

Understanding the Calumet wet-weather system

Weather and Climate

Rainfall Characterization

- Bulletin 70/71
- NOAA Atlas 14

Historical Events

- Rain gages
- Radar rainfall

Near term Forecasts

Climate Impacts
-downscaled GCMs

System Response to Rainfall

Runoff

Flow Routing

Surface Response to Storms

Soils, imperviousness, previous conditions, local drainage features

Routing of flows

- Chicago area waterways
- Local sewer systems
- Regional drainage infrastructure – interceptors, TARP

Models

- Help quantitatively understand these processes
- System interactions
- All models have limits of applicability

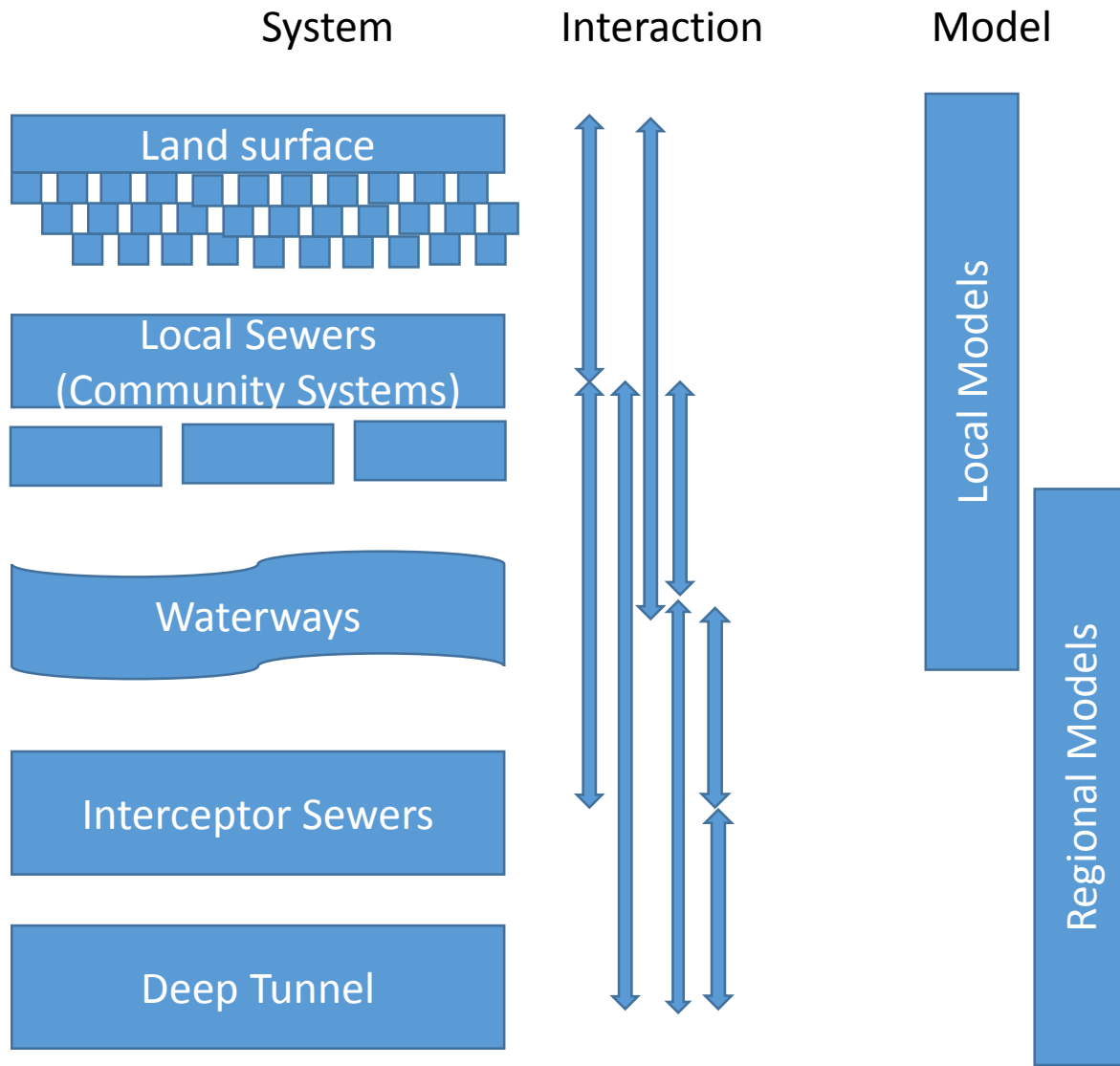
Impact

Flood risk – extent and severity of high levels
System bottlenecks

Action

How do potential interventions affect system?

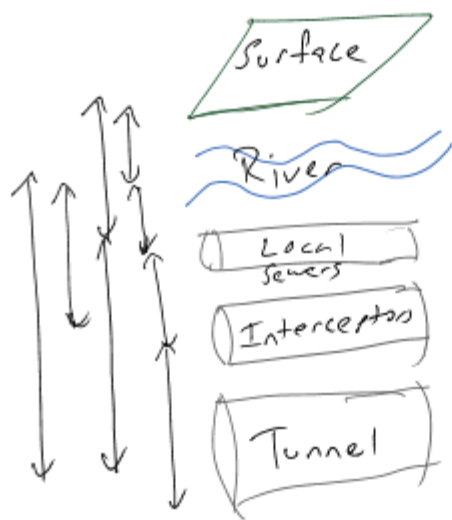
- Do solutions work together?
- What level of protection?



Key questions: to what extent do these models exist? Do they capture the key processes that affect stormwater management across a range of scales? What types of increased understanding would be helpful for planning and prioritizing projects?

Working version

System Interactions



MODELS

	CITY	METROFLOW	GLRIS
Surface	✓	✓	✓
River	-	○	X
Local sewers	✓ ++	○	✓ ++
Interceptors	✓	○-	✓
Tunnel	-	✓	X

SYSTEM ISSUES

- Runoff (into volume)
- Surface flooding (riverine)
- Basement backups ^(interceptors)
- CSO, surface flooding (sewers)
- Regional Capacity
- WWT capacity
- Availability, inflow capacity

ACTIONS toolkit

- GI, Disconnection (IIF removal)
- Detention, WMO
- STORAGE
- Homeowner (backflow prevent)
- CONVERTANCE
- OPERATIONS

○ - not present
 - Boundary condition
 X Present not wholly represented
 ✓ Included (++, +++ - degree)

A possible future condition...

