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Engineers | Environmental Specialists

PUBLIC INFORMATION MEETING

Perna Lane Area Sewers

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AGENDA

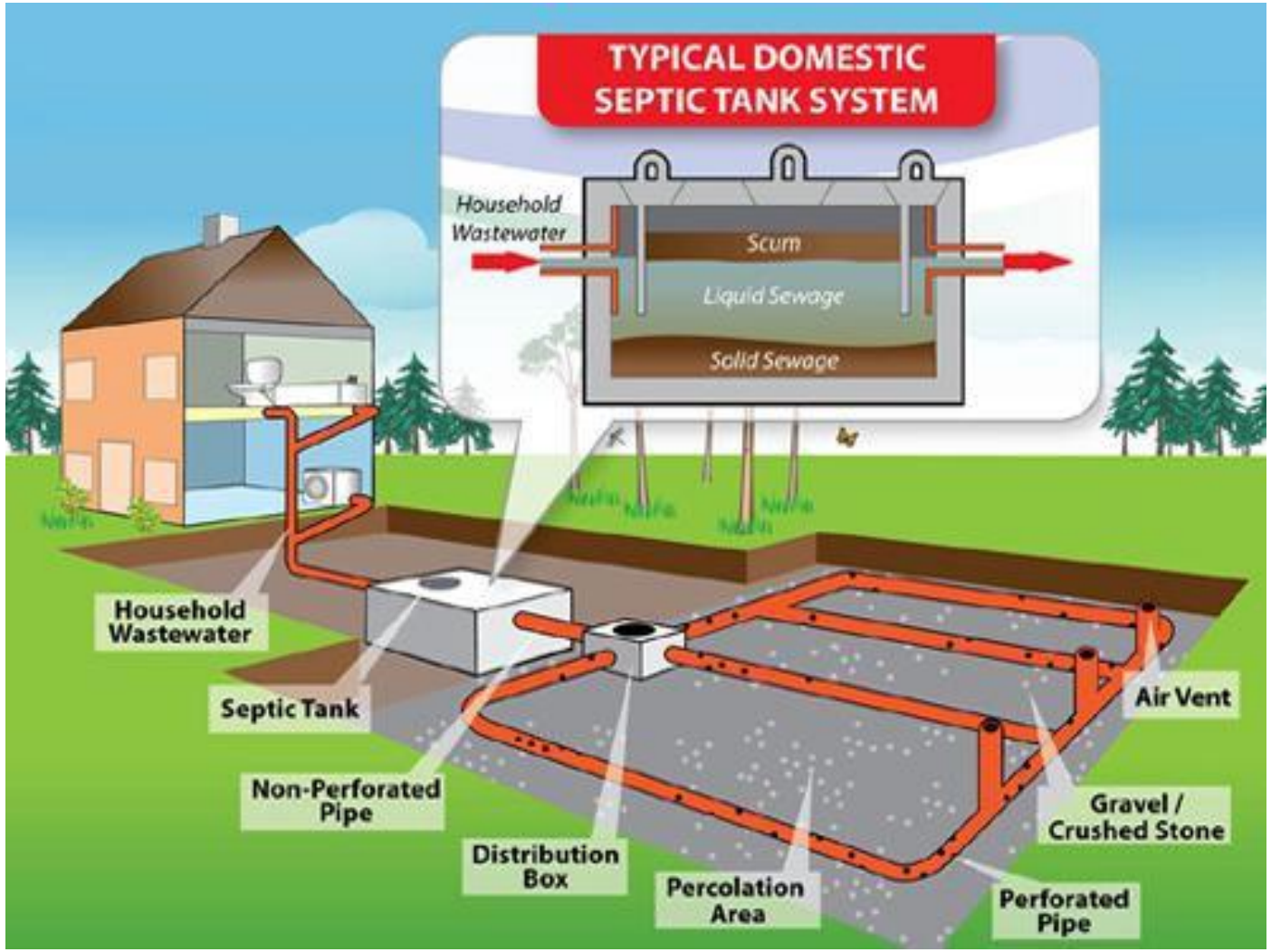
- Project Need
- Septic Systems – Why They Fail
- Project Area and Phasing
- Project History
- Alternative Evaluations
- Recommended Alternatives
  - Gravity Options
  - Low Pressure Options
  - Combination Options
- Gravity vs. Low Pressure Systems
- Project Costs
- Next Steps

PROJECT NEED

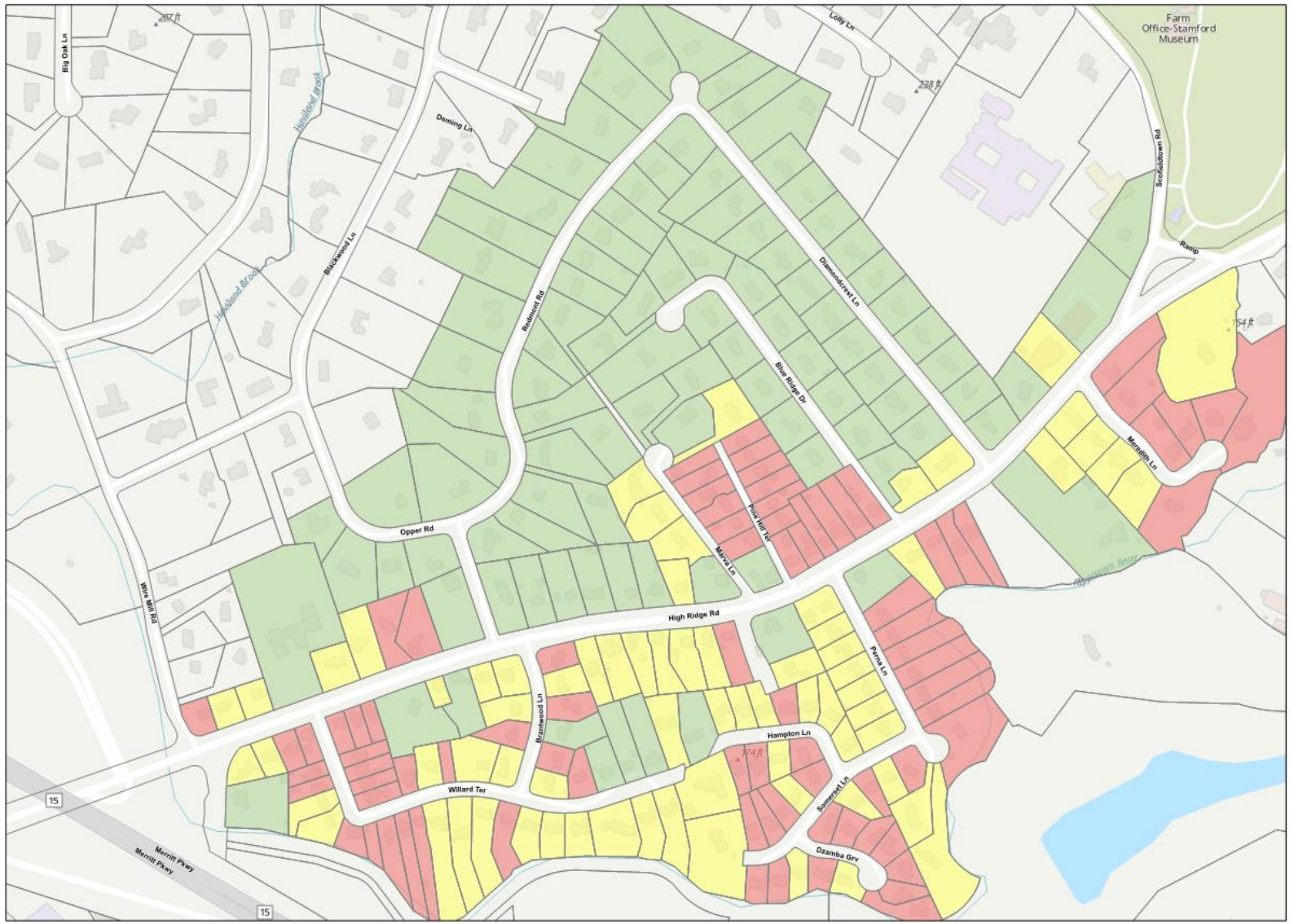
- Aging septic systems east of High Ridge Road
- Small lot sizes
- Rippowam River is bacteria impaired
- First extension of sewer service north of Parkway

SEPTIC SYSTEMS: WHY THEY FAIL

- Improper maintenance
- Excessive loading
- Poor soils / high groundwater
- Poor design / installation
- Age



SEPTIC SYSTEM REPAIR FEASIBILITY



LEGEND

- Alternative Technology
- Compliant System Not Possible
- Traditional Leaching Trenches

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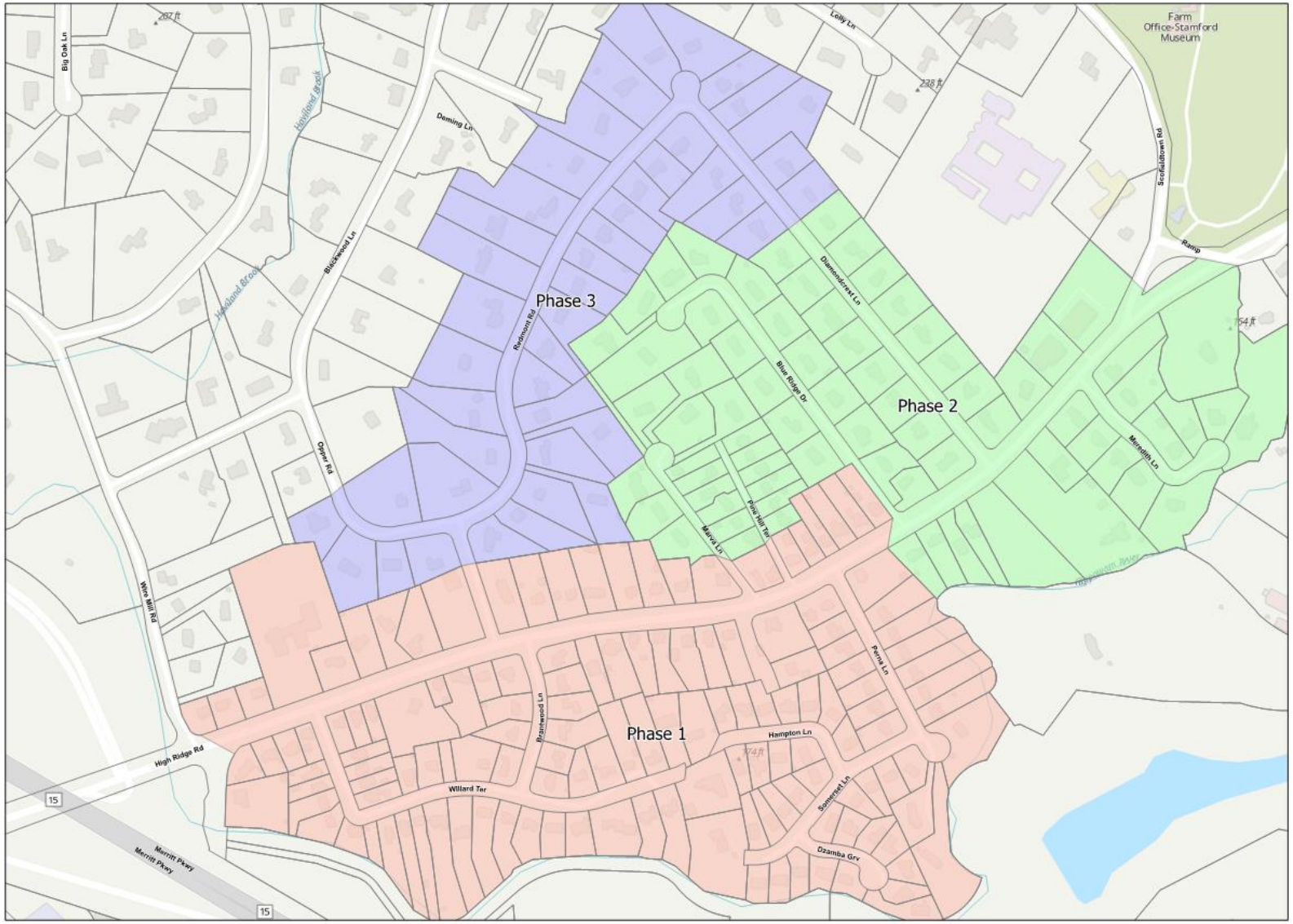
PROJECT AREA - INITIAL



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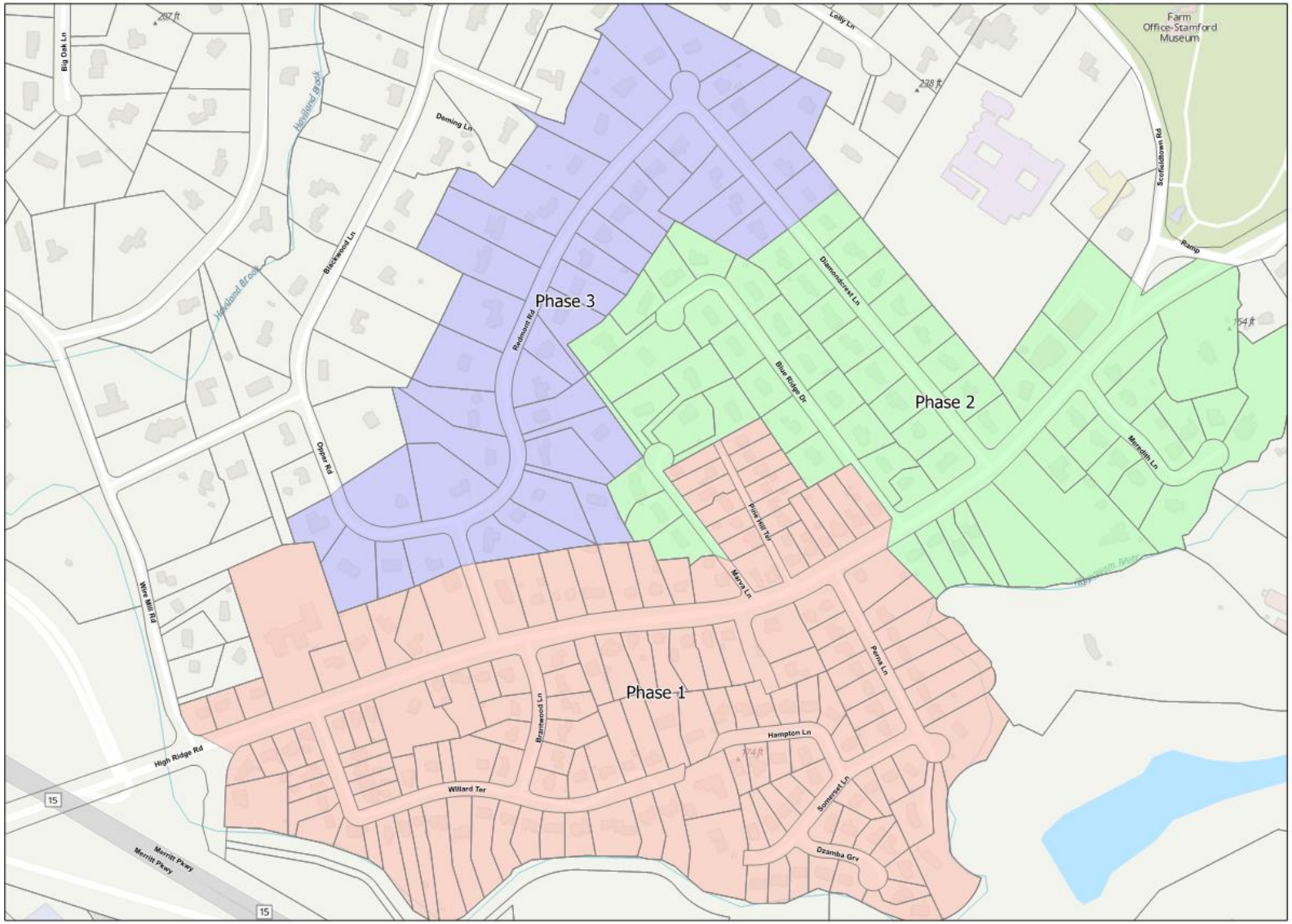
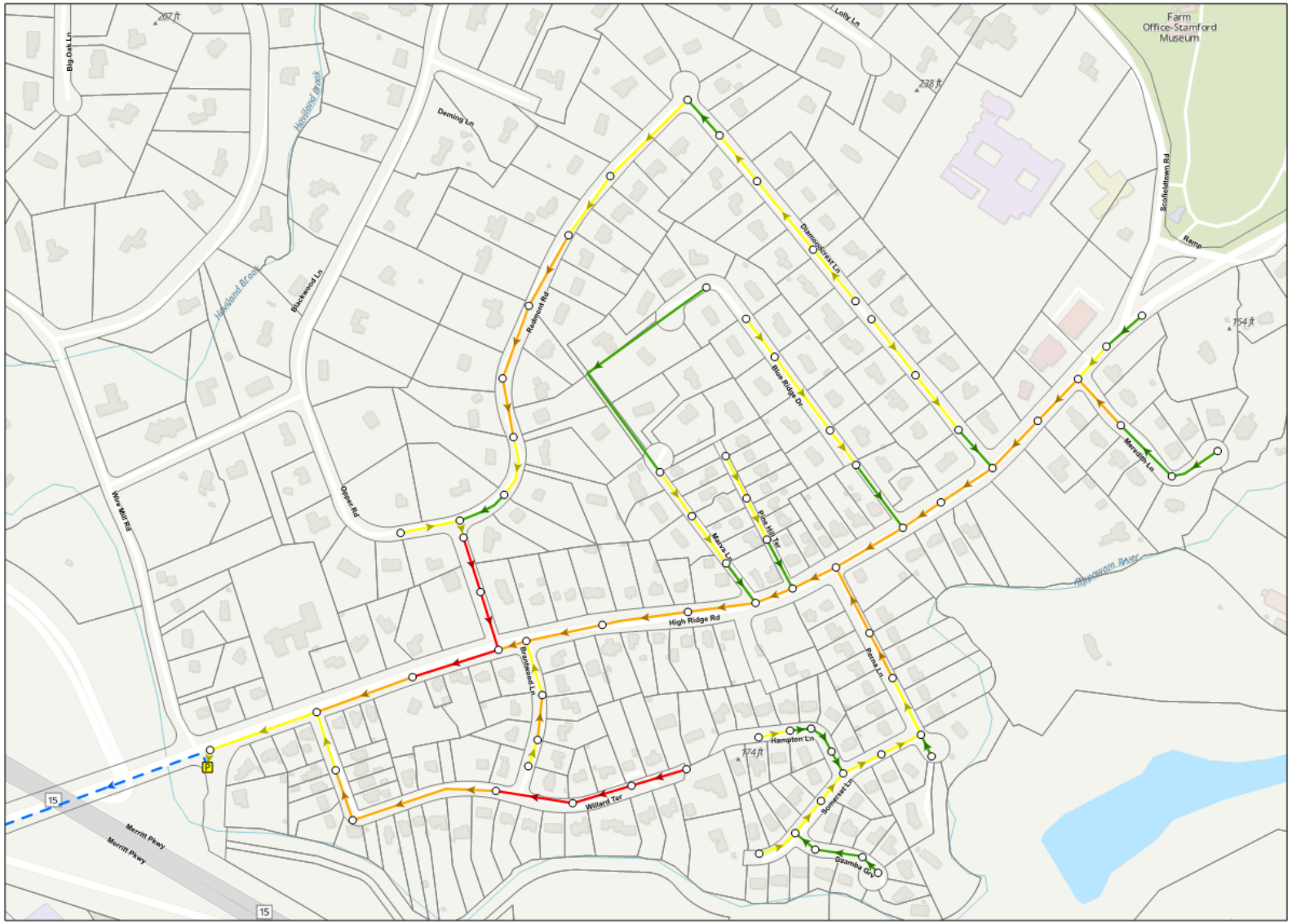
PROJECT AREA - REVISED



PROJECT HISTORY – ORIGINAL BID PLAN



PROJECT HISTORY – PHASE 1 BID

- **August 2018: First Bid**
  - One bidder, $14 million
  - Others too busy, estimated construction time one year for High Ridge Road
  - Adjusted sewer route in High Ridge Road
  - Met with CTDOT to develop detour plan
  - Designed curb radius modifications

- **April 2019: Re-Bid**
  - One bidder, $14 million

- **August 2019: Authorization to Explore Alternatives**
  - Evaluated 12 alternatives, 3 feasible

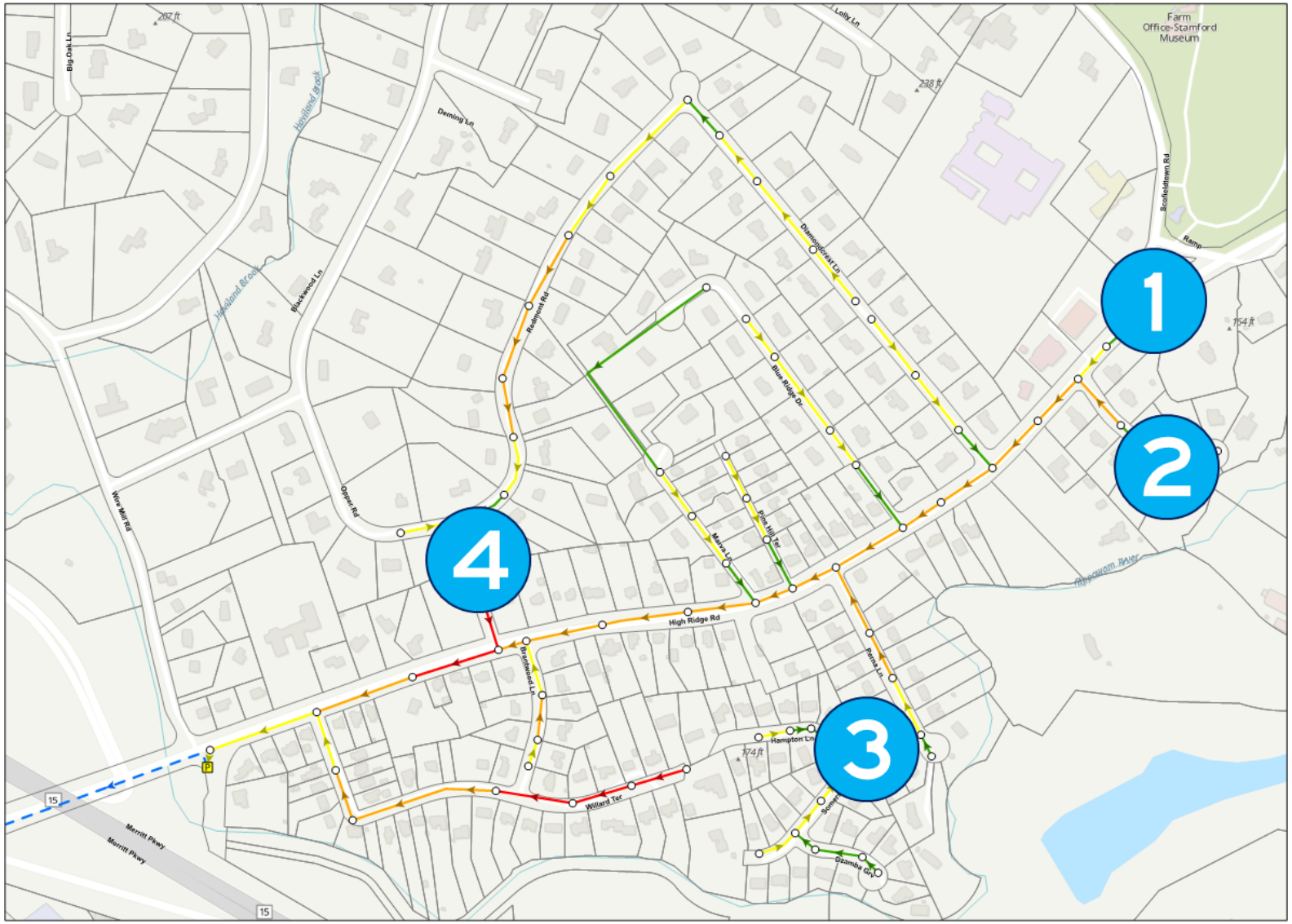
- **November 13, 2019: WPCA Technical Committee Meeting**

- **December 11, 2019: Public Information Meeting**

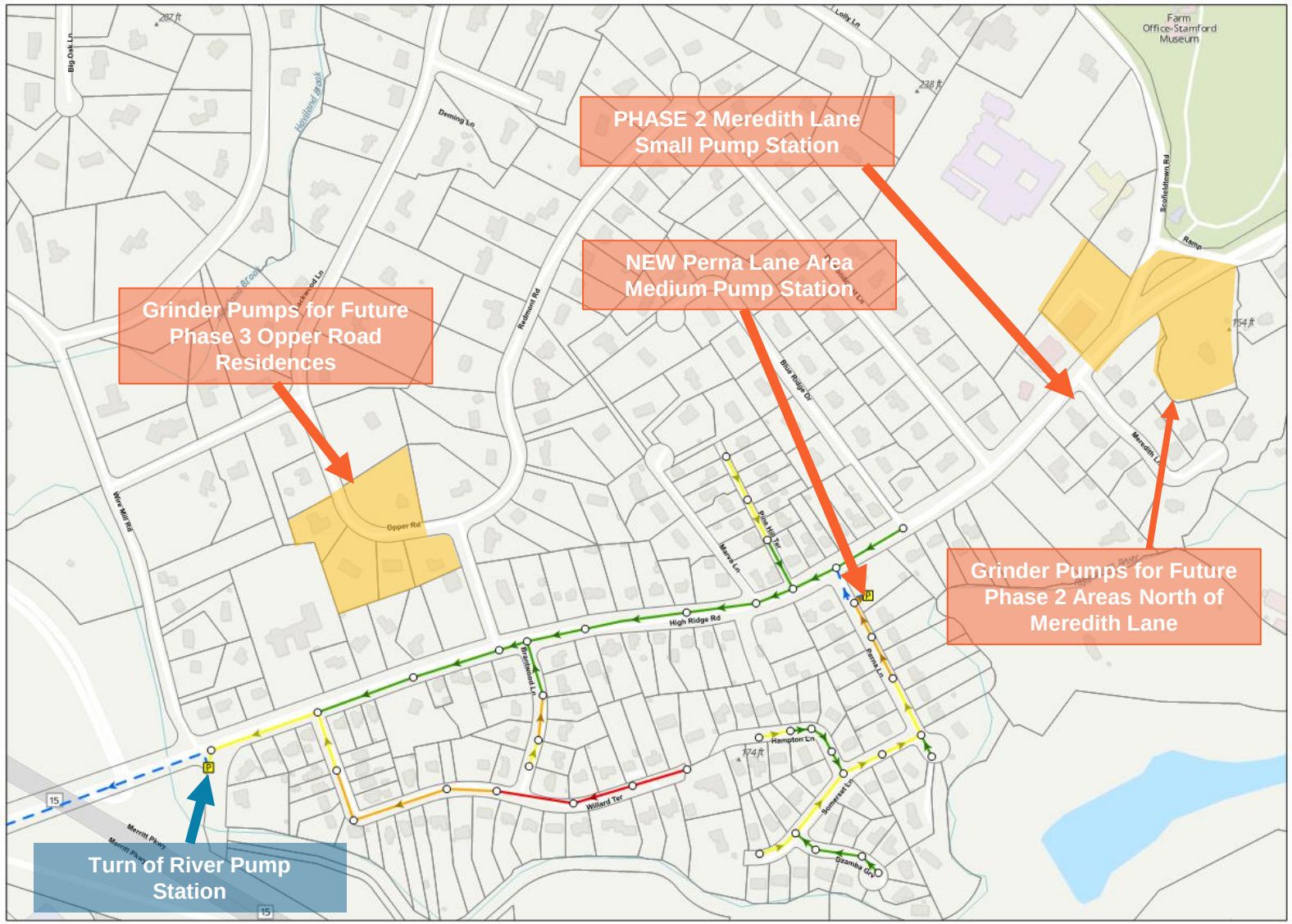
ALTERNATIVE EVALUATIONS - GOALS

- Provide sewer service to the project area
- Minimize pump stations
- Minimize number of property easements
- Minimize depth of sewer in High Ridge Road

ALTERNATVE EVALUATIONS – AREAS CONTROLLING SEWER DEPTH



ALTERNATIVE #8A – GRAVITY, PHASE 1



- **High Ridge Road Depth Reduced to 10’**
- **Still areas with deep sewer**
- **Three pump stations**

Phase	Cost
Phase 1 ONLY	$ 7.3 million
All Phases	$ 13.9 million

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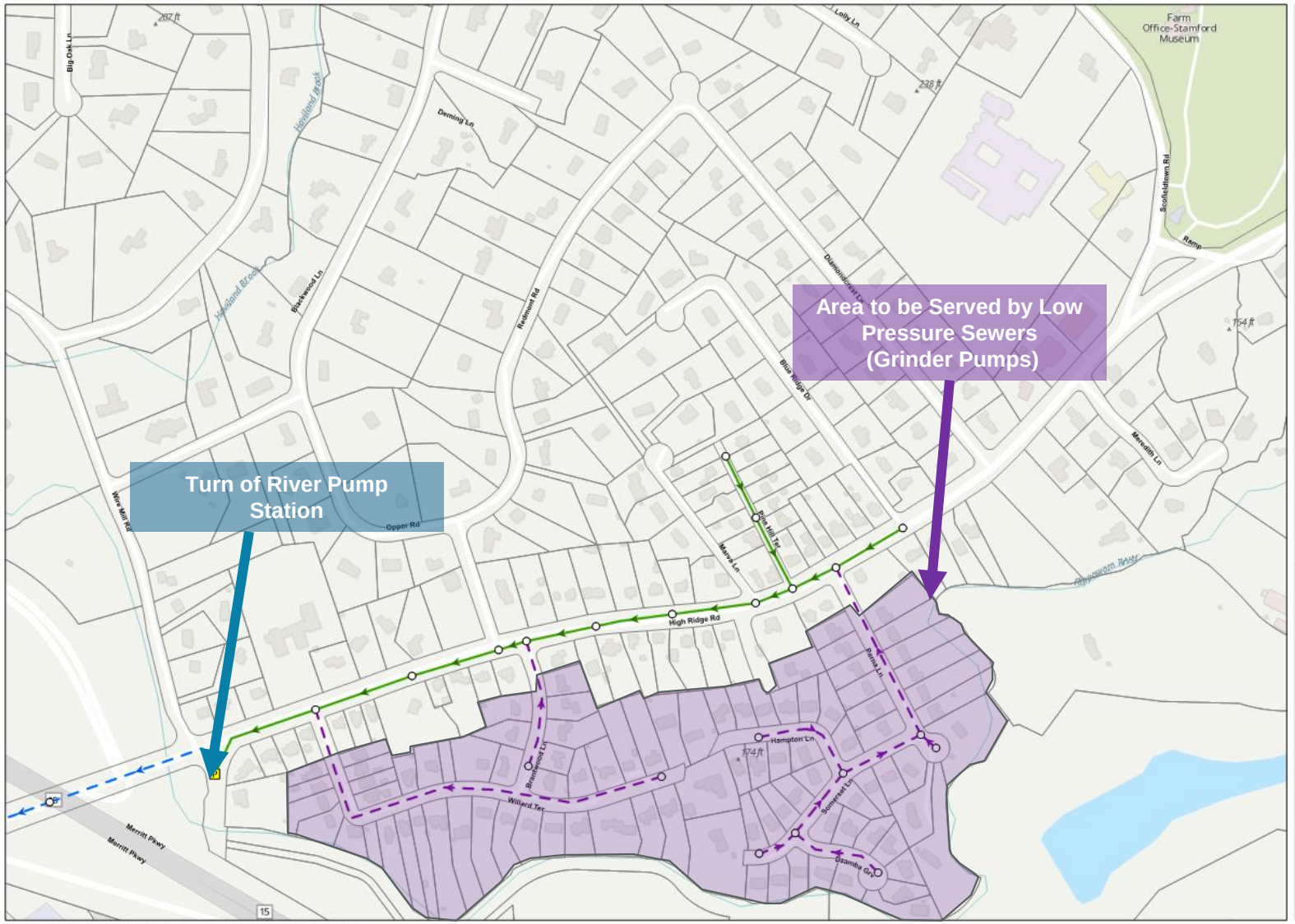
ALTERNATIVE #11A – COMBINATION, PHASE 1



- **High Ridge Road Depth Reduced to 10’**
- **Most streets to have low pressure sewers (grinder pumps)**
- **One pump station**

Phase	Cost
Phase 1 ONLY	$ 5.7 million
All Phases	$ 9.7 million

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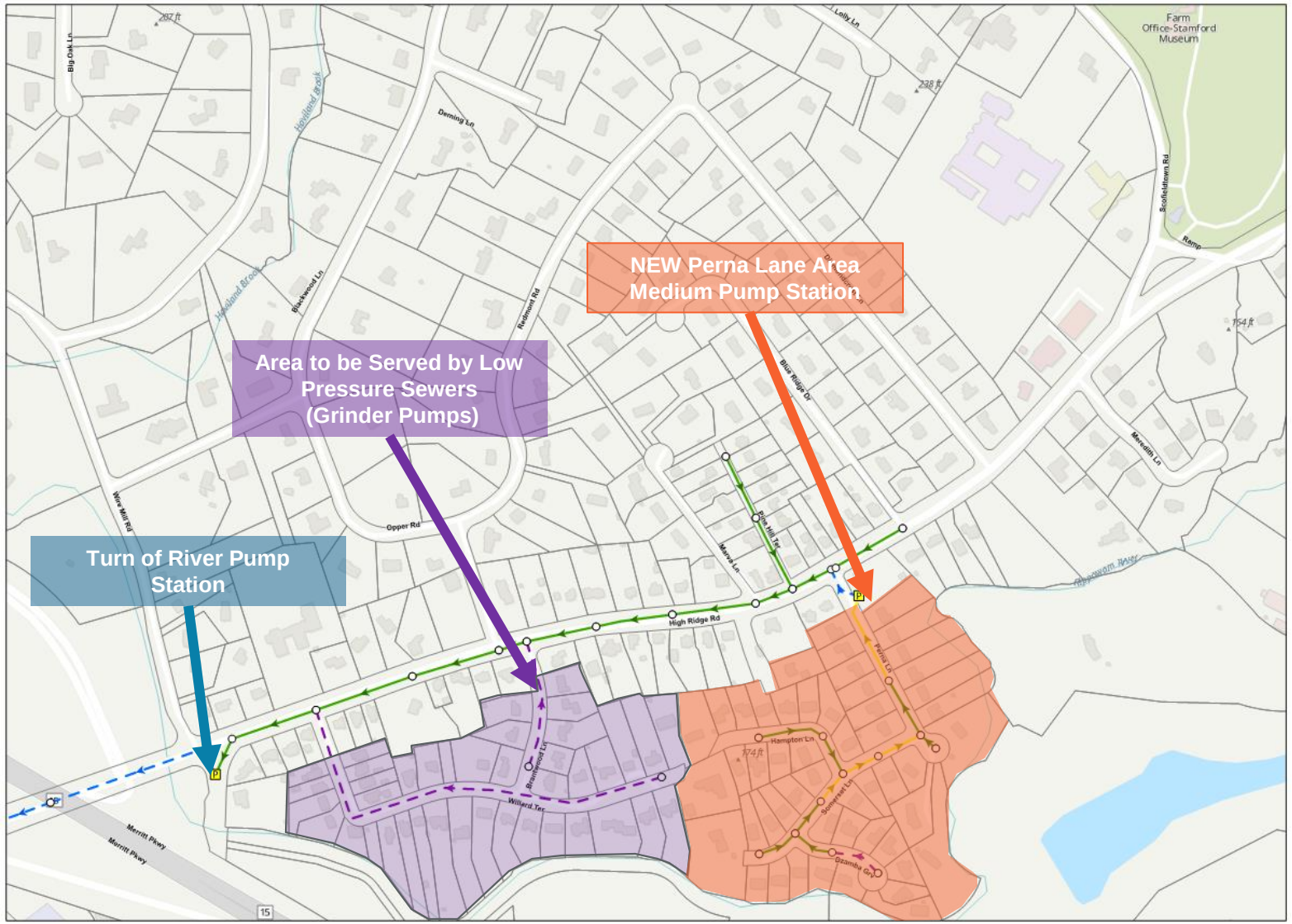
ALTERNATIVE #12A – COMBINATION, PHASE 1



- High Ridge Road Depth Reduced to 10’
- Perna Lane area served by gravity sewer
- Willard / Brantwood served by low pressure
- Two pump stations

Phase	Cost
Phase 1 ONLY	$ 5.9 million
All Phases	$ 10.0 million

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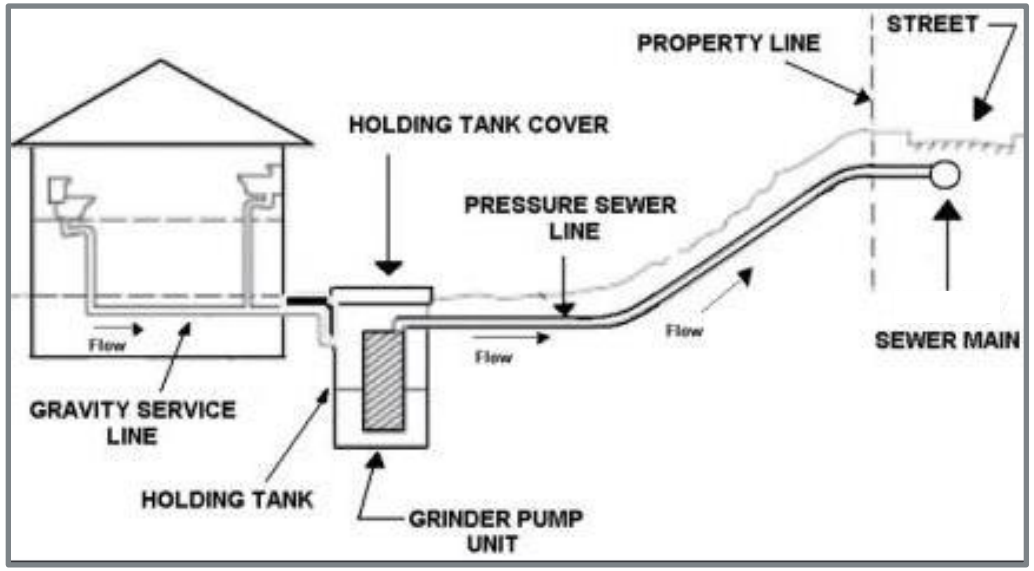
GRAVITY SEWERS VS. LOW PRESSURE SEWERS

Gravity

- Sewer pipes in street flow by gravity
- 6” diameter gravity pipe from street to house/septic tank

Low Pressure

- Sewer pipes in street operate under pressure
- Grinder pump unit at house grinds up all flow and pumps it through 1 ¼” main



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GRAVITY VS. LOW PRESSURE – THINGS TO CONSIDER

Gravity
• No grinder pump for homeowner to maintain
• No electrical cost associated with pump
• Connection from house to sewer has potential to be deep and costly
• Homeowner is responsible to install connection from house to lateral stub
• Longer construction time for main in street = more disruption

Low Pressure
• Pump will need maintenance over time
• Minimal electrical cost associated with pump
• Connection from house to sewer can be shallower and follow the terrain
• Lateral piping costs generally lower than gravity
• Cost of pump is included. Cost of pump installation, and electrical and piping connections from house to lateral stub is homeowner's responsibility
• Shorter construction time = less disruption

ALTERNATIVE COST COMPARISONS

Alternative	Number of Grinder Pumps	Phase 1	All Phases
8A – Gravity	28	$ 7.3 million	$ 13.9 million
11A – Combination (All Side Streets on Grinder Pumps)	88	$ 5.7 million	$ 9.7 million
12A – Combination (Perna Lane Area Gravity, Others on Grinders)	44	$ 5.9 million	$ 10.0 million

ALTERNATIVE COST COMPARISONS

Alternative	Total Project Cost	Raw Cost Per Building	City and WPCA Share Per Building	Owner Share Per Building
8A – Gravity	$ 13.9 million	$ 55,100	$ 38,100	$ 17,000
11A – Combination (All Side Streets on Grinder Pumps)	$ 9.7 million	$ 38,500	$ 28,500	$ 10,000
12A – Combination (Perna Lane Area Gravity, Others on Grinders)	$ 10.0 million	$ 39,600	$ 29,100	$ 10,500

SEWER ASSESSMENT COMPUTATION

$$\frac{\text{Total Project Cost} - (\text{Drainage \& Pavement})^*}{\text{Total Number of “Sewer Units”}} \times 40\% = \text{Unit Rate}$$

*Only pavement outside of sewer trench is subtracted from project cost

SEWER ASSESSMENT COMPUTATION

- **Actual assessment based on total number of sewer units**
  - 1 sewer unit = single family home with up to 2 full bathrooms
  - Additional full bathroom = 0.5 unit
  - Additional half bathroom = 0.25 unit
- **Assessment is payable in equal payments over 15 years**
- **Payment based on bonded interest rates, currently 3% to 4%**
- **Assessments for one sewer unit expected to range from $9,000 - $15,000**
  - Assessments will be higher for homes with more than two bathrooms

NEXT STEPS

- WPCA to select alternative
- Revise design plans
- Bid
- Negotiate contract
- Construct