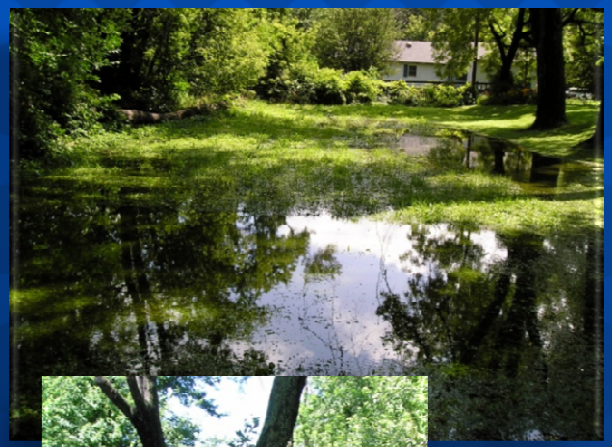








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Flooding Study Update
Area 2

June 8, 2010

Introductions

City of Crystal Lake

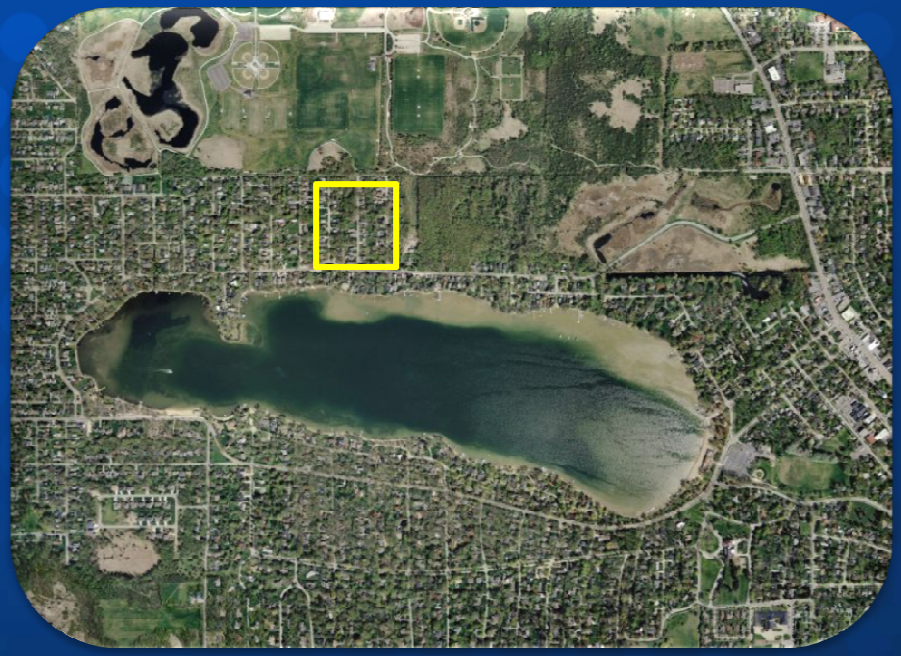
Engineering Division Staff

GHA

Gewalt Hamilton and Associates

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Location of Area 2



North of the Lake



From

East End Avenue to

Crystal Beach Avenue

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Tonight's Presentation

- Main Causes of Flooding in Area 2
- Proposed Design
- Outstanding Issues
- Estimated Cost of Construction
- Staging and Construction Schedule
- Question and Answer Session



PLEASE HOLD ALL QUESTIONS UNTIL THE END – THANK YOU

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Main Causes of Flooding

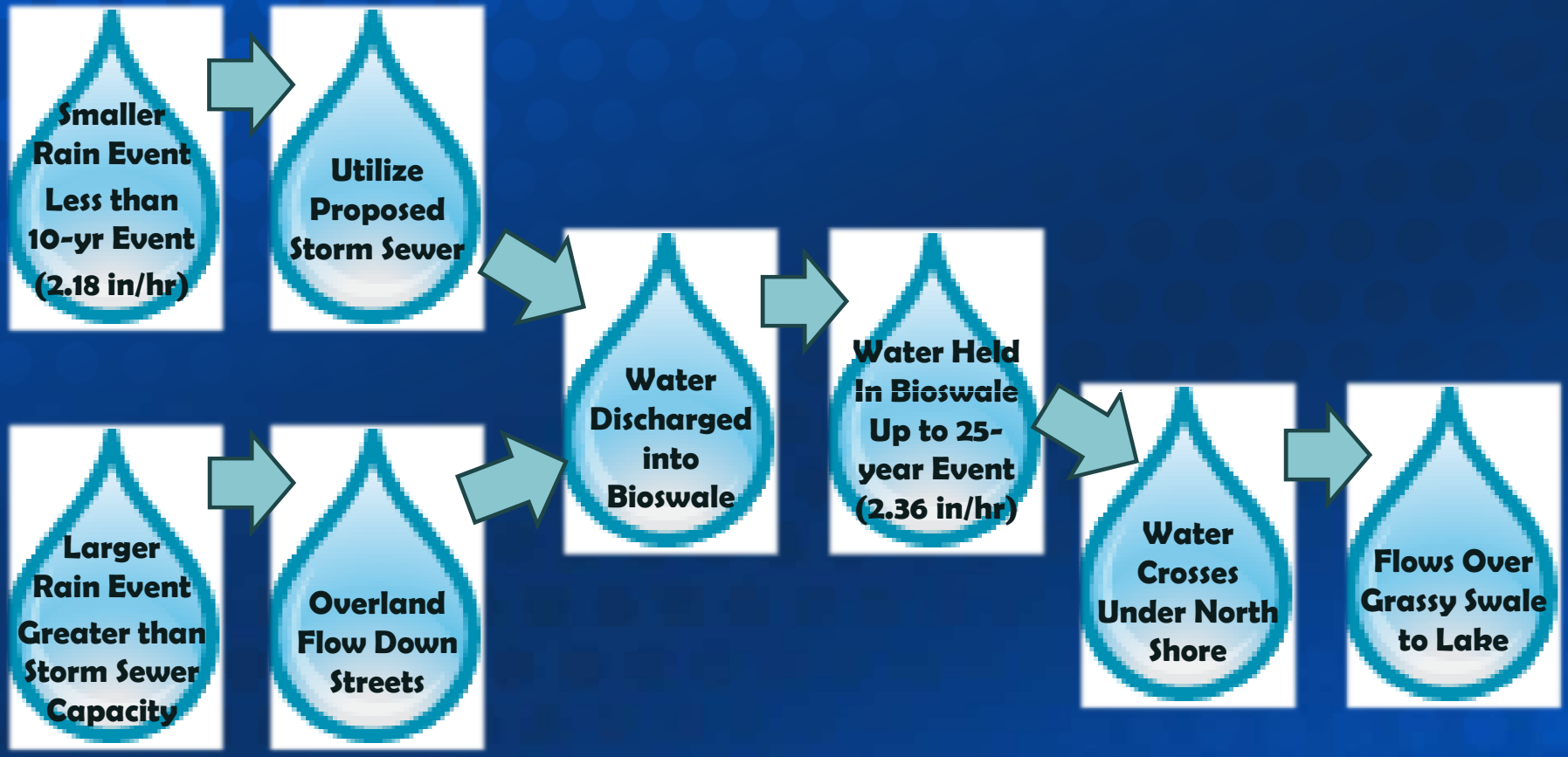
- High Groundwater
- Lack of Adequate & Maintained Minor Drainage System
- Lack of Major Drainage Path from Depression

Proposed Design

- Lower the groundwater by providing a reliable storm and underdrain system
- Provide a level-of-protection for the 100-year storm event

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Conceptual Drainage Design



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Proposed System for Smaller Rain Events



- New 12” storm sewer
- Less than 10-year event
- Along all three streets
- Located within the parkway
- To aid in lowering the groundwater, perforated storm sewer/underdrains are proposed at lateral crossings under roadway

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Proposed System for Larger Rain Events

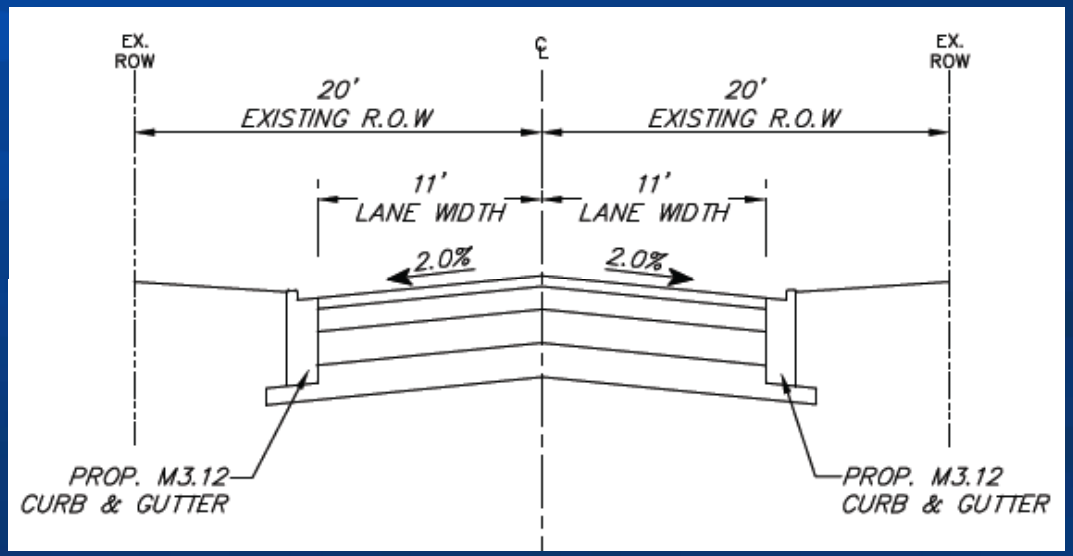
For rain events greater than proposed storm system capacity

- **Proposed Overflow Route In Roadway**
  - **As an alternative to ditching, due to lack of ROW, curb and gutter is proposed**
  - **Water will be channelized along the curb line**
  - **Maximum ponding depth 6" along the curb line at the low points**
  - **Water will cascade in the roadway from north to south**



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Proposed Roadway Work



Proposed Typical Section



RECONSTRUCT

- East End Avenue
- Greenfield Avenue
- Crystal Beach Avenue

RESURFACE

- North Shore Drive

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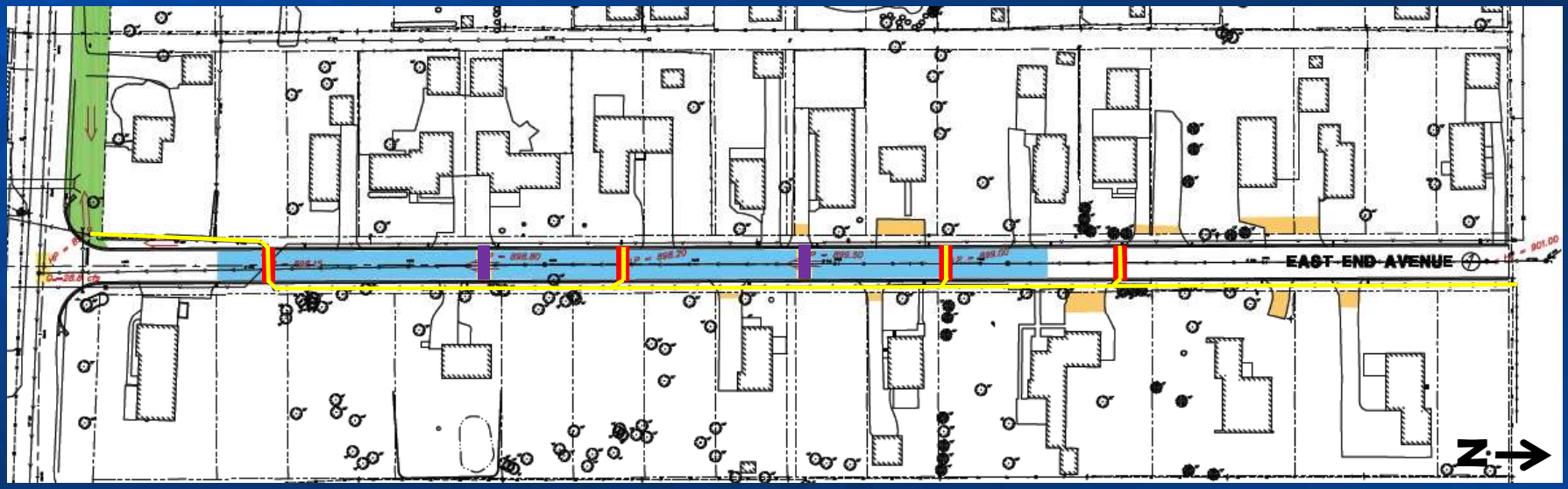
Proposed Driveway Work



- To match the new profile, portions of some driveways will need to be reconstructed
- Designed between 0.5% and 8%
- Majority will be less than 5%
- No driveways back pitched to the house
- Temporary Easements required from affected property owners
- All areas of disturbance will be restored
- No work proposed in the front yards, rear yards or alleys

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East End Avenue Design

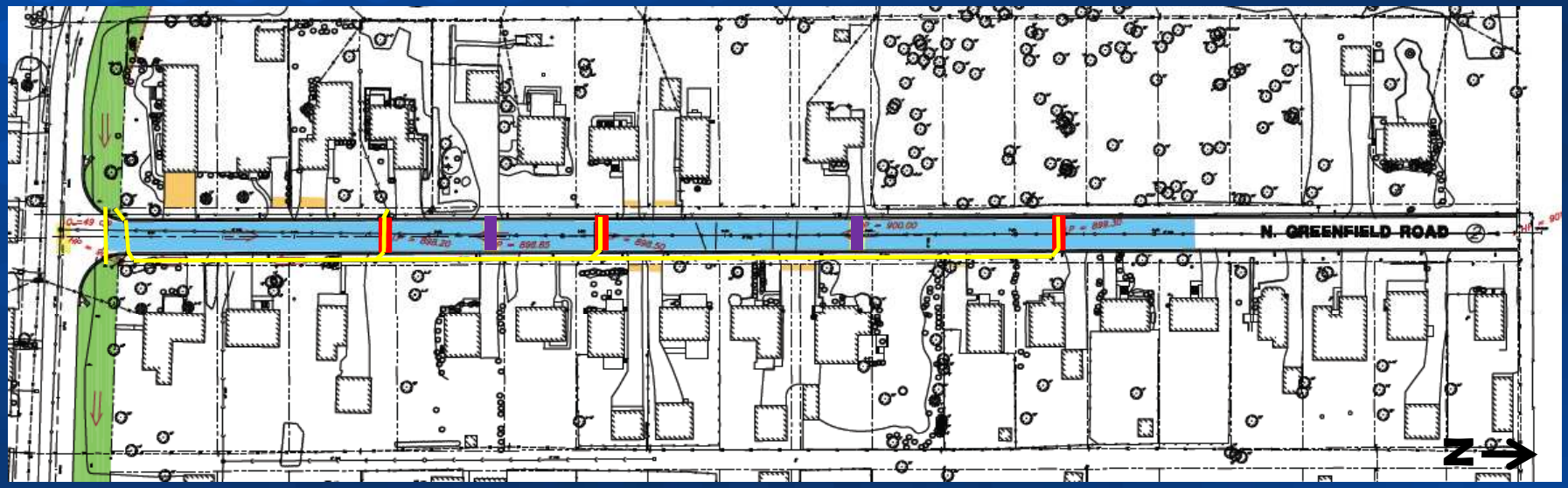


LEGEND

- AREA OF PONDING
- LOW POINT
- HIGH POINT
- DRIVEWAYS TO BE RECONSTRUCTED
- PROPOSED STORM SEWER

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Greenfield Avenue Design

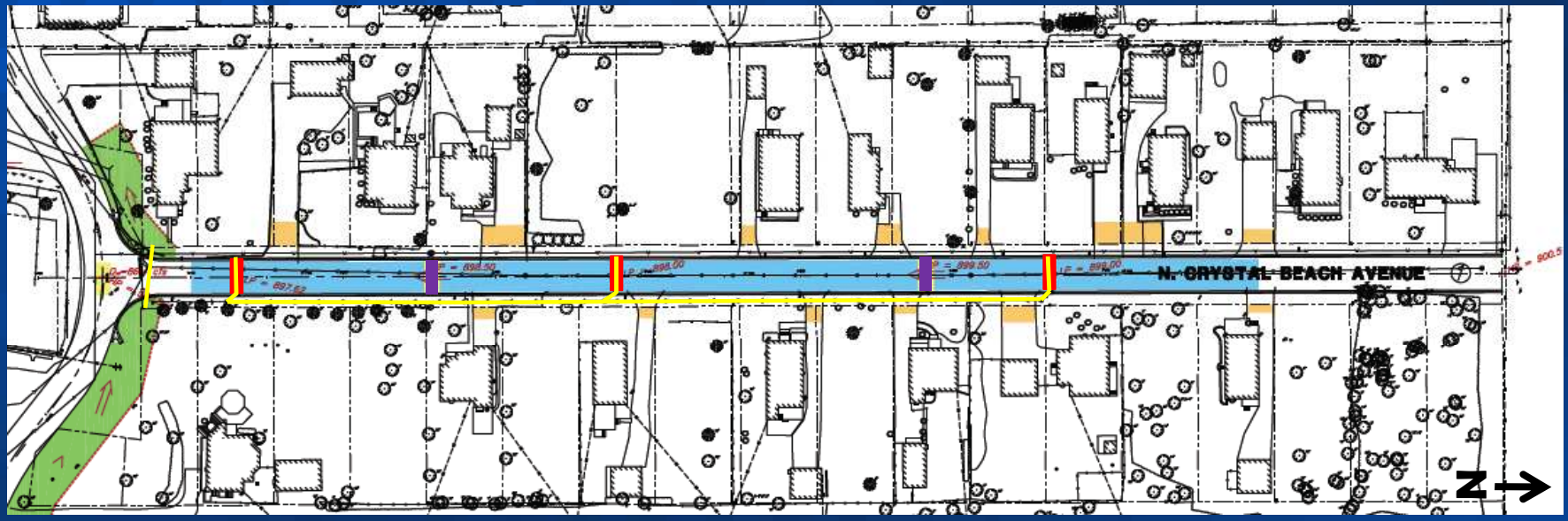


LEGEND

- AREA OF PONDING
- LOW POINT
- HIGH POINT
- DRIVEWAYS TO BE RECONSTRUCTED
- PROPOSED STORM SEWER

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Crystal Beach Avenue Design



LEGEND

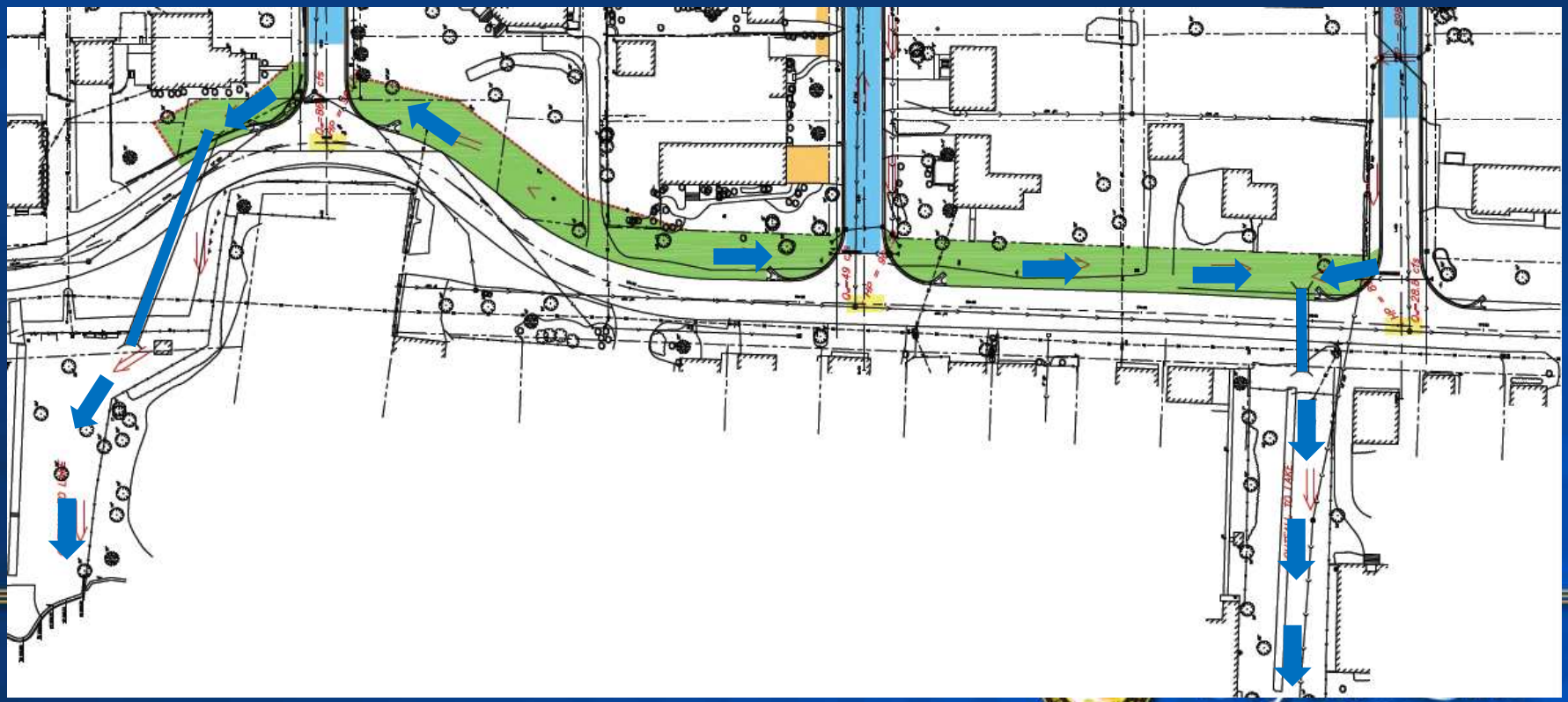
- AREA OF PONDING
- LOW POINT
- HIGH POINT
- DRIVEWAYS TO BE RECONSTRUCTED
- PROPOSED STORM SEWER

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What Happens to ALL the Water

Once It Reaches North Shore Drive

- Flow into bioswale along the north side of North Shore Drive
- Water will start flowing under North Shore Drive in excess of the 25-year event at two locations then flow to the lake

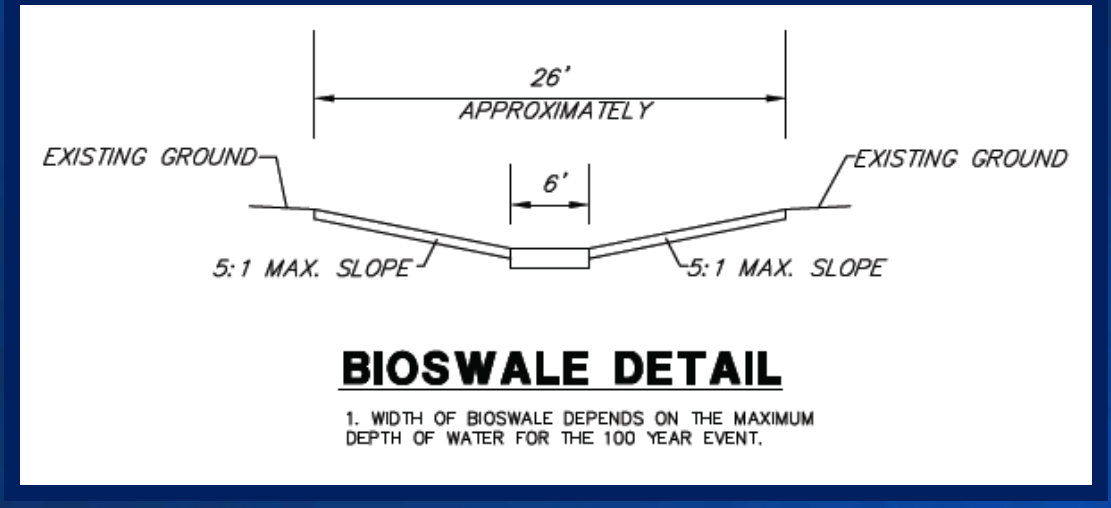


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What Is A Bioswale?

- Shallow swale area which accepts and conveys stormwater runoff
- Designed to remove silt and pollution through the use of native plantings
- Minimal maintenance required; City to maintain



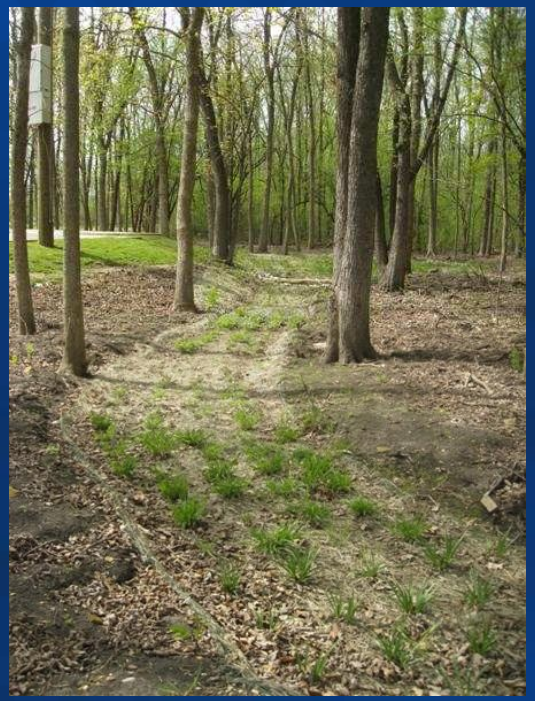
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Progression of Bioswale Plantings

Before



After Planting



3-6 Months



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Progression of Bioswale Plantings, cont.

Final







Note this is an EXAMPLE ONLY

Can take 3-5 years to fully establish

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Proposed Crossings Under North Shore Drive



Crossing near
East End Avenue
7.0 ft by 2.5 ft
Box Culvert





Crossing near
Crystal Beach Avenue
30" circular pipe



Crossings maintained by the City

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Proposed Work in Beach Access Areas

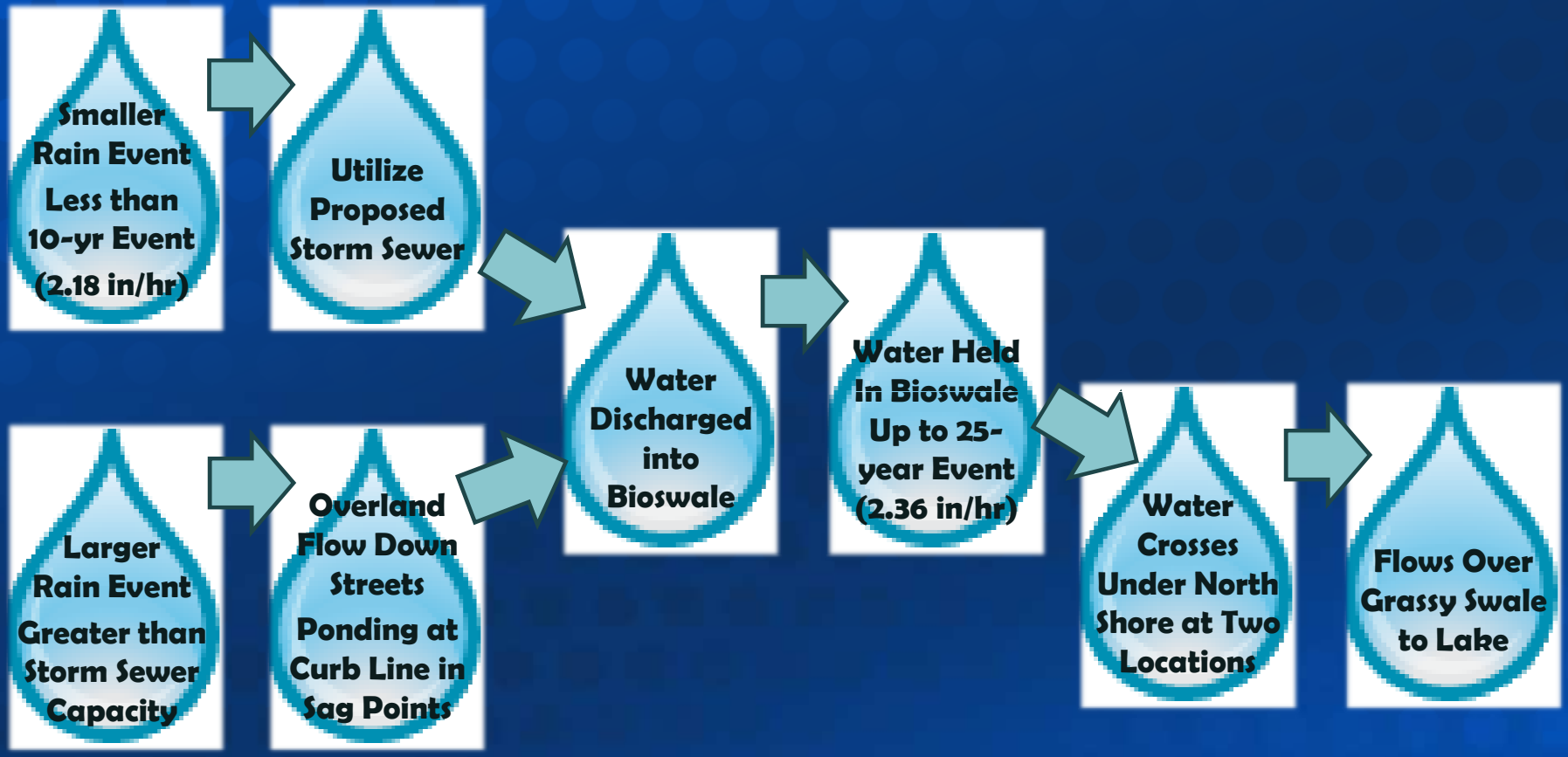
- Bioswale will hold up to the 25-year storm event
- Water then runs through the crossings to a gradual grassy swale eventually reaching the lake
- Two locations:
  - Swim Beach (near Crystal Beach Avenue)
  - Mooring Beach (near East End Avenue)
- Existing condition of 15" outlet pipe to the lake at Mooring Beach still needs to be determined





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Summary of Drainage Stages

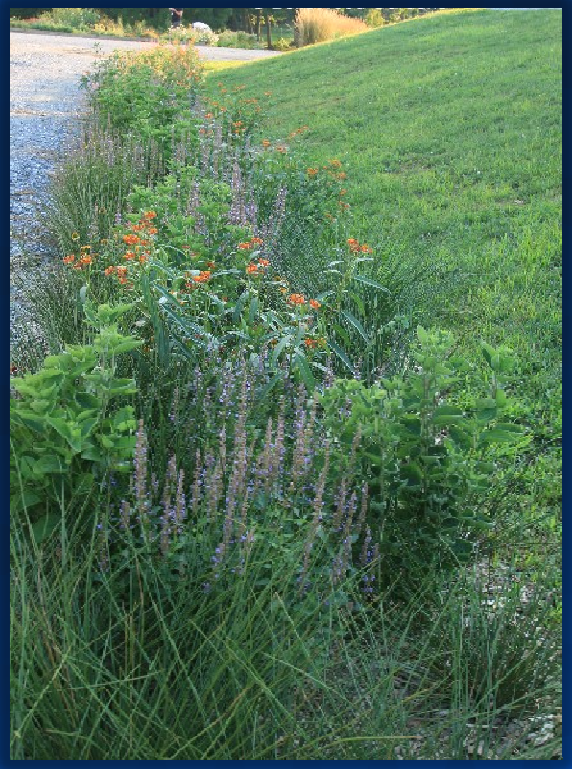


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Improve Water Quality To Lake

- ALL water will filter through the bioswale
- Water will run over the grassy swale areas
- Possible permeable pavement at low points and/or permeable curb

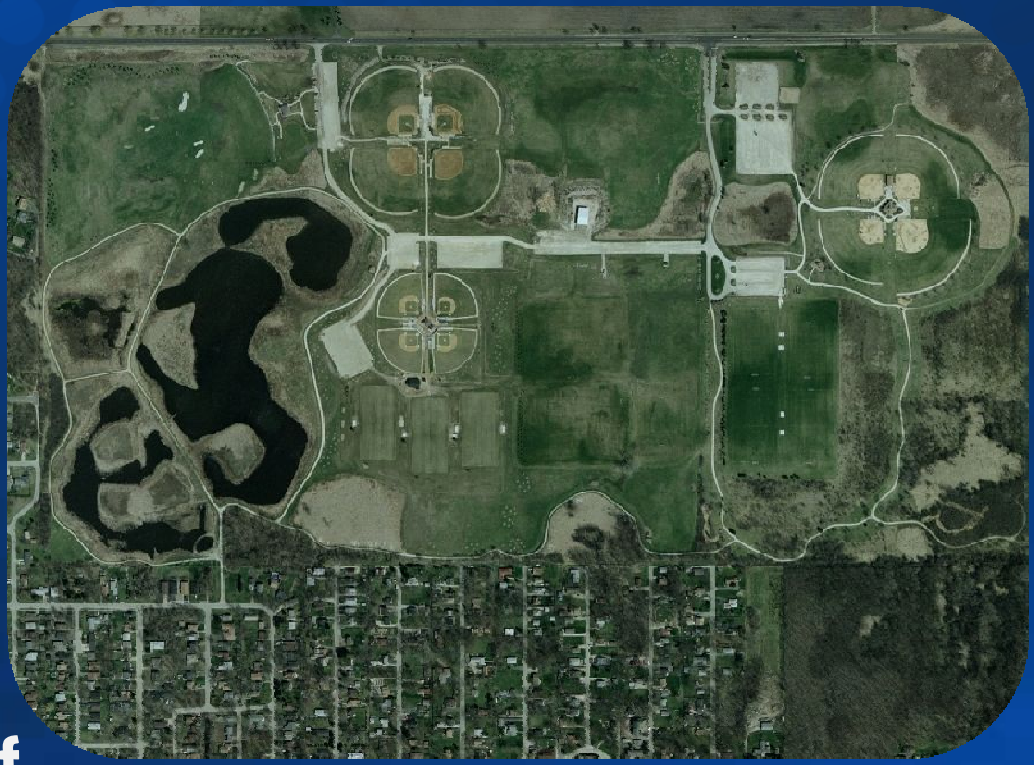




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Lippold Park Area

- Drainage patterns were reviewed by the Engineering Consultant
- Diverting the water from the 56 acre Lippold Park to the west (around Area 2), does have minimal impact in flood elevations.
- Regardless of amount of water draining through Area 2, current elevation of North Shore Drive acts as a dam



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Outstanding Issues

Before Project Can Move to Final Design

- Obtain feedback from area residents
- Agreement from HOA (North Crystal Lake Park Beach Improvement Association) for use of beach access areas
- Cooperation with homeowners adjacent to proposed bioswale



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Estimated Cost of Construction

Location	Estimated Cost
North Shore Drive (incl. crossings, beach area, & bioswale)	$335,000
East End Avenue	$372,000
Greenfield Avenue	$334,000
Crystal Beach Avenue	$352,000



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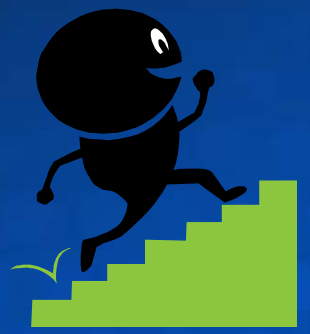
Staging and Construction Schedule

- Due to funding constraints, the project will be broken into 4 stages
- Order of stages yet to be determined; engineering consultant working on a logical progression
- City anticipates starting the first stage later this year, depending on resolution of outstanding issues
- Anticipate completing 1 stage each year unless additional funding becomes available

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Next Steps

1. Letter of acceptance from HOA
2. Obtain permanent or temporary easements
3. Engineering consultant perform final engineering
4. Bid Project for Stage 1
5. Construction



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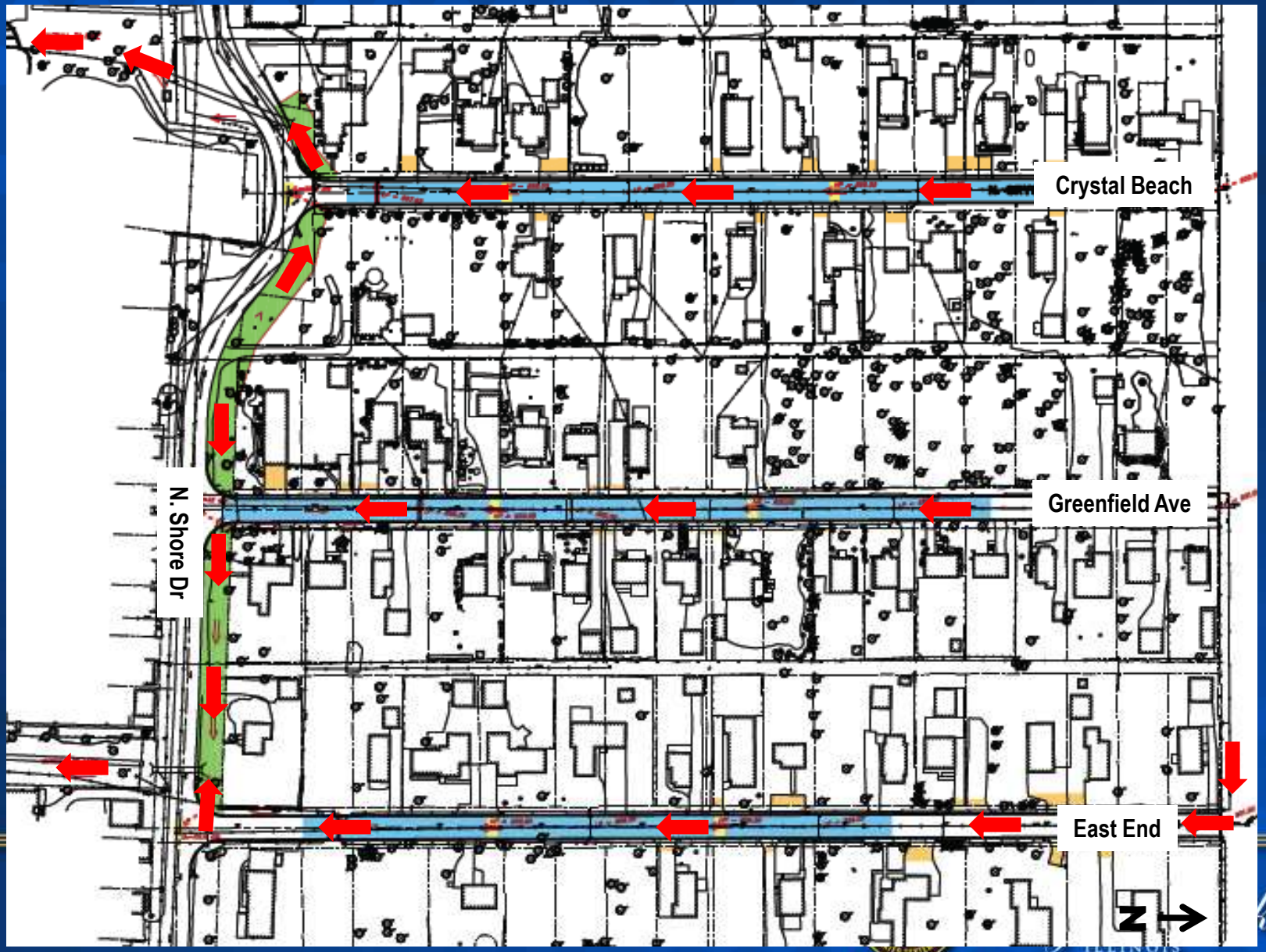
Question and Answer Session

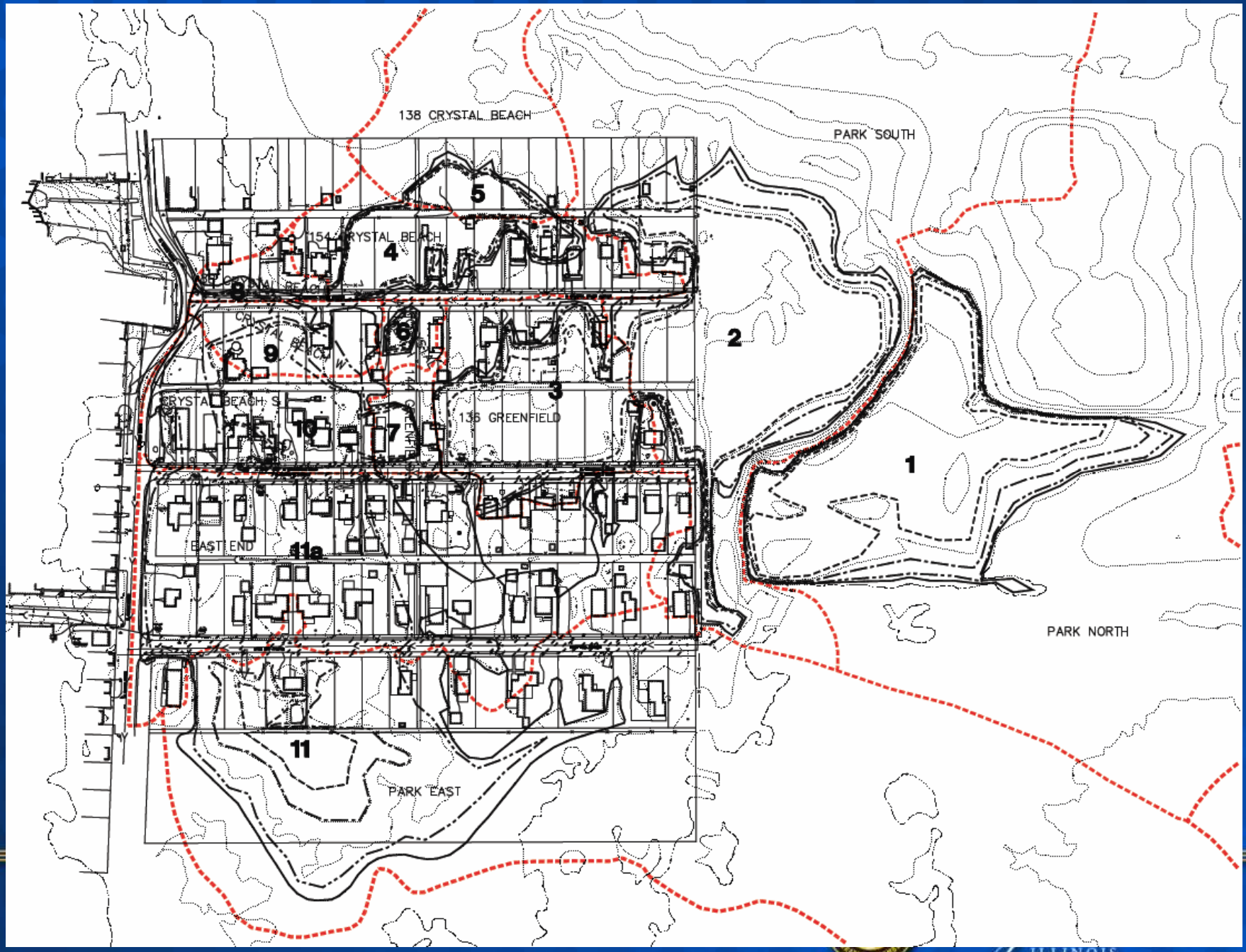


- Come to the microphone to ask your question
- Please state your name and address

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Summary of Overflow Route




138 CRYSTAL BEACH
PARK SOUTH
154 CRYSTAL BEACH
CRYSTAL BEACH S
136 GREENFIELD
EAST END
PARK NORTH
PARK EAST
1
2
3
4
5
6
7
9
10
11
11a