Challenges in Implementing LID

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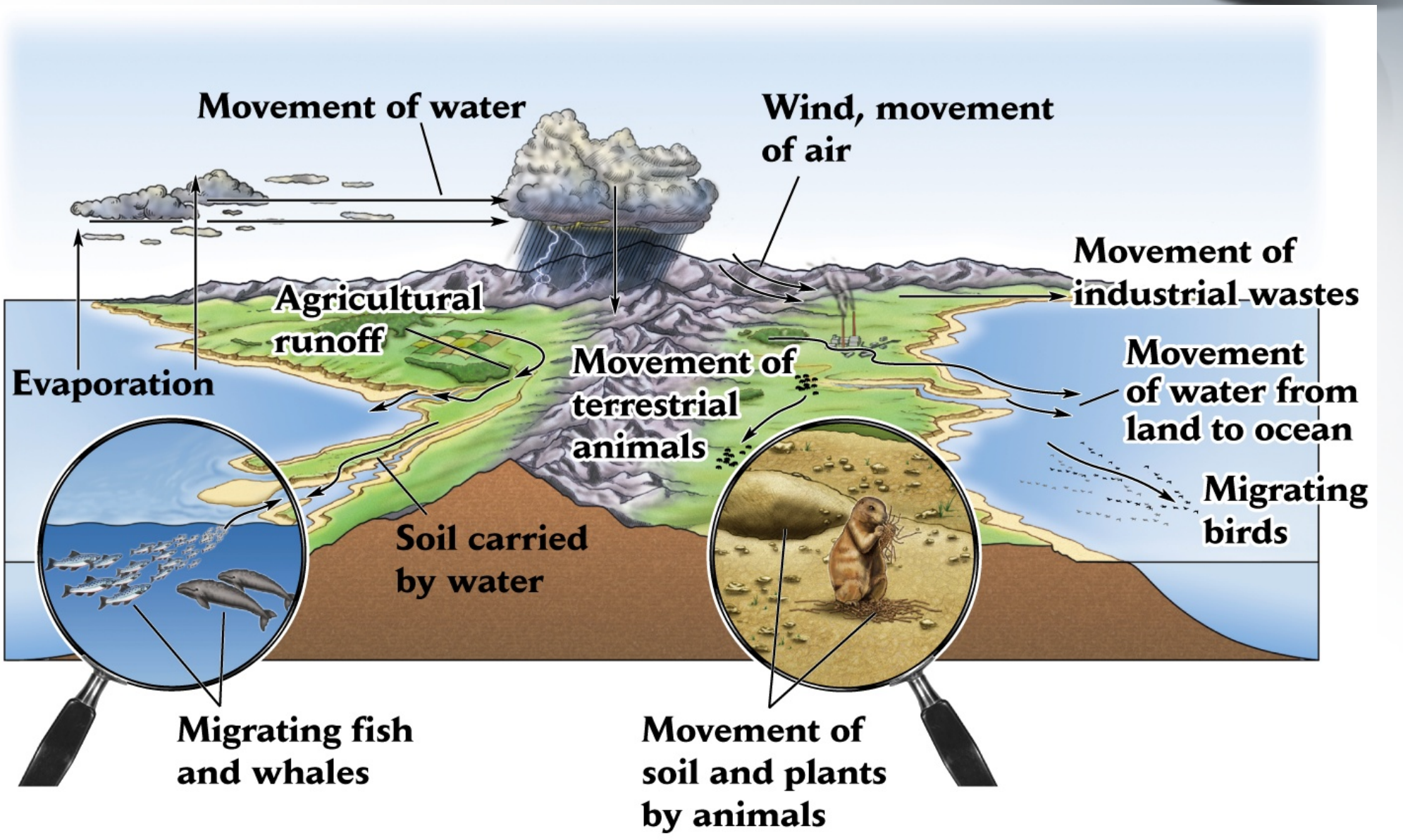
Everything is Connected




CHANGE

Primary Stressor of Urbanization on Streams

Impact of Urbanization

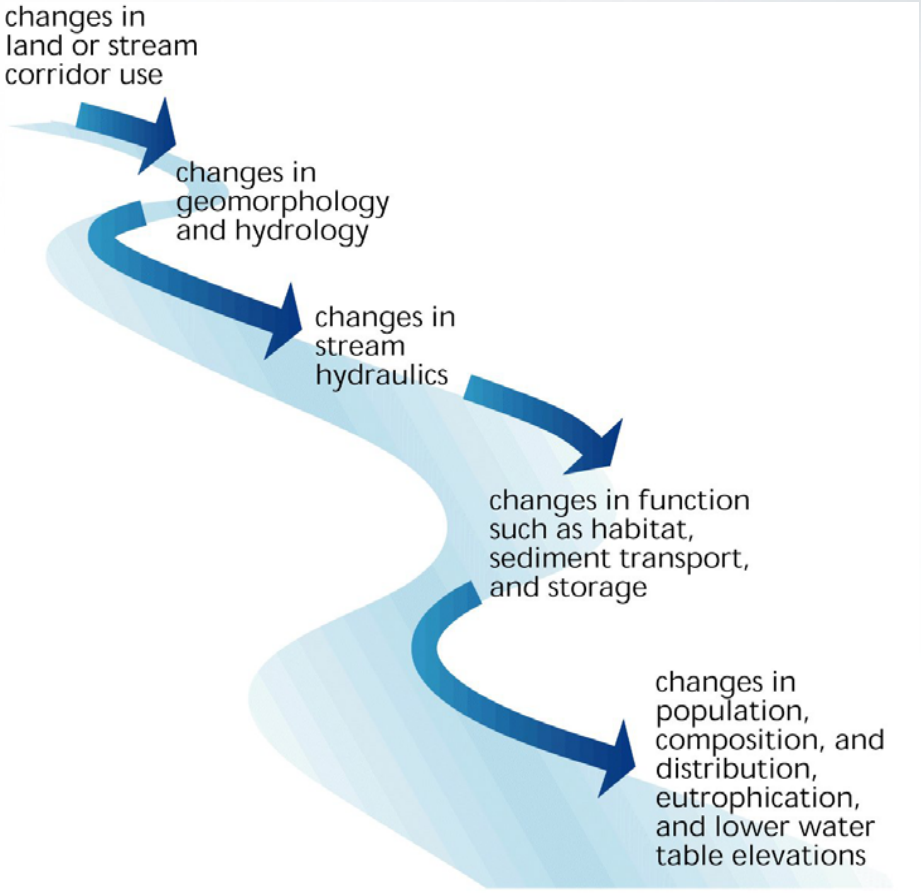


Fig. 3.2 -- Chain of events due to disturbance. Disturbance to a stream corridor system typically results in a causal chain of alterations to stream corridor structure and functions.
In Stream Corridor Restoration: Principles, Processes, and Practices (10/98)
by the Federal Interagency Stream Restoration Working Group (FISRWG) (15 Federal agencies of the U.S.)

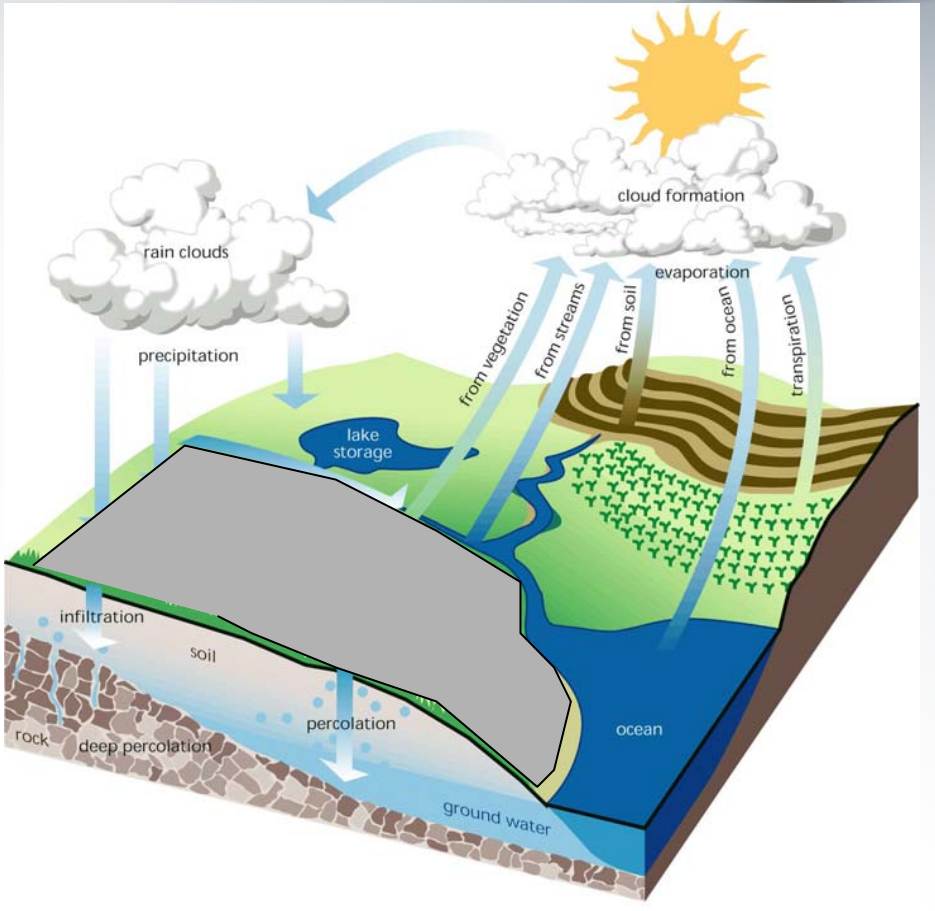


Fig. 2.2 – The hydrologic cycle. The transfer of water from precipitation to surface water and ground water, to storage and runoff, and eventually back to the atmosphere is an ongoing cycle.
In Stream Corridor Restoration: Principles, Processes, and Practices (10/98).
Interagency Stream Restoration Working Group (15 federal agencies)(FISRWG).

Impact of Urbanization

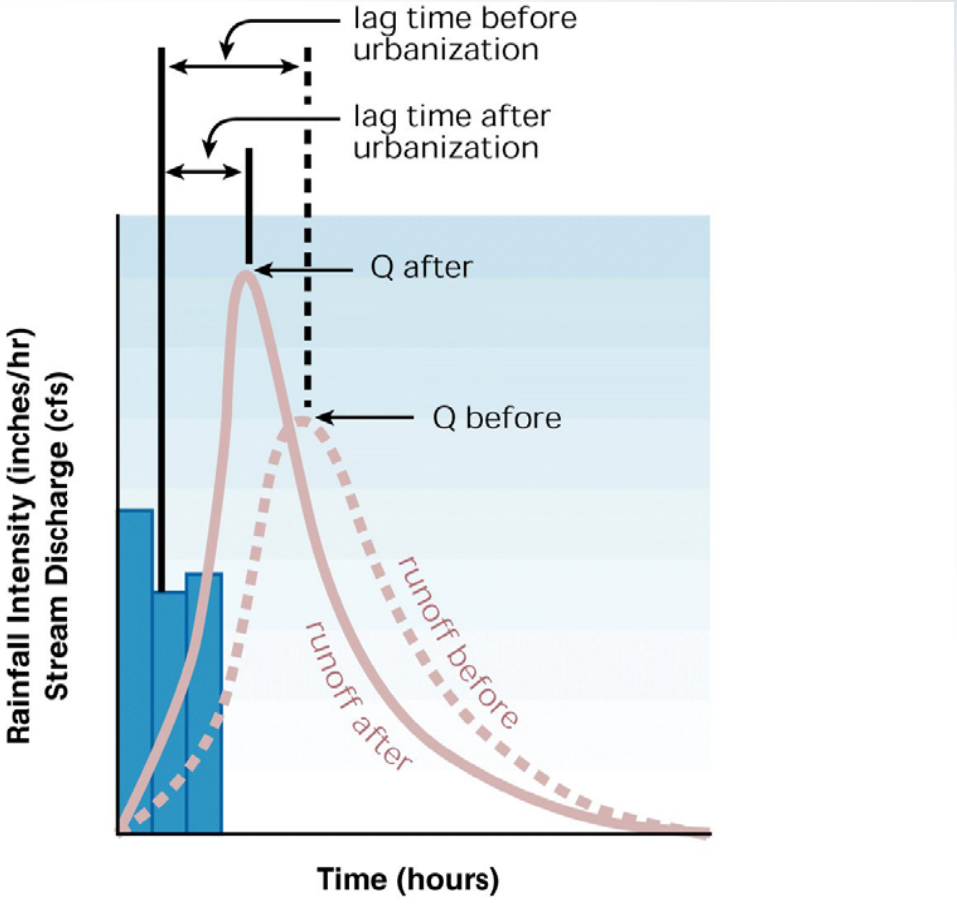
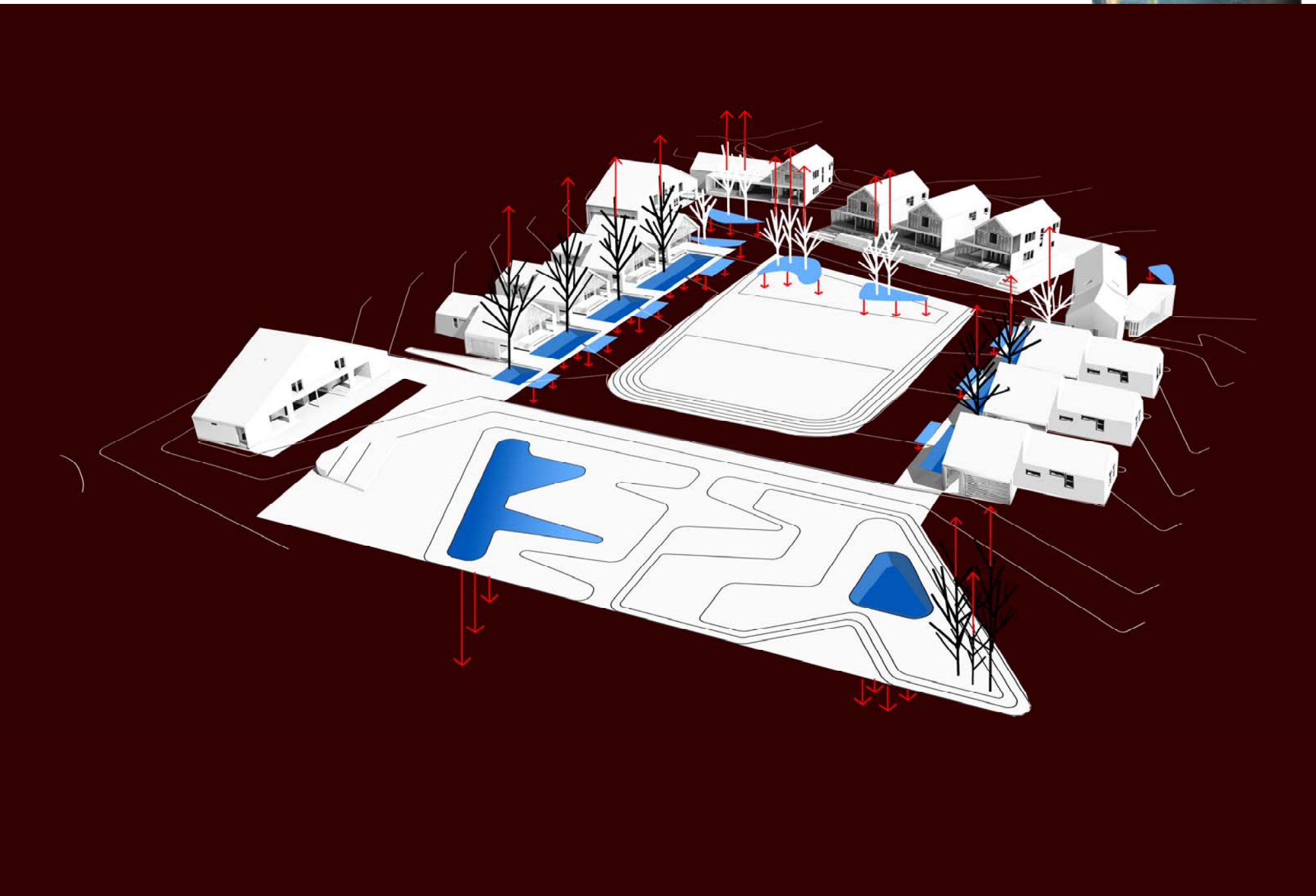


Fig. 1.15 -- A comparison of hydrographs before and after urbanization. The discharge curve is higher and steeper for urban streams than for natural streams. In Stream Corridor Restoration: Principles, Processes, and Practices (10/98). Interagency Stream Restoration Working Group (15 federal agencies)(FISRWG).

- Less infiltration
- More runoff
- Higher velocity
- Shorter travel time
- Higher peak flows
- More frequent channel forming flow
- Lower low flows

  = Extremes



MODELING HYDROLOGY

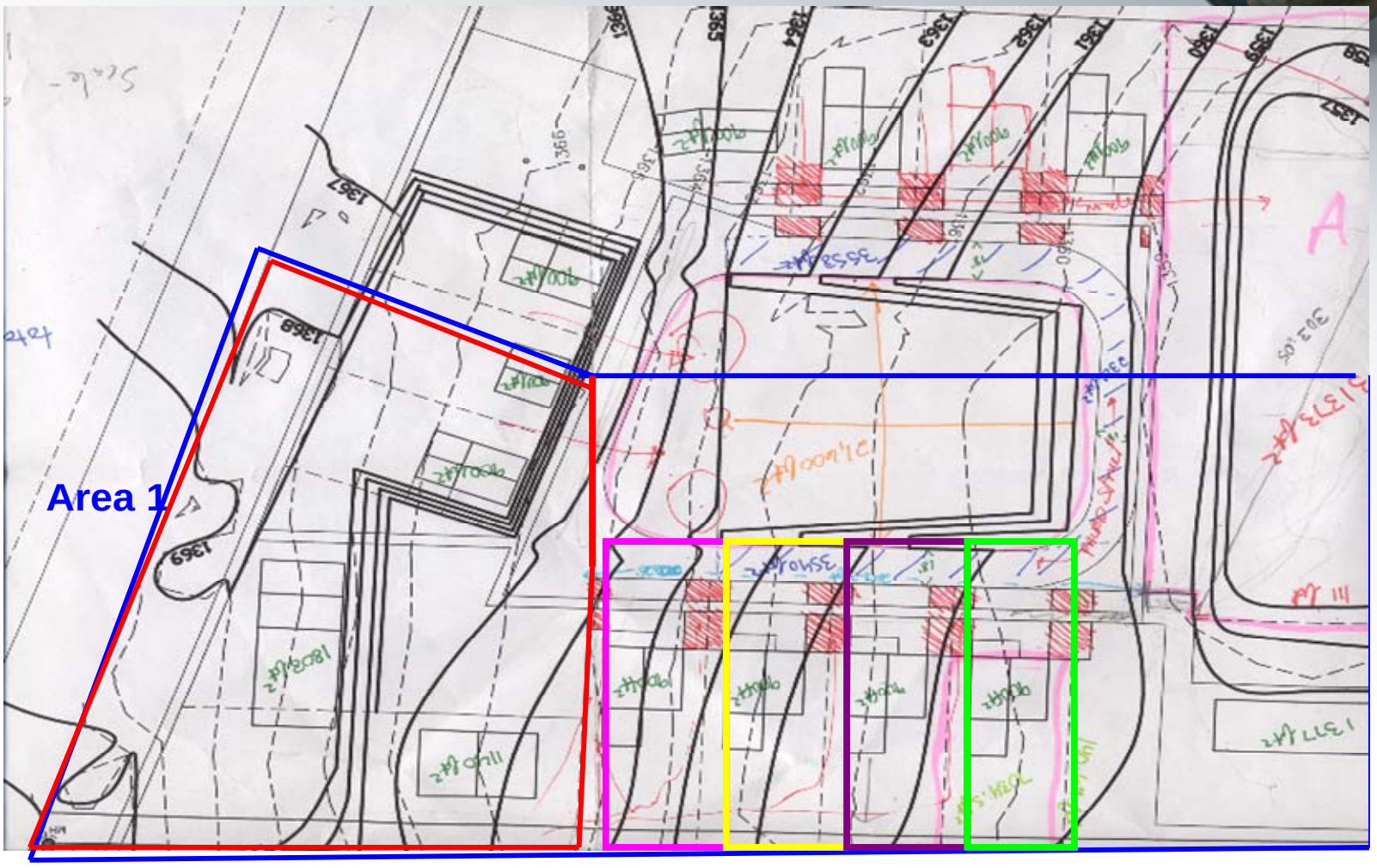


Figure 1.1 – Entire Watershed Area

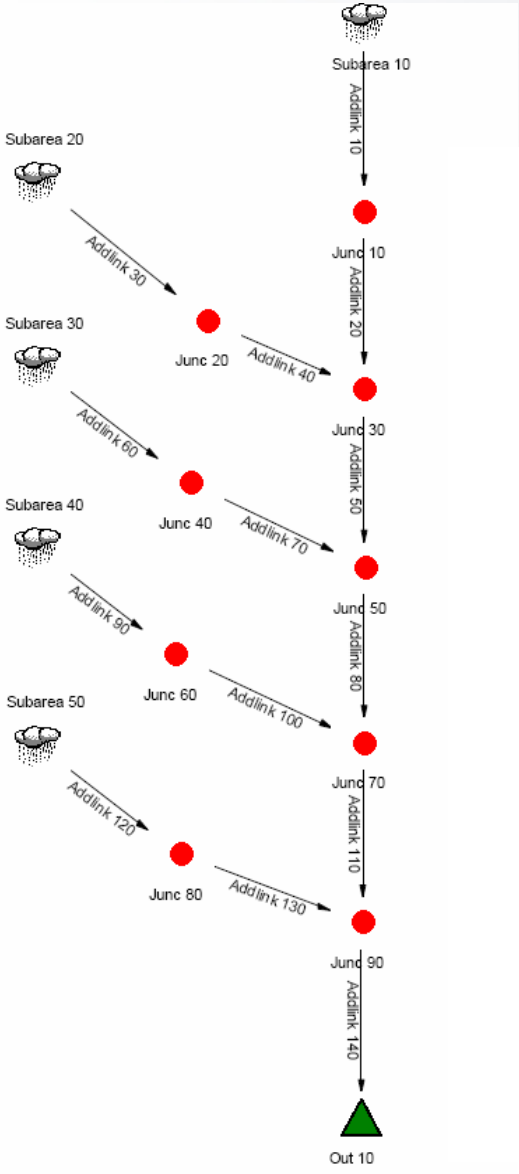
Map:

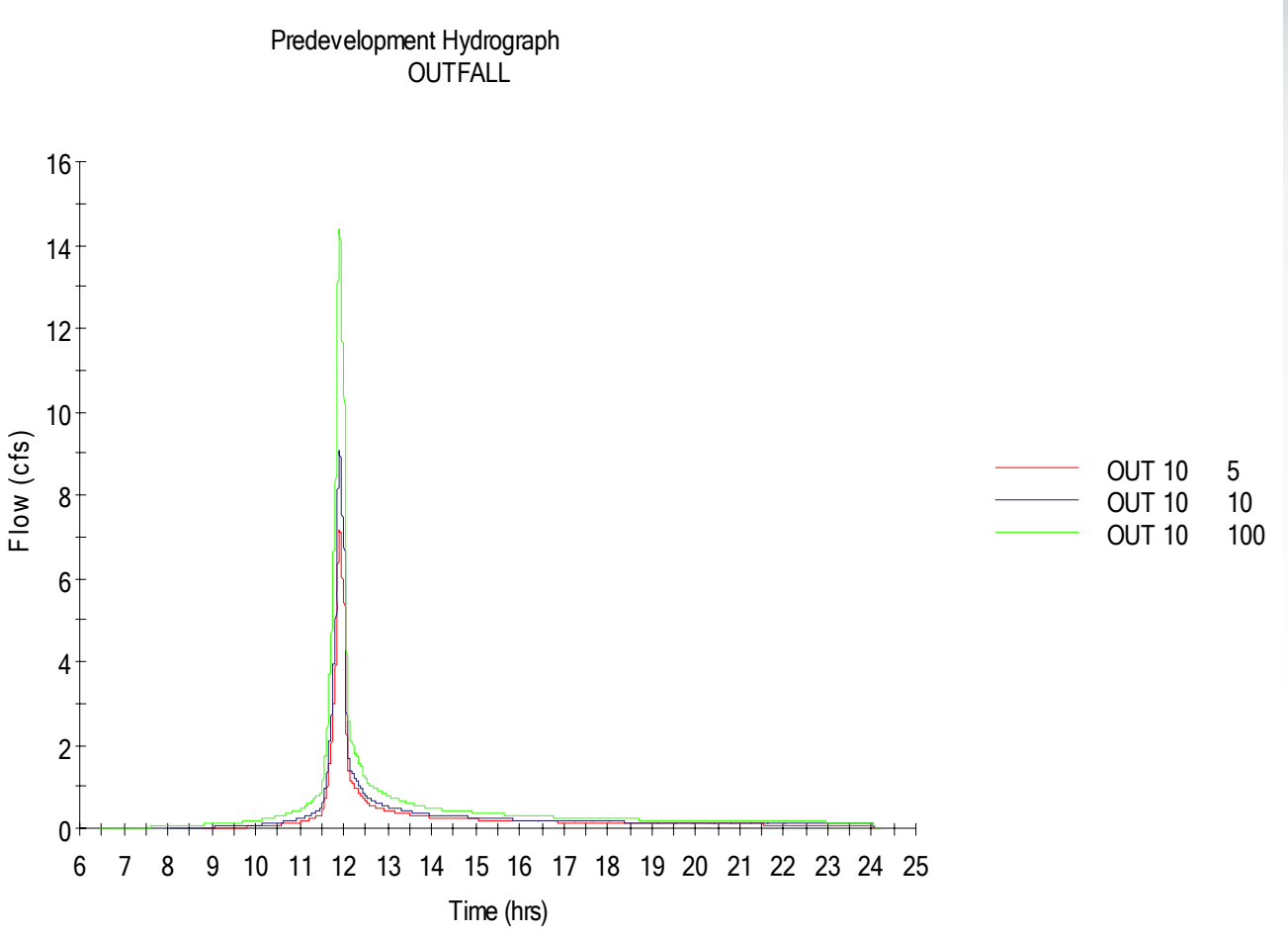
- Area 1
- Subarea 1
- Subarea 1
- Subarea 3
- Subarea 4
- Subarea 5

MODELING HYDROLOGY

Used PondPac (Haested Methods)

Pre-Developed Conditions

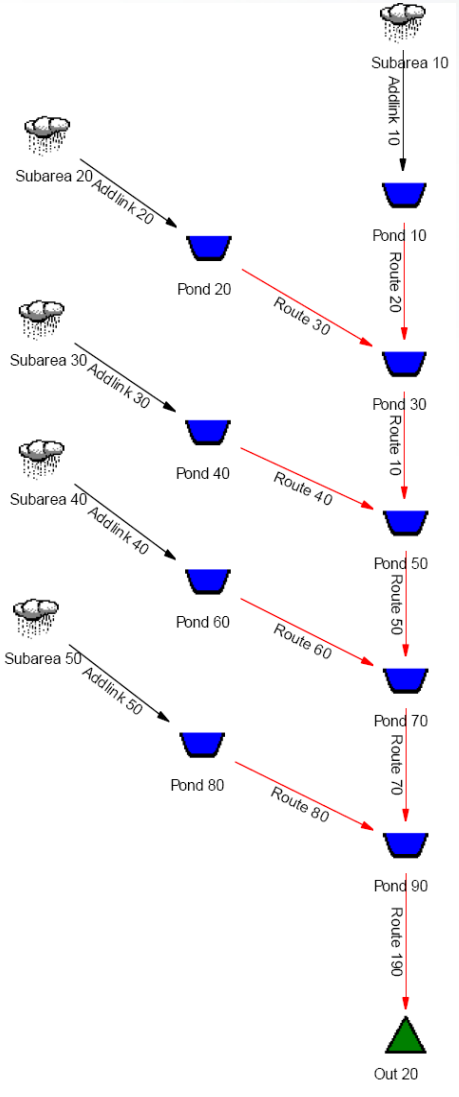


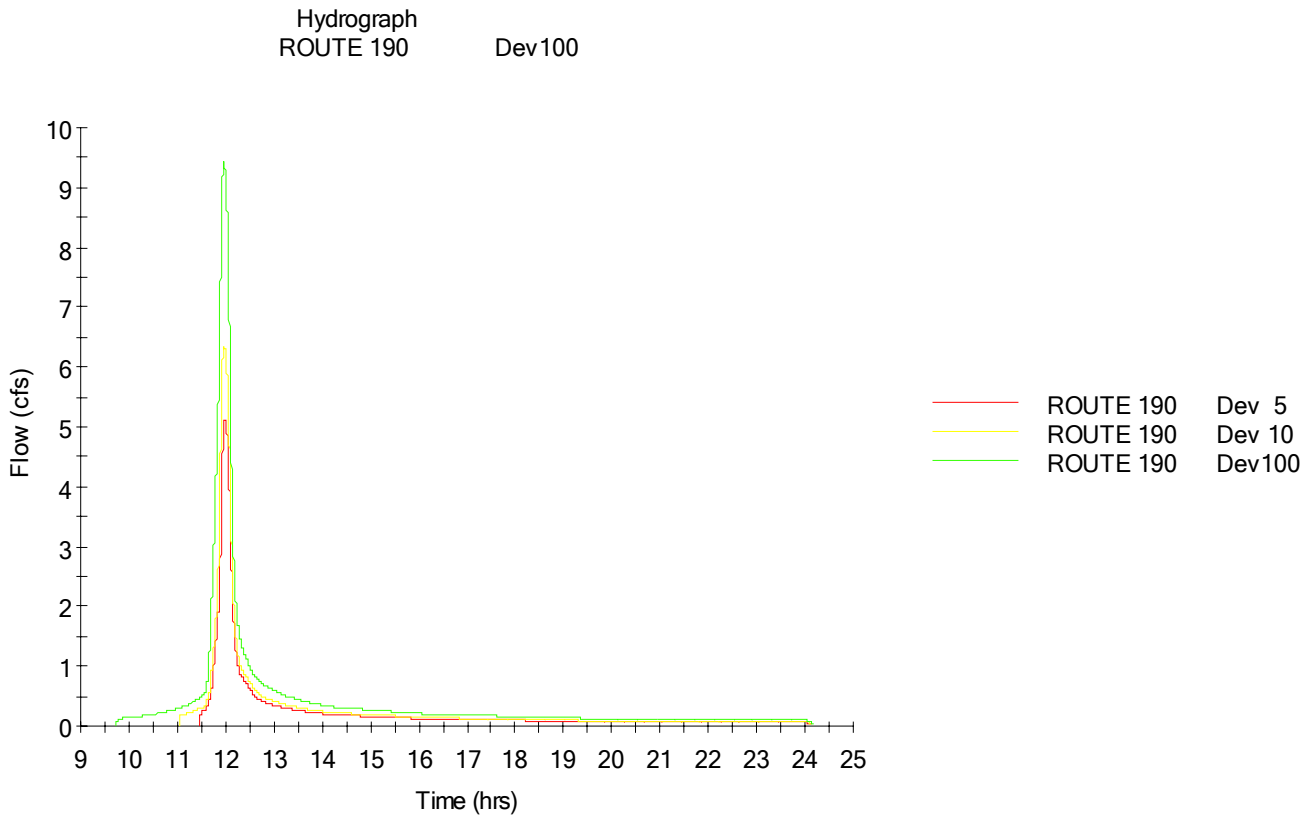


MODELING HYDROLOGY

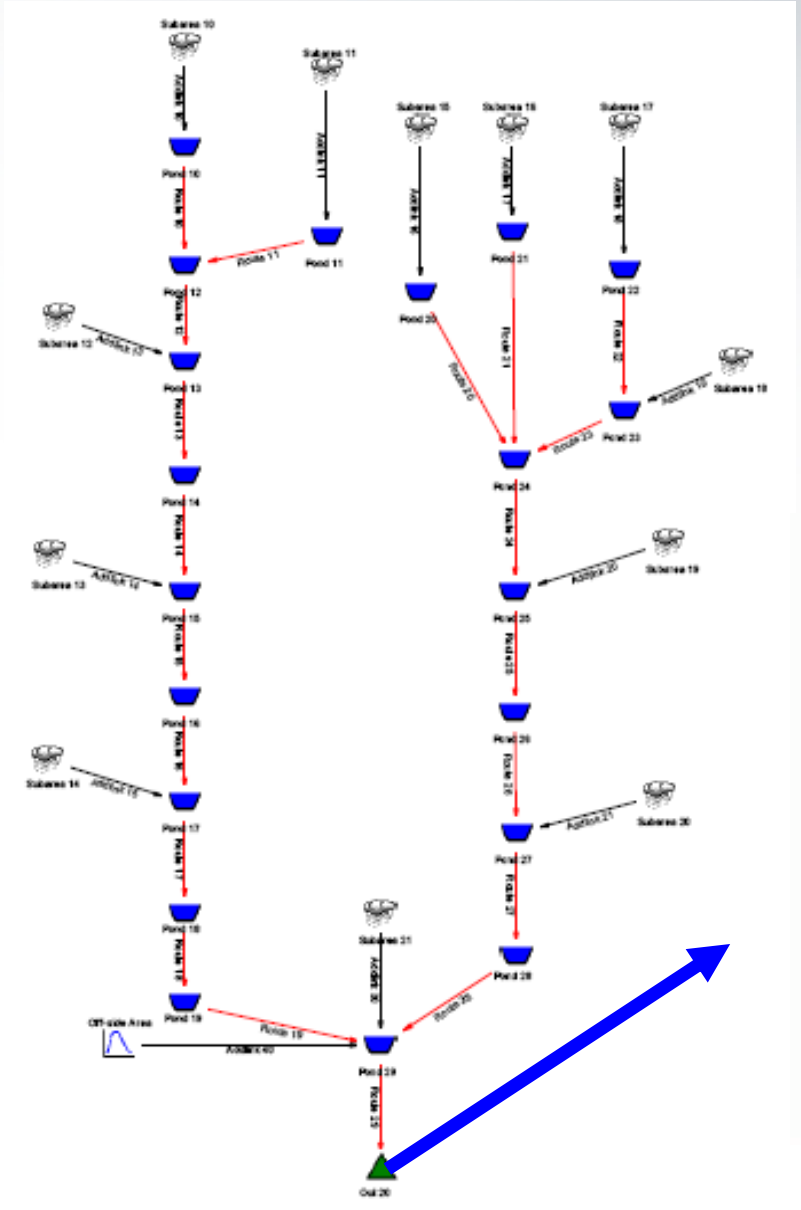
Used PondPac (Haested Methods)

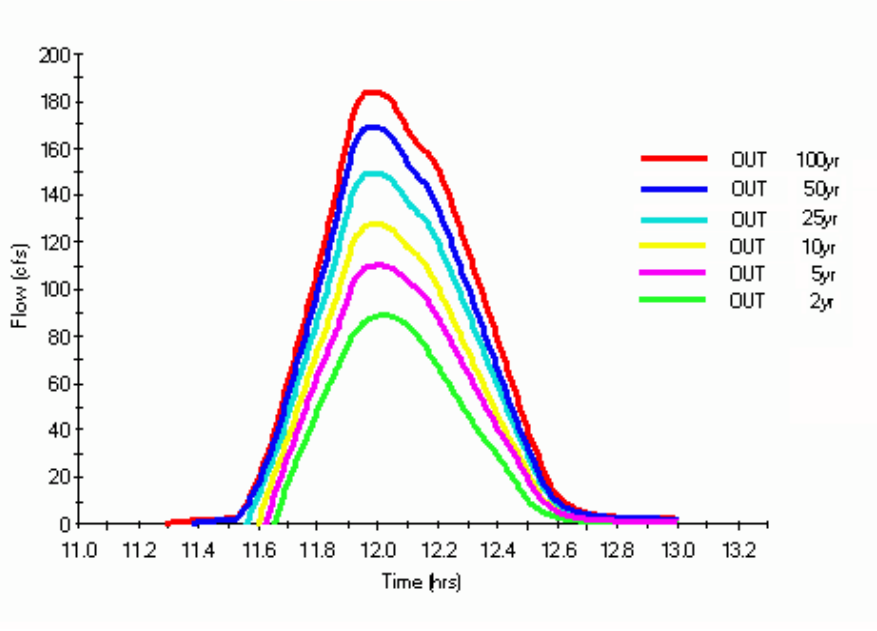
Post-Developed Conditions





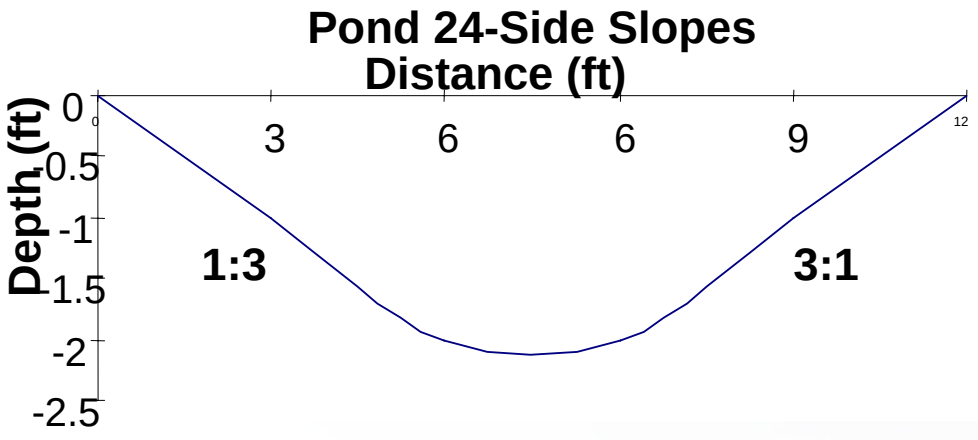
MODELING HYDROLOGY

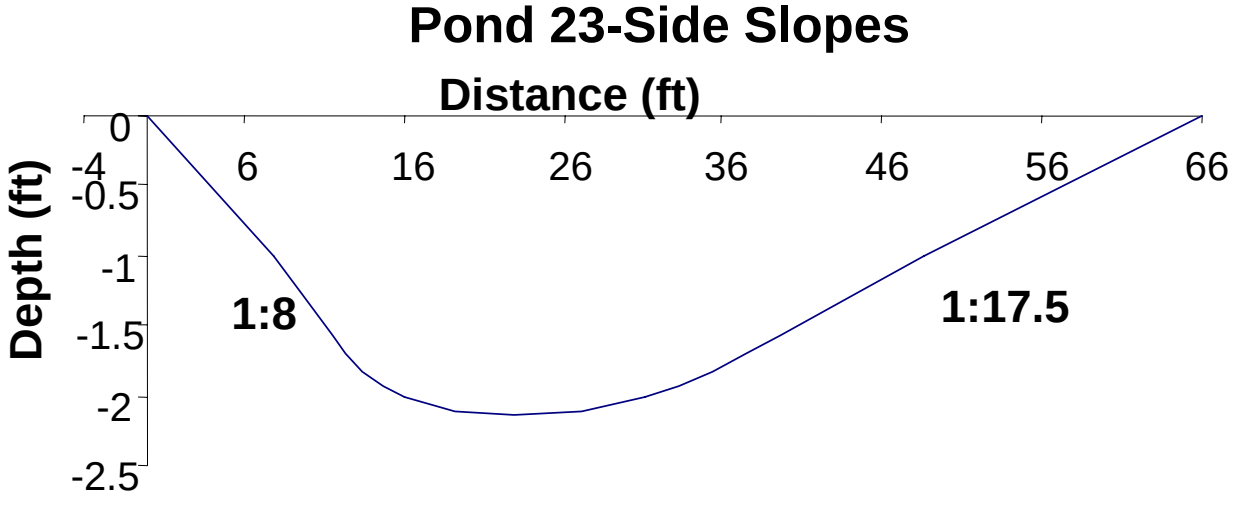




MODELING HYDROLOGY

Bio-swales Cross-sectional Views



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ENGINEERS, INC.
HABITAT TRAILS
Rogers, Benton County, Arkansas
STREET AND DRANAGE PLAN
Issued for Review
8
15
Wet Meadow Section
NTS
Note: Detention Pond Will Serve
Temporary Sedimentation Basin
Elevation Varies
STOP