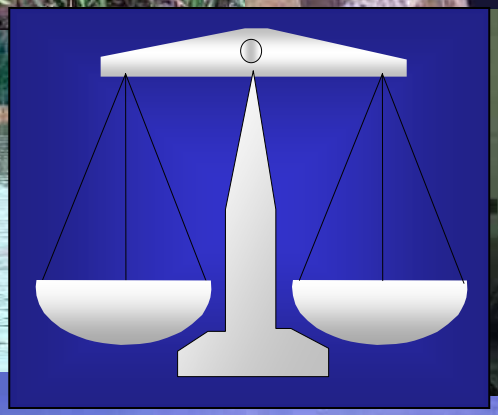
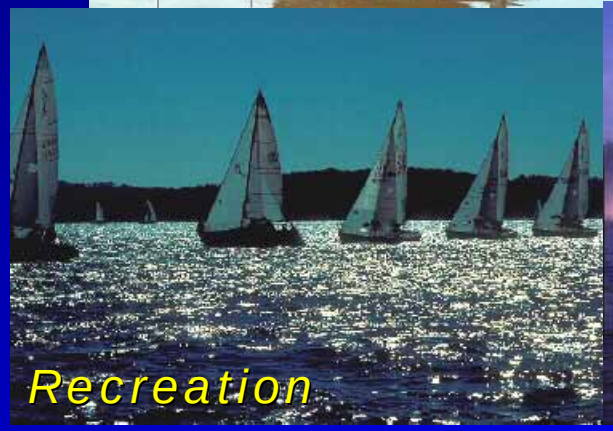
Savannah District

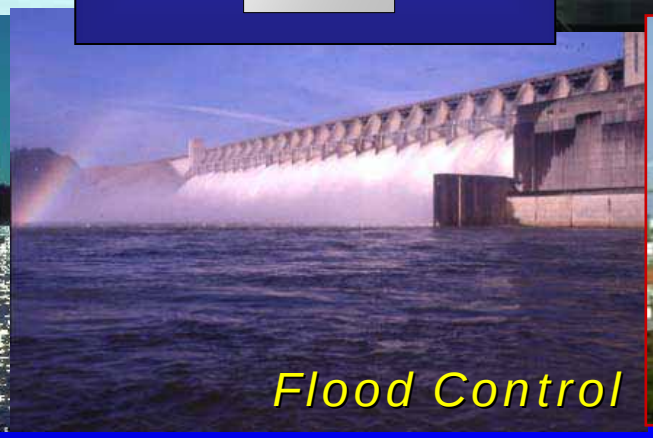
HEC- ResSim

Jason Ward - Hydrologist

Savannah River Basin Balancing Uses







HEC ResSim

Hydrologic Engineering Center (HEC)

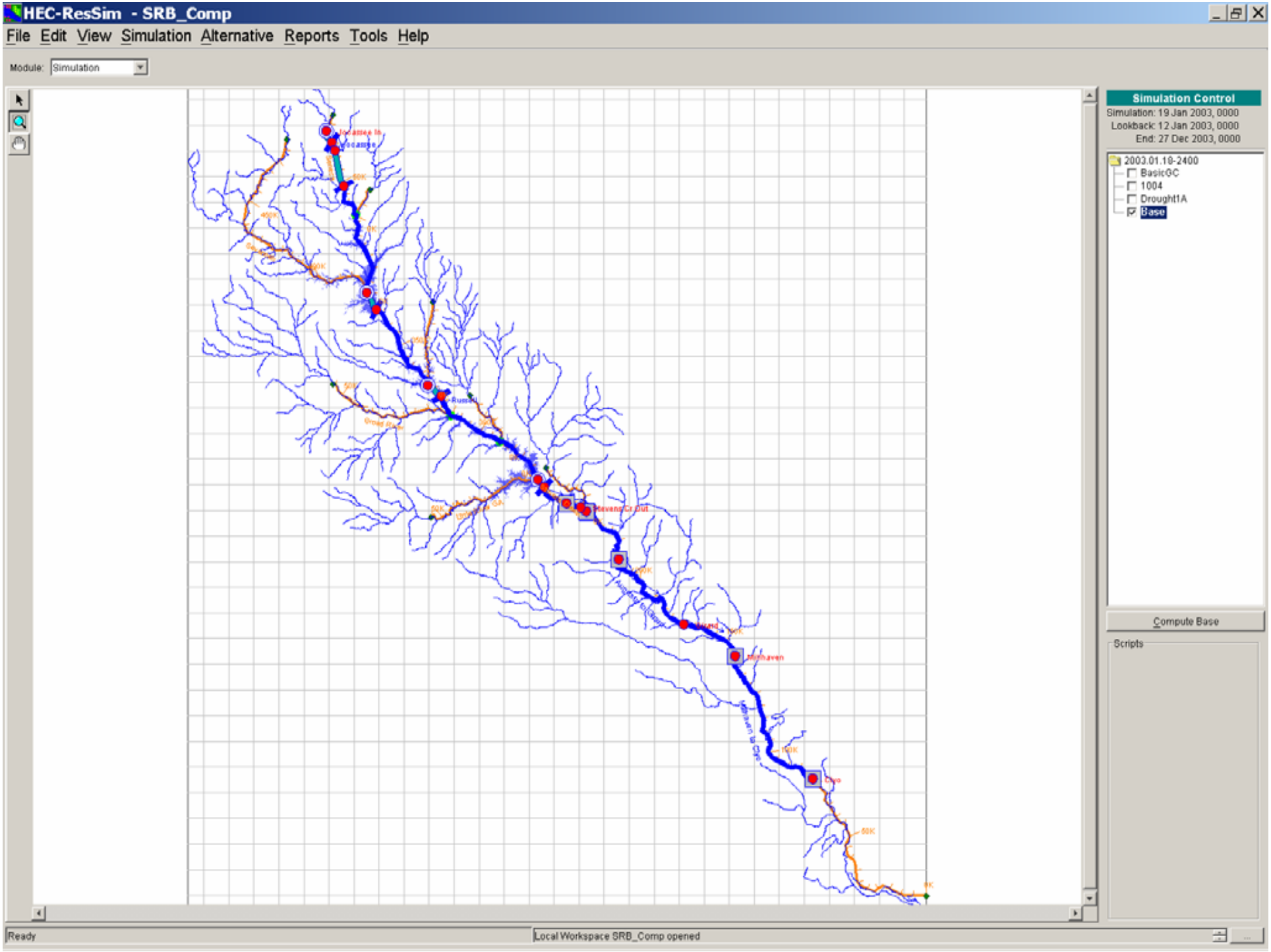
- **Designs computer software**
- **Provides technical support to Corps districts**
  - **HEC ResSim – computer model for simulating reservoir operations**

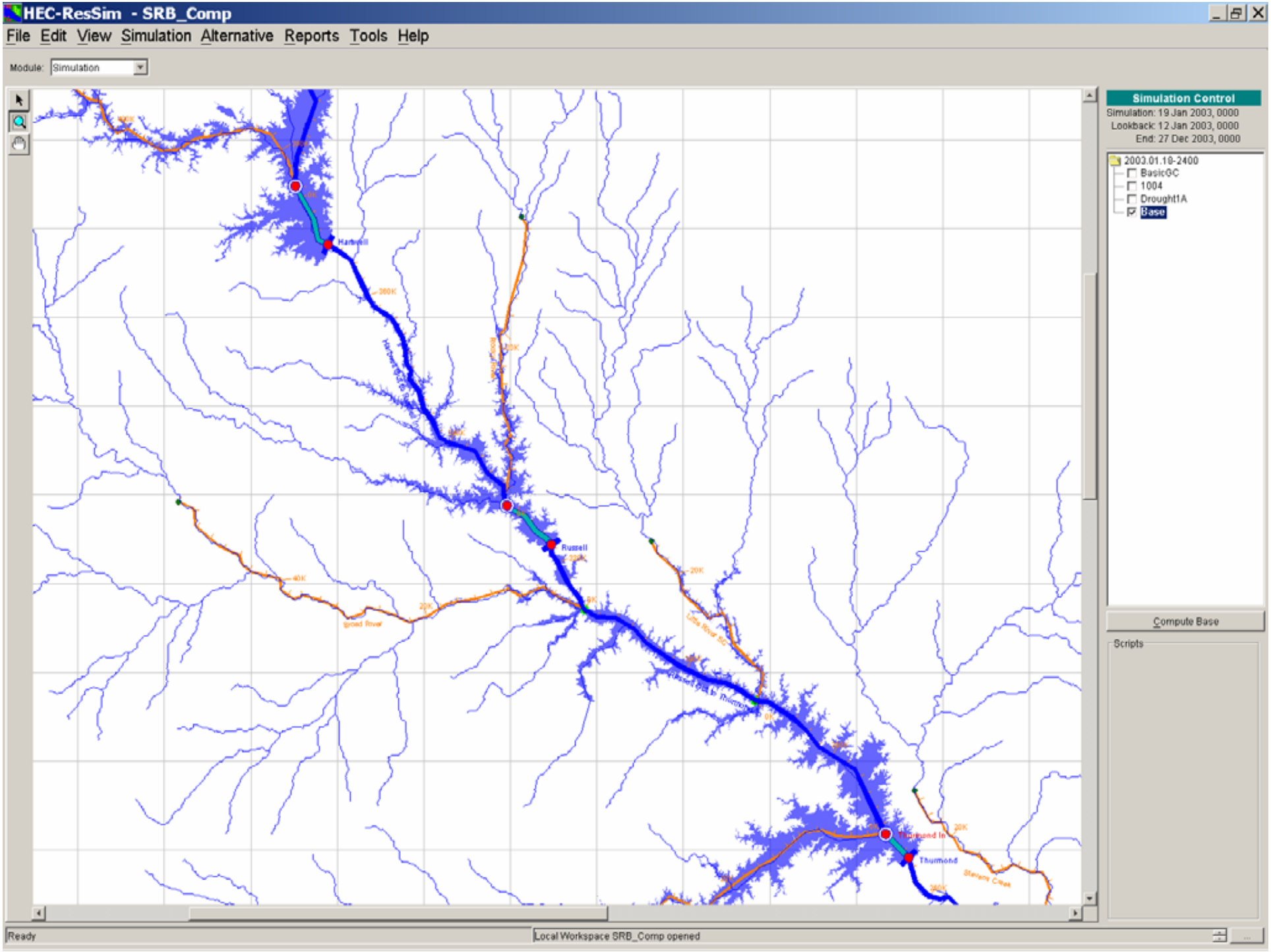
HEC ResSim Status

- New model improvements
  - System Hydropower
  - Pumpback Operations
  - Period Average Flow Rules
  - Release Allocation
  - Scheduled Outlet Outages
  - If-then-else logic for rule applicability
  - User defined state variables

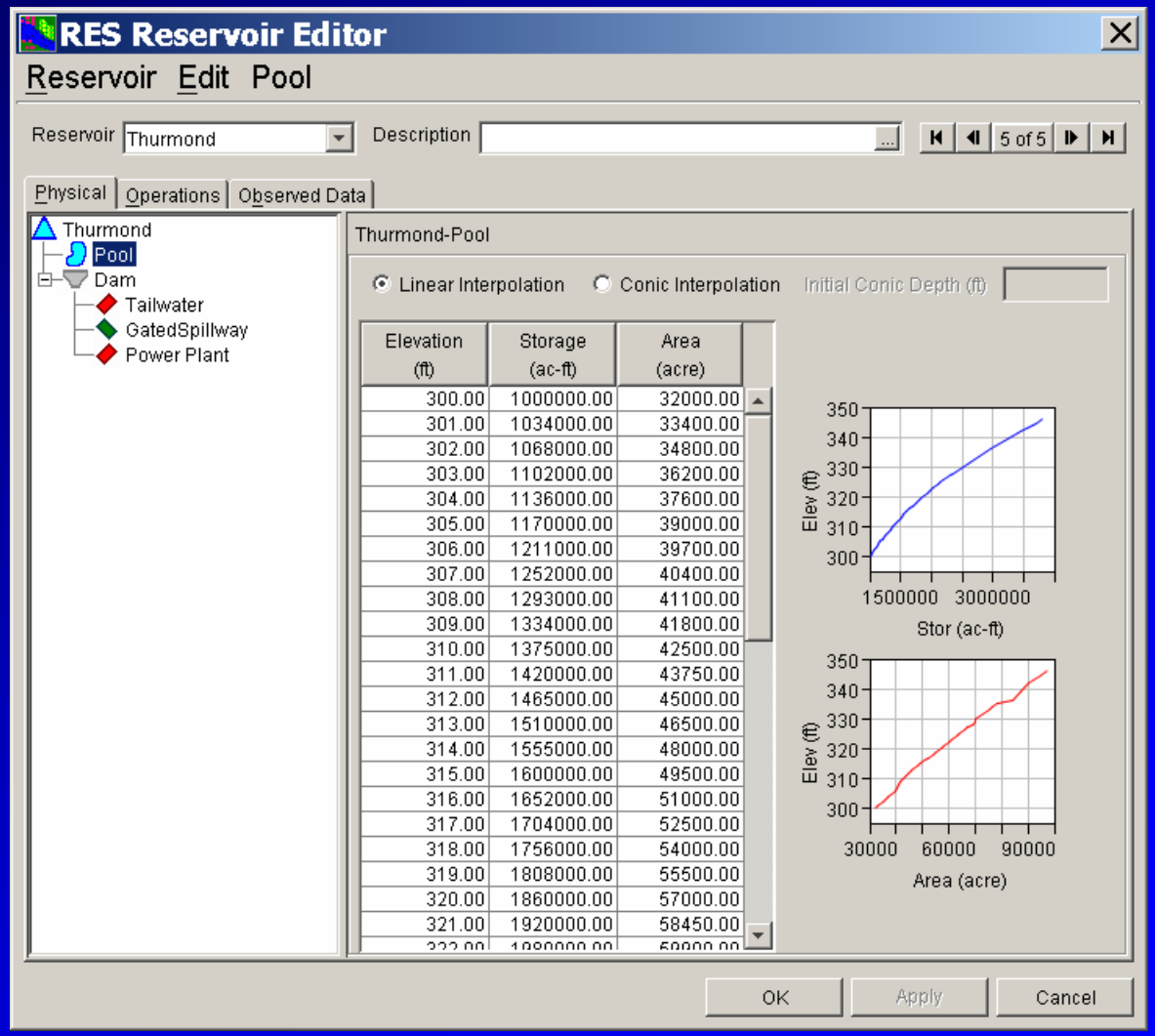
HEC ResSim Status

- New model improvements (cont.)
  - Scripted rules
  - Basic reports builder
- Version 3.0 Beta version release
  - 31 Oct 03 (Original delivery date)
  - 29 Feb 04 (Revised delivery date)
  - Currently on build #14 – Not yet here

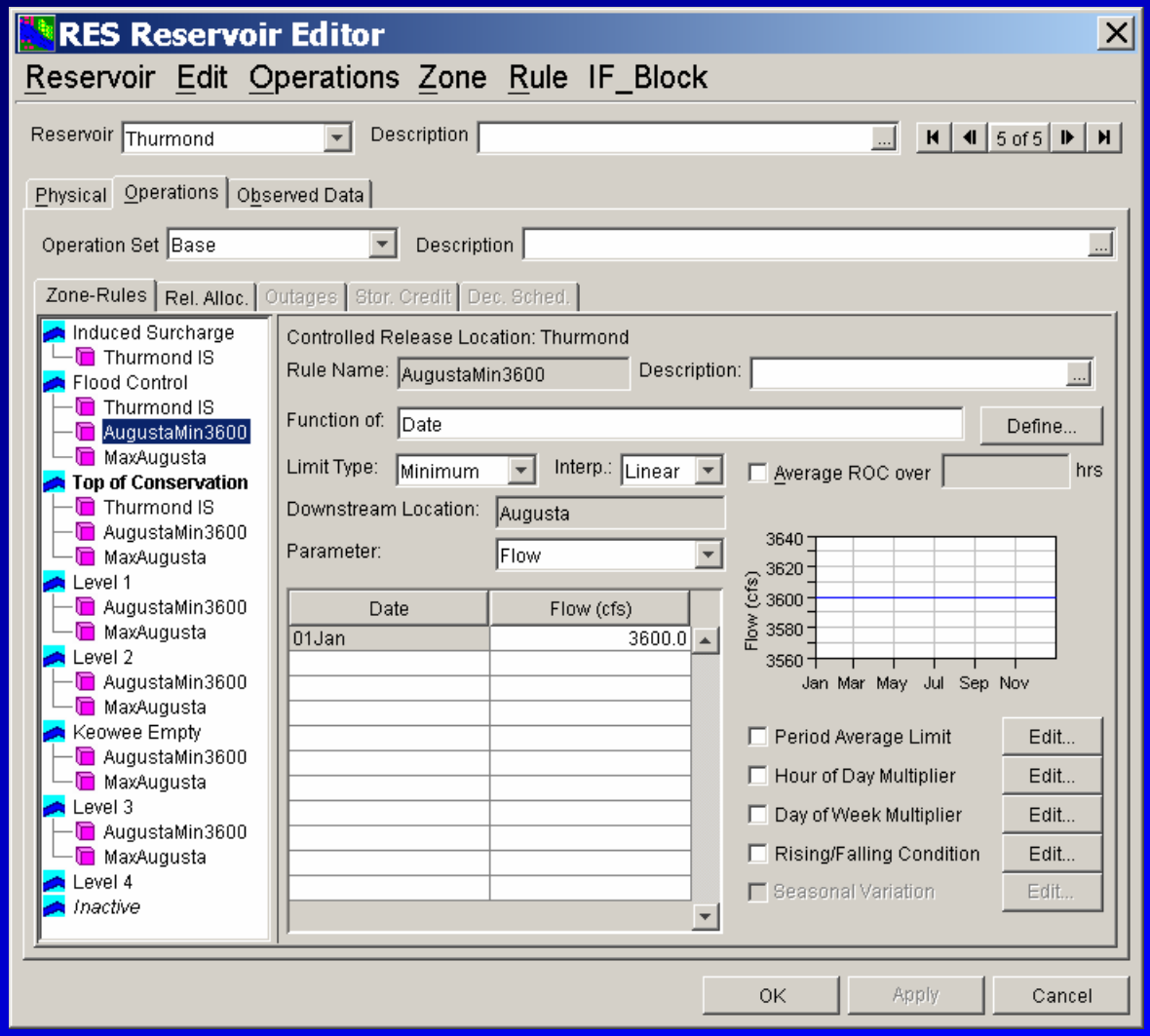

HEC-ResSim - SRB_Comp
File Edit View Simulation Alternative Reports Tools Help
Module: Simulation
Simulation Control
Simulation: 19 Jan 2003, 0000
Lookback: 12 Jan 2003, 0000
End: 27 Dec 2003, 0000
2003.01.19-2400
BasicGC
1004
Drought1A
Base
Compute Base
Scripts
Ready
Local Workspace SRB_Comp opened

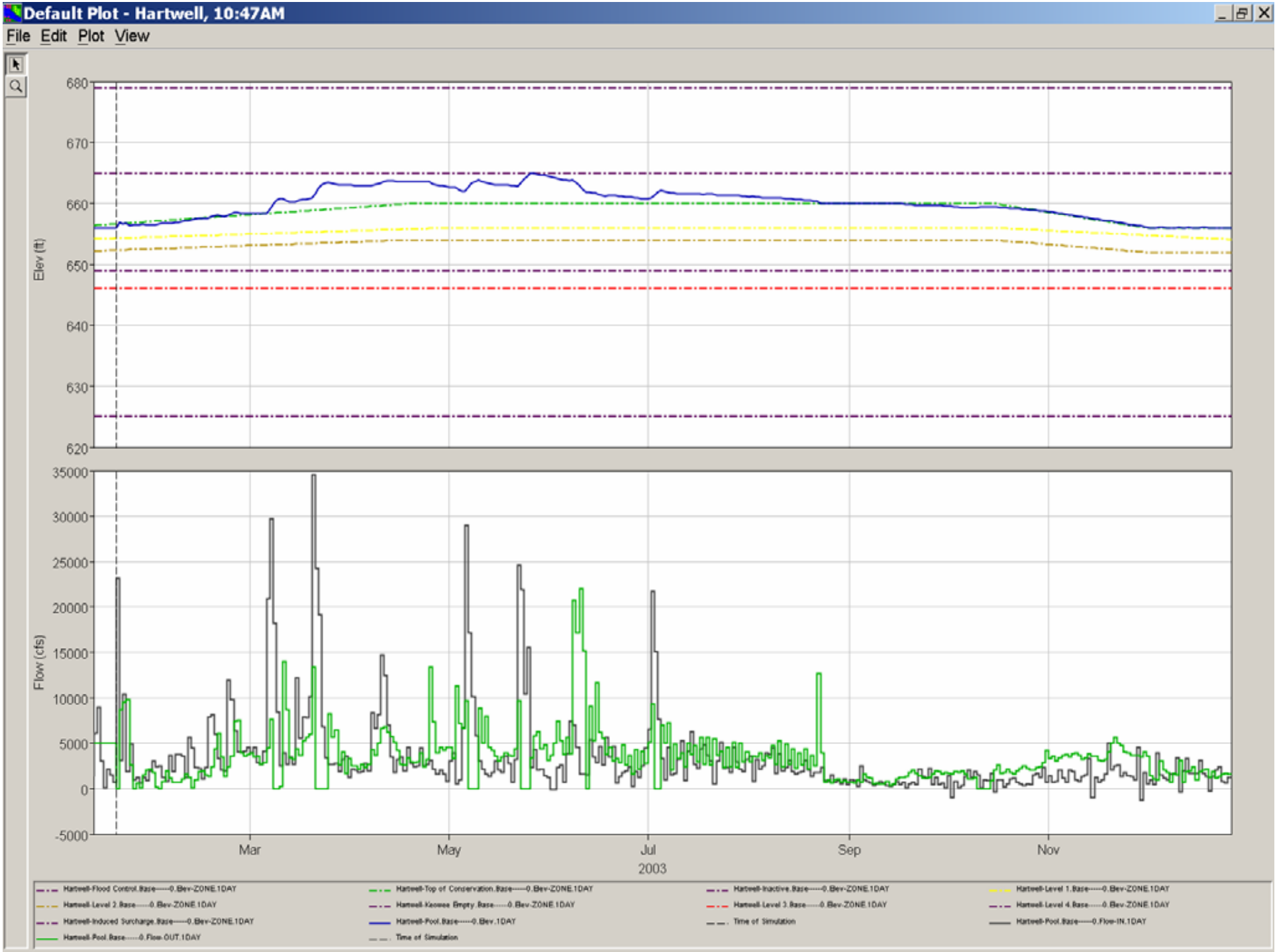

HEC-ResSim - SRB_Comp
File Edit View Simulation Alternative Reports Tools Help
Module: Simulation
Simulation Control
Simulation: 19 Jan 2003, 0000
Lookback: 12 Jan 2003, 0000
End: 27 Dec 2003, 0000
2003.01.19-2400
BasicGC
1004
Drought1A
Base
Compute Base
Scripts
Hartwell
Russell
Thurmond
Broad River
Stevens Creek
Ready
Local Workspace SRB_Comp opened

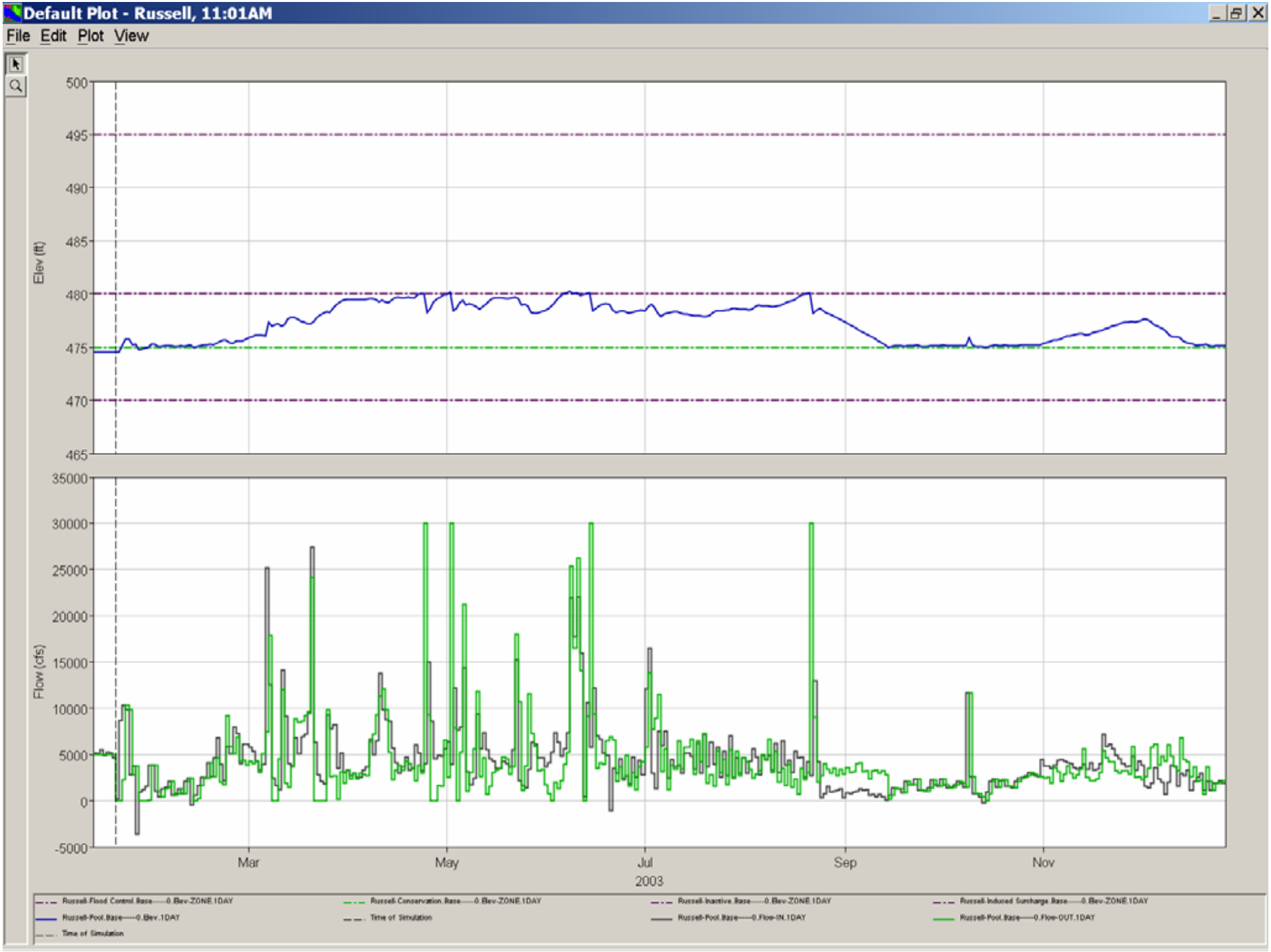
Physical Specifications

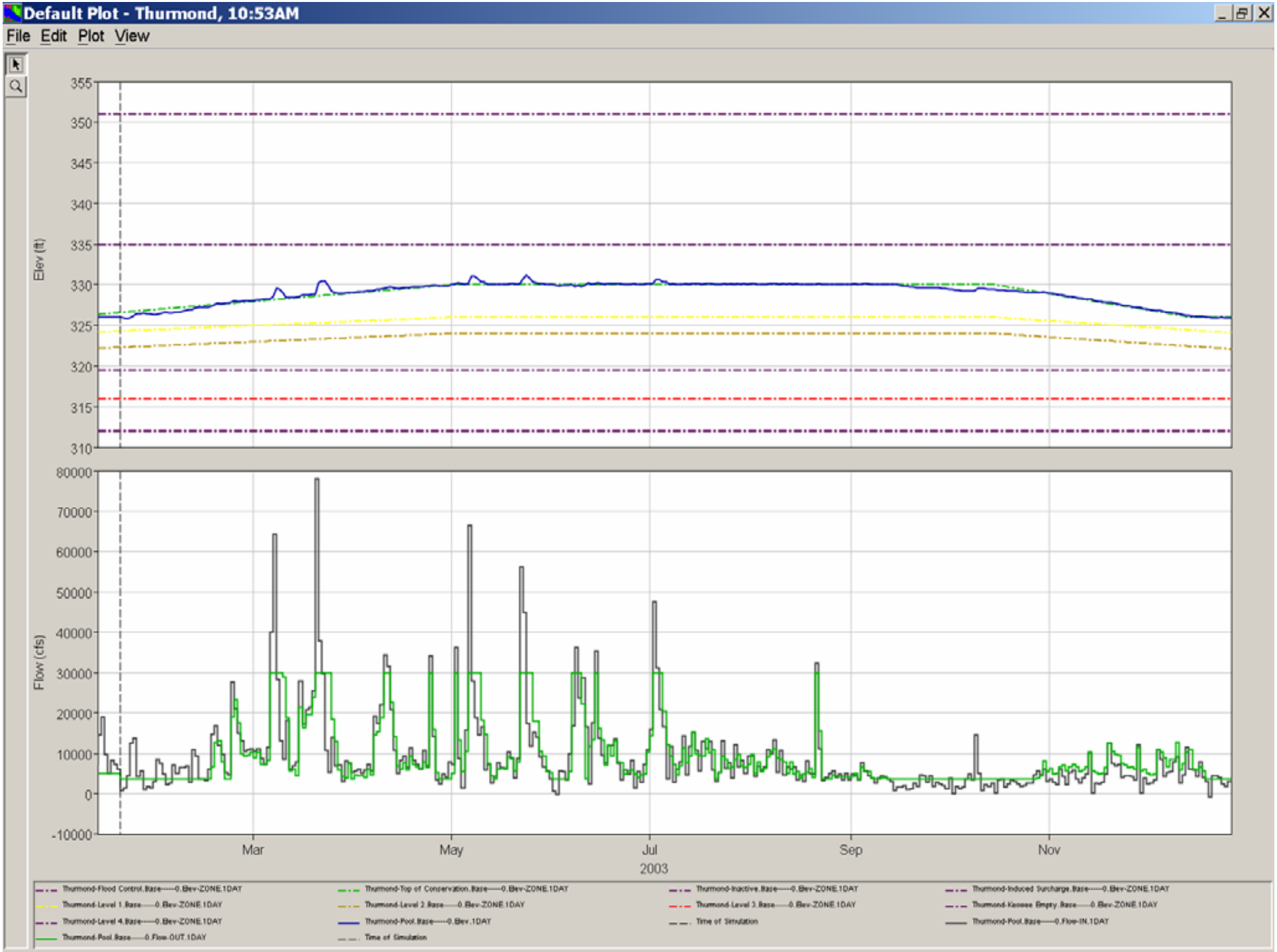


Operational Rules




Default Plot - Hartwell, 10:47AM
File Edit Plot View
Elev (ft)
680
670
660
650
640
630
620
Flow (cfs)
35000
30000
25000
20000
15000
10000
5000
0
-5000
Mar
May
Jul
Sep
Nov
2003
Hartwell-Flood Control.Base-----0.Elev-ZONE.1DAY
Hartwell-Top of Conservation.Base-----0.Elev-ZONE.1DAY
Hartwell-Inactive.Base-----0.Elev-ZONE.1DAY
Hartwell-Level 1.Base-----0.Elev-ZONE.1DAY
Hartwell-Level 2.Base-----0.Elev-ZONE.1DAY
Hartwell-Keowee Empty.Base-----0.Elev-ZONE.1DAY
Hartwell-Level 3.Base-----0.Elev-ZONE.1DAY
Hartwell-Level 4.Base-----0.Elev-ZONE.1DAY
Hartwell-Induced Surcharge.Base-----0.Elev-ZONE.1DAY
Hartwell-Pool.Base-----0.Elev.1DAY
Time of Simulation
Hartwell-Pool.Base-----0.Flow-IN.1DAY
Hartwell-Pool.Base-----0.Flow-OUT.1DAY
Time of Simulation


Default Plot - Russell, 11:01AM
File Edit Plot View
Elev (ft)
500
495
490
485
480
475
470
465
Flow (cfs)
35000
30000
25000
20000
15000
10000
5000
0
-5000
Mar
May
Jul
Sep
Nov
2003
Russell-Flood Control.Base-----0.Elev-ZONE.1DAY
Russell-Conservation.Base-----0.Elev-ZONE.1DAY
Russell-Inactive.Base-----0.Elev-ZONE.1DAY
Russell-Induced Surcharge.Base-----0.Elev-ZONE.1DAY
Russell-Pool.Base-----0.Elev.1DAY
Time of Simulation
Russell-Pool.Base-----0.Flow-IN.1DAY
Russell-Pool.Base-----0.Flow-OUT.1DAY
Time of Simulation


Default Plot - Thurmond, 10:53AM
File Edit Plot View
Elev (ft)
355
350
345
340
335
330
325
320
315
310
Flow (cfs)
80000
70000
60000
50000
40000
30000
20000
10000
0
-10000
Mar
May
Jul
Sep
Nov
2003
Thurmond-Flood Control.Base-----0.Elev-ZONE.1DAY
Thurmond-Top of Conservation.Base-----0.Elev-ZONE.1DAY
Thurmond-Inactive.Base-----0.Elev-ZONE.1DAY
Thurmond-Induced Surcharge.Base-----0.Elev-ZONE.1DAY
Thurmond-Level 1.Base-----0.Elev-ZONE.1DAY
Thurmond-Level 2.Base-----0.Elev-ZONE.1DAY
Thurmond-Level 3.Base-----0.Elev-ZONE.1DAY
Thurmond-Keowee Empty.Base-----0.Elev-ZONE.1DAY
Thurmond-Level 4.Base-----0.Elev-ZONE.1DAY
Thurmond-Pool.Base-----0.Elev.1DAY
Time of Simulation
Thurmond-Pool.Base-----0.Flow-IN.1DAY
Thurmond-Pool.Base-----0.Flow-OUT.1DAY
Time of Simulation

HEC-ResSim Output

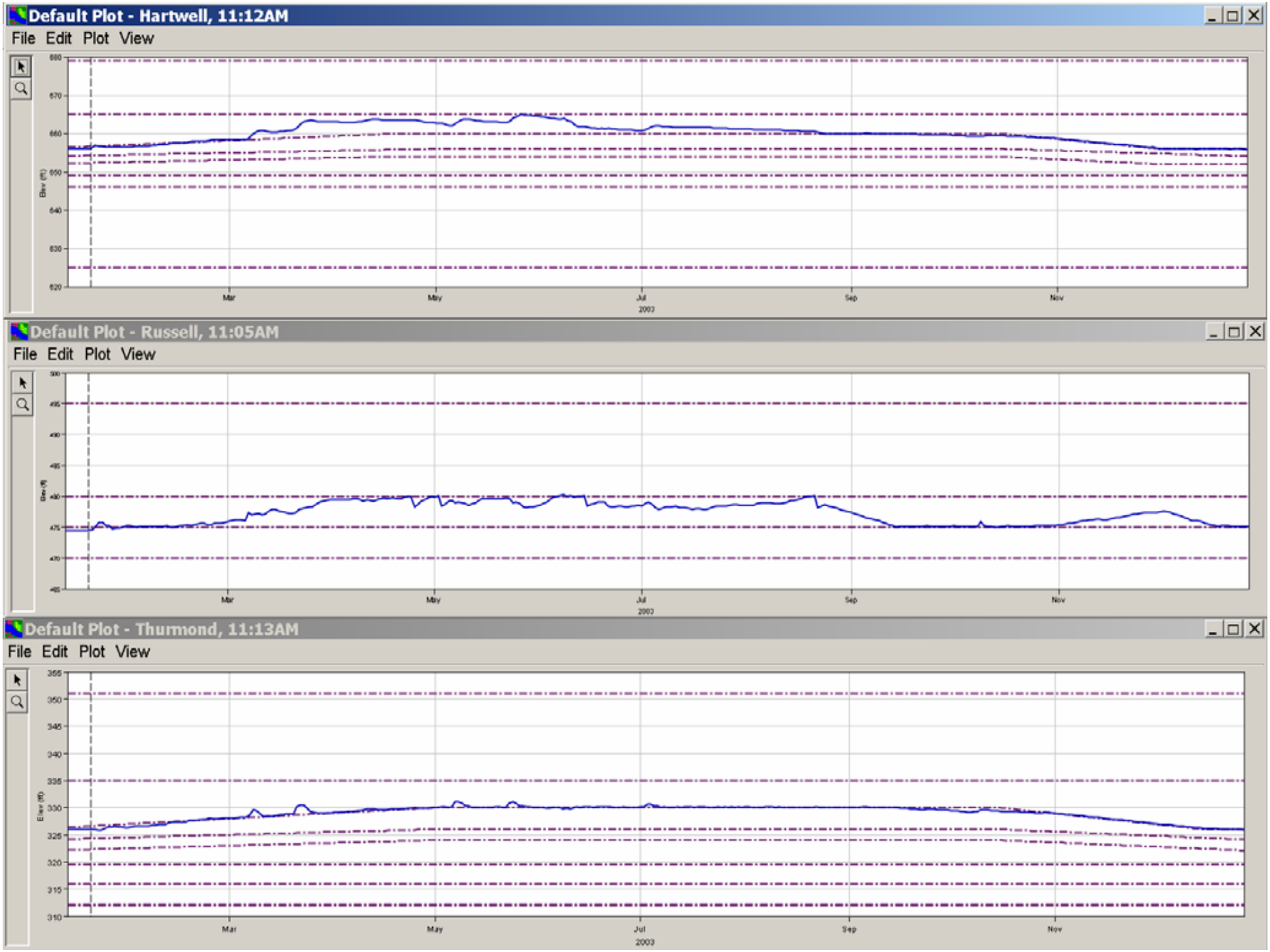
Release Decision Report

File

Alternative: Base------:Base
Run: Base------0

Lookback: 12 Jan 2003, 0000
Start Time: 19 Jan 2003, 0000
End Time: 27 Dec 2003, 0000
Rule Key: GC=Guide Curve, RO=Release Override, EO=Elevation Override, ZB=Zone Boundary

Date-Time	Thurmond				
	Active Zone Elev (ft)	Thurmond Active Rule Flow (cfs)	-Dam Active Rule Flow (cfs)	-GatedSpillway Active Rule Flow (cfs)	-Power Plant Active Rule Flow (cfs)
18Jan2003, 24:00	326.00	5,000.00	5,000.00	0.00	5,000.00
	Top of Conservation	GC:AugustaMin3600	GC:AugustaMin3600	GC:PhysMinCap	GC:AugustaMin3600
19Jan2003, 24:00	325.92	3,600.00	3,600.00	0.00	3,600.00
	Top of Conservation	GC:AugustaMin3600	GC:AugustaMin3600	GC:PhysMinCap	GC:AugustaMin3600
20Jan2003, 24:00	325.86	3,600.00	3,600.00	0.00	3,600.00
	Top of Conservation	GC:AugustaMin3600	GC:AugustaMin3600	GC:PhysMinCap	GC:AugustaMin3600
21Jan2003, 24:00	325.88	3,600.00	3,600.00	0.00	3,600.00
	Top of Conservation	GC:AugustaMin3600	GC:AugustaMin3600	GC:PhysMinCap	GC:AugustaMin3600
22Jan2003, 24:00	326.14	3,600.00	3,600.00	0.00	3,600.00
	Top of Conservation	GC:AugustaMin3600	GC:AugustaMin3600	GC:PhysMinCap	GC:AugustaMin3600
23Jan2003, 24:00	326.43	3,600.00	3,600.00	0.00	3,600.00
	Top of Conservation	GC:AugustaMin3600	GC:AugustaMin3600	GC:PhysMinCap	GC:AugustaMin3600
24Jan2003, 24:00	326.44	3,600.00	3,600.00	0.00	3,600.00
	Top of Conservation	GC:AugustaMin3600	GC:AugustaMin3600	GC:PhysMinCap	GC:AugustaMin3600


Default Plot - Hartwell, 11:12AM
File Edit Plot View
Elev (ft)
680
670
660
650
640
630
620
Mar
May
Jul
Sep
Nov
2003
Default Plot - Russell, 11:05AM
File Edit Plot View
Elev (ft)
500
495
490
485
480
475
470
465
Mar
May
Jul
Sep
Nov
2003
Default Plot - Thurmond, 11:13AM
File Edit Plot View
Elev (ft)
355
350
345
340
335
330
325
320
315
310
Mar
May
Jul
Sep
Nov
2003

HEC- ResSim

Summary

- Model development is taking longer than expected
- Base model for 50 yrs is near completion
- Next Step = Alternatives evaluation vs Base Condition