



Ludlowville Stormwater Control Project: Technical Report 1 Existing Conditions

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Presentation Outline

- **Project Overview**
- Drainage Modeling
- Existing Conditions & Deficiencies
- Conceptual Improvement Opportunities
- Moving Forward
- Discussion



Study Focus

- Evaluate existing drainage infrastructure capacities
 - hydrologic and hydraulic modeling
- Develop conceptual improvement opportunities to address historical flooding in the Ludlowville area
- Build upon previous studies



Historic Conditions





Project Overview

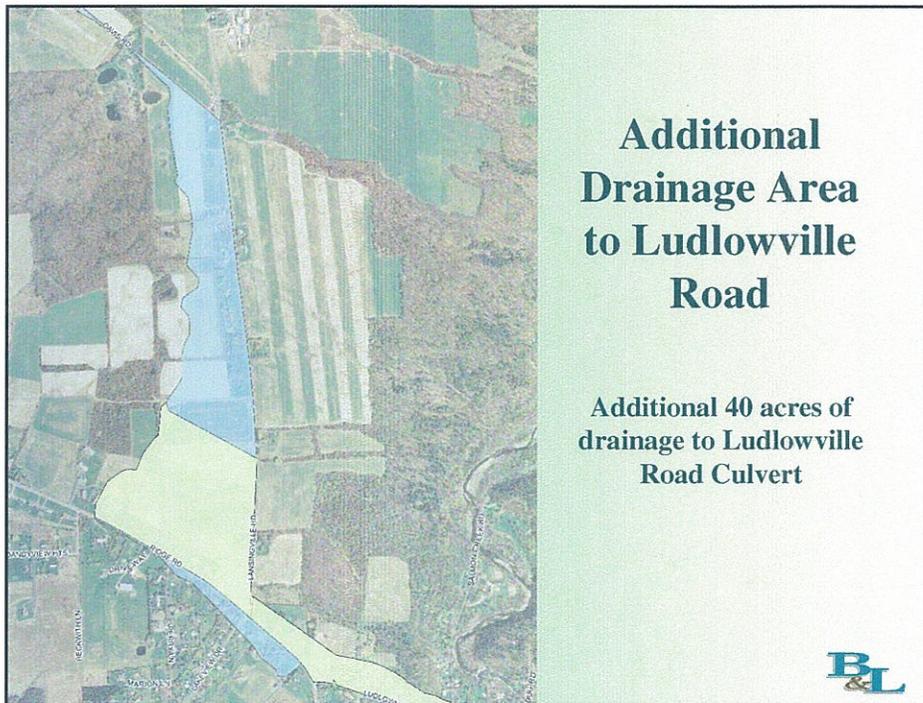
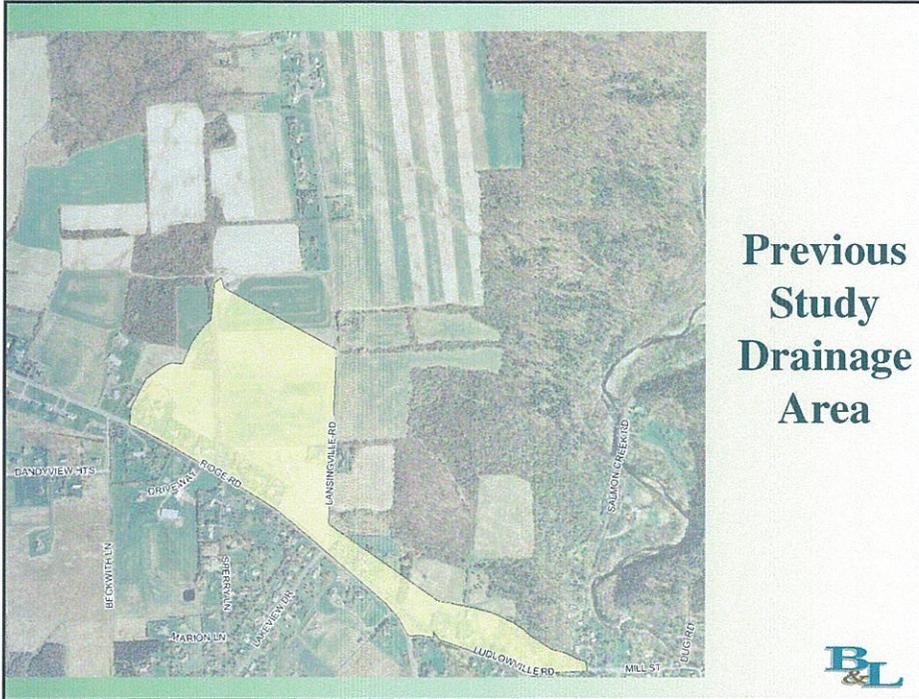
- Initial focus
 - Ludlowville Road Culvert
 - Erosive conditions down gradient of Ludlowville Road Culvert
- Residential surveys and site walks led to additional study areas



Project Overview

- Additional Study Areas
 - Lansingville Road Drainage
 - Ridge Road (NYS Route 34B) Drainage
 - Ludlowville Road Drainage System (downhill from main cross culvert)
 - Salmon Creek Road Drainage







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Drainage Modeling

- Utilized Hydrologic/Hydraulic Modeling Software
 - PondPack (TR-55)
- Drainage Basins based off of TG Miller Survey and Tompkins County LiDAR Survey
- Site Visits to Field Check Survey

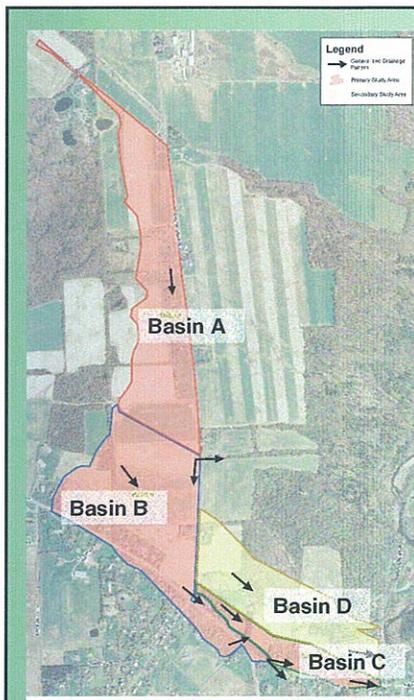


Drainage Modeling

- Focused on 2 Study Areas
- Primary Study Area (183-acres)
 - Drainage to Ludlowville Road Cross Culvert
 - Culvert 12
 - Basins A, B, and C
- Secondary Study Area (48-acres)
 - Salmon Creek Road
 - Basin D



Drainage Study Areas



Legend

- ➔ Generalized Drainage Pattern
- Primary Study Area
- Secondary Study Area





Drainage Modeling

- Key Modeling Inputs
 - Rainfall data
 - Soils
 - Land use/cover type
 - Drainage Paths
 - Drainage structures
 - Open channels
 - Closed drainage systems
 - Culverts

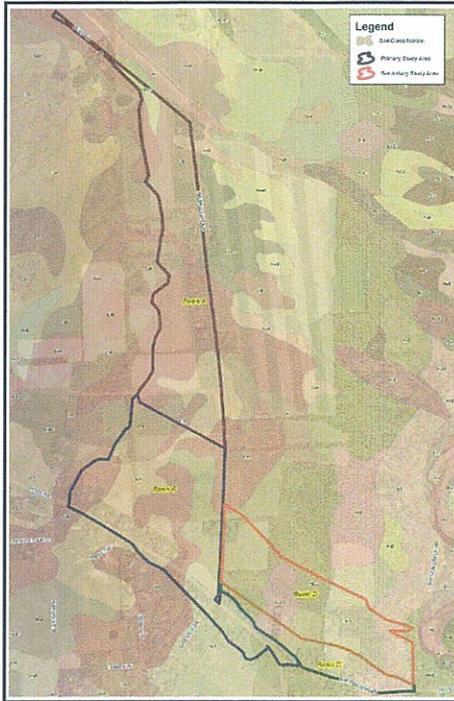



Drainage Modeling

- Rainfall Events

Recurrence Interval	Rainfall (inches)
1-year	2.3
5-year	3.4
10-year	3.9
25-year	4.6
50-year	4.9

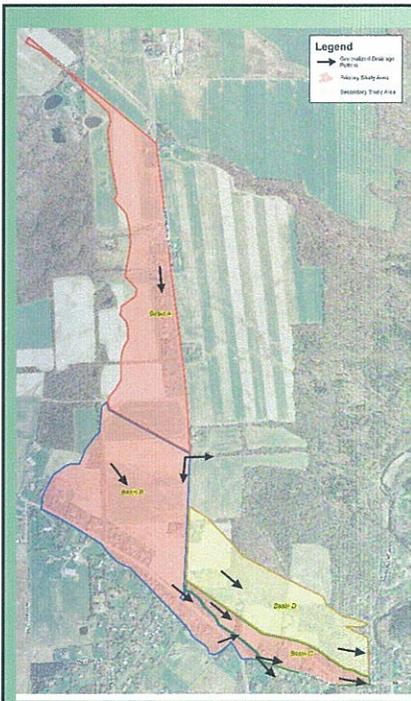




Soils Mapping

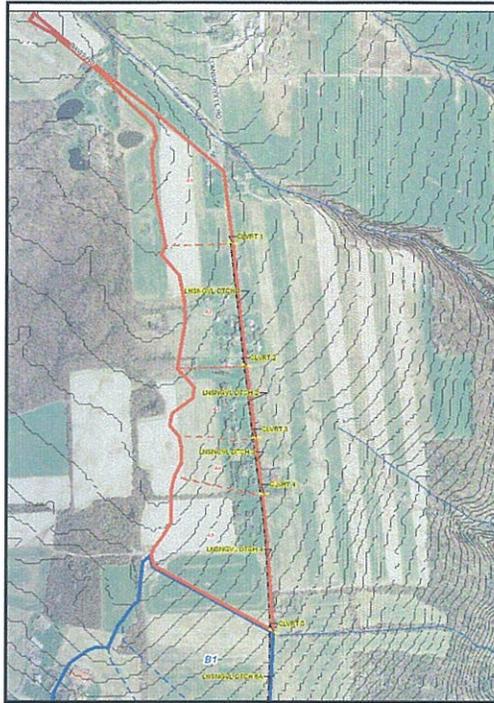
Soil impacts:

- runoff rates
- infiltration capacity
- agricultural tiling



Drainage Study Areas





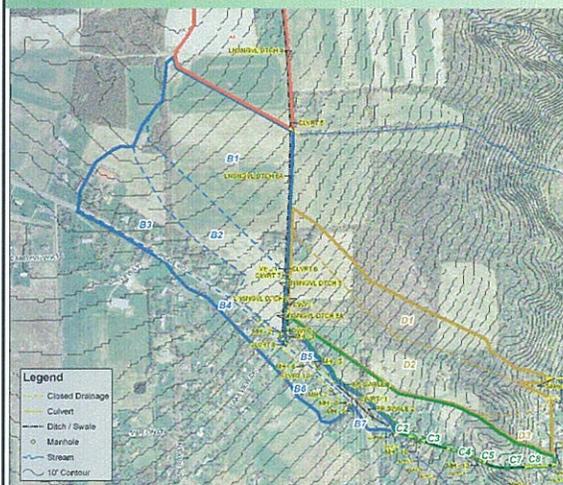
Drainage Modeling

- **Basin A**
 - Lansingville Rd.
 - Drainage conveyed by roadside ditch through cross culverts out of study area
 - Overflow to Drainage Basin B
 - “new area”





Drainage Modeling



- **Basin B**

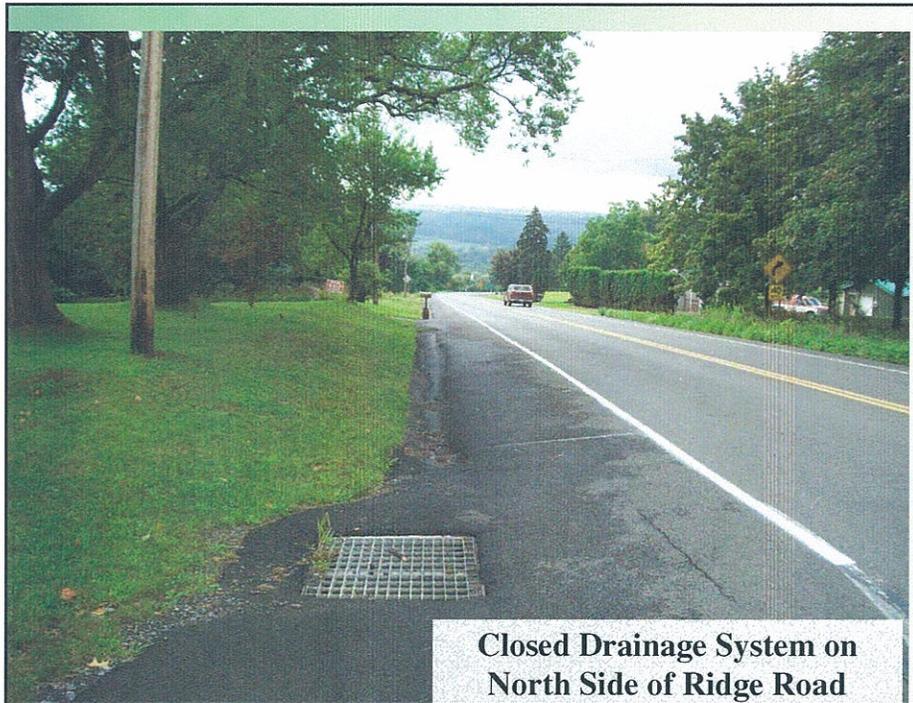
- Includes overflow from Basin A
- Includes “new area” from south side of Ridge Road
- Flows to Ludlowville Rd cross culvert





Lansingville/Ridge Road
Intersection

Drainage
Continues Down
North Side of
Ridge Road

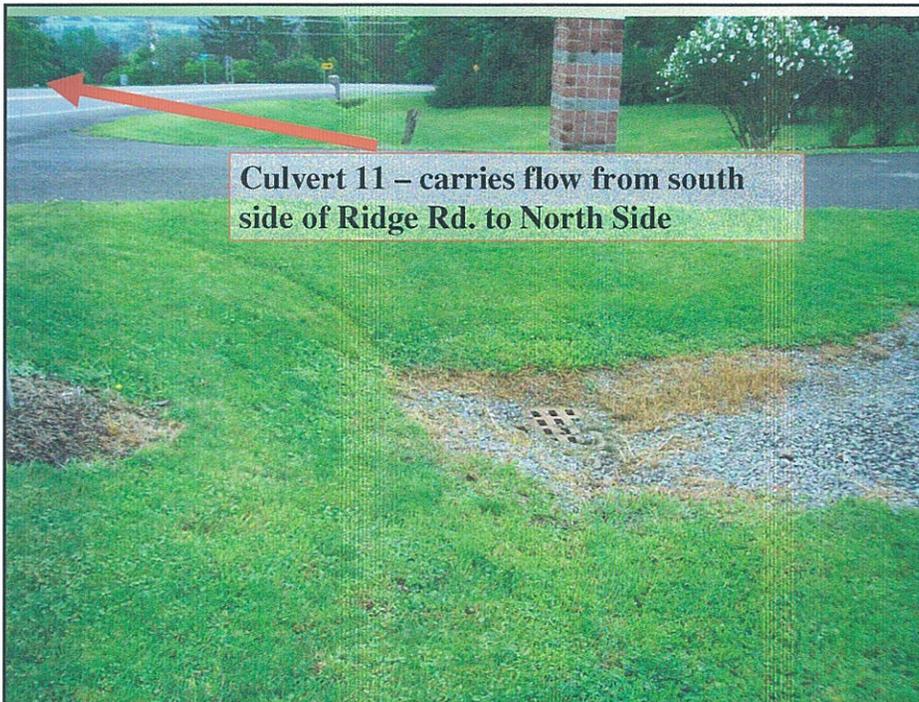


**Closed Drainage System on
North Side of Ridge Road**



Drainage on
South Side of
Ridge Road

- Ultimately crosses to North side (culvert 11)
- Drains to Ludlowville Road culvert
- Area previously unaccounted for



**Culvert 11 – carries flow from south
side of Ridge Rd. to North Side**

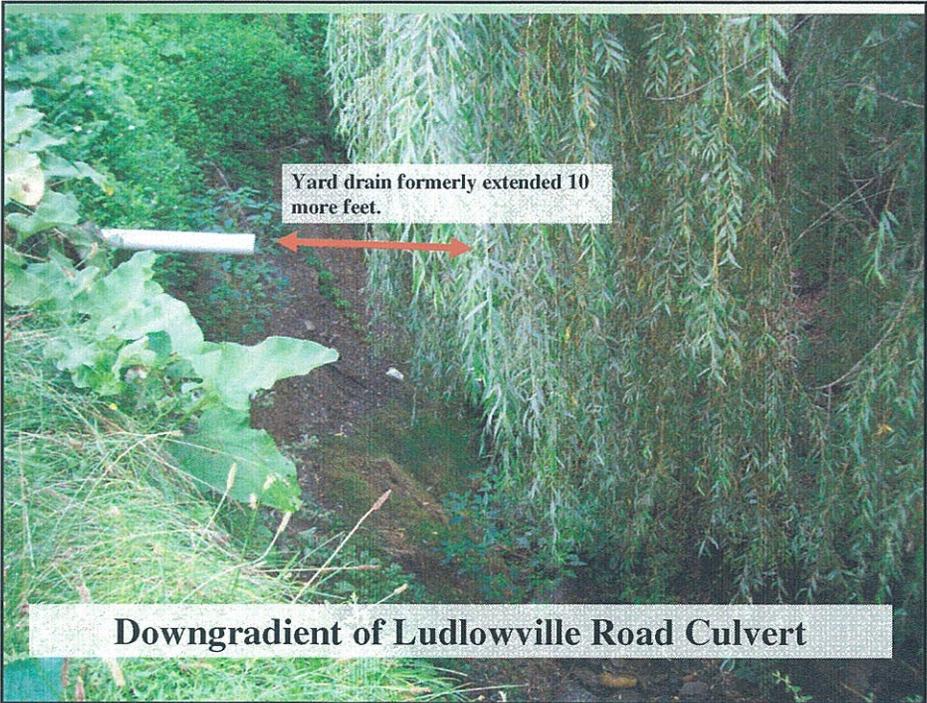
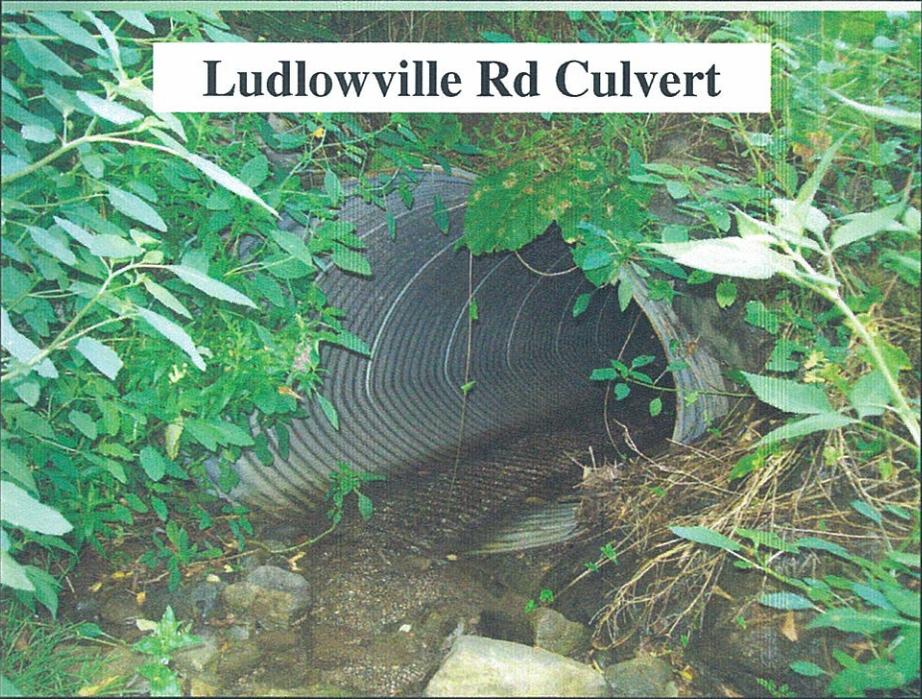


Open channel drainage on north side of Ridge Road – discharges through Ludlowville Road culvert



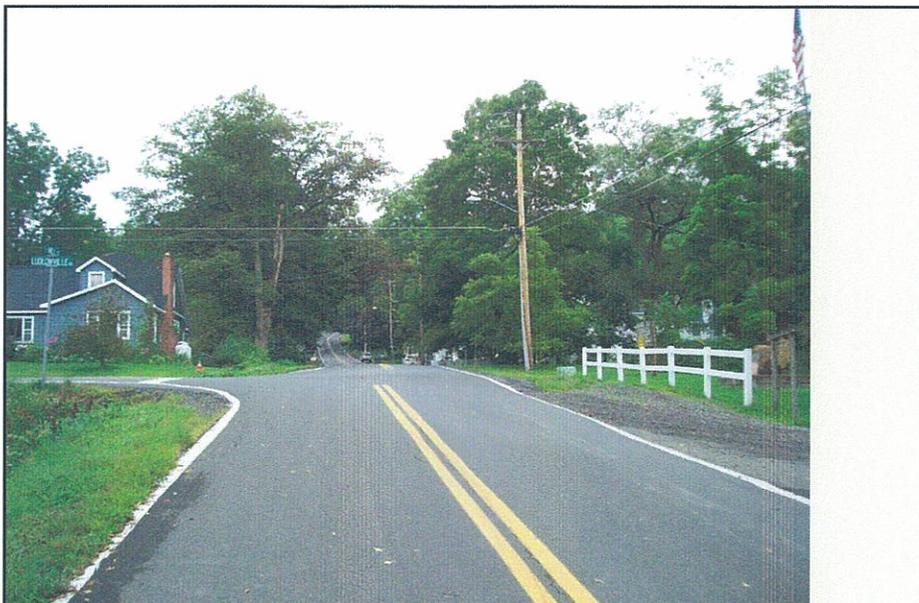
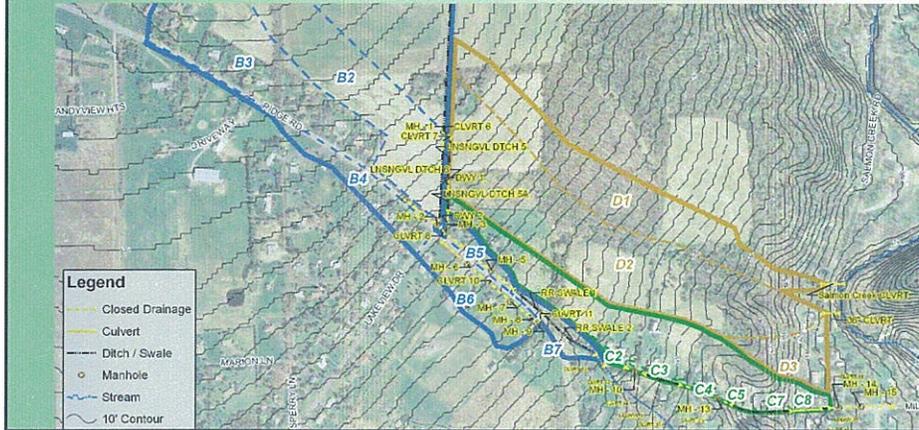
Open channel upgradient of Ludlowville Road Culvert deeply incised.





Drainage Modeling

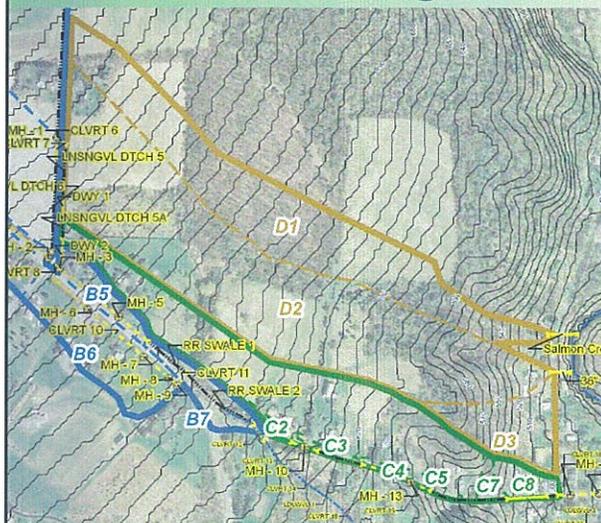
- Basin C
 - Ludlowville Road
 - Receives overflows from Basins A and B
 - Upper portion discharges through cross culvert 12
 - Overflows down Ludlowville Road



Outlet of Basin C
East of Salmon Cr. Road/Ludlowville Road Intersection



Drainage Modeling

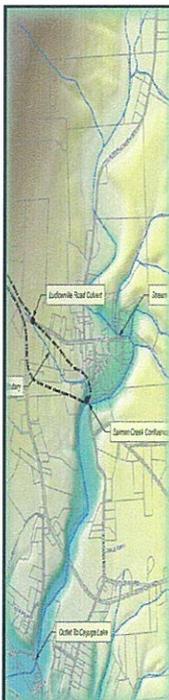


- **Basin D**
 - Salmon Cr. Road
 - Secondary Basin



Presentation Outline

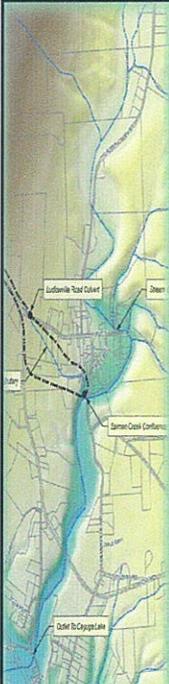
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Existing Condition Deficiencies

- Primary Study Area: Basin A (Lansingville Road)
 - Conveys runoff approaching the 5-year storm
 - Outlet culvert 5 overtops at <5 year storm
 - Excess flows discharge to Basin B and ultimately to Ludlowville Road Culvert



Existing Condition Deficiencies

- Primary Study Area: Basin B
 - Conveys runoff approaching the 5-year storm
 - Ludlowville Road culvert overtops at <5 year storm
 - Excess flows discharge to Basin C down the North side of Ludlowville Road
 - Impacts to private properties





Existing Condition Deficiencies

- Primary Study Area: Basin C (Ludlowville Road)
 - Conveys runoff approaching the 5-year storm
 - Closed drainage system on North side of Ludlowville overtops during <5 year storm
 - Primarily caused by overflows from Basins A and B
 - Culvert at Ludlowville Road/Salmon Creek Road overtops during the <10 year storm
 - Excess flows to private properties




Existing Condition Deficiencies

- Primary Study Area Summary
 - Structure Limitations (<5-year storm)
 - Culvert 5 (Lansingville Road)
 - Culvert 12 (Ludlowville Road)
 - Structure Limitation (<10-year storm)
 - Culvert 18 (Ludlowville/Salmon Cr. Road)





Existing Condition Deficiencies

- Secondary Study Area: Basin D
(Salmon Creek Road)
 - Conveys all runoff for the 10-year storm
 - Overtops during 25-year storm
 - Excess flows to private properties and Salmon Creek Road



Presentation Outline

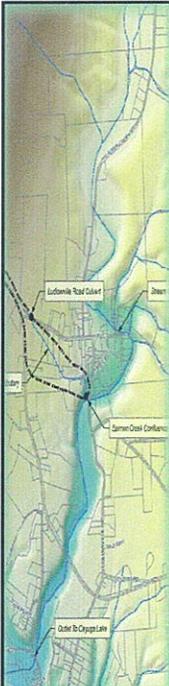
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Improvement Opportunities

- Only conceptual at this point
- To be evaluated in Technical Report 2
- Focused on:
 - Conveying selected design storm flows
 - Reducing stormwater velocities
 - Reducing erosion in Salmon Cr. Tributary

Improvement Opportunities

- Increase capacity of Culvert 5
(Lansingville Rd. - outlet of Basin A)
 - Would require easements
- Modifications to Culvert 12
(Ludlowville Road)
- Attenuate Peak Flows (Ponds)
- Channel stabilization
- Divert stormwater from Ludlowville Road
 - Convey diverted stormwater along Ridge Road





Improvement Opportunities

- Potential Improvements
 - Culvert Improvements
 - Detention Facilities
 - Stream bank stabilization
 - Re-establishment of roadside swales
 - Shoulder/Driveway Aprons
 - Storm Sewers



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Moving Forward

- Public review and comment
- Project Team accepts report
- Technical Report 2
 - Design Alternatives Report
- Technical Report 3
 - Design Report (Construction Documents)
- Survey, design, permitting
- Phased construction



Moving Forward

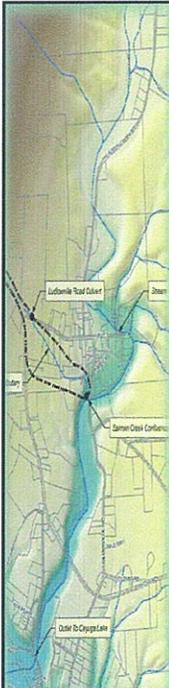
- Schedule
- Technical Report 2 (spring 2009)
 - Recommendations for stormwater controls
- Technical Report 3 (late summer 2009)
 - Design of preferred alternatives
- Survey, design, permitting (late 2009)
- Phased construction (2009/2010)





Moving Forward

- Public comments until January 23, 2009
- Submit to:
 - Scott Doyle, AICP
Senior Planner
Tompkins County Department of Planning
121 East Court Street
Ithaca, New York 14850



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