CHARLOTTE
ENGINEERING & PROPERTY MANAGEMENT

Cutchin Drive Storm Drainage Improvements Project

Recommended Design Alternative Public Meeting

Sharon Presbyterian Church

December 15, 2015

Charlotte-Mecklenburg STORM WATER Services

WSP PARSONS BRINCKERHOFF

Introduction of Staff

- Charlotte-Mecklenburg Storm Water Service (CMSWS) Staff
  - Adrian Cardenas, PE – *Project Manager*
    - Phone: 704-336-4682
    - E-Mail: acardenas@charlottenc.gov
  - Doug Lozner, PE – *Watershed Area Manager*
  - Steven McCraney – Engineering Team
  - Billy Hattaway – Design Management Team
- Parsons Brinckerhoff (PB) Staff
  - Karl Dauber, PE – *Project Manager*
  - Derek Benenhaley – *Project Engineer*

Housekeeping Items:

- Sign-In Sheet
- Agenda & other handouts
- Customer Service Comment Cards
- Q&A period after the presentation

Meeting Purpose and Agenda

- **Purpose**
  - Provide a summary of the Recommended Alternative Improvements
  - Request feedback from property owners/residents within the project area

- **Agenda**
  - Project Progress and Current Status
  - Criteria for Alternatives Analysis
  - Presentation of the Recommended Alternative Improvements
  - Future Project Milestones
  - General Questions and Comments
  - Small group break-out sessions

Why the Cutchin Drive Storm Drainage Improvement Project (SDIP) was chosen:

- Requests for Service from Property Owners to 311 within watershed (**88** Qualifying Requests from **66** Unique Addresses)
  - Inadequate/Undersized Drainage Infrastructure
  - Deteriorating Infrastructure (old culverts, pipes, inlets)
  - Sink Holes
  - Channel Erosion
  - Road Flooding
  - Structure Flooding (Houses, Buildings, Sheds, etc.)
- Larger Watershed-wide issues that cannot be managed by spot repairs or without potentially impacting downstream properties.

Planning Phase
(began April 2014)

- **Survey, Public Input & Questionnaires**
  - Original questionnaires were mailed out in June of 2014
  - 71 Responses – 46 reporting drainage issues
- **Existing Conditions Analysis**
  - 1st Public Meeting – Held on October 21, 2014
  - On-line questionnaire – Nov. 2014 – Nov. 2015
  - 13 new responses – 6 reporting drainage issues
- **City Design Standards Alternative**
- **Alternative Analyses**
- **Recommended Alternative**
  - 2nd Public Meeting – TODAY – December 15, 2015

Alternatives Analysis:

Criteria for Alternatives Analysis

- Public Safety
- Impact to homeowners
- Cost to fee payers

Types of Alternatives Considered

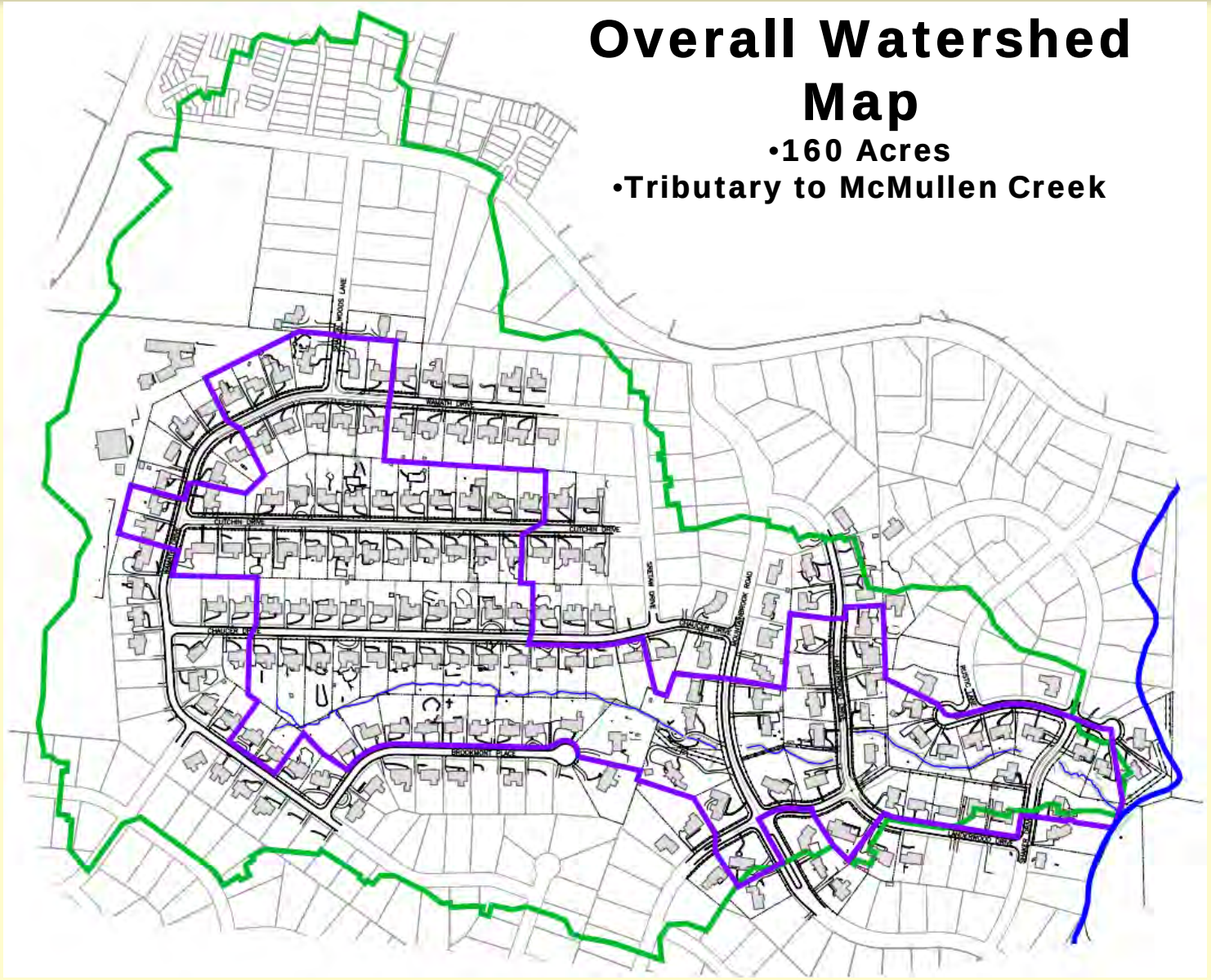
- Replacement of failing pipes
- Rehabilitation of existing pipes
- Different culvert and pipe sizes
- Different culvert and pipe shapes and materials
- Additional pipes and inlets
- New alignments
- Detaining water to reduce flow
- Stream stabilization

Cutchin Drive Storm Drainage Improvement Project

Recommended Alternative Improvements

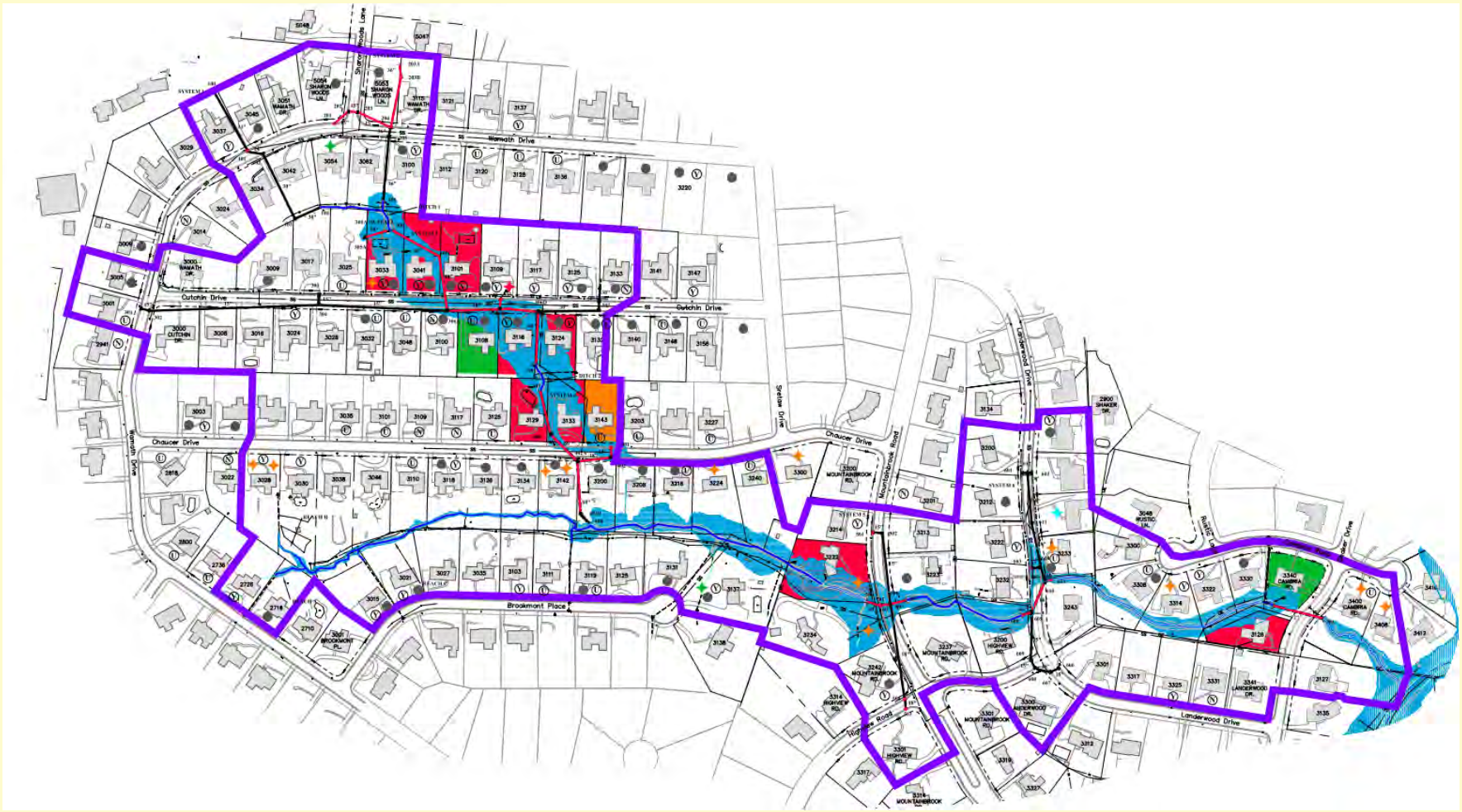
Overall Watershed Map

- 160 Acres
- Tributary to McMullen Creek

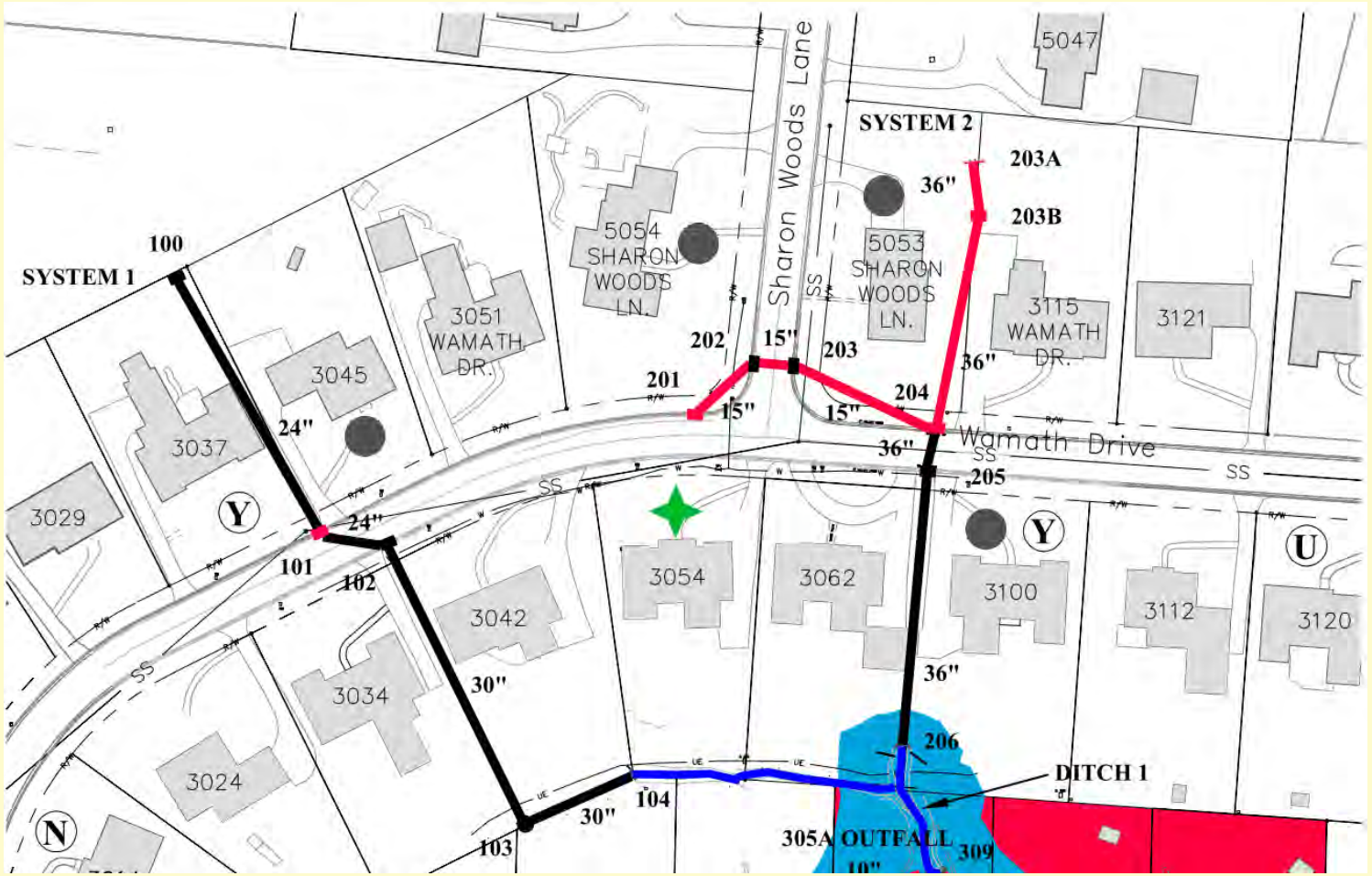


Existing Conditions Floodplain Map

- **Illustrates the Predicted Extent of Flooding**
- **100-Year Storm Event:**
  - **1 percent chance of storm occurring in any given year**



Wamath Drive - Systems #1 & #2

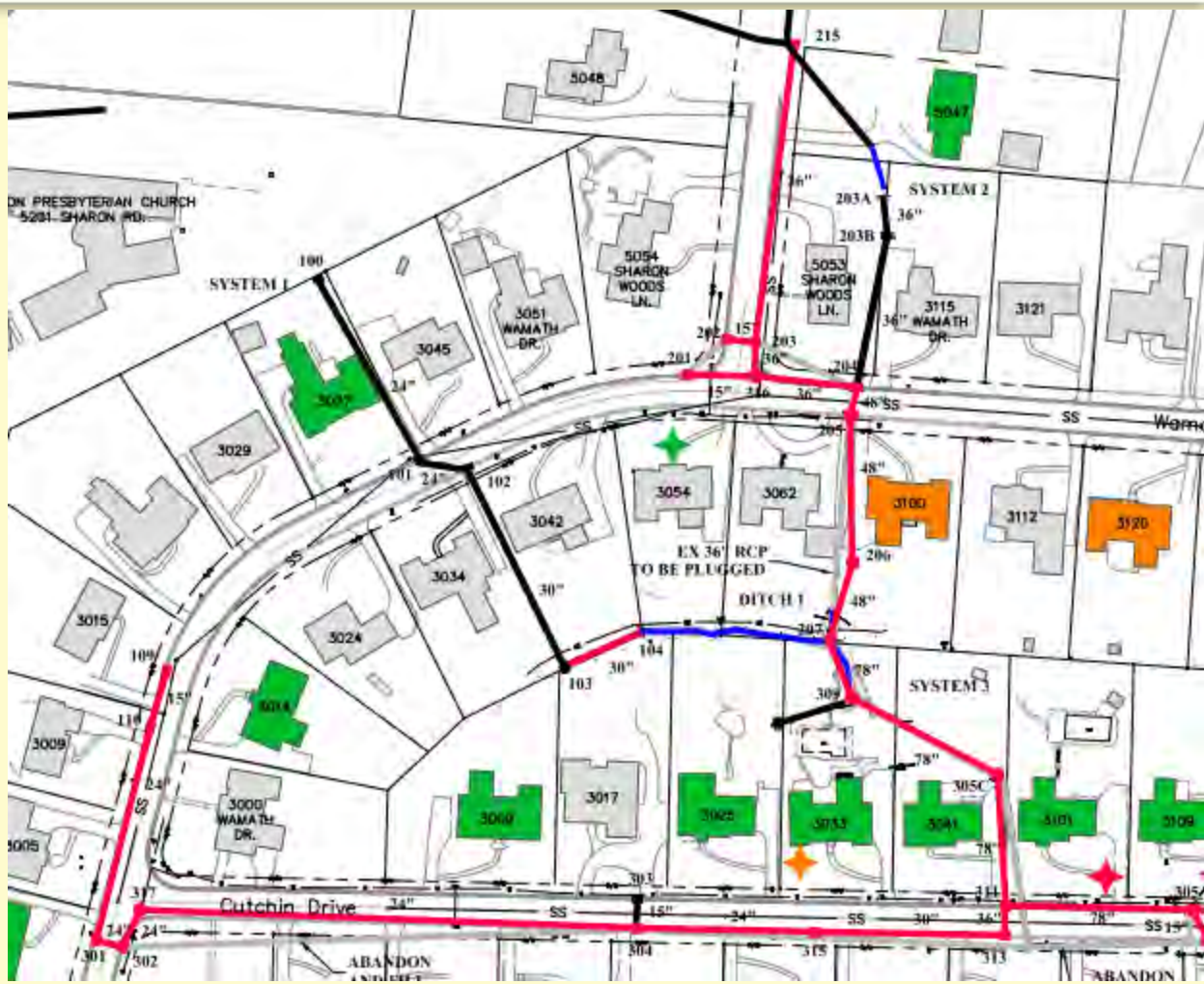


- System #1 – Additional inlets needed
- System #2 – Additional inlets needed & system undersized for 10yr storm event.

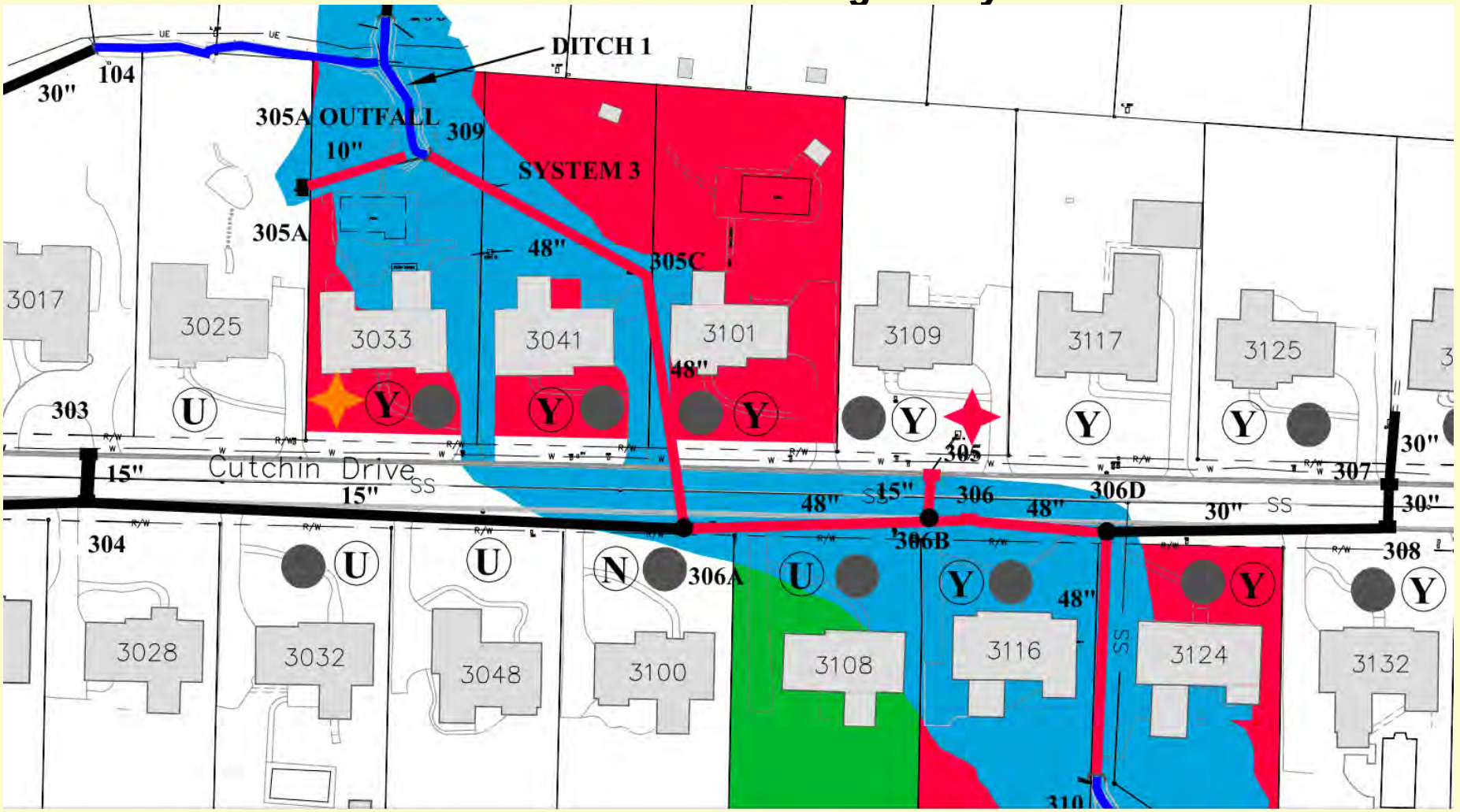
Wamath Drive - Systems #1 & #2 (Recommended)

System #1:
- Retain existing system, due to reduction of flow to the system.
- Replace outfall pipe

System #2:
- Intercept flow with system on Sharon Woods Lane.
- Upgrade system.
- Majority of work within existing R/W.



Cutchin Drive Storm Drainage – System #3

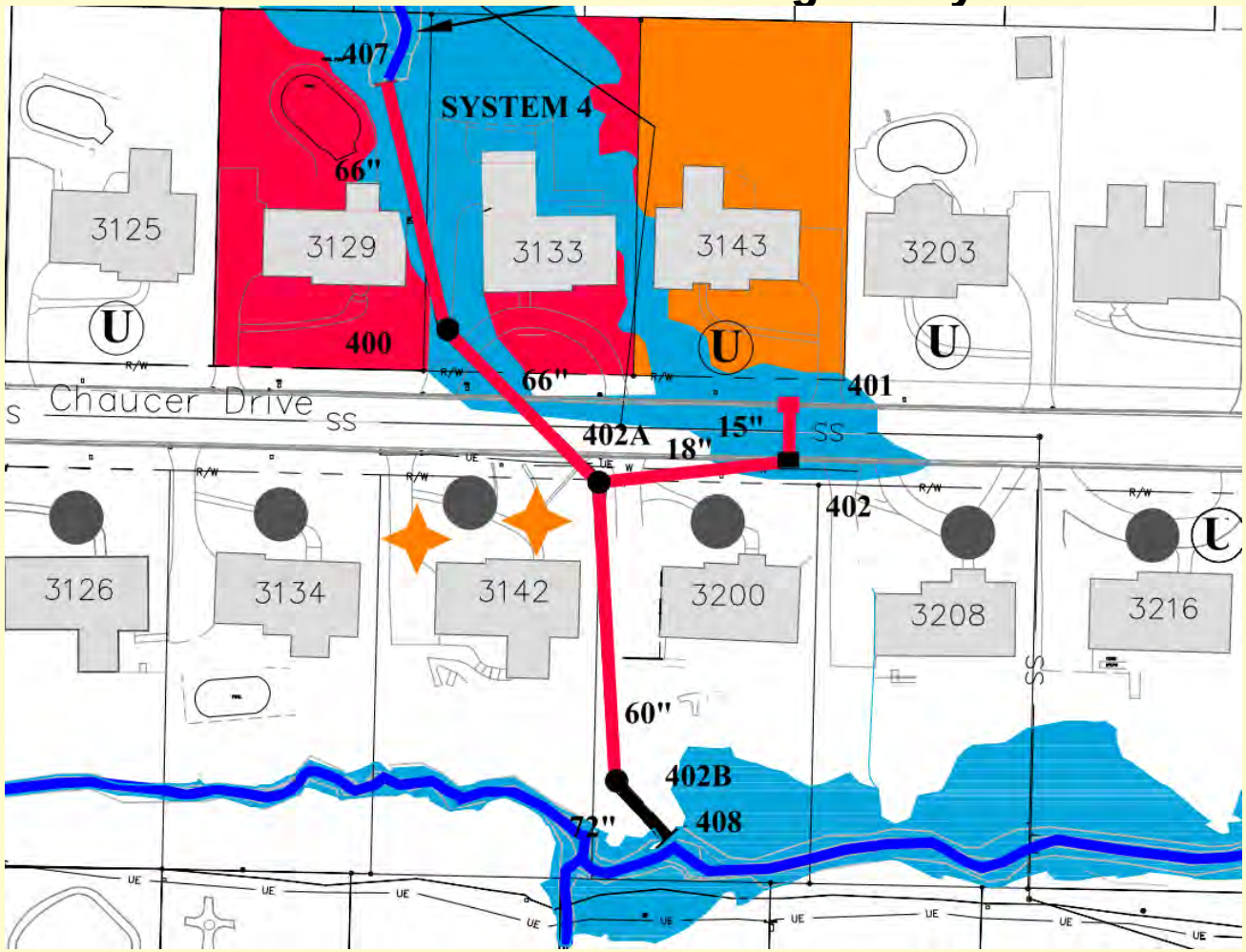


•System #3 - Additional inlets needed & system undersized for 10yr storm event causing flooding at 6 residences.

Cutchin Drive – System #3 (Recommended)

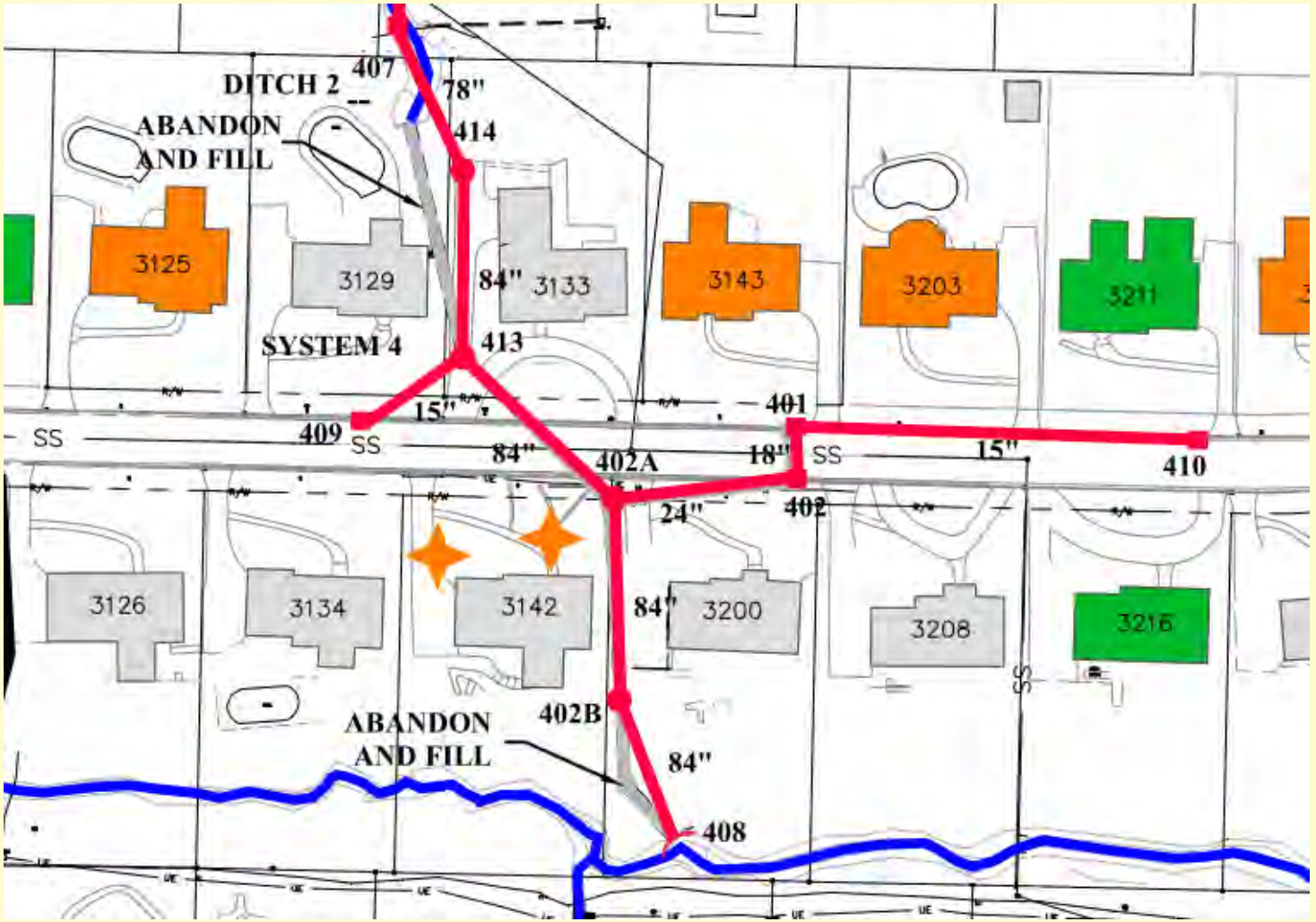
System #3 – Entire system upgraded. No structure flooding.

Chaucer Drive Storm Drainage – System #4



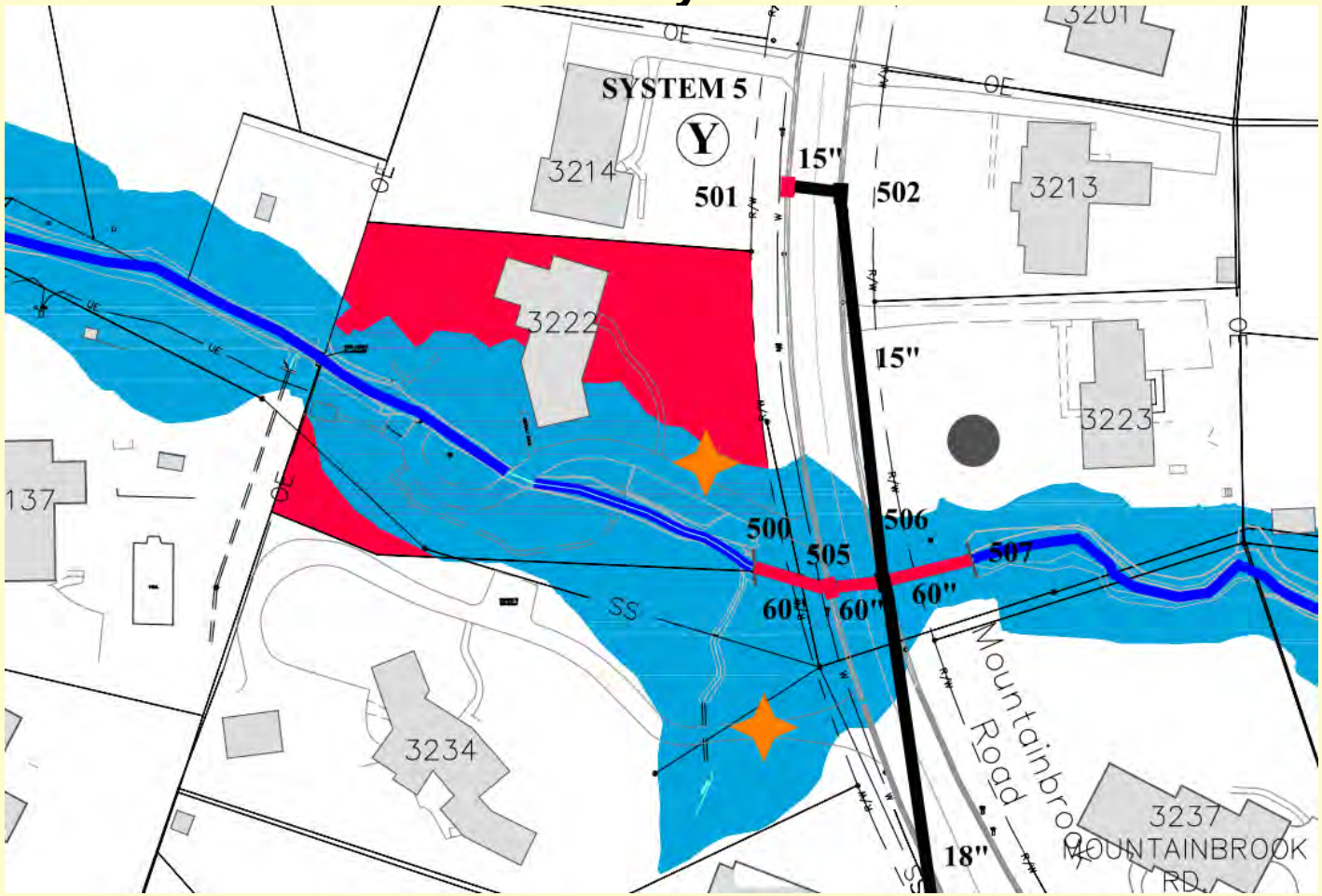
•System #4 - Additional inlets needed & system undersized for 25yr storm event causing flooding at 3 residences.

Chaucer Drive – System #4 (Recommended)



System #4 – Entire system upgraded. No structure flooding.

Mountainbrook Road – System #5 & 60” Culvert



- Mountainbrook Road Culvert (60”):
  - Undersized, overtops in 10-year storm
  - Flooding at 3222 Mountainbrook Road
- System #5 –Additional inlets needed

Mountainbrook Road – System #5 & Road Culvert (Recommended)

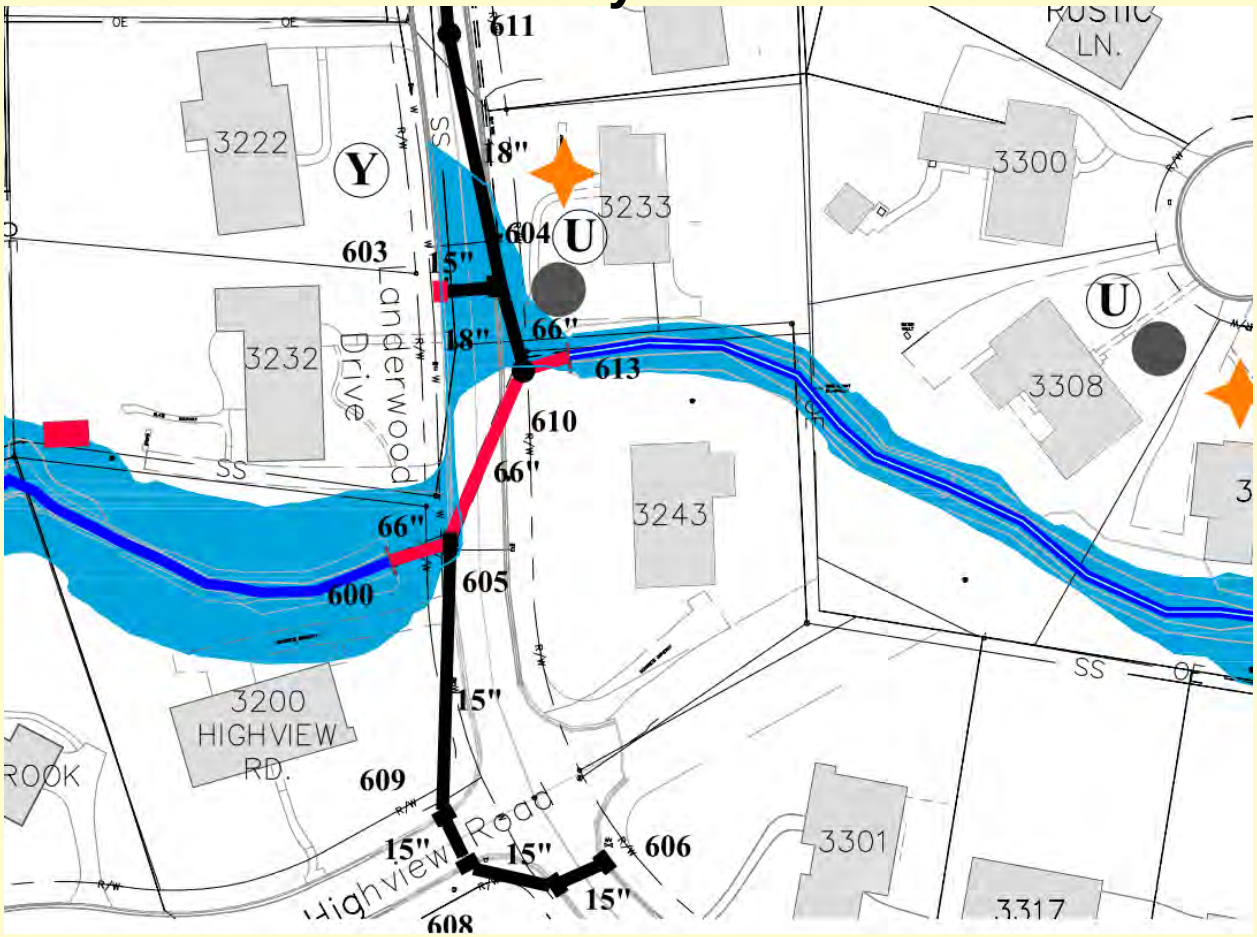
Mountainbrook Road Culvert:

- Replaced with 8'x6' Box Culvert.
- No overtopping (Existing)
- Overtopped 25-Yr (Future)
- 3222 Mountainbrook: 25-Yr LAG only. No FFE flooding.

System #5

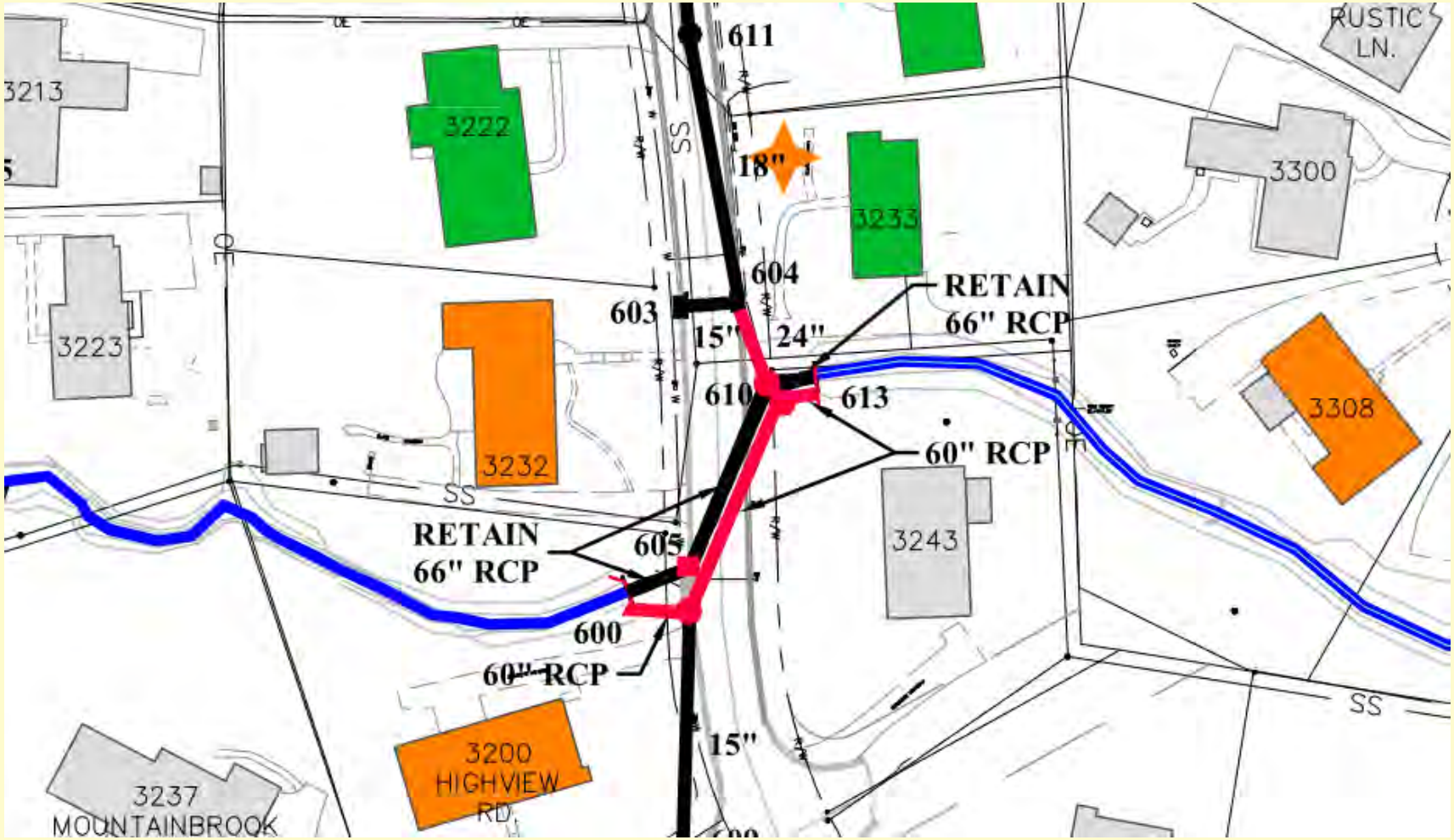
- Additional inlets provided to address excess spread and flooding at road low point.

Landerwood Drive – System #6 & 66” Culvert



- Landerwood Drive Culvert (66”):
  - Undersized, overtops in the 25-year storm
  - FFE Flooding 3200 Highview Road in Future Conditions 100yr Storm
- System #6 –Additional inlets needed

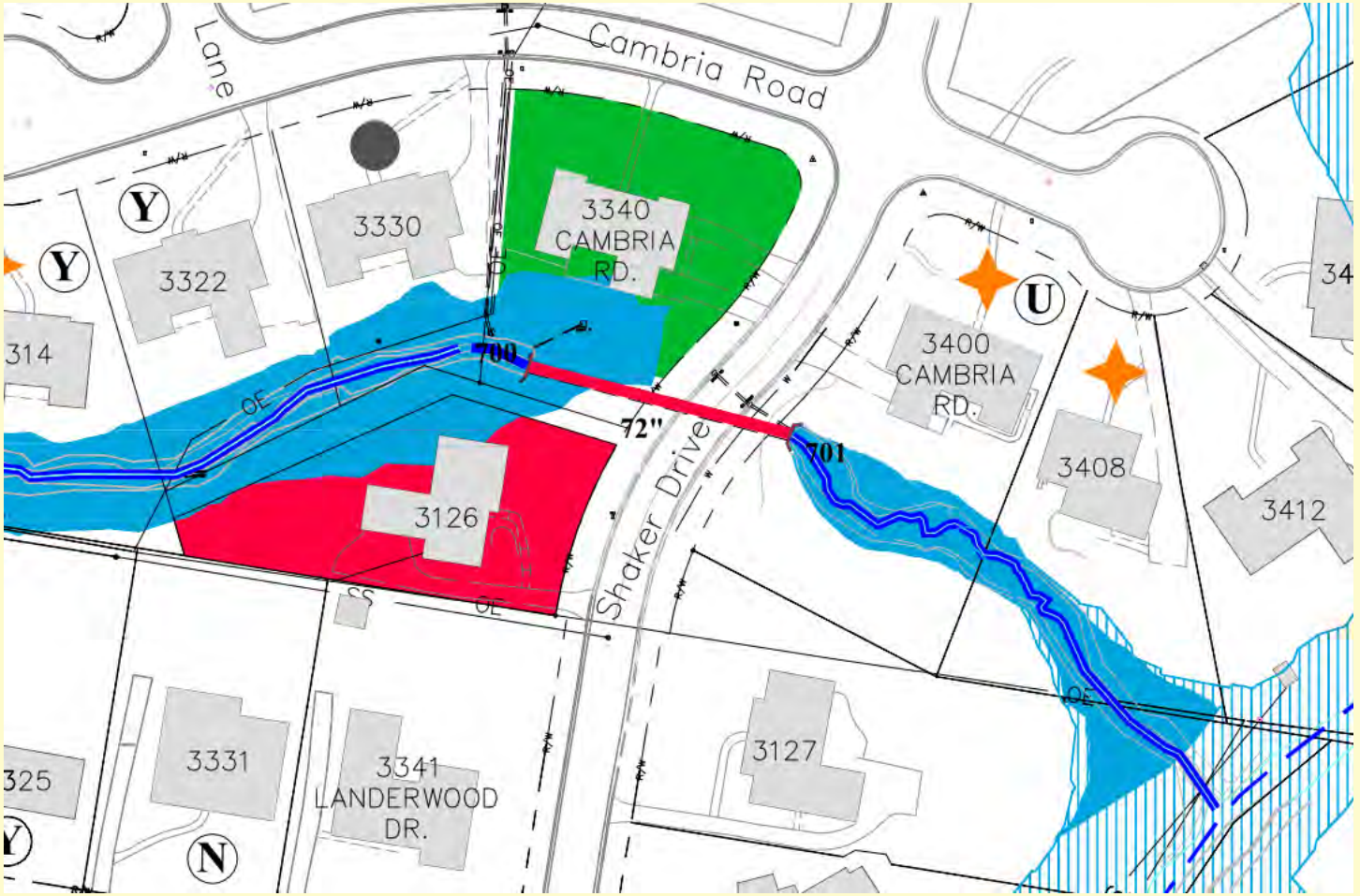
Landerwood Drive – System #6 & Road Culvert (Recommended)



Landerwood Drive Culvert (66” RCP), supplemented with additional 60” RCP:

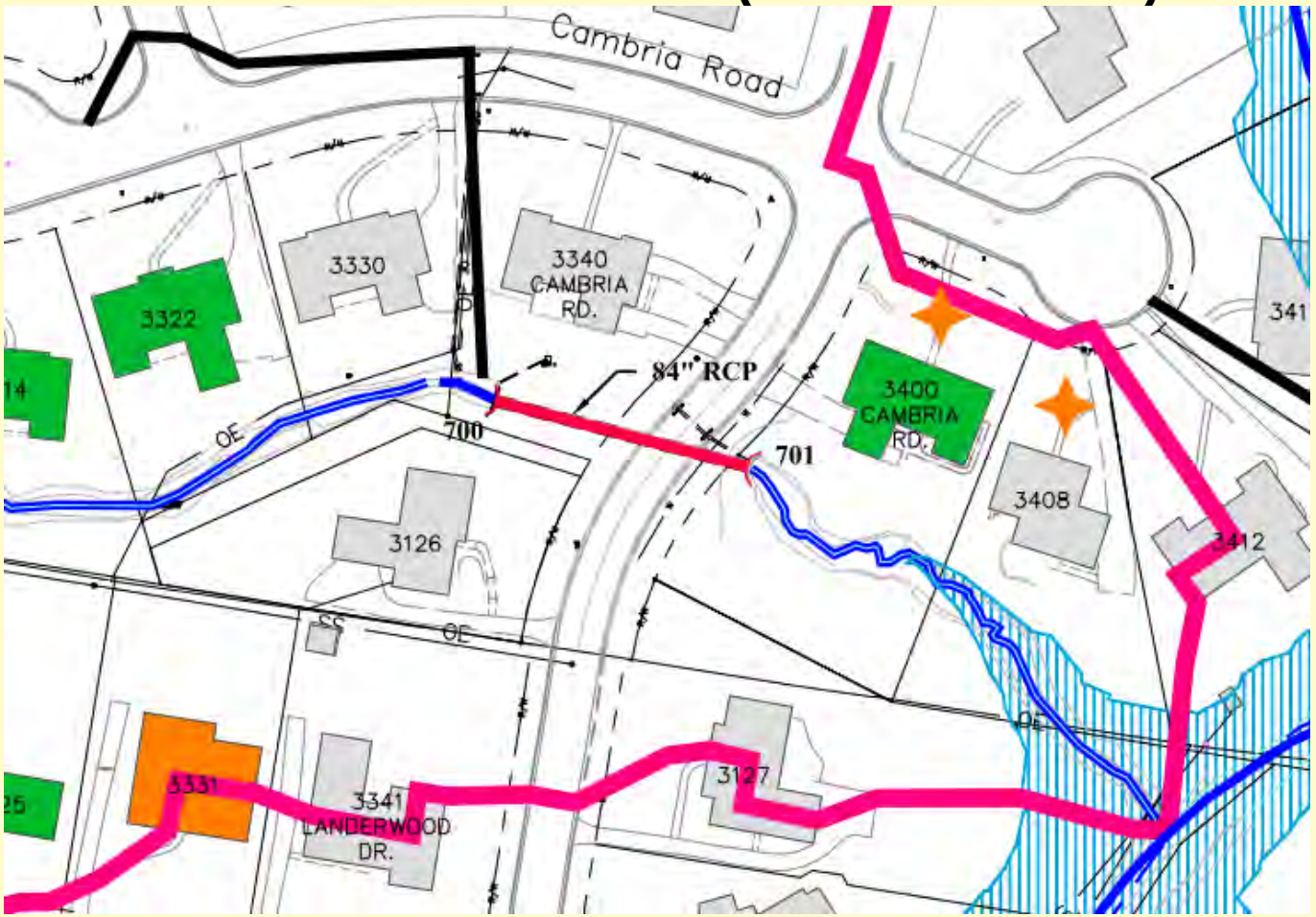
- No overtopping (Existing); Overtopped 50-Yr (Future)
- Structure flooding: 50-Yr HVAC

Shaker Drive Culvert – 72” RCP



- Shaker Drive Culvert (72”):
  - Undersized in future conditions models, overtops in the 25-year storm.
  - Flooding at 3126 Shaker Drive and 3340 Cambria Road
  - Flooding at 3330 Cambria Road in the future conditions model

Shaker Drive Culvert (Recommended)



Shaker Drive Culvert:

- Replaced with 84” RCP culvert, overtops in the 50-year storm (future only).
- Structure flooding: 100-Yr LAG

What is Next?

1) Survey - **COMPLETE**
2) Existing Conditions Analysis - **COMPLETE**
3) Public Meeting #1 – Existing Conditions – **COMPLETE (10/21/14)**
4) Alternative Analysis & Recommended Alternative - **COMPLETE**
5) Public Meeting #2 – Recommended Alternative - **NOW**
6) Project Design - **NEXT**
7) Public Meeting #3 – Present Preliminary Design & Easement Acquisition Kick-off
8) Easement Acquisition
9) Permitting
10) Bid
11) Construction

Storm Drainage Improvement Project Phases

PLANNING (Typically 16 to 23 months)

- Existing Conditions Analysis – Identifying the Problems (Started April 2014)
- **Alternative Analysis – Finding the Solutions**

DESIGN (Typically 21 to 34 months)
Designing the Solutions

PERMITTING (Typically 3 to 9 months, but usually overlaps the design phase)

EASEMENT ACQUISITION (Typically 12 months, also overlaps with the design phase)

BID (Typically 6 to 9 months)

CONSTRUCTION (Typically 12 to 24 months)

Path Forward

- Additional information obtained during this meeting will be considered and incorporated into the Selected Alternative Improvements, where applicable.
- Design of the Selected Alternative Improvements.
- CMSWS will then hold a third and final public meeting to present and obtain feedback on the preliminary design.

Wrapping Up

- Please remember to sign-in and fill out a customer service card.
- The City and our consultant will stay here to answer any specific questions you may have.
- If you are experiencing channel erosion and would like the City to address this issue, please let us know.
- General Discussion.

Thank you for coming to the meeting!

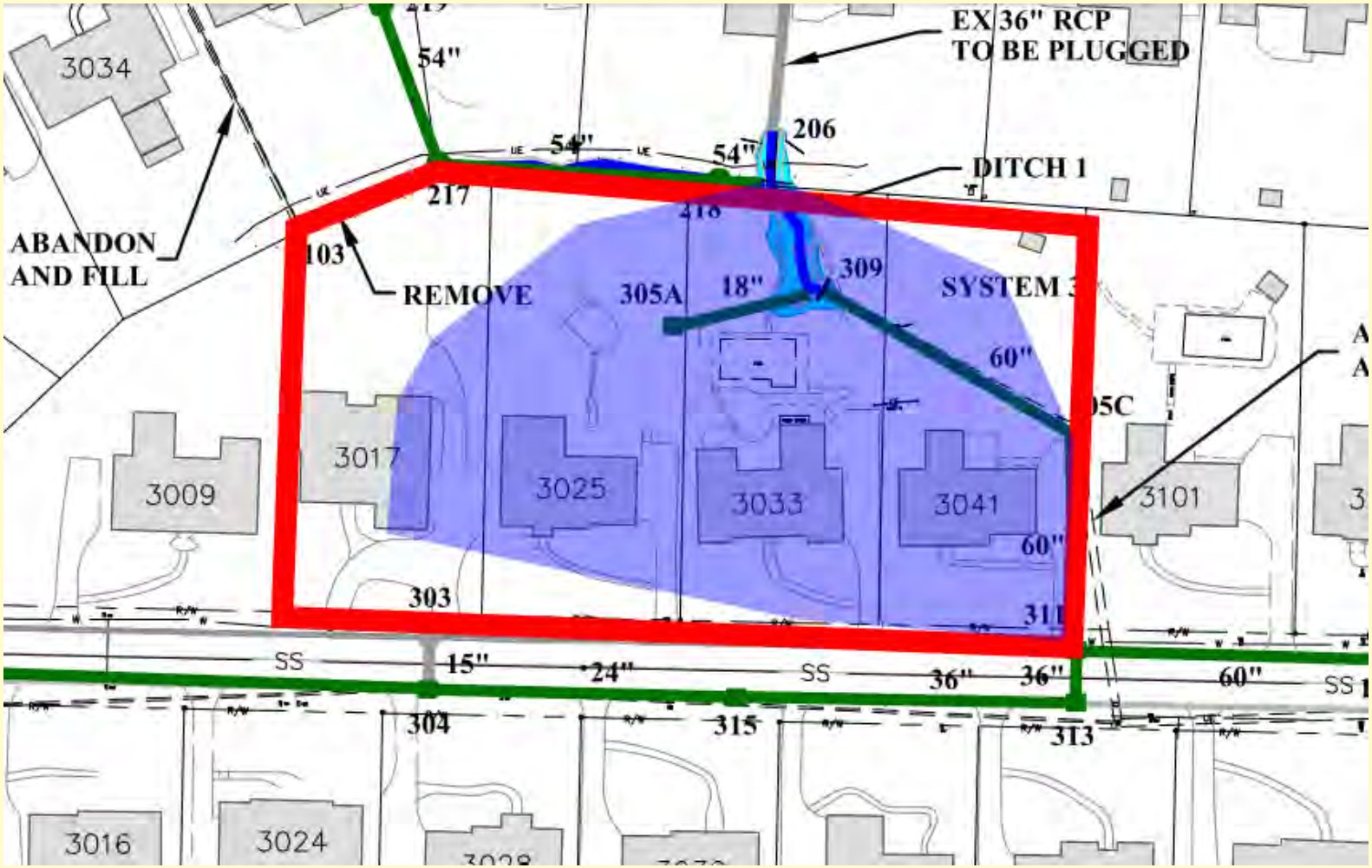
CHARLOTTE.

Charlotte-Mecklenburg STORM WATER Services

WSP PARSONS BRINCKERHOFF

Thank you for coming to the meeting!

Detention Alternative



Detention Basin Cost = $ 3,410,000 (includes $2,555,000 in property costs)

Total Cost for Detention Basin Alternative = $5,639,000 (includes downstream improvements)

Example of a pipe in good condition

Example of a pipe joint in good condition

Cutchin Drive

Cutchin Drive

Cutchin Drive

Chaucer Drive

Wamath Drive

Wamath Drive

Wamath Drive

Mountainbrook Road

Mountainbrook Road

Shaker Drive US HW

Shaker Drive DS HW