



HALE HAVEN DRIVE AND GARRIAN ORCHARDS DRAINAGE STUDY

PRESENTED TO: HALE HAVEN DRIVE AND GARRIAN ORCHARDS COMMUNITY
JULY 31, 2019



PRESENTERS AND CONTACTS



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AGENDA

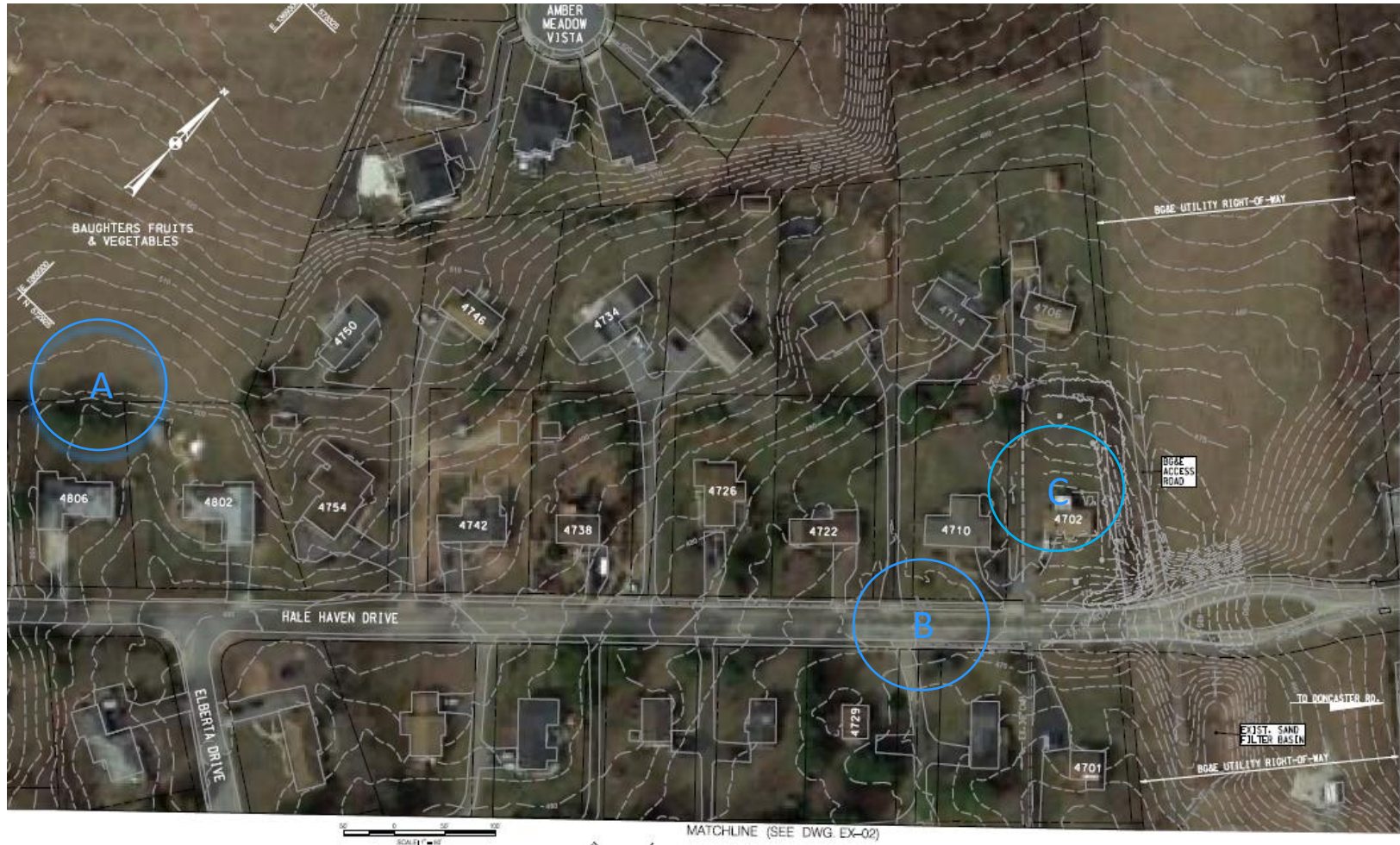
- Introduction and Purpose
- Problem Statement
- Preliminary Drainage Option: Properties Along and Northwest of Hale Haven Drive
- Preliminary Drainage Option: Properties Located Southeast of Hale Haven Drive
- Stream Restoration Options
- Stake Holders
- Q&A and Community Input

INTRODUCTION AND PURPOSE

- Properties along Hale Haven Drive and at Garrian Orchards have experienced drainage issues over the years.
- JMT was tasked by Howard County DPW to investigate the problems and to come up with preliminary drainage and stream stabilization options for the community.
- The investigation's outcome and preliminary options are now presented to the community for comments and inputs.
- The preliminary options will be refined after incorporating community input to finalize detailed design plans.

PROBLEM STATEMENT – AREA #1

- Drainage issues at properties along and northwest of Hale Haven Drive include:



4806 HALE HAVEN DRIVE

- BASEMENT FLOODING



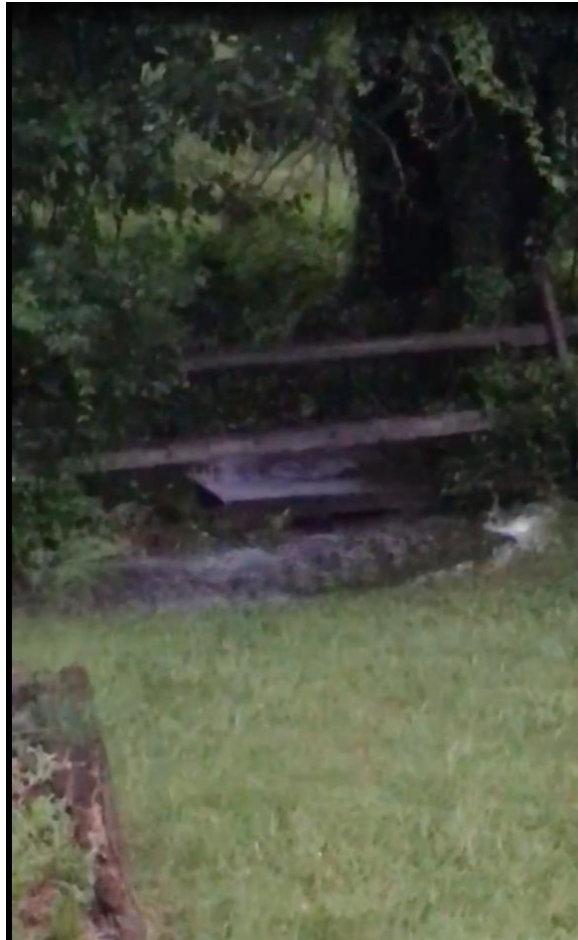
STORM DRAIN ALONG HALE HAVEN DRIVE

- LIMITED CAPACITY IN EXISTING STORM DRAIN PIPE



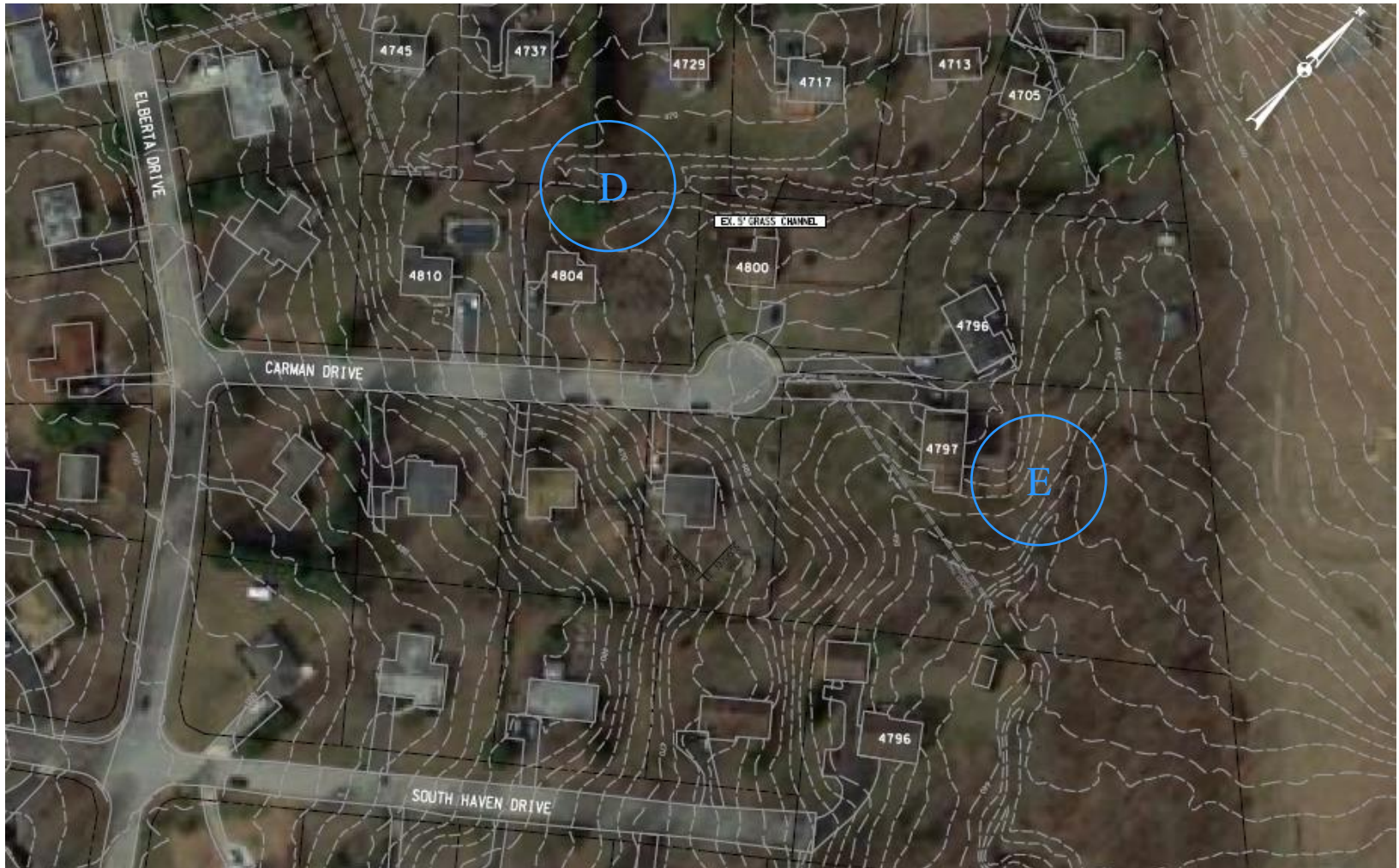
4702 HALE HAVEN DRIVE

- SEVERE BASEMENT FLOODING



PROBLEM STATEMENT – AREA #2

- Properties southeast of Hale Haven Drive and Garrian Orchards



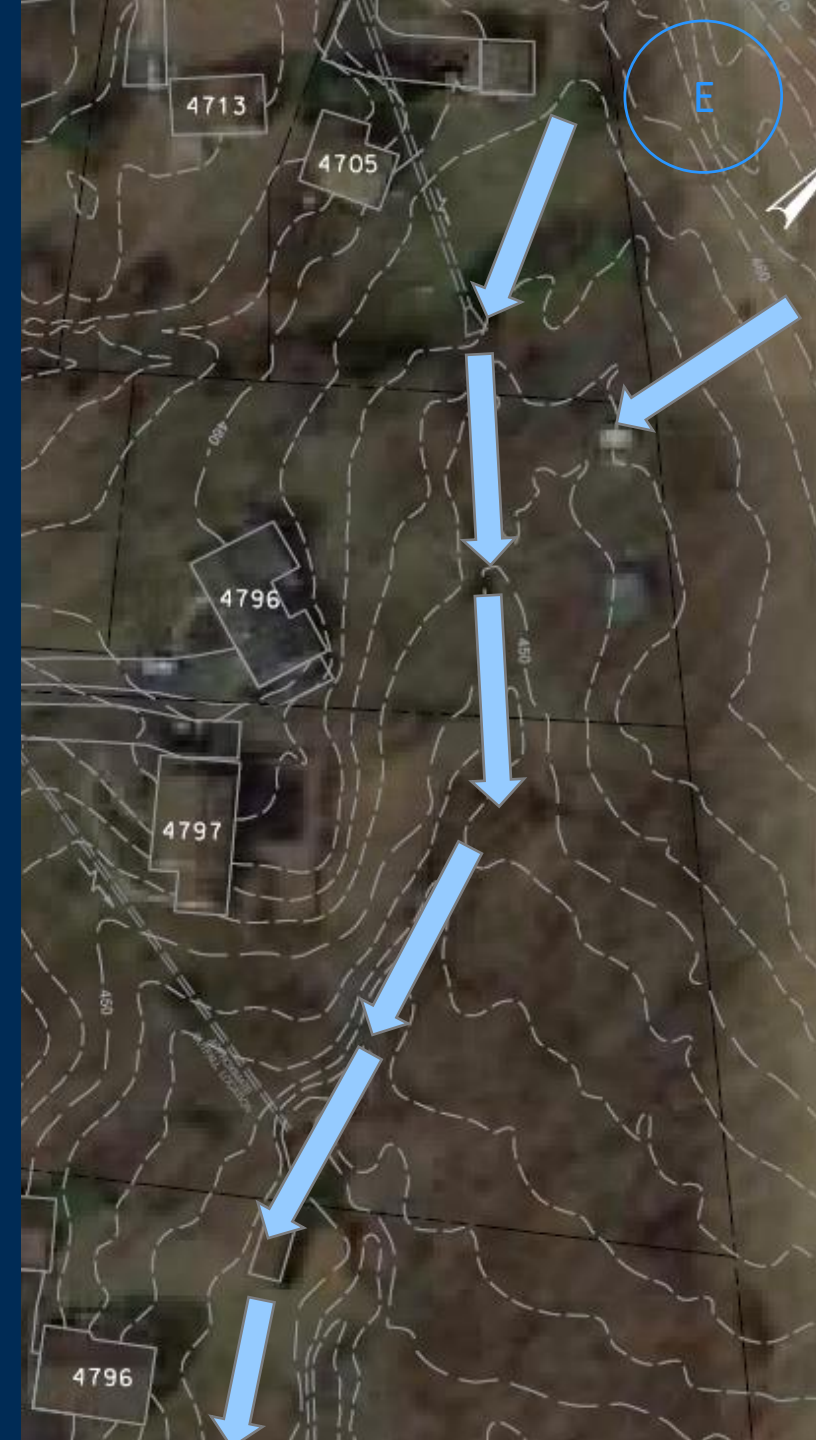
4800, 4804, 4810 CARMAN DRIVE

- BACKYARD CHANNEL FLOODS (#4804, 4800)



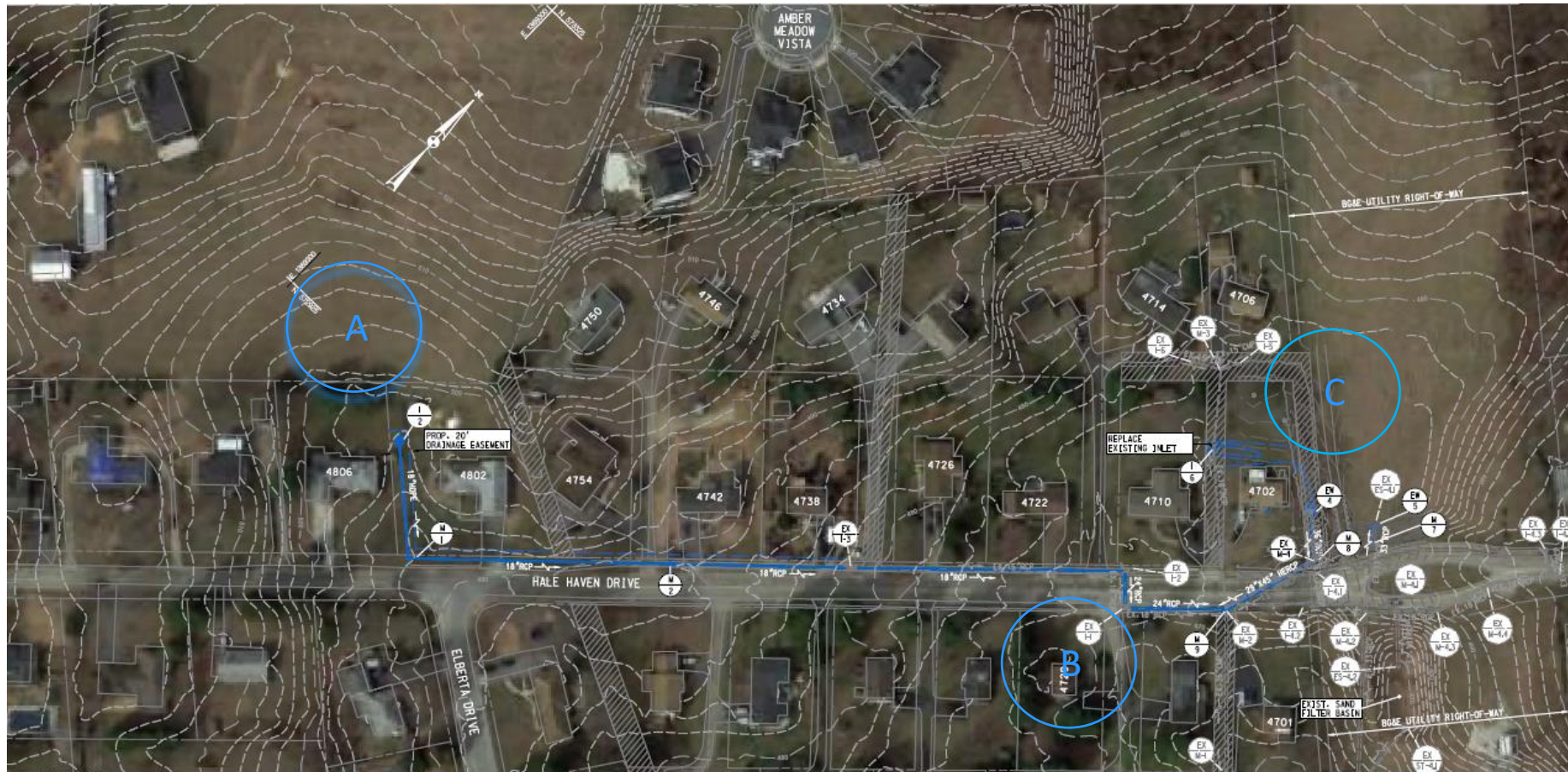
4796 & 4797 Carman Drive 4796 South Haven Drive

BACKYARD STREAM BANK EROSION AND MIGRATION



PRELIMINARY DRAINAGE OPTIONS – AREA #1

- PROPERTIES ALONG AND NORTHWEST OF HALE HAVEN DRIVE



Preliminary Drainage Option for 4806 Hale Haven Drive



Preliminary Drainage Option for

Storm Drain Along Hale Haven Drive

CURRENT:

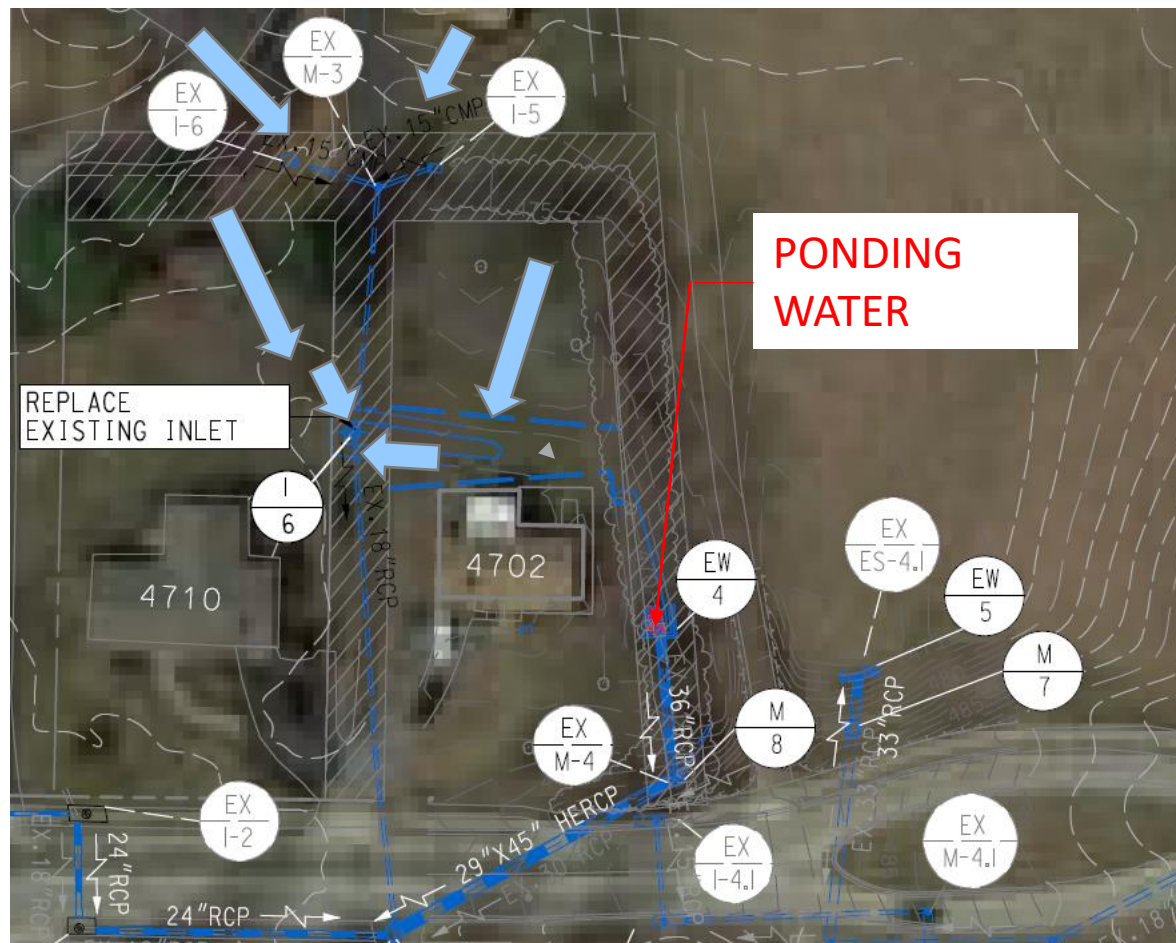


PROPOSED:



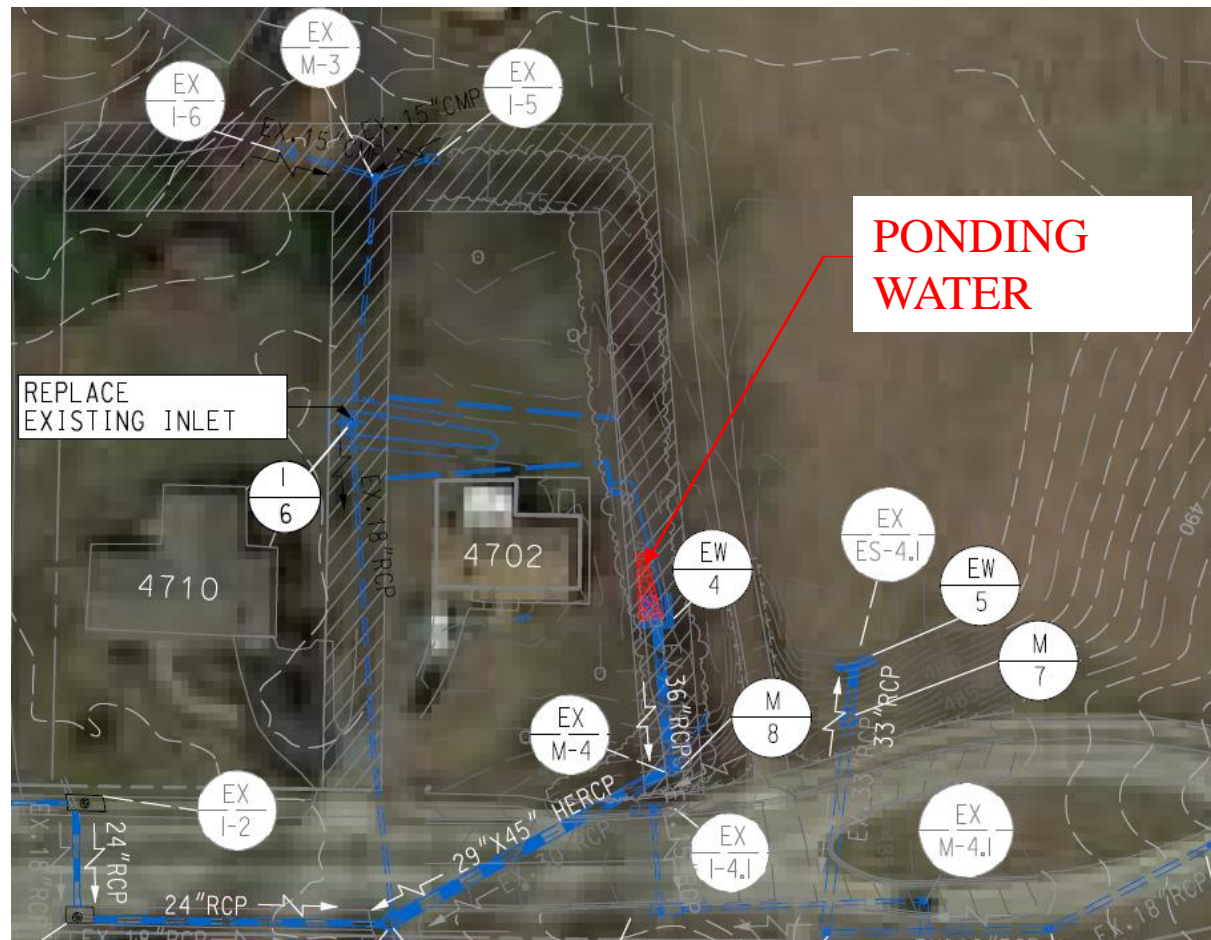
Preliminary Drainage Option for 4702 Hale Haven Drive

- **PROPOSED IMPROVEMENT: 10-YR, 24-HR DESIGN STORM (ANNUAL CHANCE = 10%)**



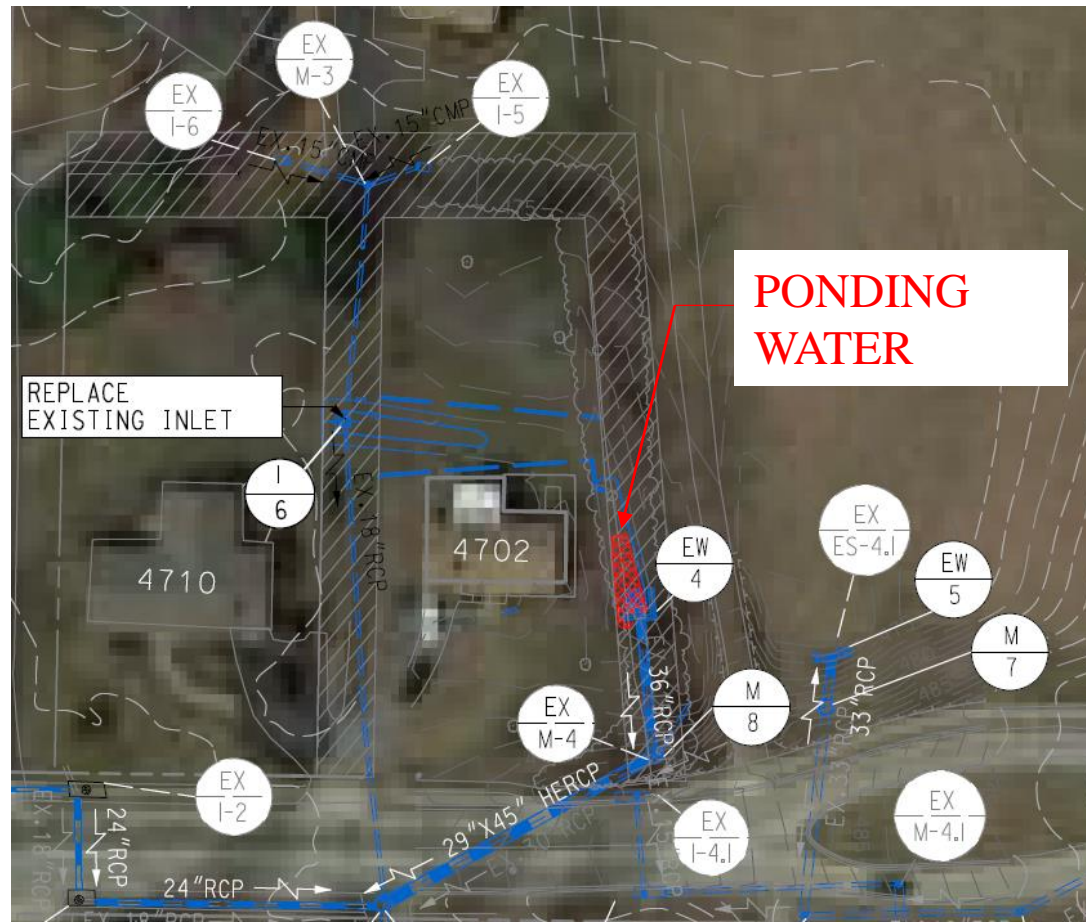
Preliminary Drainage Option for 4702 Hale Haven Drive

- **PROPOSED IMPROVEMENT: 25-YR, 24-HR DESIGN STORM (ANNUAL CHANCE = 4%)**



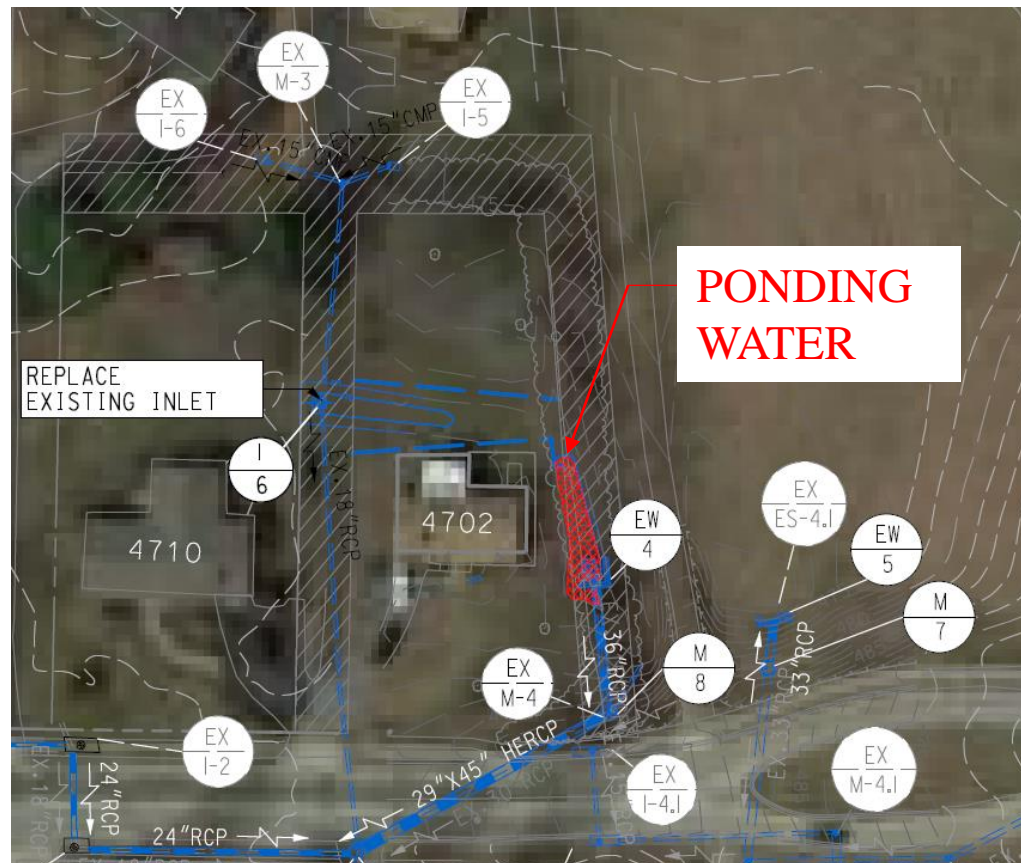
Preliminary Drainage Option for 4702 Hale Haven Drive

- **PROPOSED IMPROVEMENT: 50-YR, 24-HR DESIGN STORM (ANNUAL CHANCE = 2%)**



Preliminary Drainage Option for 4702 Hale Haven Drive

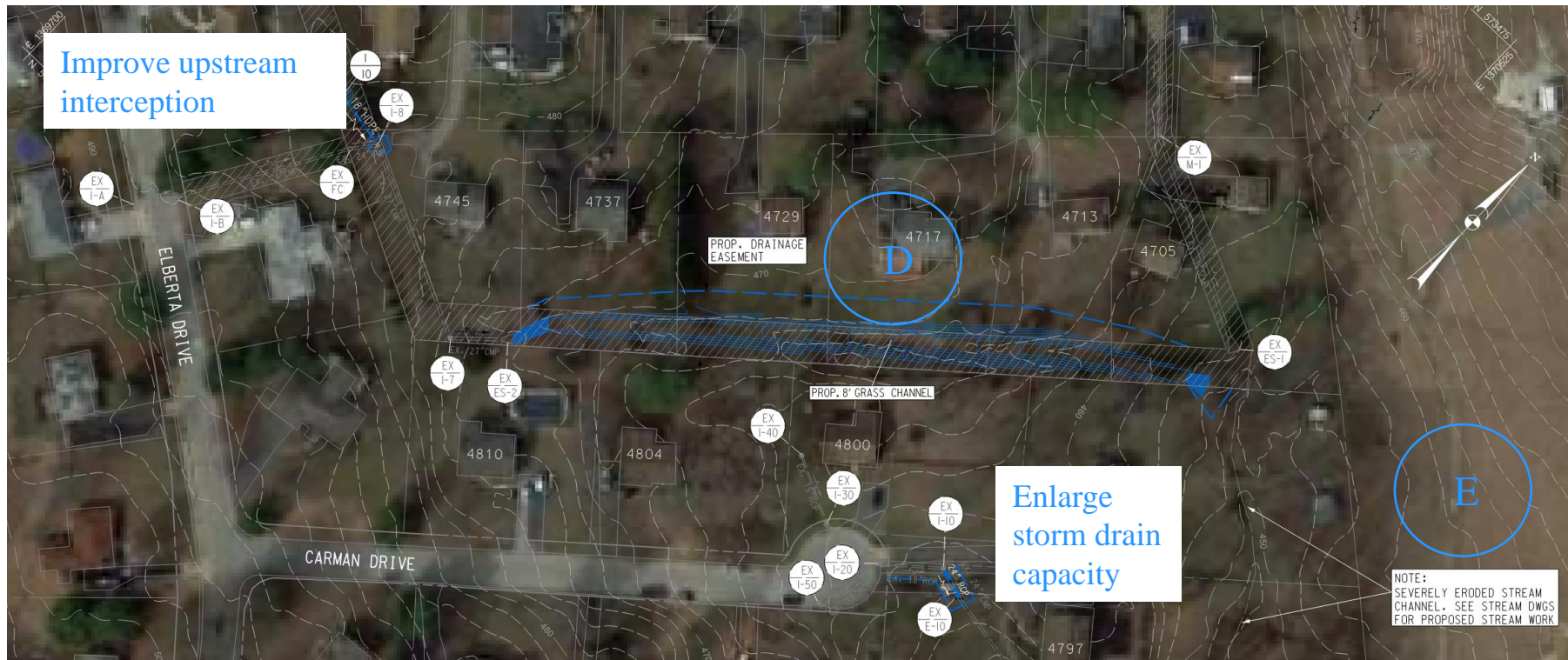
- **PROPOSED IMPROVEMENT: 100-YR, 24-HR DESIGN STORM (ANNUAL CHANCE = 1%)**



PRELIMINARY DRAINAGE OPTIONS

-AREA #2

- Properties southeast of Hale Haven Drive and Garrian Orchards



Preliminary Drainage Option For 4800, 4804 and 4810 Carman Drive

- **WIDEN THE GRASS CHANNEL TO 8 FEET WIDE TO PREVENT OVERFLOW**



4796, 4797 CARMAN DRIVE, 4796 SOUTH HAVEN DRIVE

BACKYARD STREAM BANK EROSION AND MIGRATION

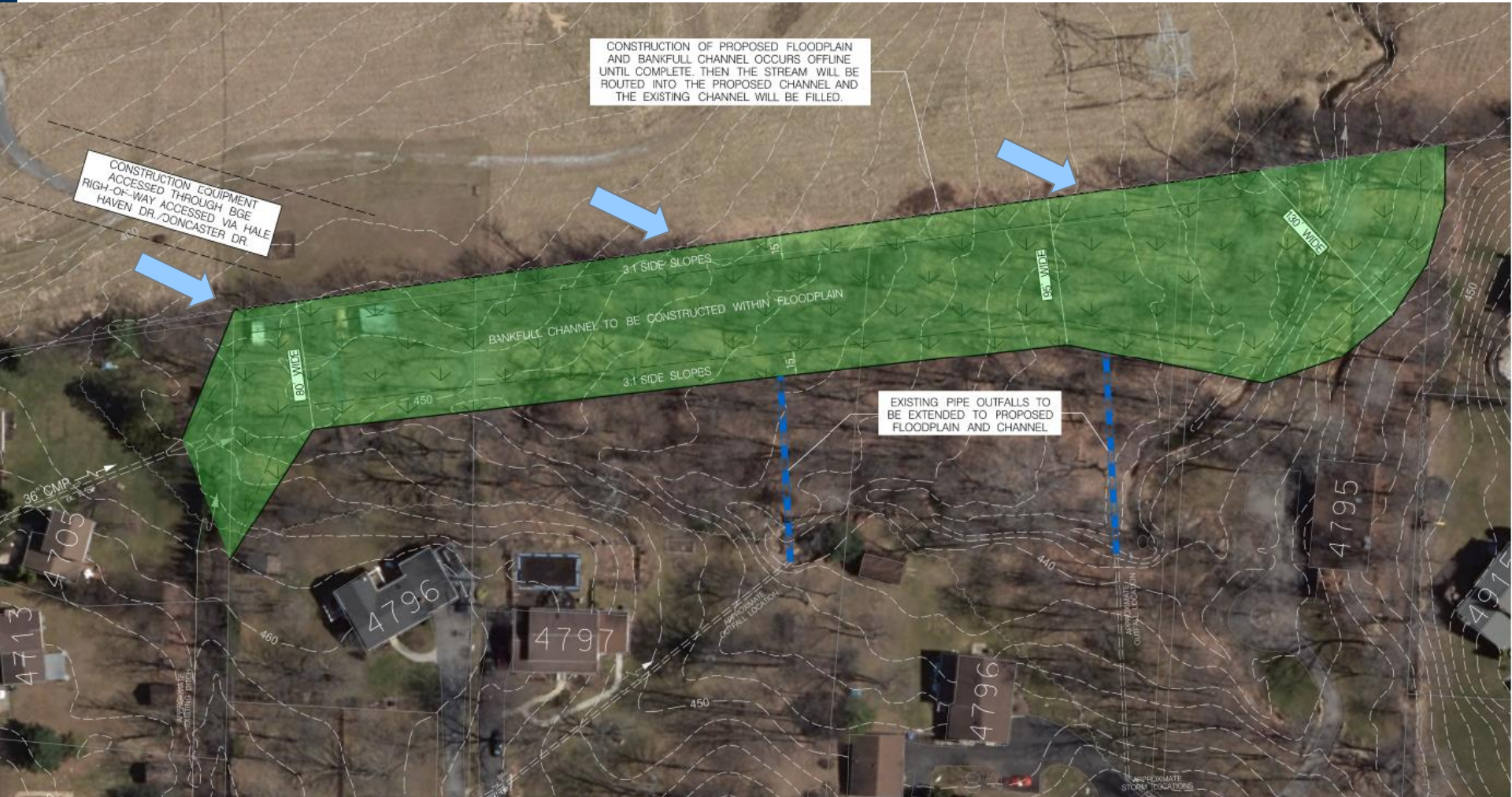
WILL BE ADDRESSED BY STREAM RESTORATION OPTIONS.

Full site survey for the area has not been completed yet. Concept level design options have been proposed but further level of detail is needed to finalize designs. The proposed option will be designed to handle and stabilize the 100-year storm.

Studies performed so far include a cross section survey and flow capacity of the proposed options.

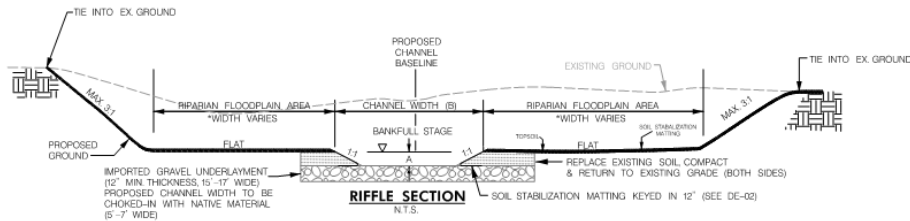


STREAM RESTORATION OPTION 1 – Floodplain and Bankfull Channel

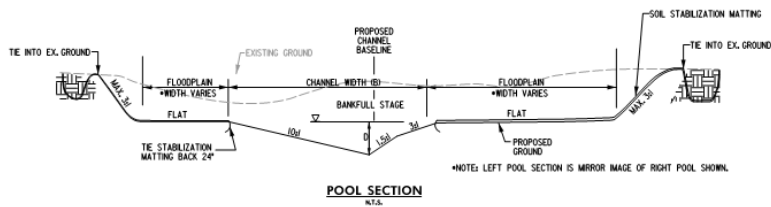


STREAM RESTORATION OPTION 1 – Floodplain and Bankfull Channel

TYPICAL CROSS SECTIONS
N.T.S.



RIFLE DIMENSION TABLE	
BANKFULL DEPTH (D)	CHANNEL WIDTH (B)
1.00'	4-5'



POOL DIMENSION TABLE	
BANKFULL DEPTH (D)	CHANNEL WIDTH (B)
1.5-3'	4-5'

Pros:

- Improved long-term stream and floodplain stability
- Improved ecological value
- Improved flood conveyance and capacity

Cons:

- This design option requires more land to be donated by property owners
- There will be significant tree impacts

**Once full survey of the site is conducted the tree impacts will be more measurable. The site will also be replanted.

Cost: \$1,170,000.00

STREAM RESTORATION OPTION 2-

In-Channel Stabilization/Armoring of Existing Channel

Pros:

- Less land will be disturbed by construction activity on each property
- The current stream/woodland conditions will largely remain unchanged

Cons:

- May not provide long-term stability for larger storm events
- Will not improve stream ecology
- Will not address flood resiliency for larger storm events

**Once full survey of the site is conducted the tree impacts will be more measurable

Cost: \$880,000.00

STREAM RESTORATION OPTION 3- Berm and Channel System

Pros:

- Little to no land disturbance will be required on each property
- The berm and channel will capture the majority of flows and prevent major erosion coming from the BGE right-of-way

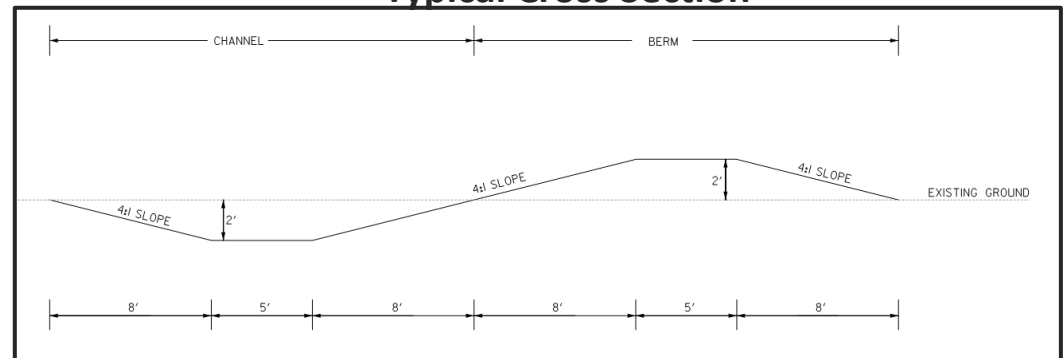
Cons:

- This option does not address current and potential future erosion in the stream channel
- This will require permission from BGE to work within their right-of-way

**Further information and full survey is needed to determine if some spot improvements are needed along the existing stream channel.

Cost: \$370,000.00

Typical Cross Section



STAKE HOLDERS

- Community (construction impact and granting drainage easements).
- Howard County Department of Public Works (funding, maintenance of traffic during construction, and others).
- Maryland Department of the Environment and U.S. Army Corps of Engineers (permits for stream work).
- Howard Soil Conservation District (erosion and sediment control approval).
- Consultant designers
- Existing utilities will need to be avoided or relocated as needed.

ALL OF THE ABOVE WILL IMPACT PROJECT SCHEDULE AND PROGRESS.

Q&A AND COMMUNITY INPUTS

Thank You



Questions and
Comments?



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