)

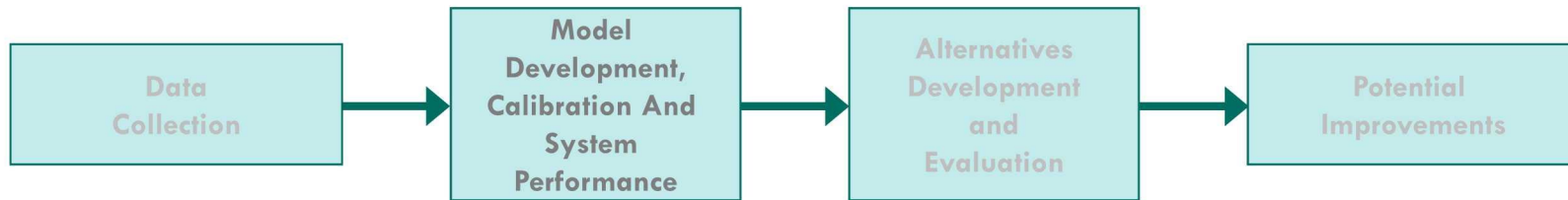


System Performance

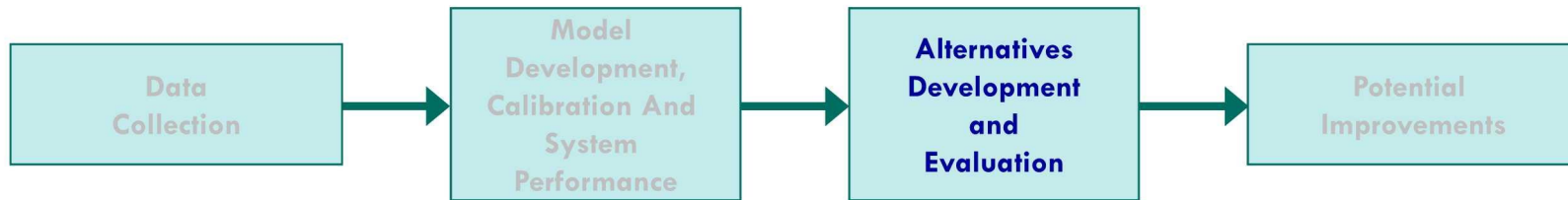
- Calibrated model used for evaluating system performance
- CSTA system performance was evaluated for the 2.1 inches in 1-hour storm event (Village's design storm)
- Model predicted 8 potential locations where the combined system does not provide protection for basement backups
- Majority of the CSTA system can convey the 1.79 inches in 1-hour storm event



 Subbasins With Potential Basement Backups

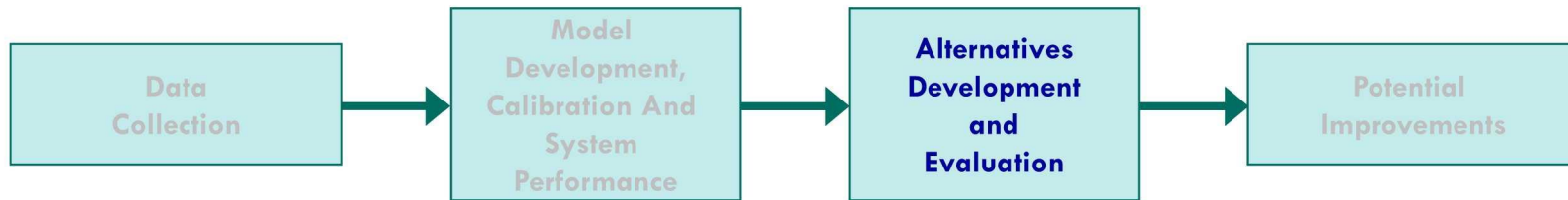


- Potential alternative components:
 - Local combined sewer improvements
 - Diversion to existing relief sewers to make use of available capacity if present
 - Local storage improvements
 - Trunk relief sewers discharging into the TARP system
 - Overhead sewers
- Alternative screening analysis using the following criteria:
 - Effectiveness
 - Permitting
 - Constructability
 - Public acceptance
 - Relative cost



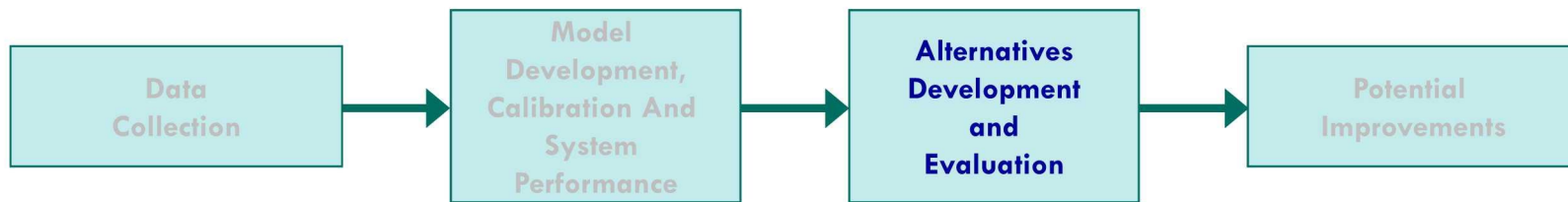
ALTERNATIVE COMPONENTS SCREENING ANALYSIS

- Screening for all eight problem areas
- Identified two alternative components
 - New relief sewers
 - New overhead sewers



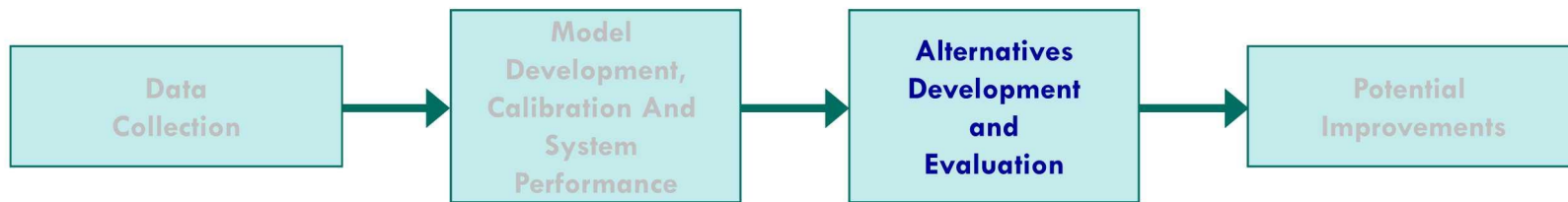
ALTERNATIVES

- Relief sewer improvements:
 - New local combined sewers to provide additional capacity
- Overhead sewer improvements:
 - Improvements prevent sewage from backing up in the sanitary lateral and entering a house or building basement

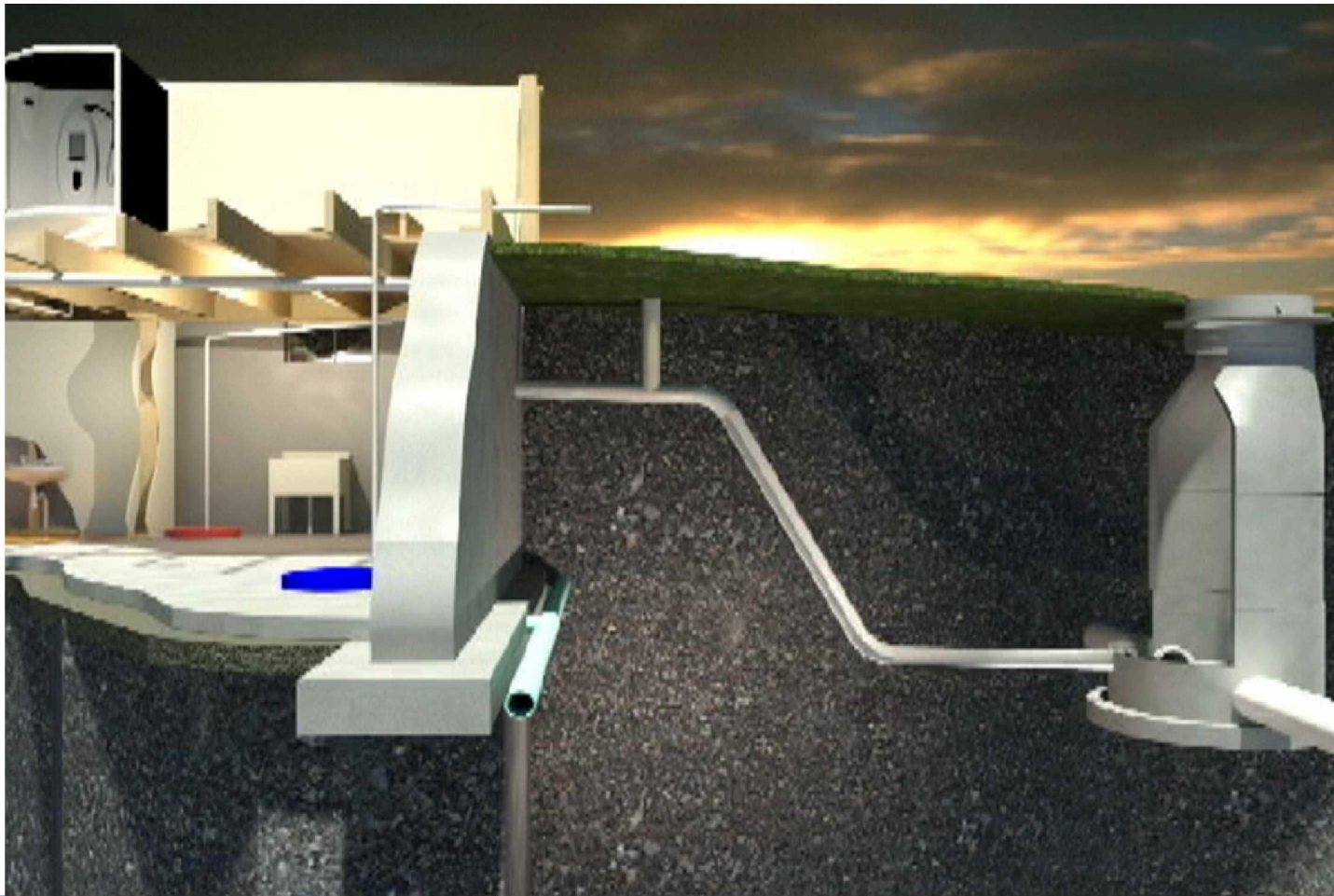


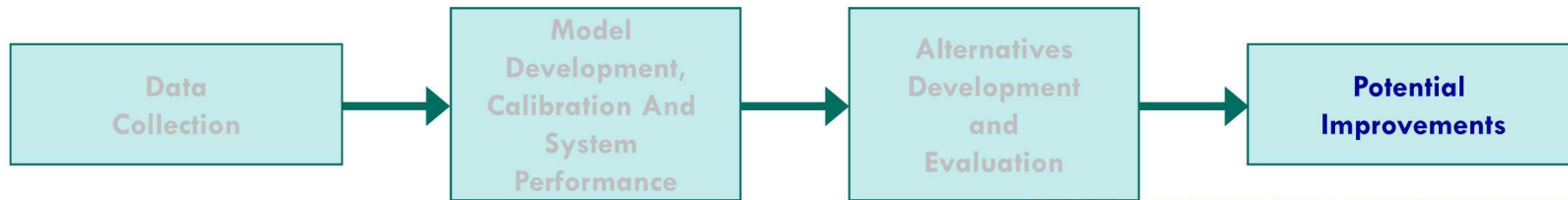
Basement without overhead sewer





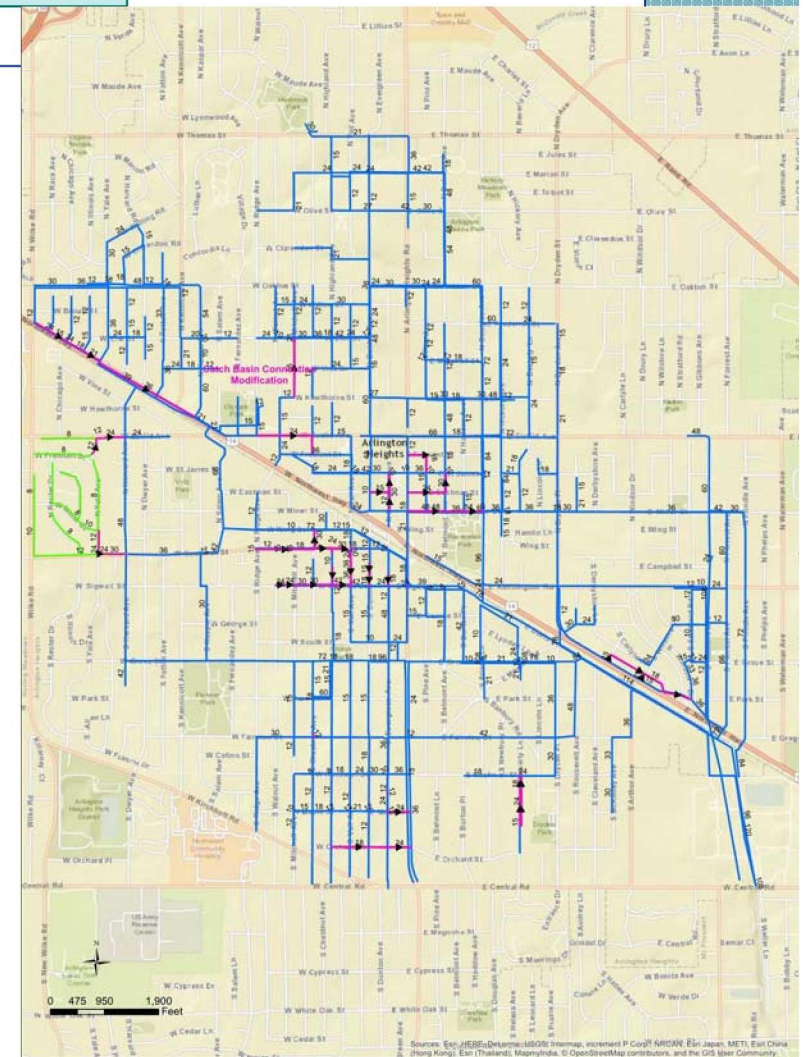
Basement with overhead sewer





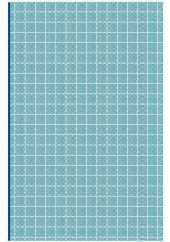
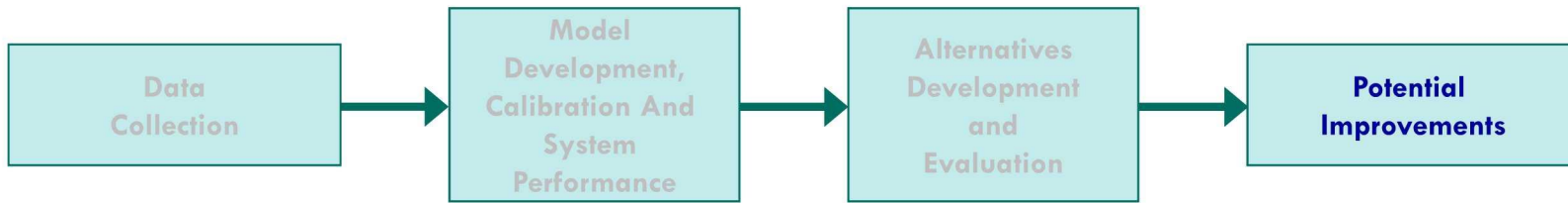
Potential relief sewer improvements:

- Potential relief sewer improvements are sized for the Village's design standard
- Potential relief sewer improvements range from 15 inches to 60 inches in size
- Potential relief sewer alternative improvements cost approximately \$13 million
- Details discussed in breakout session



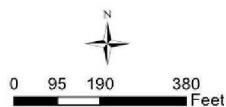
Legend

- Relief Sewer Alternative Improvements
 - Combined Sewer Network
 - Sanitary Sewers
- Basement Backup Protection - 2.1 inches in 1-Hour Storm Event
Combined Sewer Tributary Area Flood Study
Village of Arlington Heights

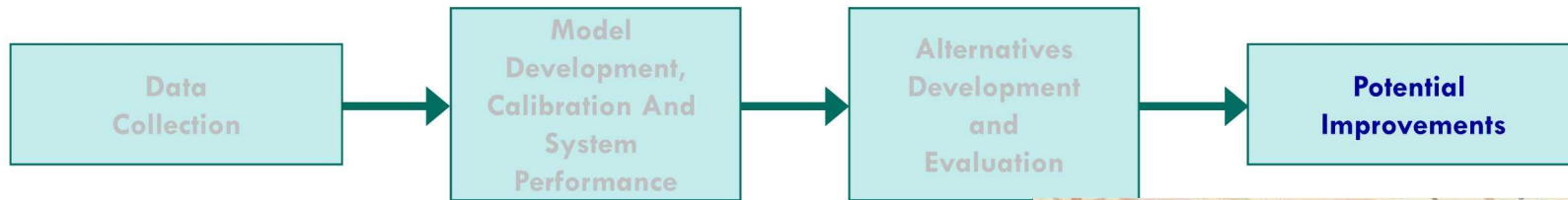


Legend

- Potential Relief Sewers
- Combined Sewer Network

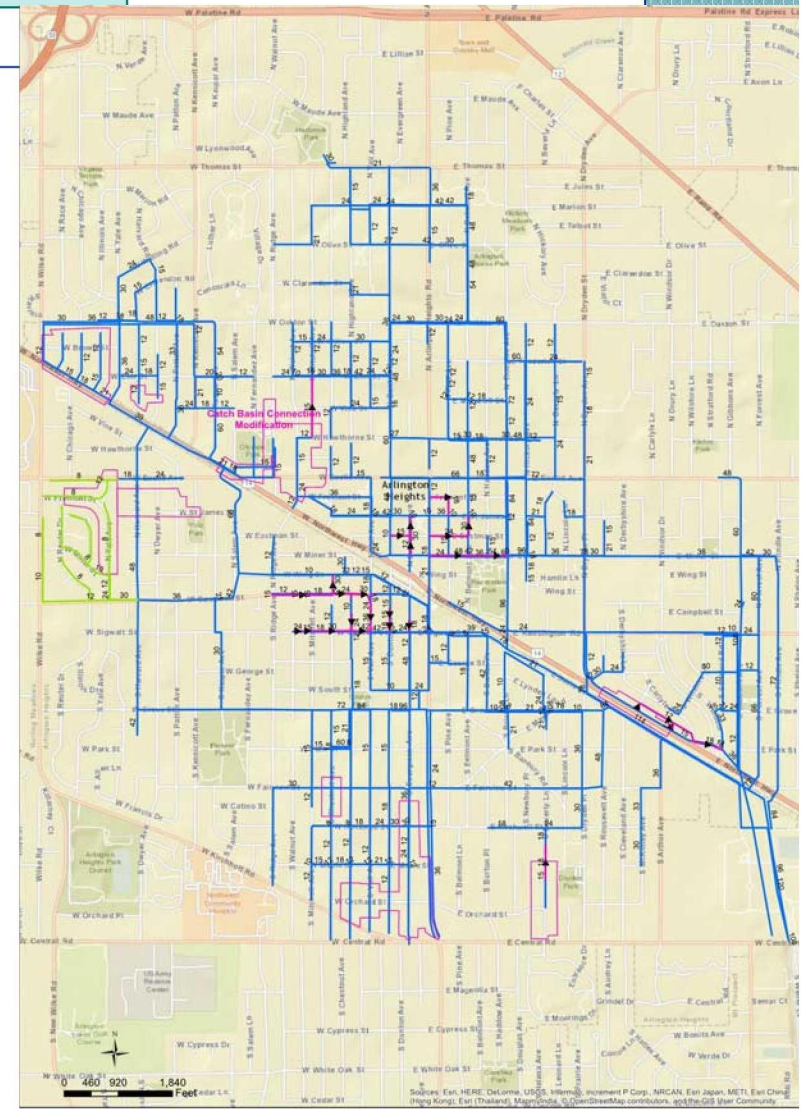


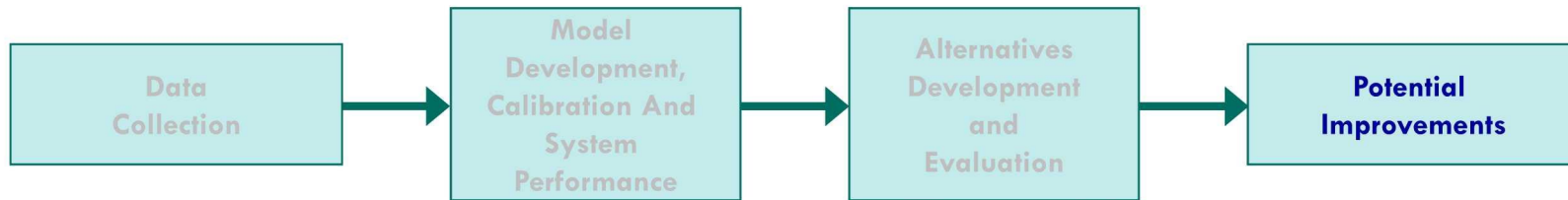
Potential Relief Sewer Improvements near Northwest Highway and Chicago Avenue
 Basement Backup Improvements
 Combined Sewer Tributary Area Flood Study
 Village of Arlington Heights



Potential overhead sewer improvements:

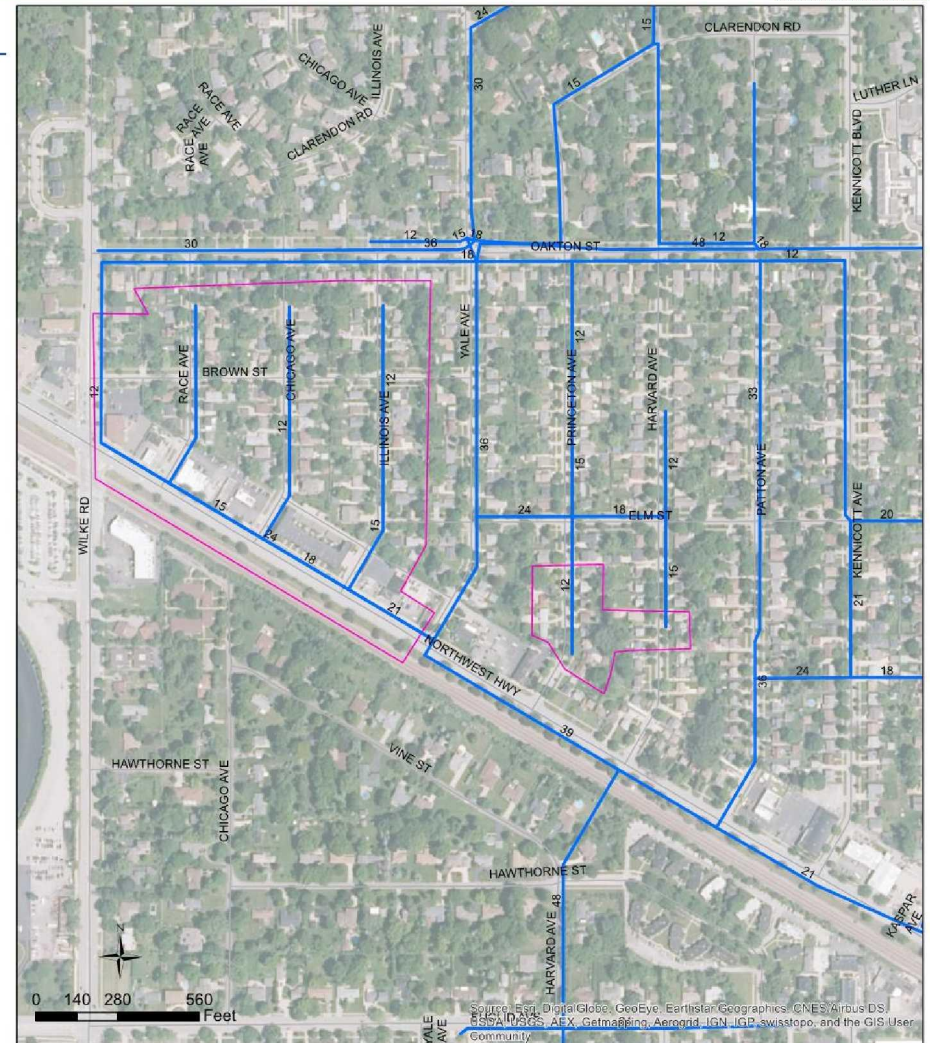
- Potential overhead sewers at approximately 440 locations
- Overhead sewers not provided in downtown areas (problem areas 3 and 4, relief sewers still required)
- Several areas still require relief sewers (15 to 18 inches in size)
- Overhead sewer alternative improvements cost approximately \$11 million
- Presumes 50% overhead sewer installation cost participation from the residents





Potential overhead sewer improvements for Area 1:

- Overhead sewer improvements at 80 properties



Legend

- Combined Sewer Network
- Overhead Sewers Location

Potential Overhead Sewer Improvements near NW HWY and Chicago Avenue
Basement Backup Improvements
Combined Sewer Tributary Area Flood Study
Village of Arlington Heights

**CDM
Smith**

SUMMARY CONCLUSIONS

- Village established design standard
- Eight problem areas do not meet Village's design standard
- Potential alternatives include:
 - Relief sewer improvements
 - Overhead sewer improvements
- Improvements costs: \$13 and \$11 million respectively
- Improvements meet or exceed Village's design standard
- Continue overhead sewer cost share program
- The Village Board will be reviewing the cost & benefits of the potential improvements at a later meeting to determine their feasibility and next possible steps

BREAKOUT SESSION INFORMATION

- Areas 1 and 8 – South Board Room
- Areas 2 and 4 – Commissions Room
- Areas 3 and 5 – Siegel Room
- Areas 6 and 7 – Community Room
- Street Ponding Areas – Commissions Room

