Case Study: Sunnyland Subdivision Drainage Improvement Project
2013 IAFSM Presentation

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Presentation Agenda

- Project Overview and Goals
- Engineering Evaluation
- Recommended Projects
- Funding
- Construction Packaging / Sequencing
- Construction Challenges
- Questions?
Project Overview and Goals

- Reduce Flooding and Drainage Problems in Sunnyland Neighborhood
  - ~ 200 Residential Structures
  - Structural, Yard, Street Flooding
  - Identify Problem and Develop Project Alternatives to Reduce Depth and/or Duration of Flooding

- Project Followed Traditional Project Path
  - Data Collection
  - Analysis
  - Develop Alternatives
  - Recommend Projects
Who Is V3?

Engineering Evaluation

1939 Aerial Photo

North Tributary

Main Drain

South Tributary
Engineering Evaluation: Main Drain

- Large drainage area
- Mapped Floodplain
- Flows through backyards
- Overgrown with trees, shrubs
- Apparent limited channel capacity
- Apparent limited culvert capacity
Engineering Evaluation: South Trib

- Approx. 60 acres at Gaylord
- Not Mapped Floodplain
- No / poorly defined channel or flow path downstream of Gaylord
- Water flows between homes, limited capacity to convey water
- Water path blocked by fences and obstructions
Who Is V3?

Engineering Evaluation: North Trib

- Smallest drainage area
- No Mapped Floodplain
- Channel between homes

Approx 40 acres at Gaylord Rd
Engineering Evaluation: Resident Input

- Importance of Data Collection from Residents
  - Questionnaire sent to residents
  - Two neighborhood meetings solicited information
  - Residents identified specific problems & challenges
  - Shaped direction of project
71 Responses

59 Indicated Flooding
- 15 Indicated First Floor House Flooding
- Remainder: Basement, Garage, Yard, Street

Flooding Occurs During:
- Small Storms = 5 responses, 7%
- Moderate Storms = 34 responses, 48%
- Large Storms = 59 responses, 83%
Reason for Flooding

- **69% = Insufficient or Clogged Ditches, Culverts**
  - Includes All Residents with First Floor Structural Flooding
- **39% = Poor Grading of Lot**
- **22% = Seepage through Walls/Floor**
- **20% = Limited Storm Sewer Inlets**
- **19% = Overland Flow**
- **< 10% = Other responses**
  - Erosion
  - Sump Pump Failure
  - Sewer Backup
Engineering Evaluation

- Problems Scattered Throughout Sunnyland Subdivision

- No “Magic Bullet” Solution

- Engineering Alternatives Included:
  - Conveyance
  - Storage
  - Maintenance
Projects: South Tributary Sewer Improvements, Inlet Improvements, Ditch Reshaping West of Gaylord

Benefits: Homes Along South Tributary

9 properties reported flooding problems;
6 properties reported house flooding

Provides infrastructure for Phase 2
Improvements to benefit additional homes

Estimated Cost
Opinion: $526,500
Projects: Additional Inlets and Storage within Adjacent Subdivision

**Benefits:** Homes on Grape, Burbank, & Gaylord
5 properties reported flooding problems;
3 properties reported house flooding

**Estimated Cost Opinion:** $39,000
Projects: Main Drain Improvements:
Clear Debris, Clear / Trim Landscaping

Benefits:
- Preventative Maintenance, Minimal Reduction in Flood Levels
- Homes on Poplar & Garden
- 8 properties reported flooding problems;
- 3 properties reported house flooding

Estimated Cost Opinion: $15,600
Projects: Main Drain Improvements:
Downstream Fence Modification

Preventative Action to Protect Against
Extreme Storms, No Reduction in Flood
Levels
Projects: Ditch Improvements - Step 1 - South

Benefits: Homes on Garden, Berry, Grape, Burbank, Blossom

(Garden & N. side Grape included in Phase 1 as Bid Alternates)

26 properties reported flooding problems (9 of these properties benefit from Phase 1 improvements);

8 properties reported house flooding (6 of these houses benefit from Phase 1 improvements)

Estimated Cost Opinion: $445,000
Projects: Ditch Improvements - Step 2 - South

Benefits: Homes on Berry, Grape, Burbank, Flower, Blossom

Provides improved ditch conveyance for remainder of subdivision, south of Sunnyland Drain

Estimated Cost Opinion: $678,000 (includes Step 2 – North, on next slide)
Projects: Ditch Improvements - Step 1 - North

**Benefits:** Homes on Emlong, Keith and Chestnut

7 properties reported flooding problems;
2 properties reported house flooding

Provides Infrastructure for Phase 2 Improvements

**Estimated Cost Opinion:** $362,000
Who Is V3?

Projects: Ditch Improvements - Step 2 - North

**Benefits:** Homes on Emlong, Pecan, Poplar

Provides improved ditch conveyance for remainder of subdivision, south of Sunnyland Drain

**Estimated Cost Opinion:** $678,000 (includes Step 2 - South, on previous slide)
Engineering Evaluation

• Limited Funding = Project Prioritization

• Phase 1 Projects
  • Focuses on Areas with First Floor Flooding
    • Benefits 87% of homes with first floor flooding
    • Benefits 45% of properties with reported flooding

• Phase 2 Projects
  • Remainder of Subdivision
Ongoing Maintenance Recommended Upon Completion of Phase 1

Within Sunnyland Subdivision

• Ditches
• Storm Sewer System
  (Inlet Grates & Catch Basins)
• Main Sunnyland Drain

Adjacent to Subdivision

• Detention Ponds
• Stormwater Management Systems
Funding

- IKE Disaster Recovery Program Grant
  - Will County Received $750,000 for Sunnyland Subdivision
  - Grant Deadline is October 31, 2013
  - Grant dedicated to stormwater improvements

- Community Block Development Grant (CDBG)
  - Plainfield Township received $300,000 from Will County
  - Grant Deadline is March 15, 2014
  - Grant dedicated to Sunnyland Subdivision improvements

- Plainfield Township Construction
  - Plainfield Township is dedicating labor and equipment
  - Construction to include ditch excavation
Construction Packaging and Sequencing

- Construction Packaging
  - Priority 1 – Storm Sewer in Kellogg Street
Construction Packaging and Sequencing

• Construction Packaging

  • Priority 2 – Primary Ditches (10 cfs or more in 10-Yr)

South Area

North Area
Construction Challenges

• Utility Conflicts
  • Nicor Gas
  • Two Private Water Distribution Companies
Construction Challenges

• Tree & Landscape Conflicts
Questions?