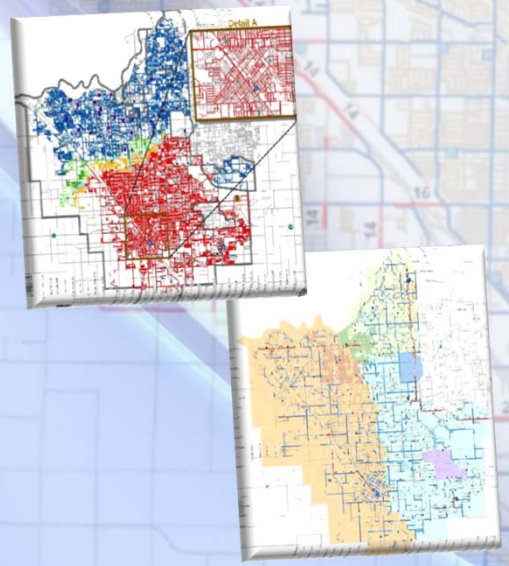
CapPlan Isolation and Outage Analysis



Tony Akel, PE
Brad Kooiman, PE
Kevin Tuttle, PE

Asset Management Prioritization
User Group Meeting
Friday, December 9th, 2016 – Oakland, CA
Innovyze®

December 9, 2016

AKEL
ENGINEERING GROUP, INC.

Agenda

- Purpose
- Isolation Analysis
- Outage Analysis
- Questions

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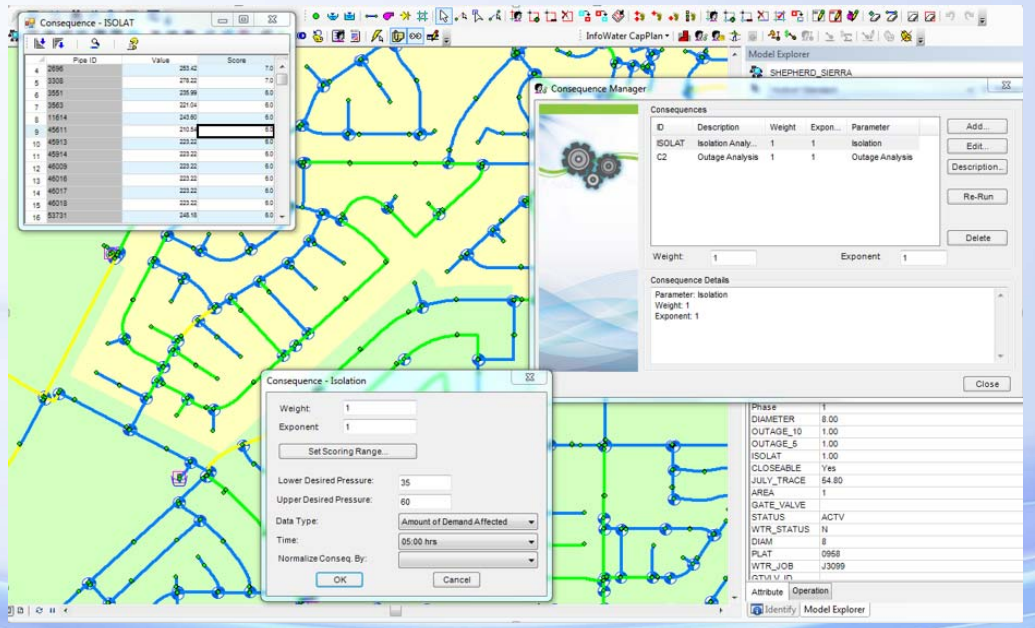
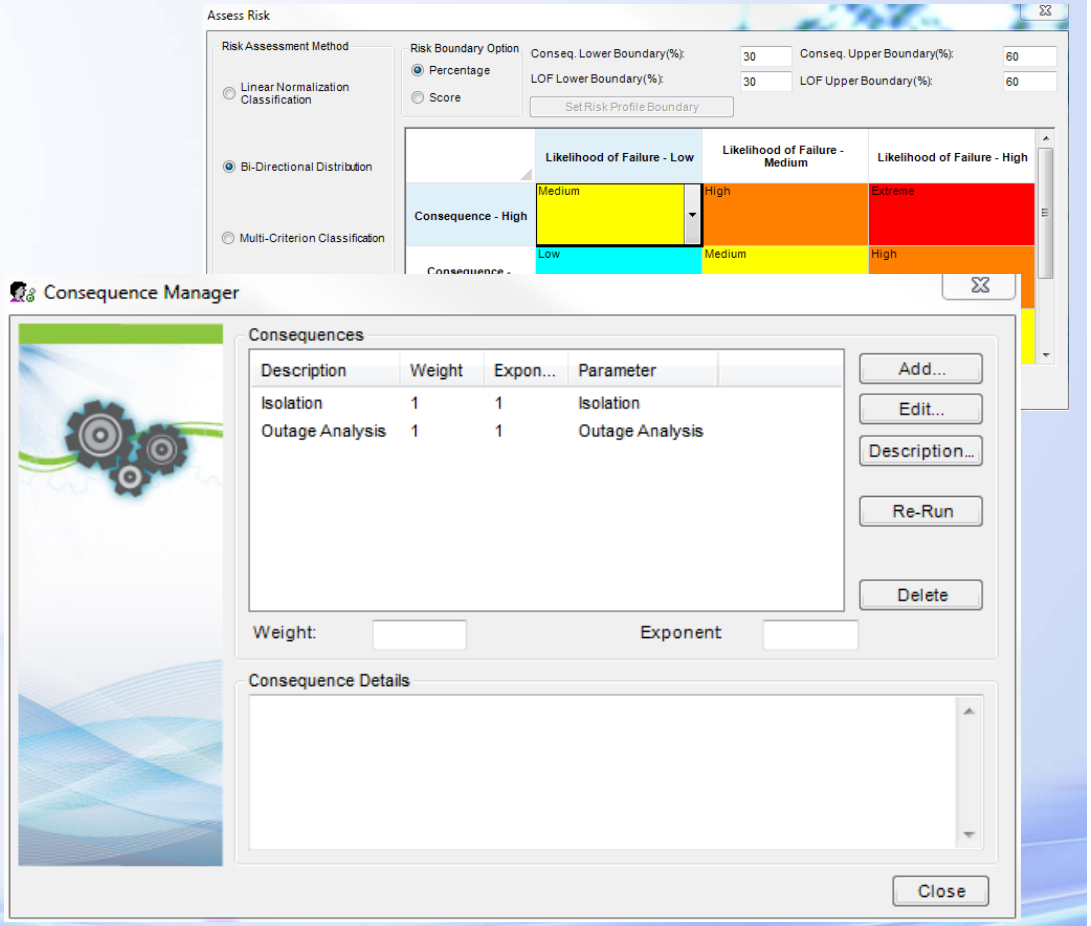
CapPlan Overview

- Risk Management tool
- Identify Likelihood and Consequence of Failure



Purpose of Isolation and Outage

- Identify system vulnerabilities
- Risk Metric
- Prioritizing Capital Costs



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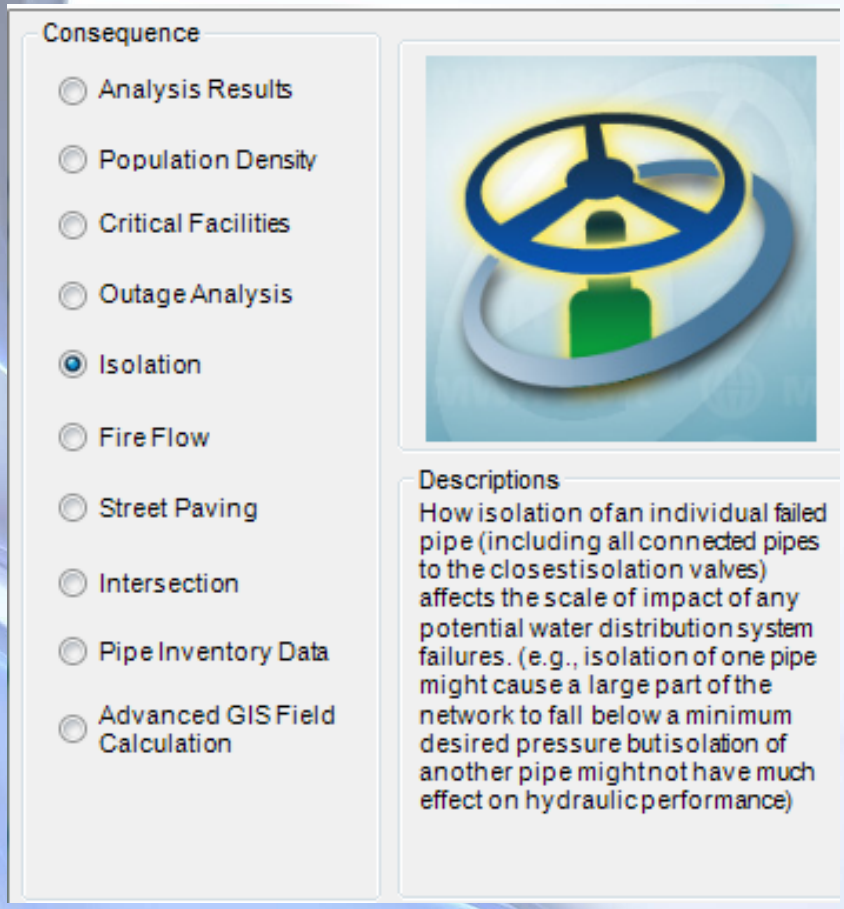
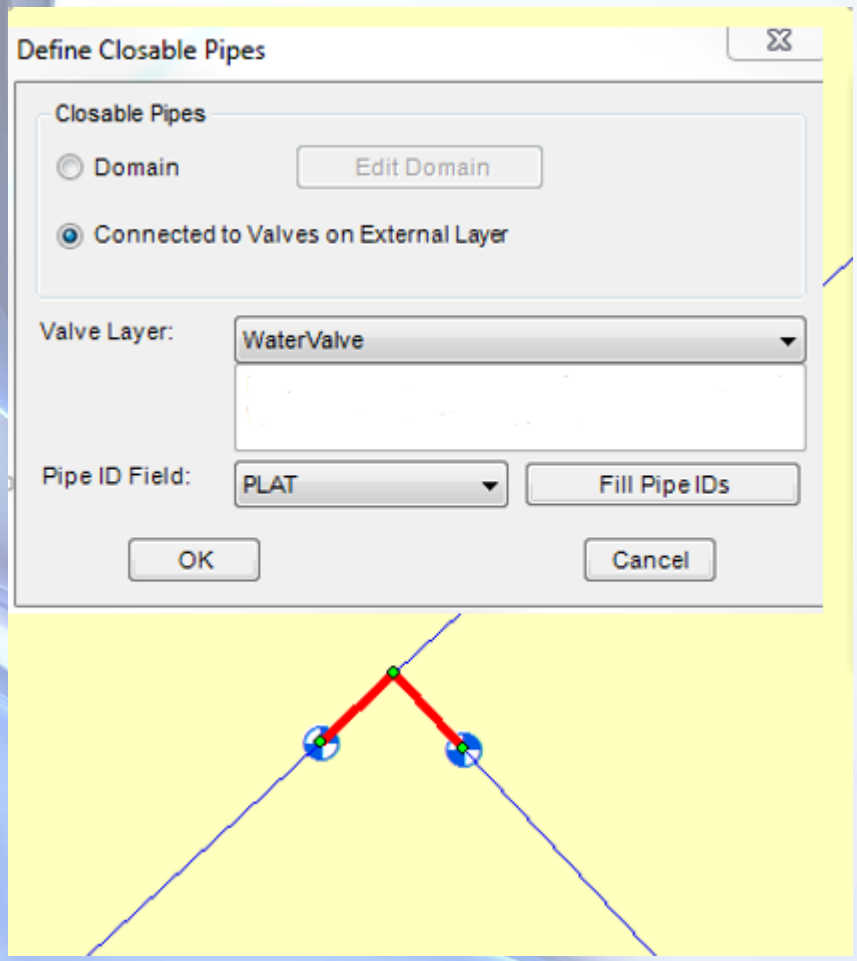
Isolation Analysis
Summary



- Quantifies impact of isolating specific water mains

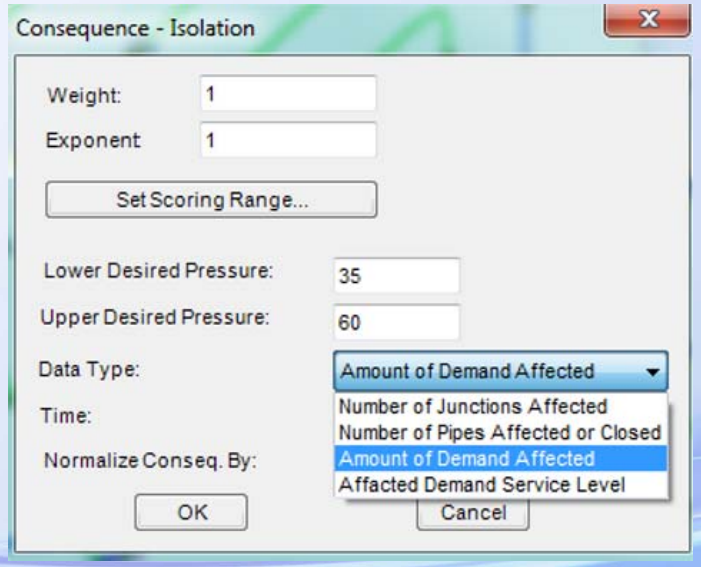
Isolation Analysis
Required Input



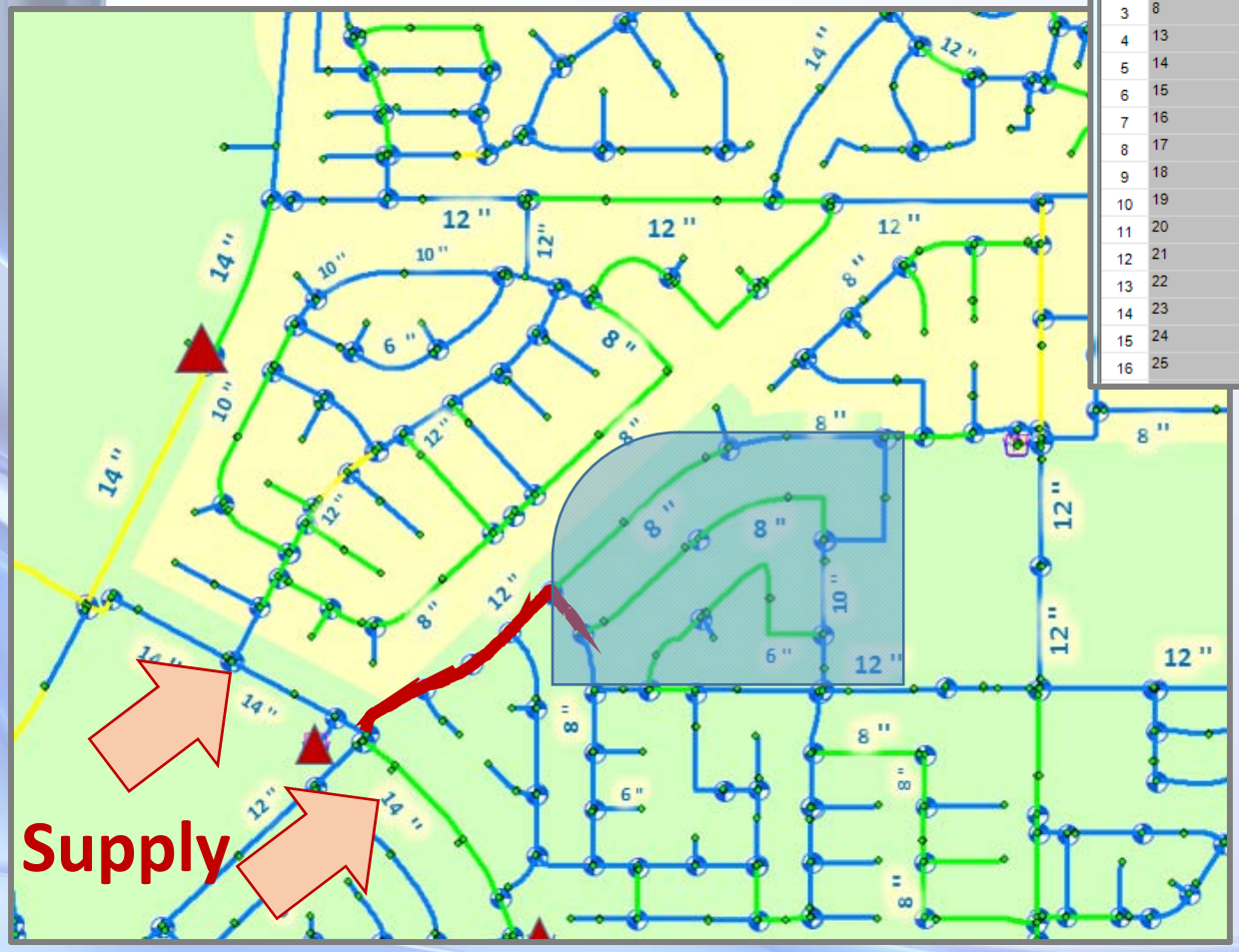
- Requires specification of closable pipes.
- Closable pipes can be specified manually or automatically by using a shapefile

Isolation Analysis
Consequence of Failure

- Defining acceptable pressure parameters
- Classifying desired consequence
  - Demand
  - Number of Pipes



Isolation Analysis
Results



Consequence - ISOLAT

	Pipe ID	Value	Score
1	6	3.94	1.0
2	7	11.19	1.0
3	8	0.58	1.0
4	13	1.33	1.0
5	14	1.33	1.0
6	15	1.33	1.0
7	16	0.00	1.0
8	17	0.00	1.0
9	18	7.77	1.0
10	19	7.77	1.0
11	20	7.77	1.0
12	21	9.10	1.0
13	22	9.10	1.0
14	23	0.00	1.0
15	24	0.00	1.0
16	25	0.00	1.0

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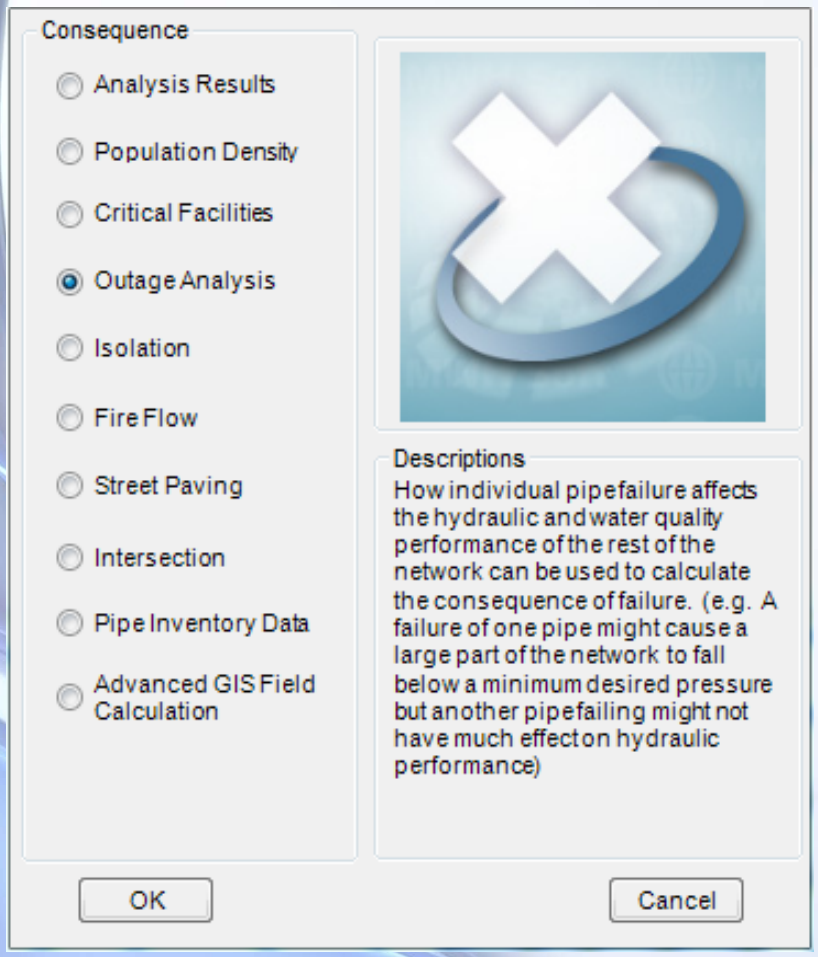
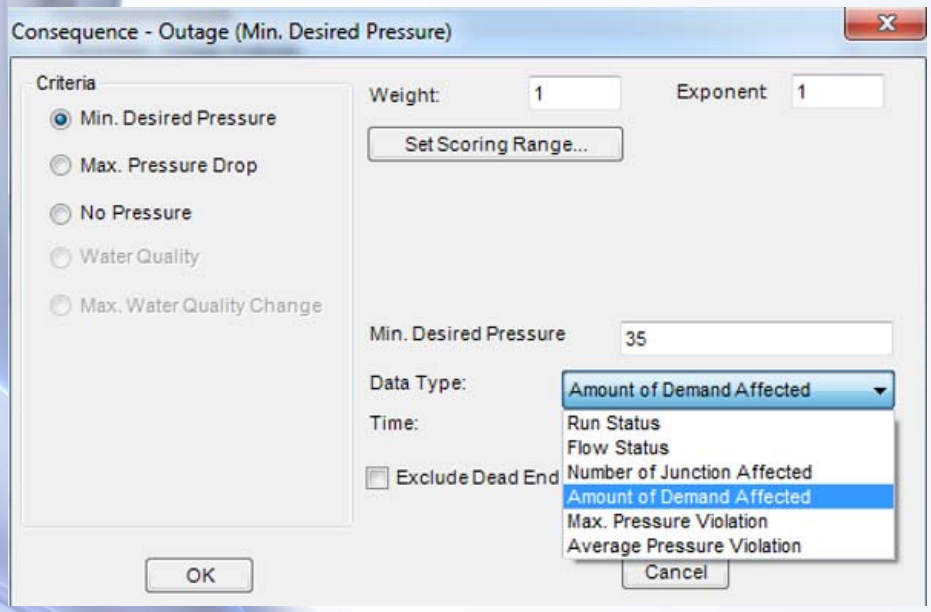
Outage Analysis
Summary



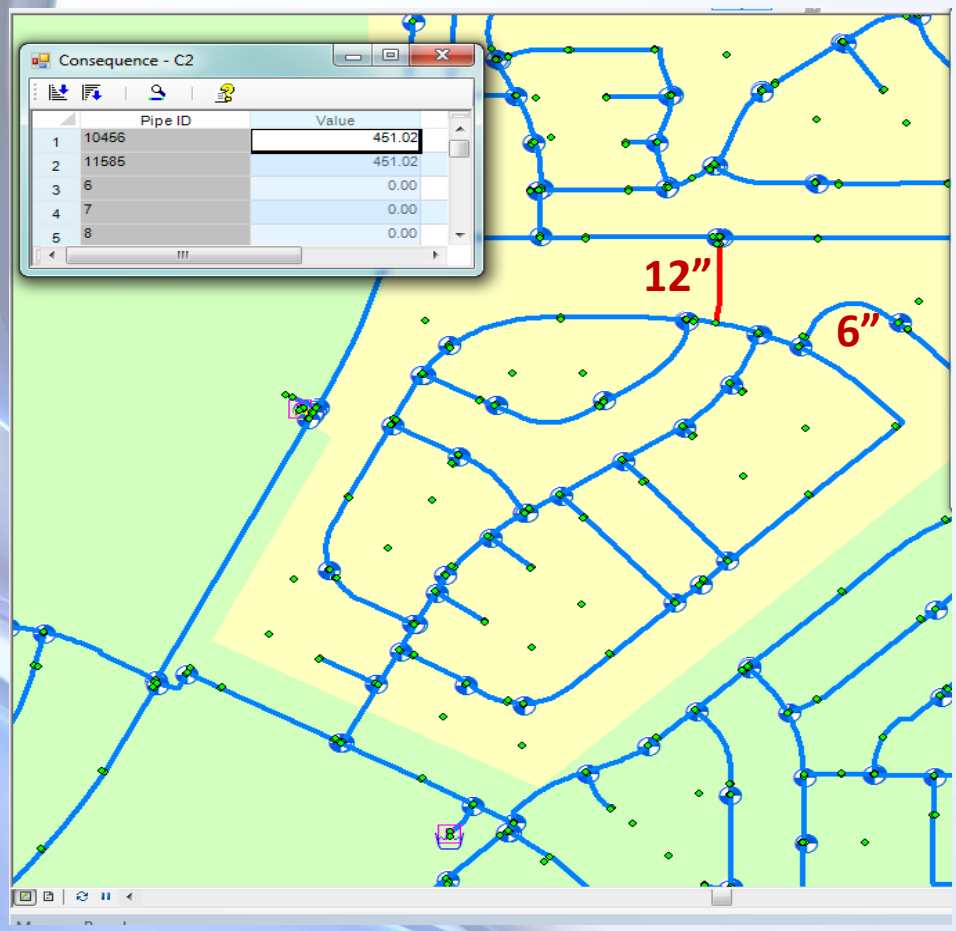
- Quantifies hydraulic or water quality impact of water main failure

Outage Analysis
Consequence of Failure



- Consequence Criteria:
  - Minimum pressure
  - Maximum pressure drop
  - No pressure (dead-end mains)
  - Water quality
  - Maximum change in water quality

Outage Analysis
Results



- Results summarize impact of pipe failure

CapPlan Isolation and Outage Analysis

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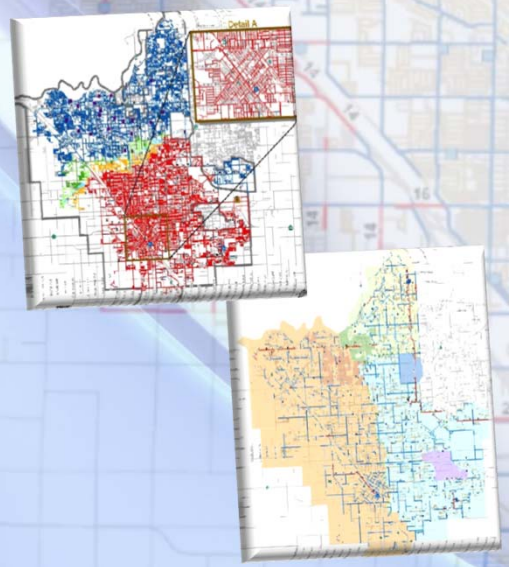

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