

26th to 34th Street, West Avenue to Bay Avenue Flood Mitigation Study

PRELIMINARY RESULTS PRESENTATION



Outline

Flood Mitigation Study Scope

Flood Model Results

Flood Mitigation Concepts

Next Steps

Flood Mitigation Study Scope

Field Visit and Data Collection

- Identified the drainage structures within the project area and evaluated the roadway condition
- Created an existing conditions model of the drainage network under a mean tide assumption and high tide assumption
- Developed concepts to mitigate frequent flooding

Field Verification



Field Verification



Field Verification



Field Verification



Approach

Model the Existing Conditions

- 1 year Event
- 2 Year Event
- 5 Year Event
- 10 Year Event
- Average Tide
- High Tide

Analyze Mechanical Solutions

- Pumps

Analyze Infrastructure Solutions

- Rerouting Drainage
- Roadway Profile Raises

Green Solutions

- Infiltration
- Rain Barrels
- Rain Gardens

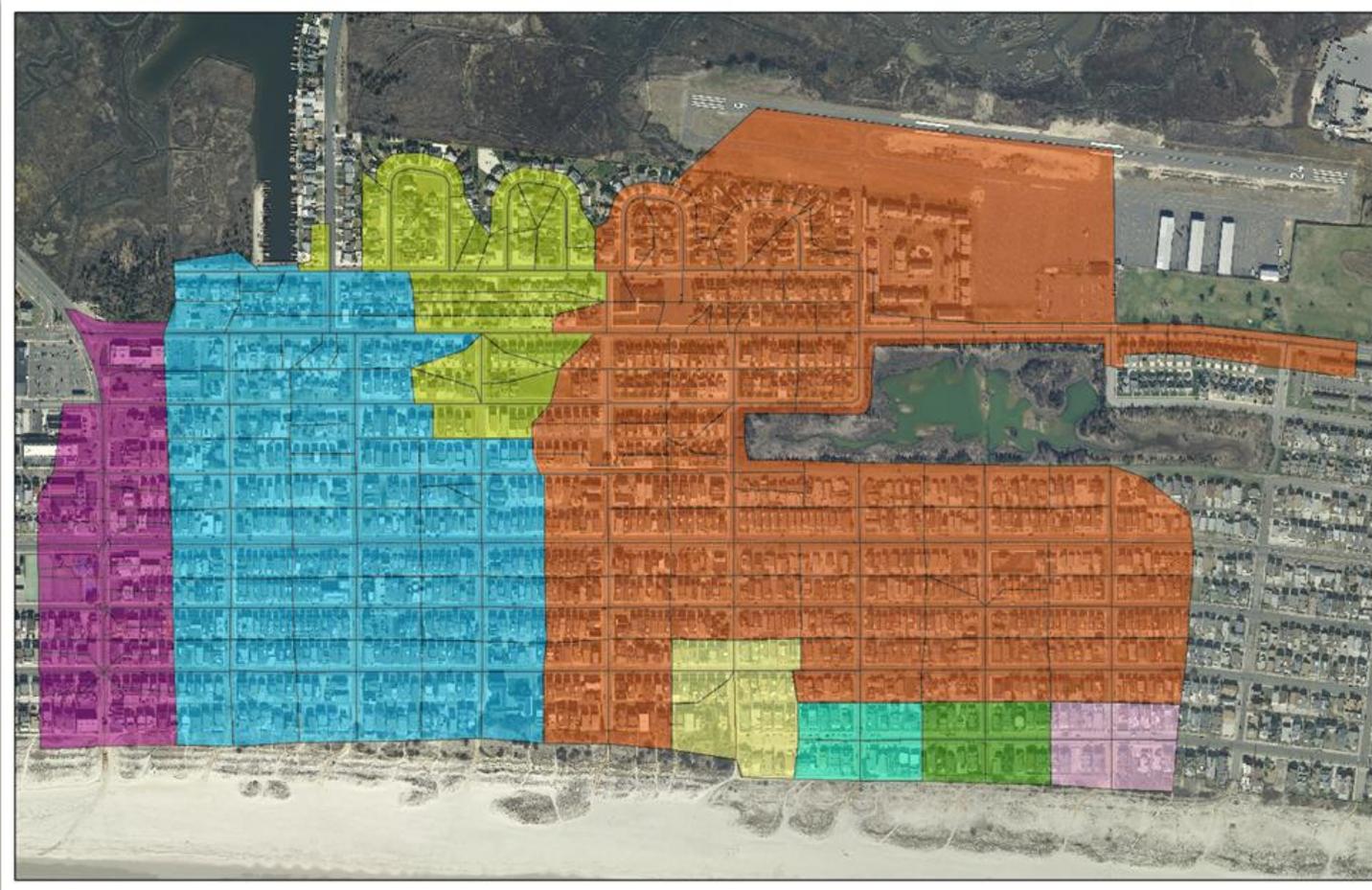
Model Results - Rainfall

245 Acre Study Area

Comprising mostly residential plots, some commercial, large areas of impervious roadway

1 Year Event -	2.68 Inches of Rain -	14.67 Million Gallons of Runoff
2 Year Event -	3.27 Inches of Rain -	18.04 Million Gallons of Runoff
5 Year Event -	4.24 Inches of Rain -	23.53 Million Gallons of Runoff
10 Year Event -	5.08 Inches of Rain -	33.79 Million Gallons of Runoff

Model Results – Drainage Areas



Model Results – Pipes and Overflows

32,000 Feet of Pipe

314 Drainage Structures

110 Additional Routing Points

73,000 Feet of Overflow Paths

Model Results – Pipes and Outfalls



Model Results – Pipes and Overflows



Model Results – Pipes and Overflows



Solutions

Mechanical

- Viability of Pumps

Infrastructure

- Roadway Profiling
- Drainage Rerouting
- Drainage Optimization

Green Infrastructure

- Infiltration Techniques
- Rain Barrels
- Rain Gardens

Potential Pump Locations



Merion Park Pumps



Cost Estimates

Pump Stations

Cost Per Station			
Mobilization			\$ 40,000.00
Three (3) 80 HP Pumps and Cables			\$ 135,000.00
Pump Controls			\$ 40,000.00
Internal Piping			\$ 25,000.00
Outfall Pipe			\$ 100,000.00
Diversion Manhole			\$ 50,000.00
Piling Support			\$ 50,000.00
Concrete Station			\$ 150,000.00
Electric Upgrades			\$ 100,000.00
Soil Erosion Sediment Control			\$ 10,000.00
Stairs and Other Access Requirements			\$ 50,000.00
TOTAL:			\$ 750,000.00
TOTAL FOR 3 STATIONS:			\$ 2,250,000.00

Cost Estimates

Roadway and Drainage Network Improvements

Upgrades to Simpson, Haven, West and Numbered Streets			
Necessary Drainage System Upgrades			
Mobilization			\$ 75,000.00
Soil Erosion Sediment Control			\$ 30,000.00
Pavement Upgrades			\$ 4,500,000.00
Drainage Upgrades			\$ 3,600,000.00
Sidewalk Improvements			\$ 1,400,000.00
Utility Conflicts			\$ 100,000.00
Traffic Control			\$ 50,000.00
TOTAL:			\$ 9,755,000.00

Cost Estimates

Roadway and Drainage Network Improvements

Cost Per Unit			
Mobilization			\$ 40,000.00
Soil Erosion Sediment Control			\$ 5,000.00
Drainage Upgrades			\$ 75,000.00
Infiltration System			\$ 400,000.00
TOTAL:			\$ 520,000.00

Next Steps

Detailed Survey Collection

Finalize Design Limits

Develop Street-Scaping and Traffic Calming Measures

Obtain Necessary Permits

Develop Contract Plans

Throughout the final design process, residents will be engaged to develop the final design elements of the project