
HEC ResSim

Martin Relicensing
Technical Workshop
February 10, 2009

- Developed by US Army Corps of Engineers – Hydrologic Engineering Center in Davis, CA
 - Used to predict the behavior of reservoirs and help reservoir operators plan releases during day-to-day and emergency operations
 - Major features
 - Graphical user interface
 - Map-based schematic
 - Rule-based operations
-

HEC-ResSim



- Replaced HEC5 – now legacy software
- Calibrated to replicate HEC5 results for 1977 and 1995 operations



ResSim Modeling Results



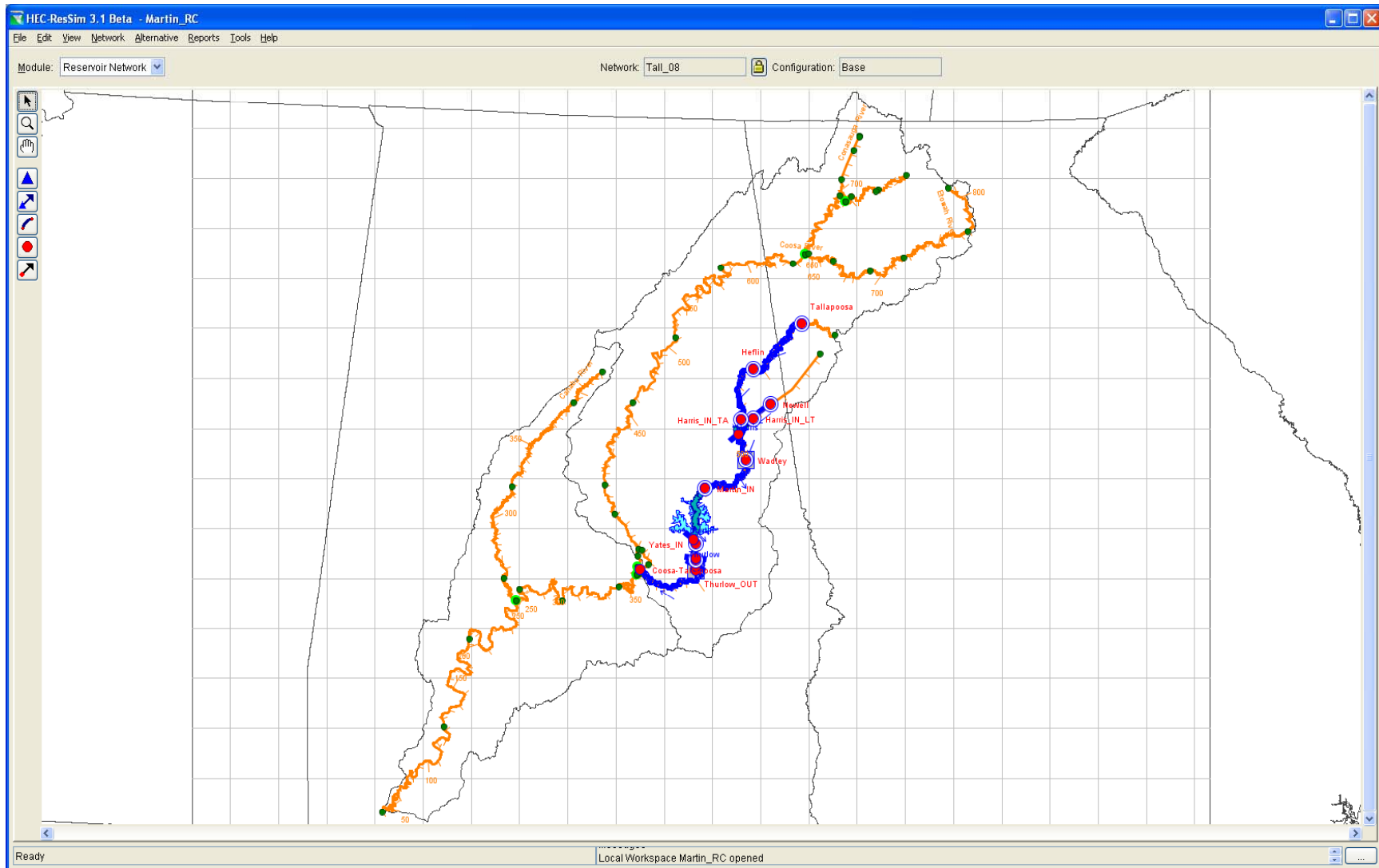
Deliverables

- ❑ Model normal daily reservoir operations
 - ❑ Evaluate rule curve changes
 - ❑ Evaluate elevation and flow durations
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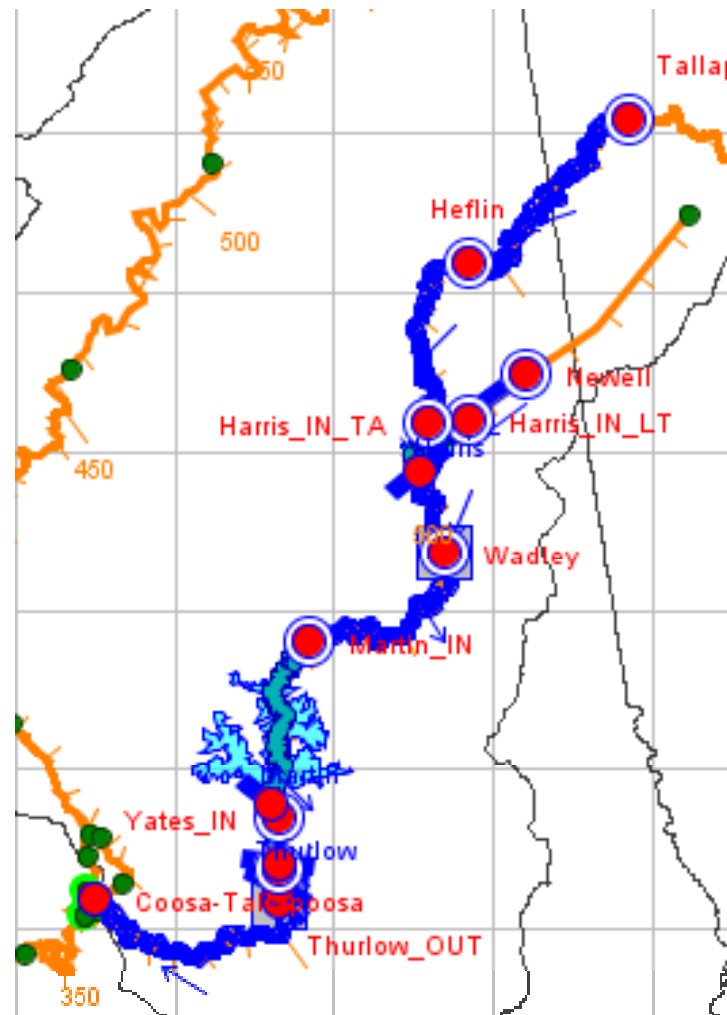
Input

- ❑ Watershed & System Network to study
 - ❑ Reservoir physical data
 - ❑ Computation points (Junctions)
 - ❑ Channel routing criteria
 - ❑ Storage allocation (Zones)
 - ❑ Operational goals (Rules)
 - ❑ Flow data
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Tallapoosa ResSim Model



Tallapoosa ResSim Model



ResSim Reservoir Setup

HEC-ResSim 3.1 Beta - Martin_RC

File Edit View Network Alternative Reports Tools Help

Module: Reservoir Network Network: Tall_08 Configuration: Base

Reservoir Editor

Reservoir: Martin Description: Martin Reservoir

Physical Operations Observed Data

Martin

- Pool
- Evaporation
- Dam
 - Tailwater
 - Gated Spillway
 - Power Plant

Composite Release Capacity

Elevation (ft)	Controlled (cfs)	Uncontrolled (cfs)	Total (cfs)
444.5	0.0	0.0	0.0
444.5	9,600.0	0.0	9,600.0
474.0	9,600.0	0.0	9,600.0
475.0	14,521.0	0.0	14,521.0
476.0	18,066.0	0.0	18,066.0
477.0	22,380.0	0.0	22,380.0
478.0	27,465.0	0.0	27,465.0
479.0	33,320.0	0.0	33,320.0
480.0	39,945.0	0.0	39,945.0
481.0	47,339.0	0.0	47,339.0
482.0	55,504.0	0.0	55,504.0
483.0	64,439.0	0.0	64,439.0
484.0	74,120.0	0.0	74,120.0
485.0	84,460.0	0.0	84,460.0
485.0	85,974.4	0.0	85,974.4
486.0	97,300.0	0.0	97,300.0
487.0	109,440.0	0.0	109,440.0
488.0	122,260.0	0.0	122,260.0
488.0	129,680.8	0.0	129,680.8
489.0	142,729.0	0.0	142,729.0
490.0	157,289.0	0.0	157,289.0
491.0	172,209.0	0.0	172,209.0
492.0	187,829.0	0.0	187,829.0
493.0	205,129.0	0.0	205,129.0
494.0	222,230.0	0.0	222,230.0
495.0	240,405.0	0.0	240,405.0
496.0	259,349.0	0.0	259,349.0
497.0	279,064.0	0.0	279,064.0
498.0	299,549.0	0.0	299,549.0
499.0	320,804.0	0.0	320,804.0
500.0	342,829.0	0.0	342,829.0
501.0	365,625.0	0.0	365,625.0

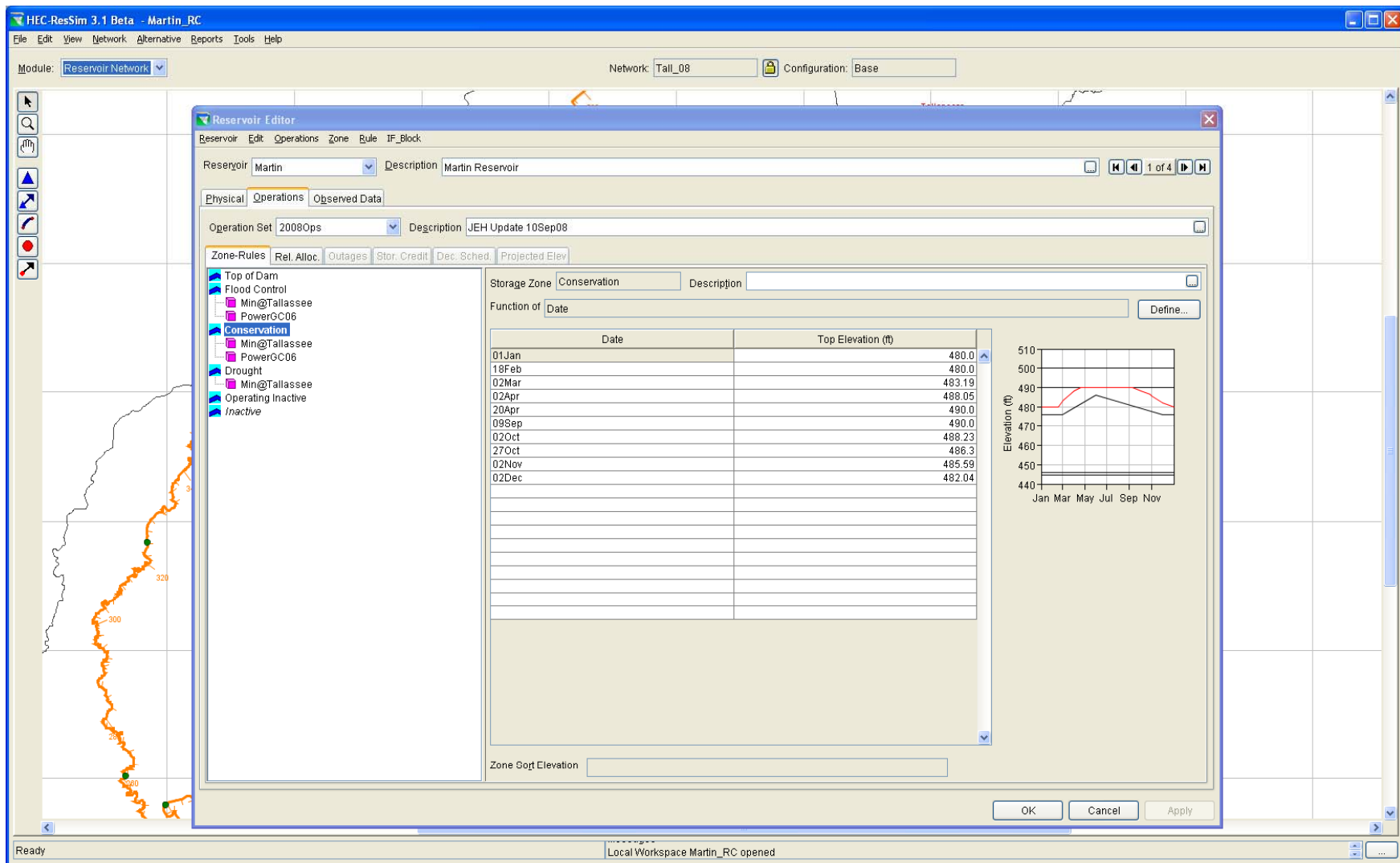
Elevation (ft) vs Flow (cfs) graph

Label Position: NORTH

OK Cancel Apply

Coordinates: 1478688 east, 1429126 north Local Workspace Martin_RC opened

ResSim Reservoir Setup



HEC-ResSim 3.1 Beta - Martin_RC

File Edit View Network Alternative Reports Tools Help

Module: Reservoir Network Network: Tall_08 Configuration: Base

Reservoir Editor

Reservoir: Martin Description: Martin Reservoir

Physical Operations Observed Data

Operation Set: 2009Ops Description: JEH Update 10Sep08

Zone-Rules Rel. Alloc. Outages Stor. Credit Dec. Sched. Projected Elev

Top of Dam
Flood Control
Min@Tallassee
PowerGC06
Conservation
Min@Tallassee
PowerGC06
Drought
Min@Tallassee
Operating Inactive
Inactive

Storage Zone: Conservation Description:

Function of: Date Define...

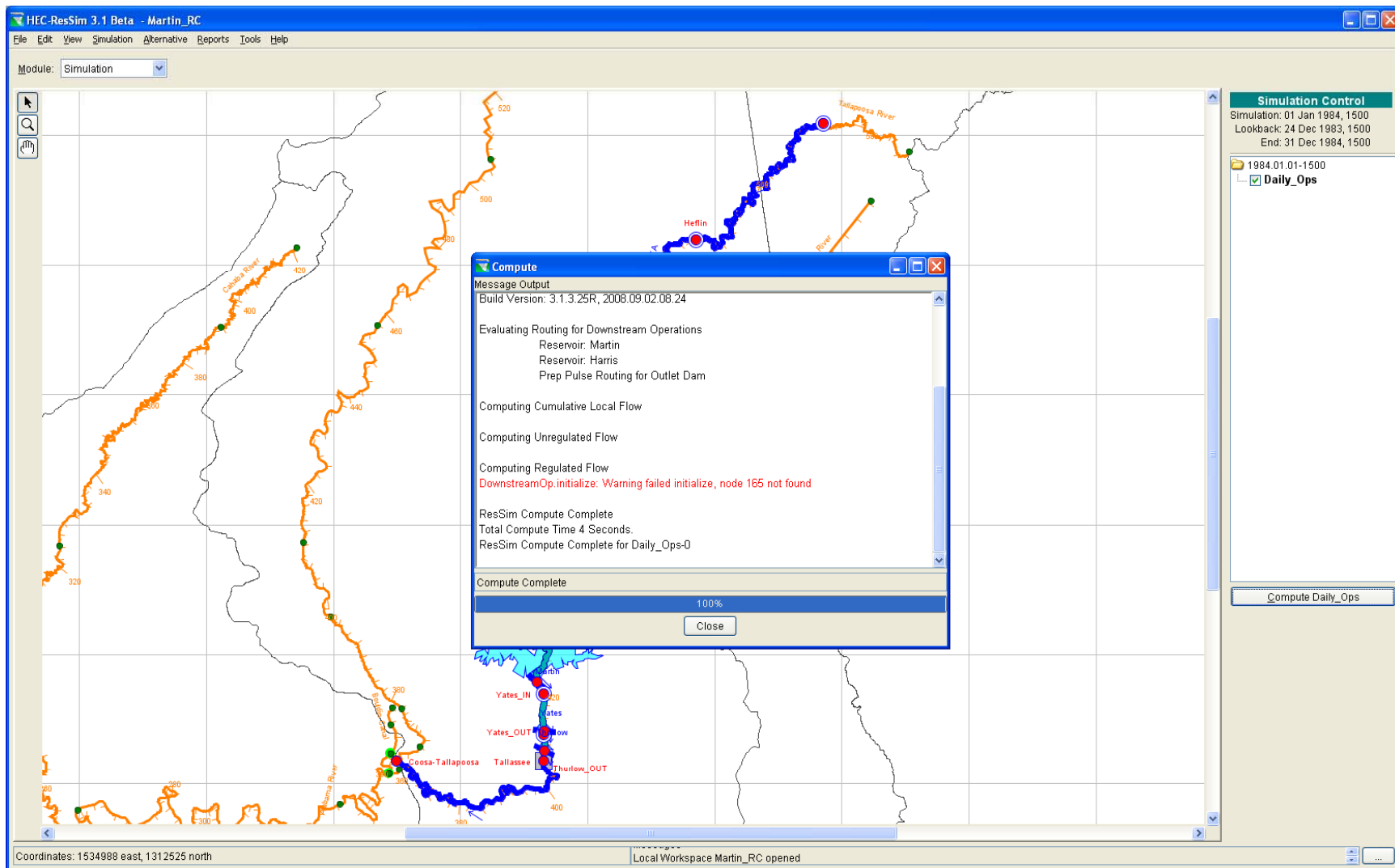
Date	Top Elevation (ft)
01Jan	480.0
18Feb	480.0
02Mar	483.19
02Apr	488.05
20Apr	490.0
09Sep	490.0
02Oct	488.23
27Oct	486.3
02Nov	485.59
02Dec	482.04

Zone Opt Elevation:

OK Cancel Apply

Ready Local Workspace Martin_RC opened

ResSim Modeling Simulation



The screenshot displays the HEC-ResSim 3.1 Beta software interface. The main window shows a map of a river network with various nodes and segments. A 'Compute' message window is open in the center, displaying the following text:

```
Message Output
Build Version: 3.1.3.25R, 2008.09.02.08.24

Evaluating Routing for Downstream Operations
  Reservoir: Martin
  Reservoir: Harris
  Prep Pulse Routing for Outlet Dam

Computing Cumulative Local Flow
Computing Unregulated Flow
Computing Regulated Flow
DownstreamOp.initialize: Warning failed initialize, node 165 not found

ResSim Compute Complete
Total Compute Time 4 Seconds.
ResSim Compute Complete for Daily_Ops-0

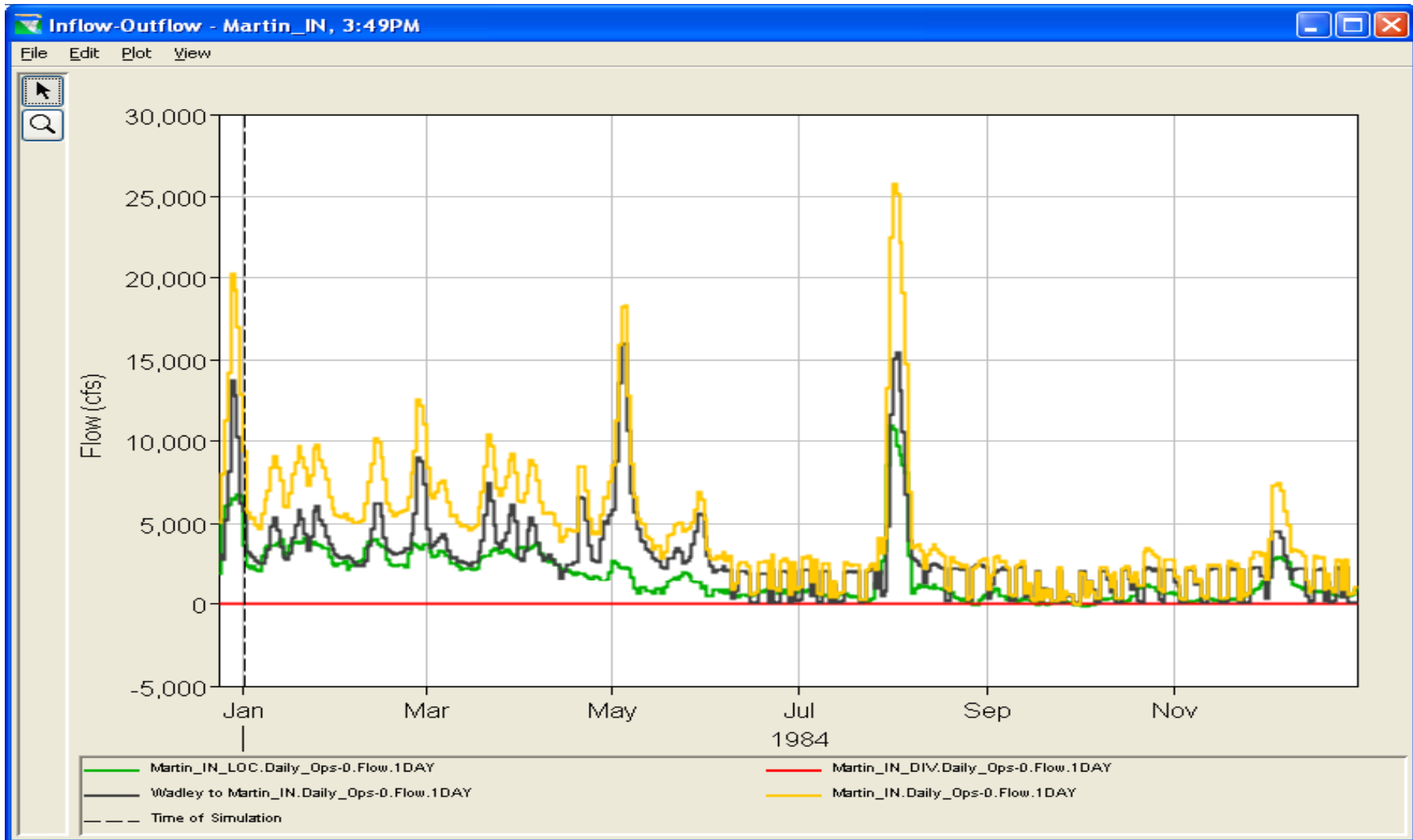
Compute Complete
100%
Close
```

On the right side, the 'Simulation Control' panel shows the simulation parameters:

- Simulation: 01 Jan 1984, 1500
- Lookback: 24 Dec 1983, 1500
- End: 31 Dec 1984, 1500
- 1984.01.01-1500
- Daily_Ops

At the bottom of the interface, the status bar shows 'Coordinates: 1534988 east, 1312525 north' and 'Local Workspace Martin_RC opened'.

ResSim Modeling Results



ResSim Modeling Results

