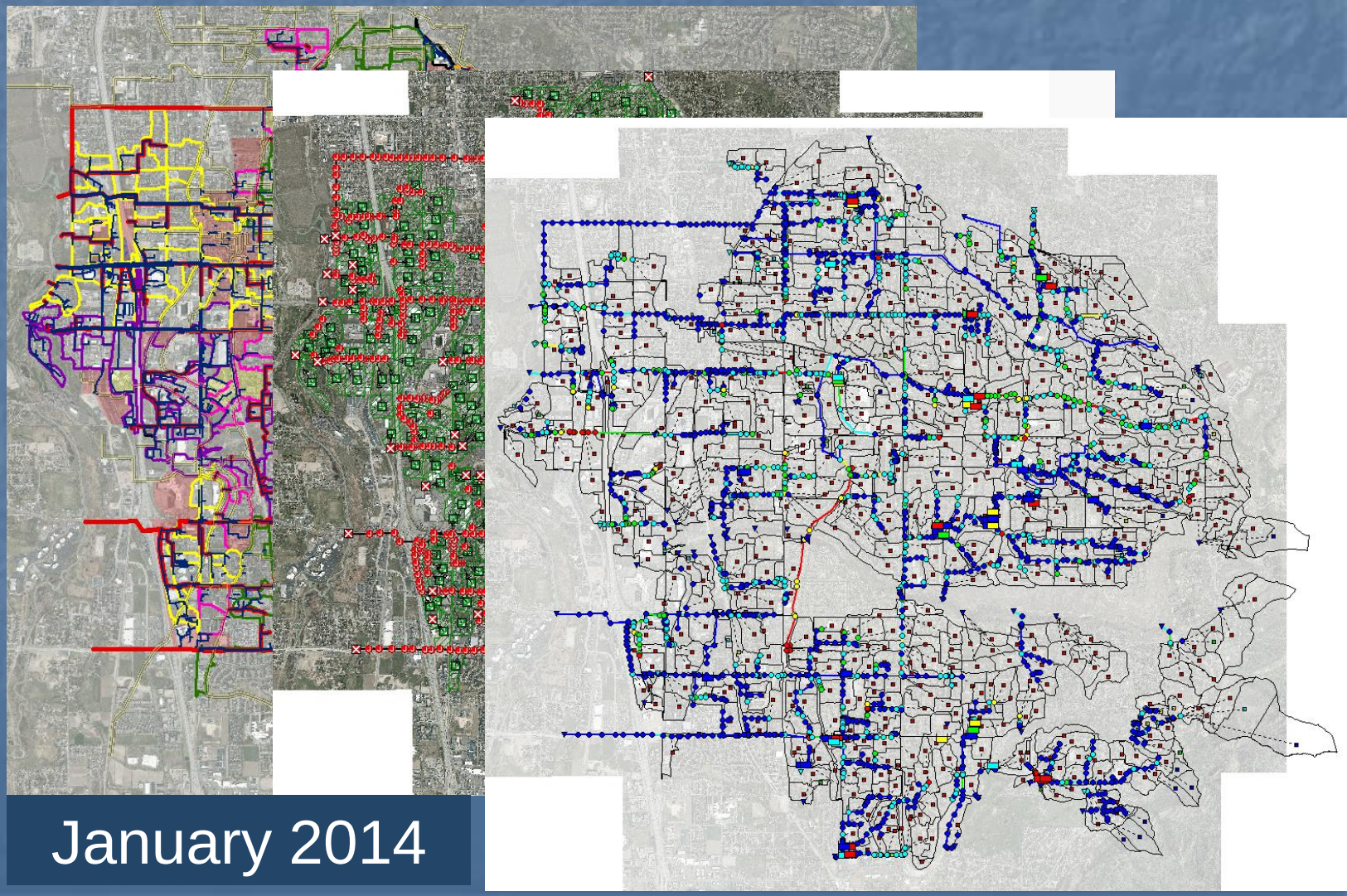
Sandy City
Storm Drain Model Update



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ENGINEERS

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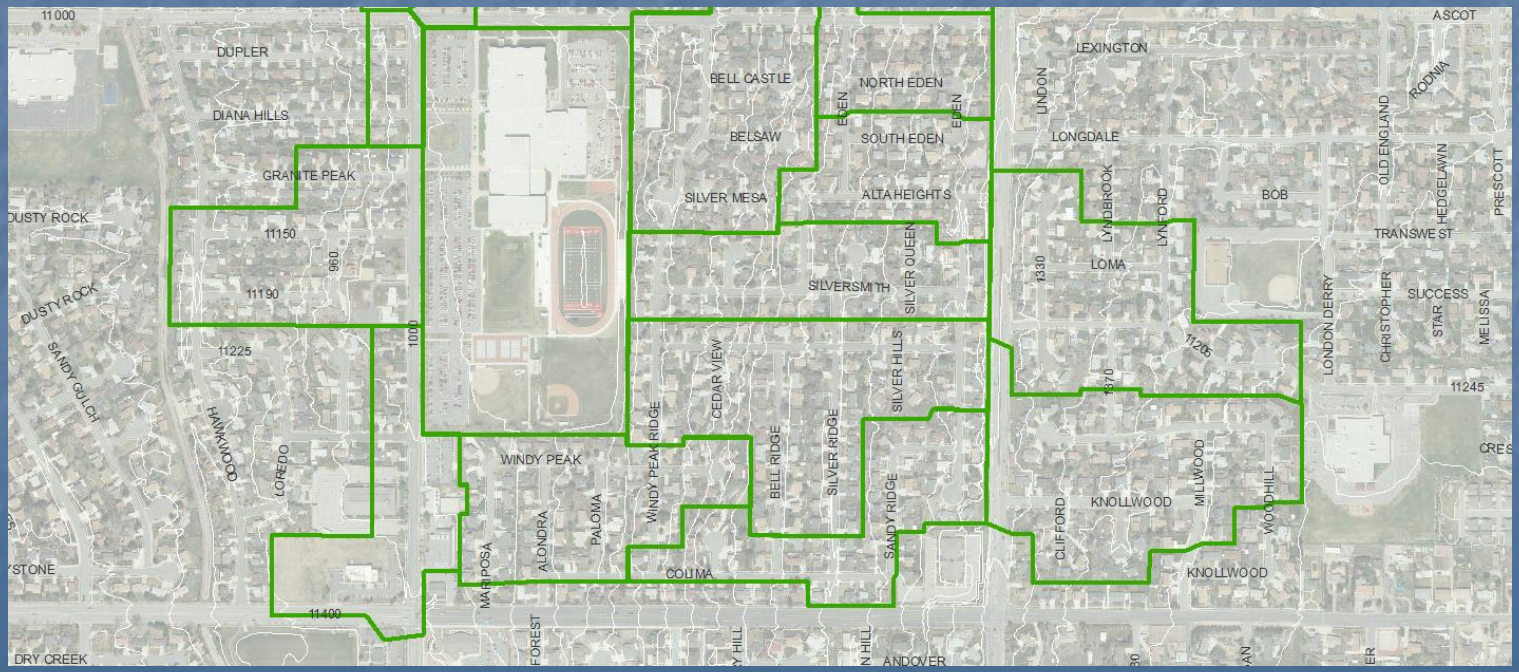
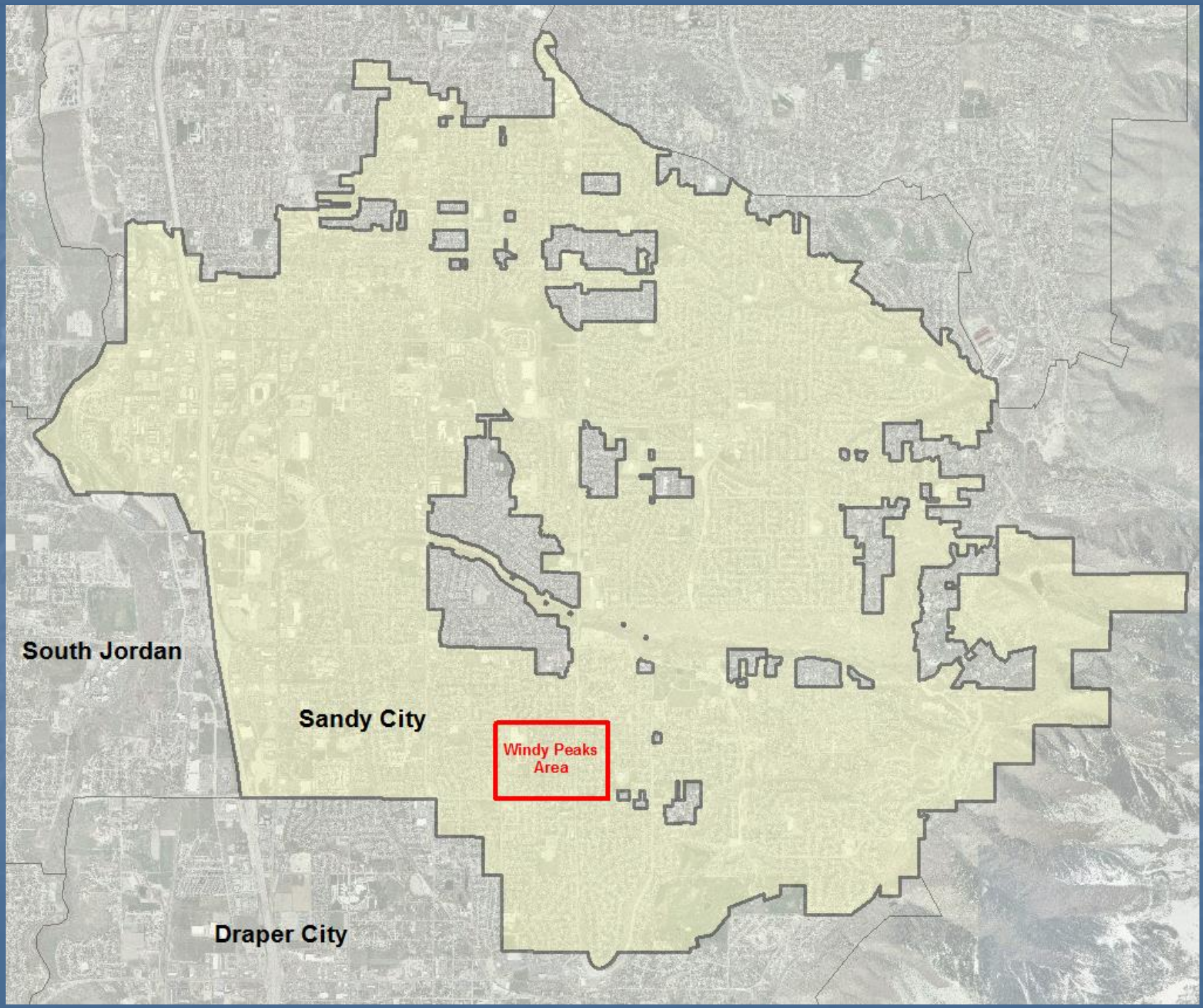
Introduction

- Purpose of Model Update
- Available Data
- Model Selection and Capabilities
- Model Creation
- Model Presentation

Project Purpose

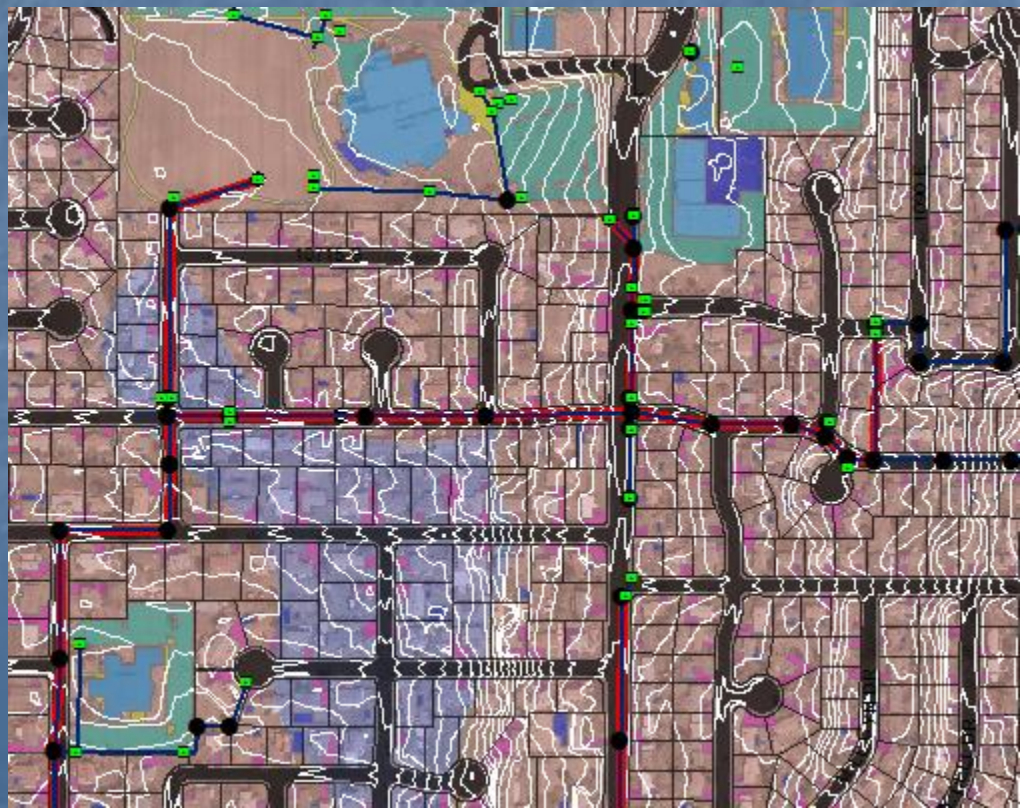
- Update the Storm Drain Model for Sandy City
- Prompted by Windy Peaks Storm Drain Project
- Previous model over-predicted flows
- Subbasins didn't represent drainages well




South Jordan
Sandy City
Windy Peaks Area
Draper City

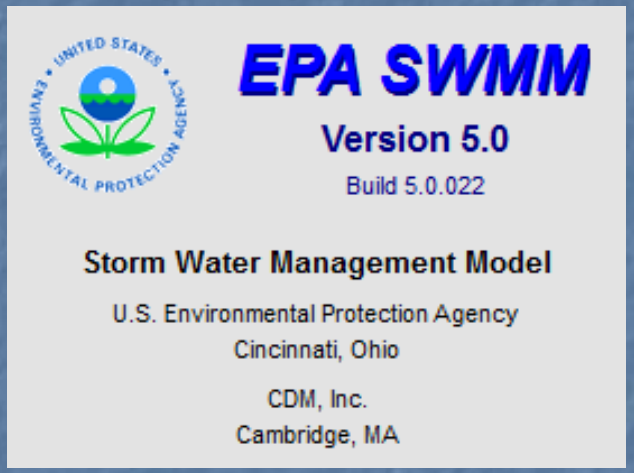
Available Data

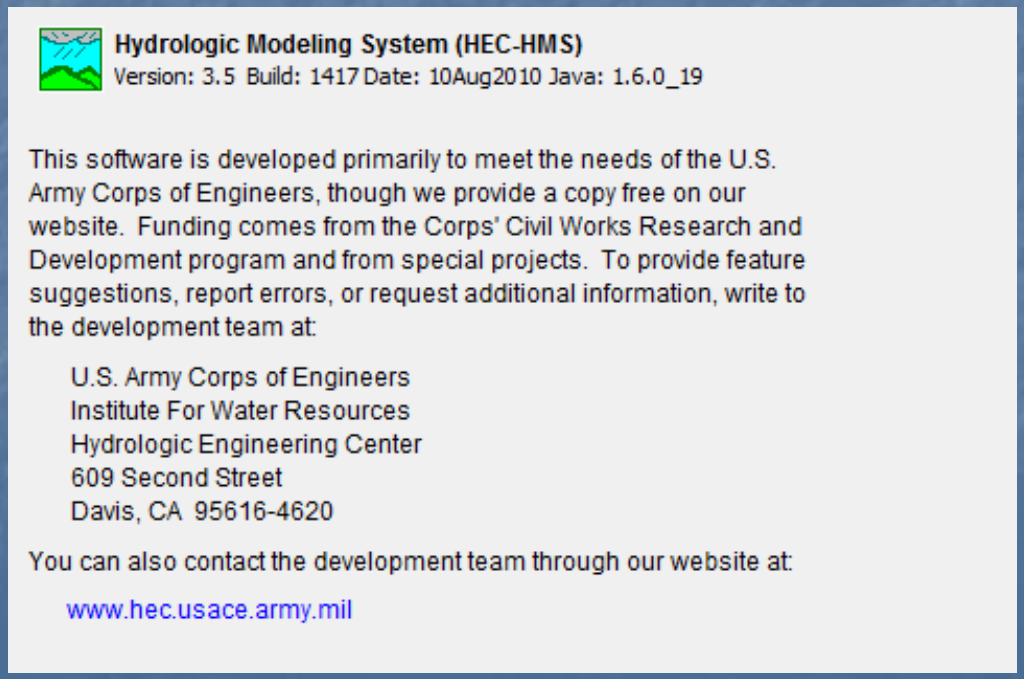
- Previous Storm Drain Model (EPA SWMM)
- SSURGO (Soil Survey Geographic Database)
- Sandy Storm Drain System (GIS)
- Parcels (GIS)
- 2 Foot Contours (GIS)
- Impervious Surfaces (GIS)



Model Selection

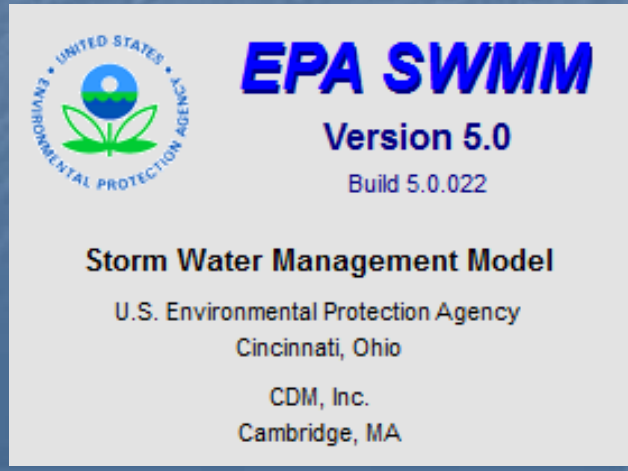
- Sandy City preferred free modeling software





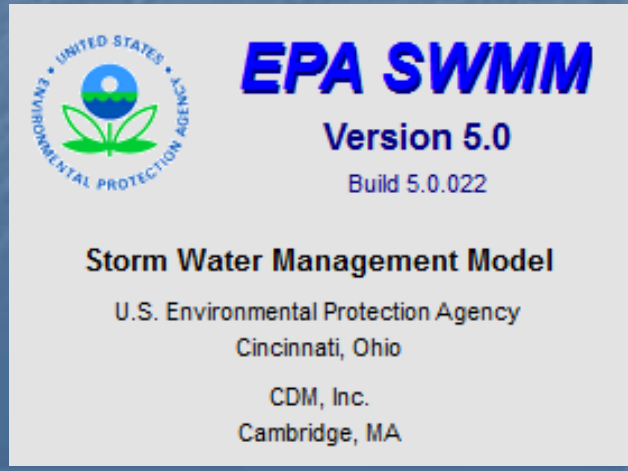
SWMM Capabilities

- Infiltration Modeling
  - Horton Method
  - Green Ampt Method
    - Used in Previous Model
  - Curve Number Method
    - Modify to account for impervious unconnected areas

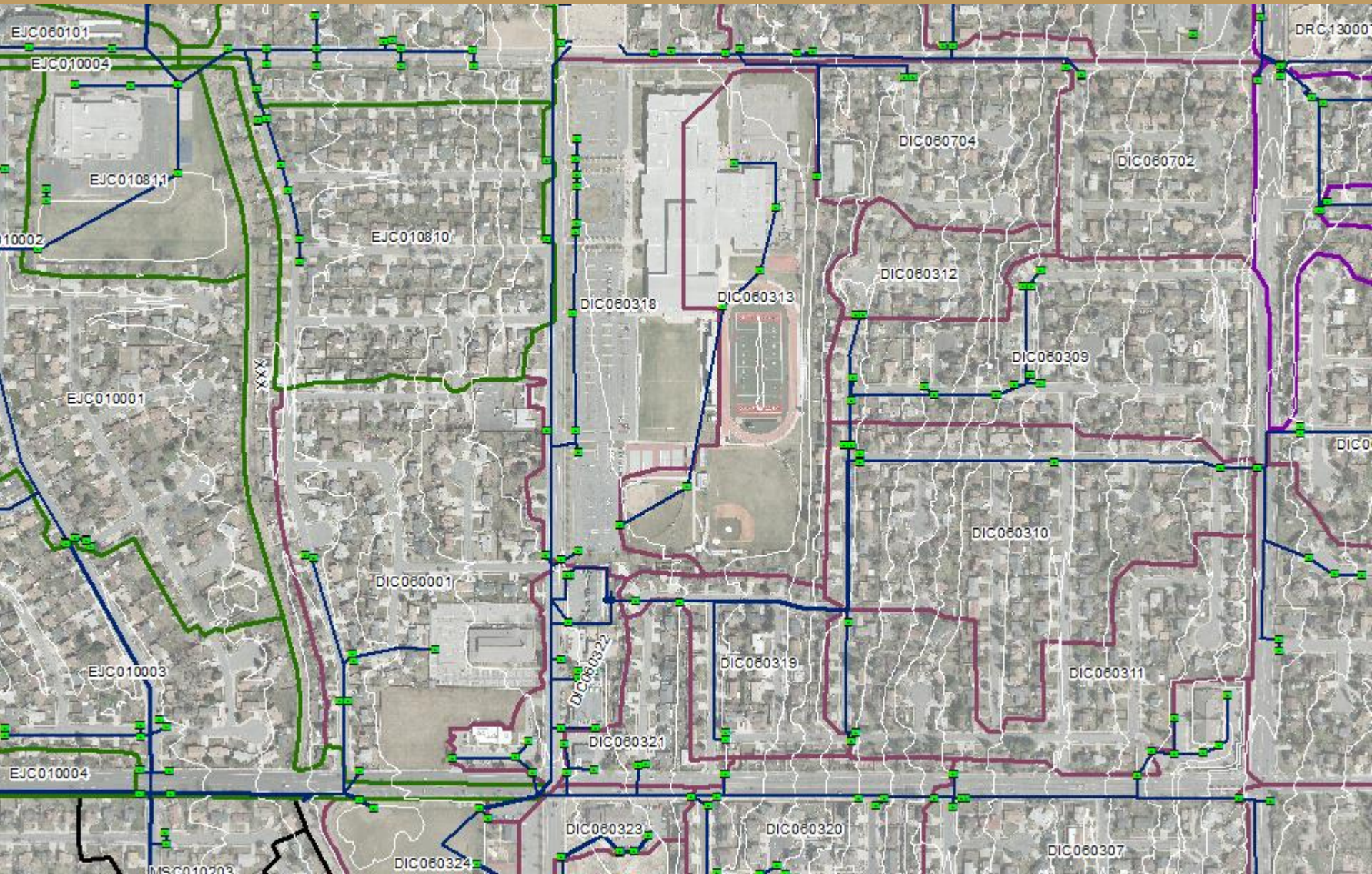


SWMM Capabilities

- Routing Methods
  - Steady Flow
    - Inflow Hydrograph = Outflow Hydrograph
  - Kinematic Wave
    - Does not account for pressurized flow
  - Dynamic Wave
    - Complete Saint Venant Equations
    - Most accurate routing method



Model Creation



Model Creation

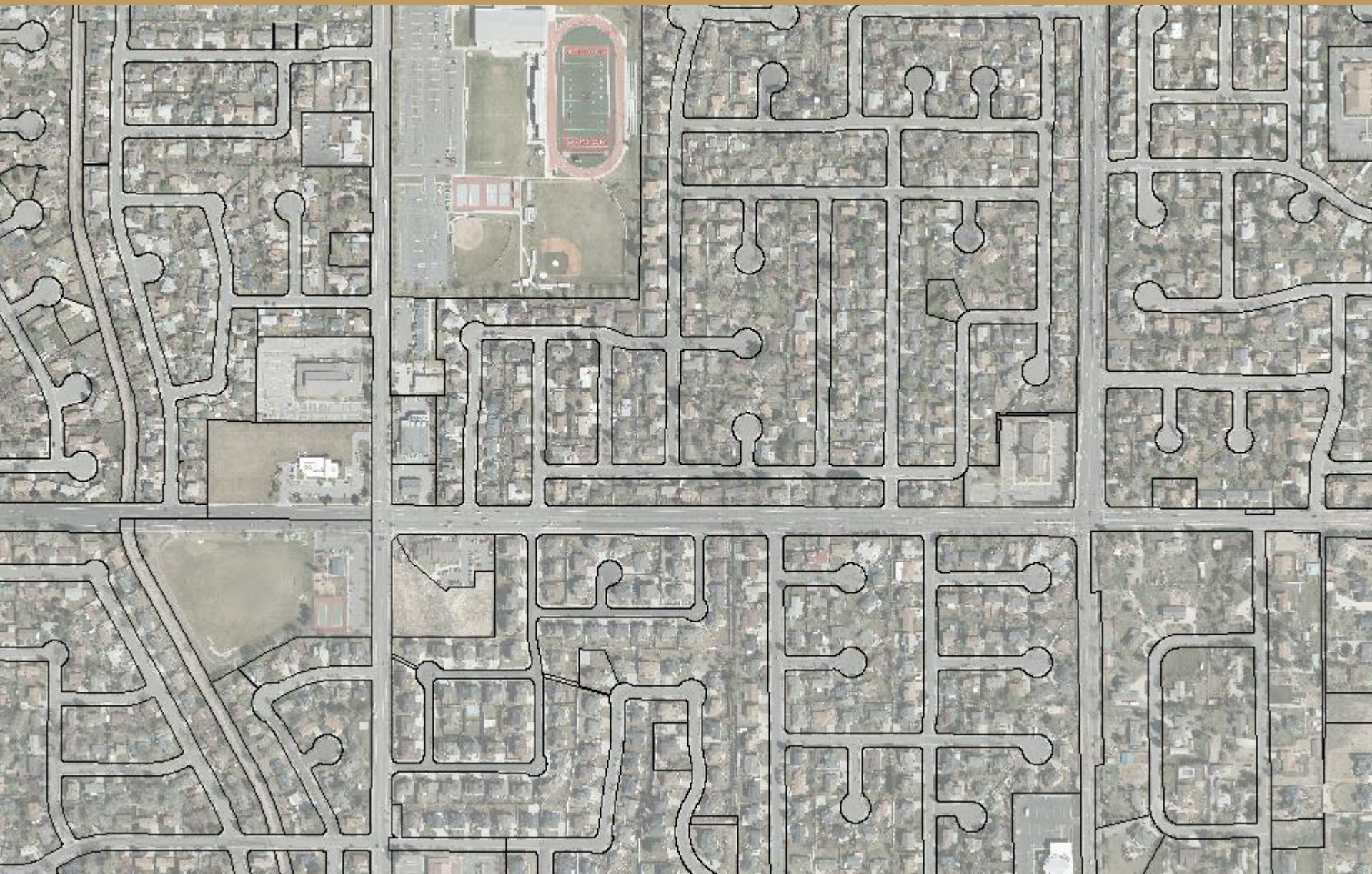
- Subbasin Names Determined by:
  - Tributary Stream JOR
  - Outfall on Stream 06
  - Detention Basin 19
  - Subbasin Number 01

JOR061901

Model Creation

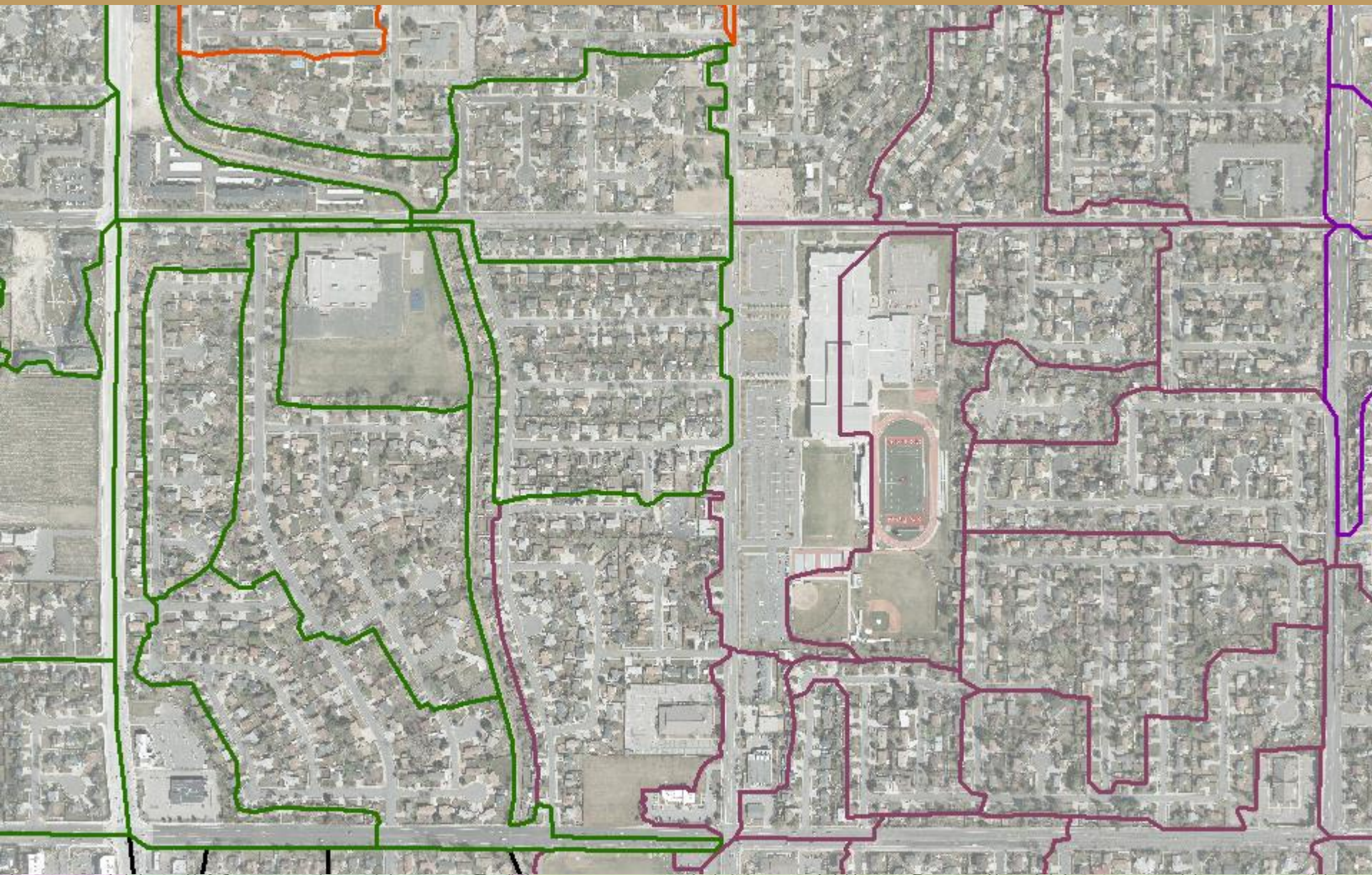
- Composite Subbasin Attributes
  - Width (feet)
    - Width (ft) = Area (ft) / Longest Overland Flow Path (ft)
  - Percent Impervious (Directly Connected)
  - Curve Number

Composite Attributes Calculations



Composite Attributes Calculations

Composite Attributes Calculations

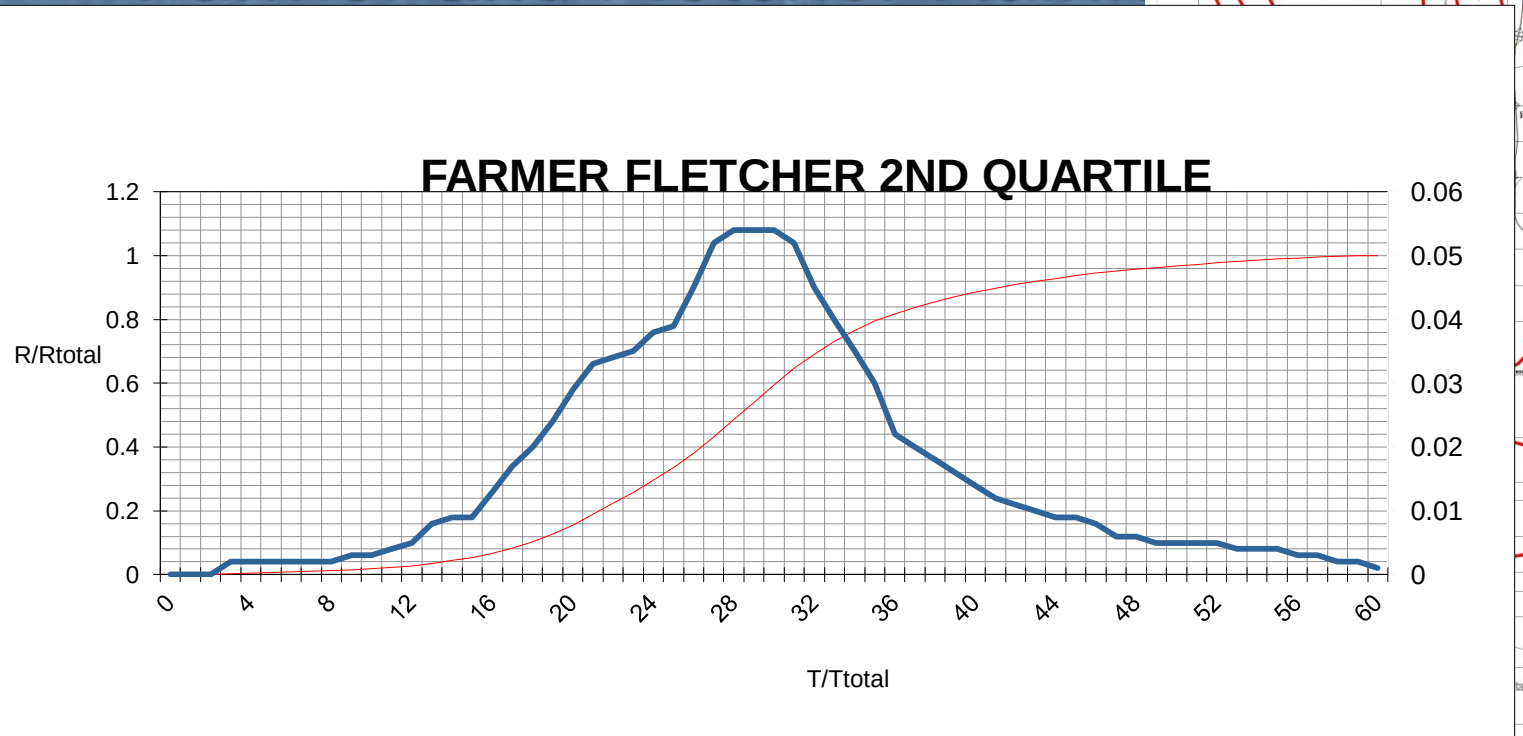


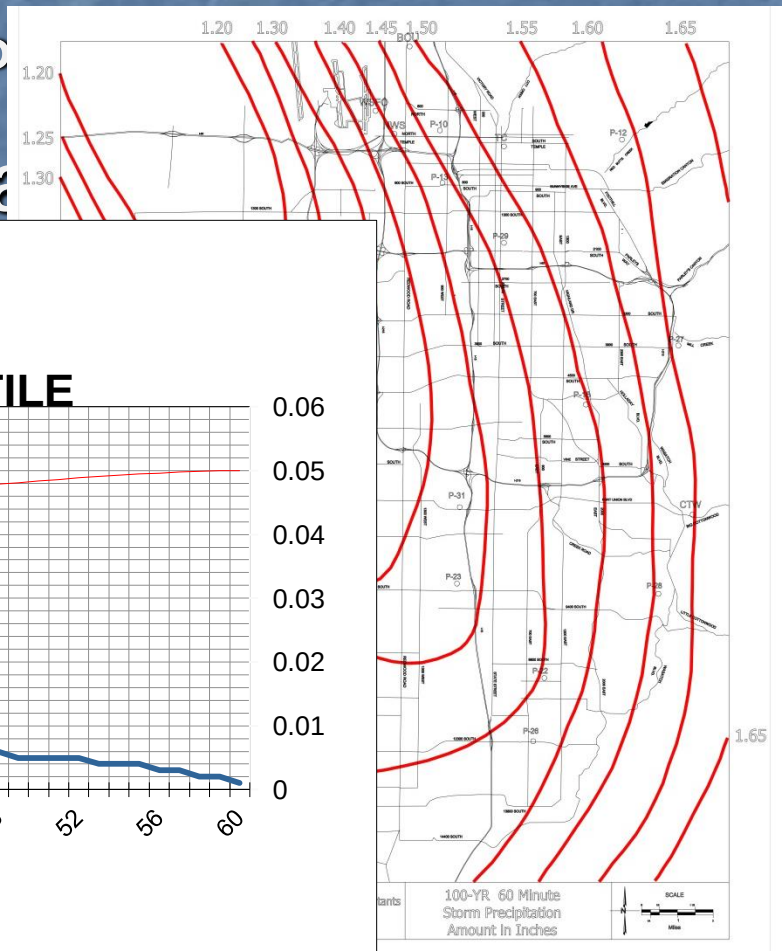
Composite Attributes Calculations

- Curve Number and Percent Impervious similarly calculated
- Factors in Curve Number Calculation
  - Parcel Type
  - Impervious/Pervious Area
  - Soil Type
  - Subbasin
- Factors in Percent Impervious
  - Parcel Type
  - Impervious/Pervious Area
  - Subbasin

Storm Event

- 10 year and 100 year 1-hr Storm Events
  - TRC North American Weather Consultants
  - Used by Salt Lake County P
- Farmer and Fletcher Rainfa





Model Import

- AutoCAD SSA Model as Import/Export Tool
- R… odel
- Ir…
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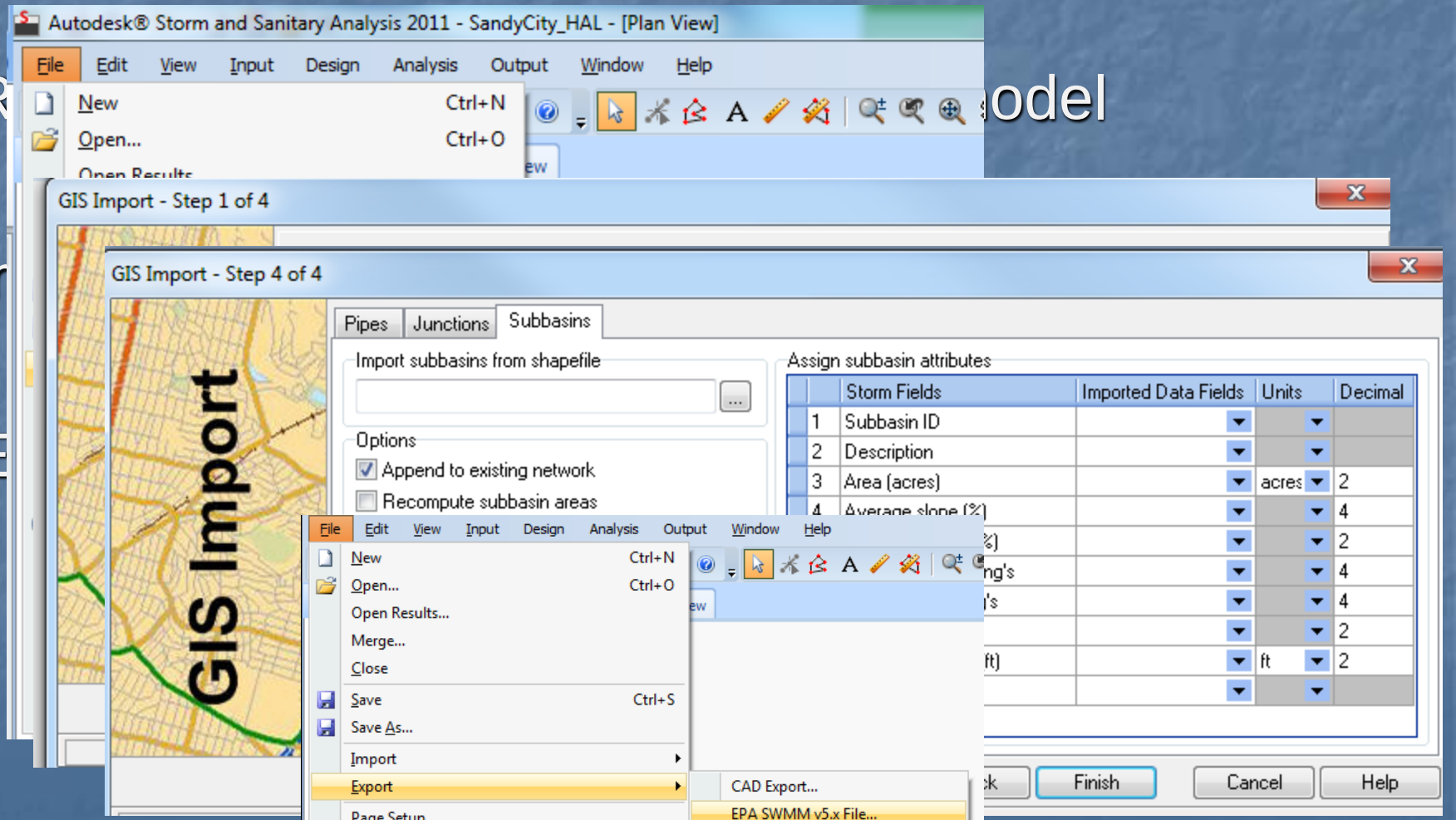

Model Presentation