

# Neuse Basin Systems Data Summary



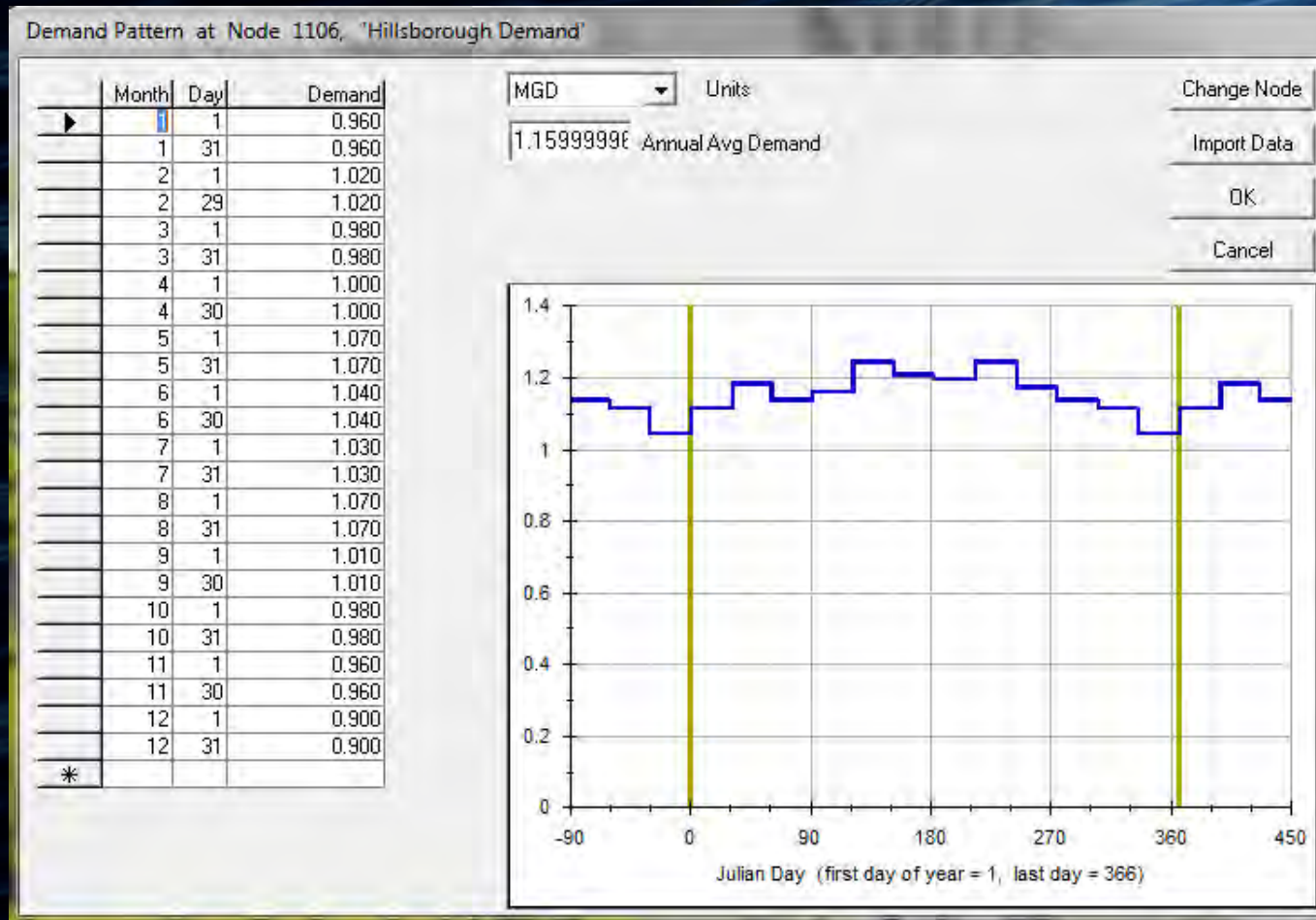
Advancing the Management  
of Water Resources

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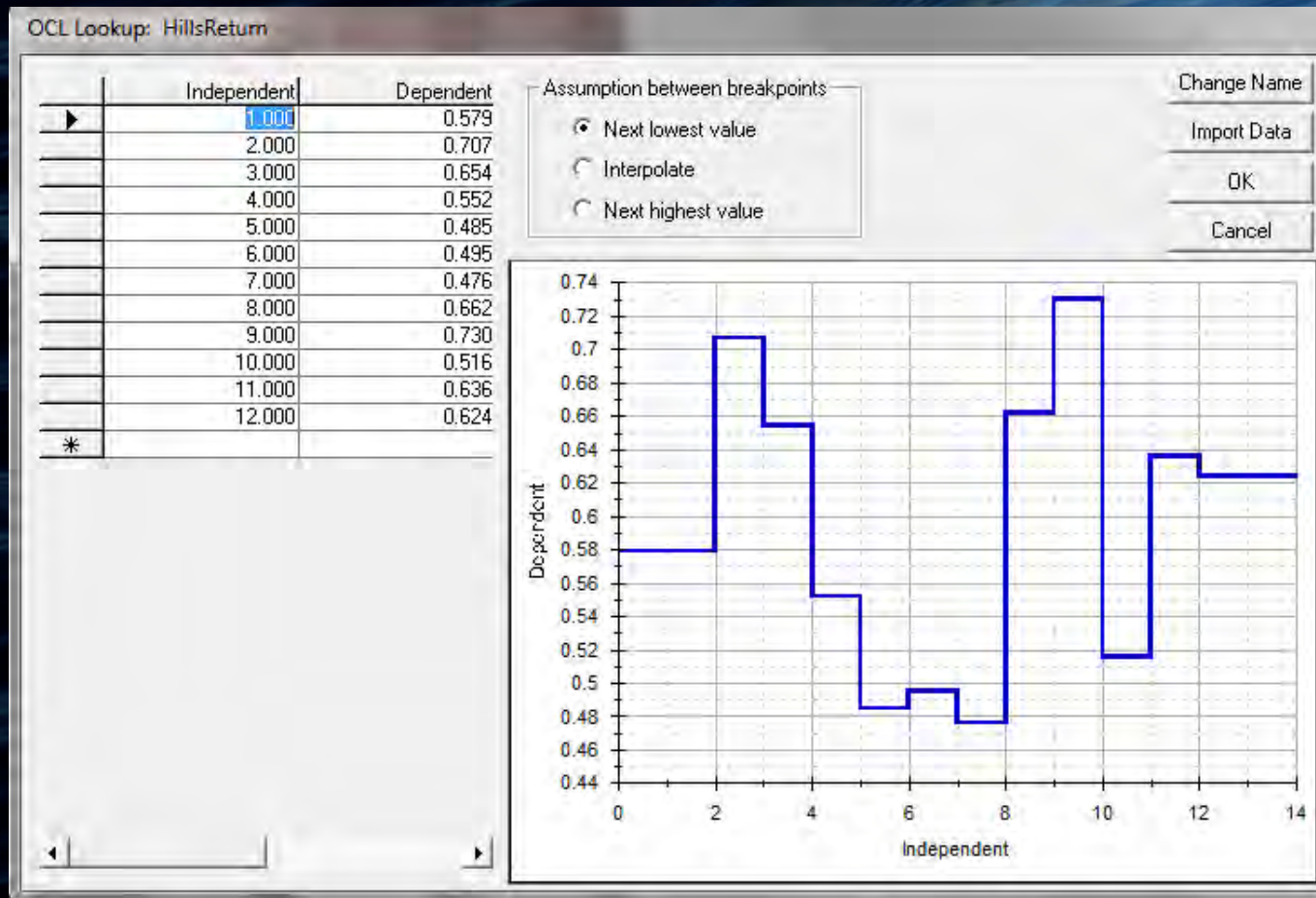
July 23, 2012



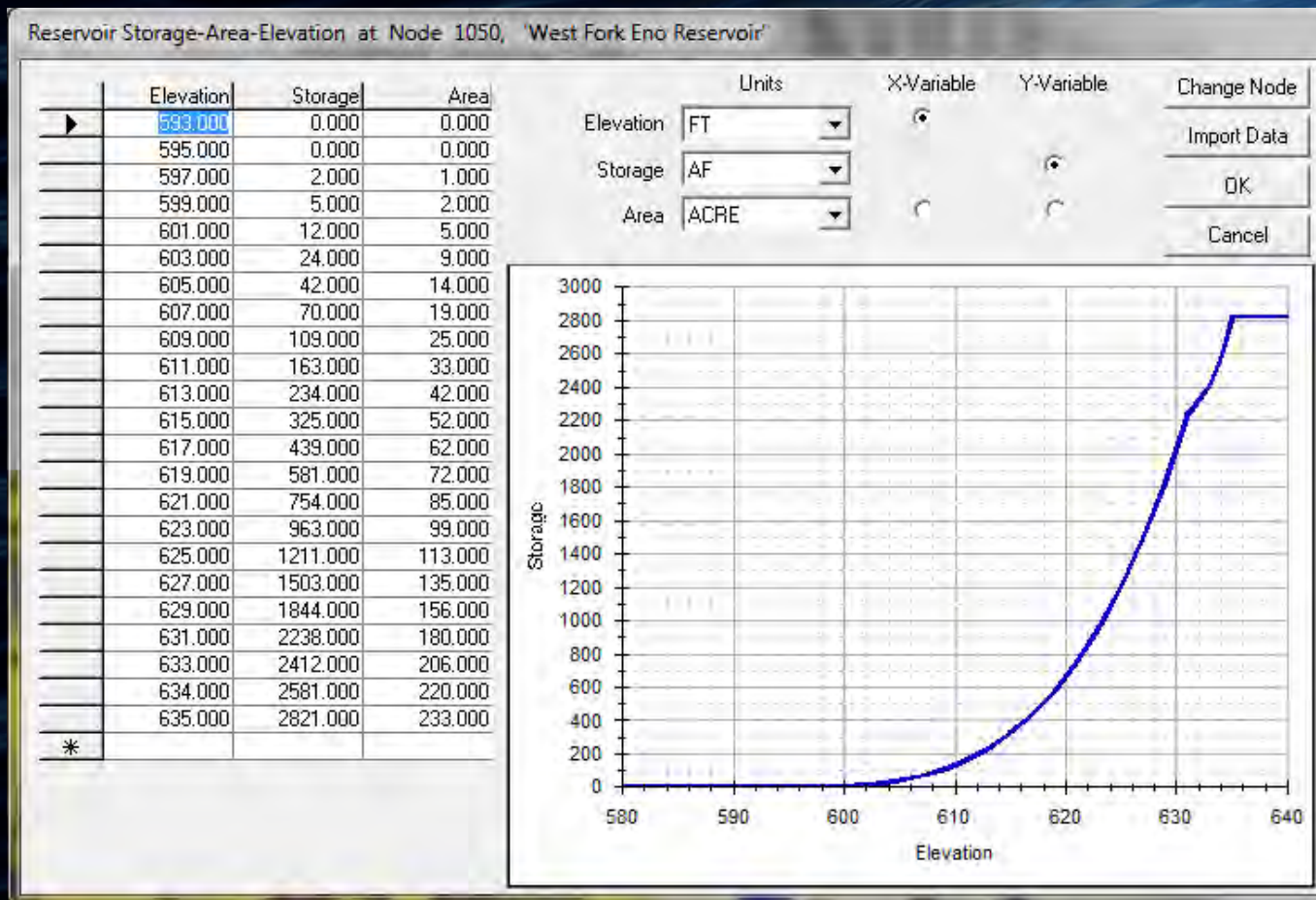
# Hillsborough Demand Pattern



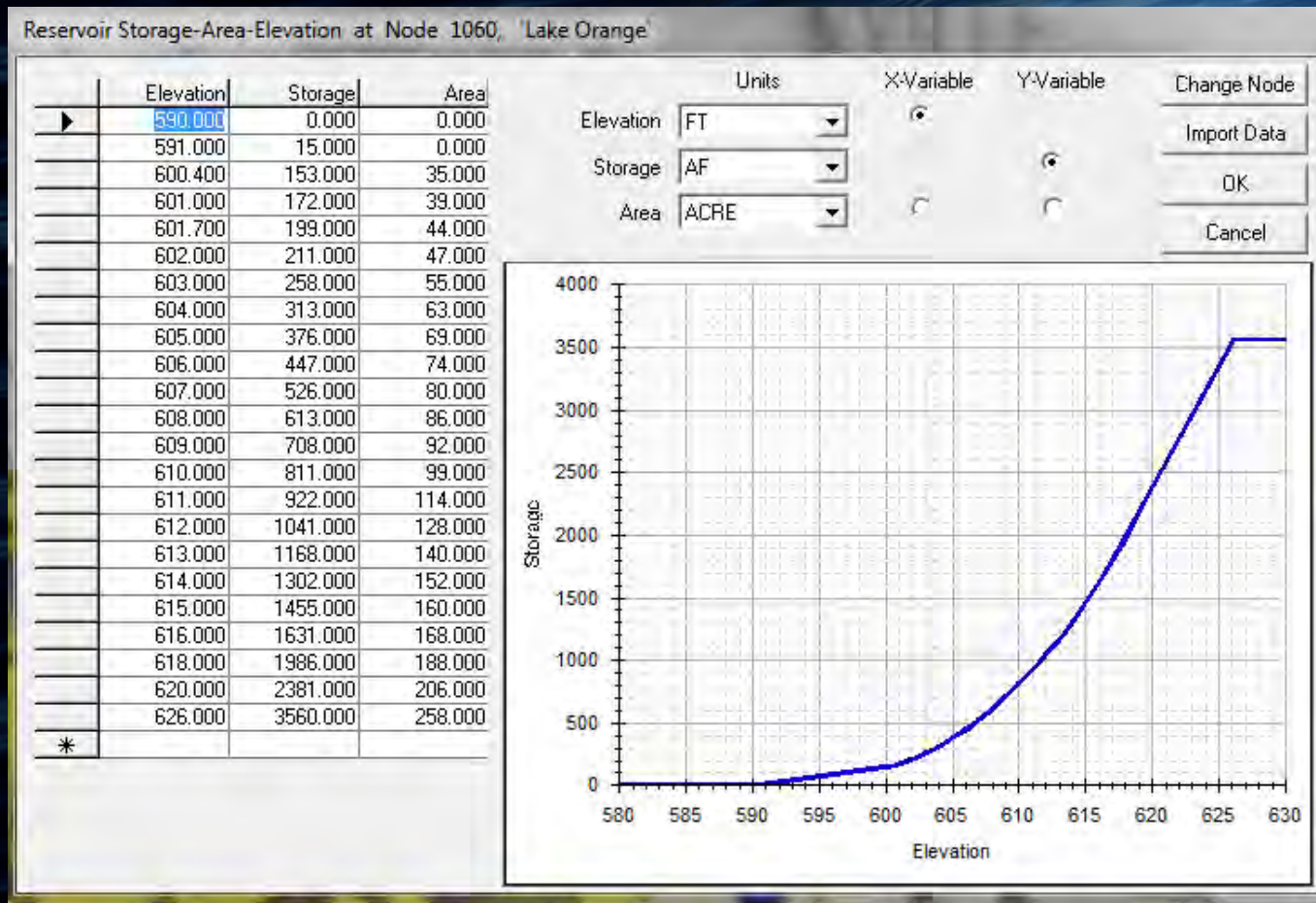
# Hillsborough Discharge Pattern



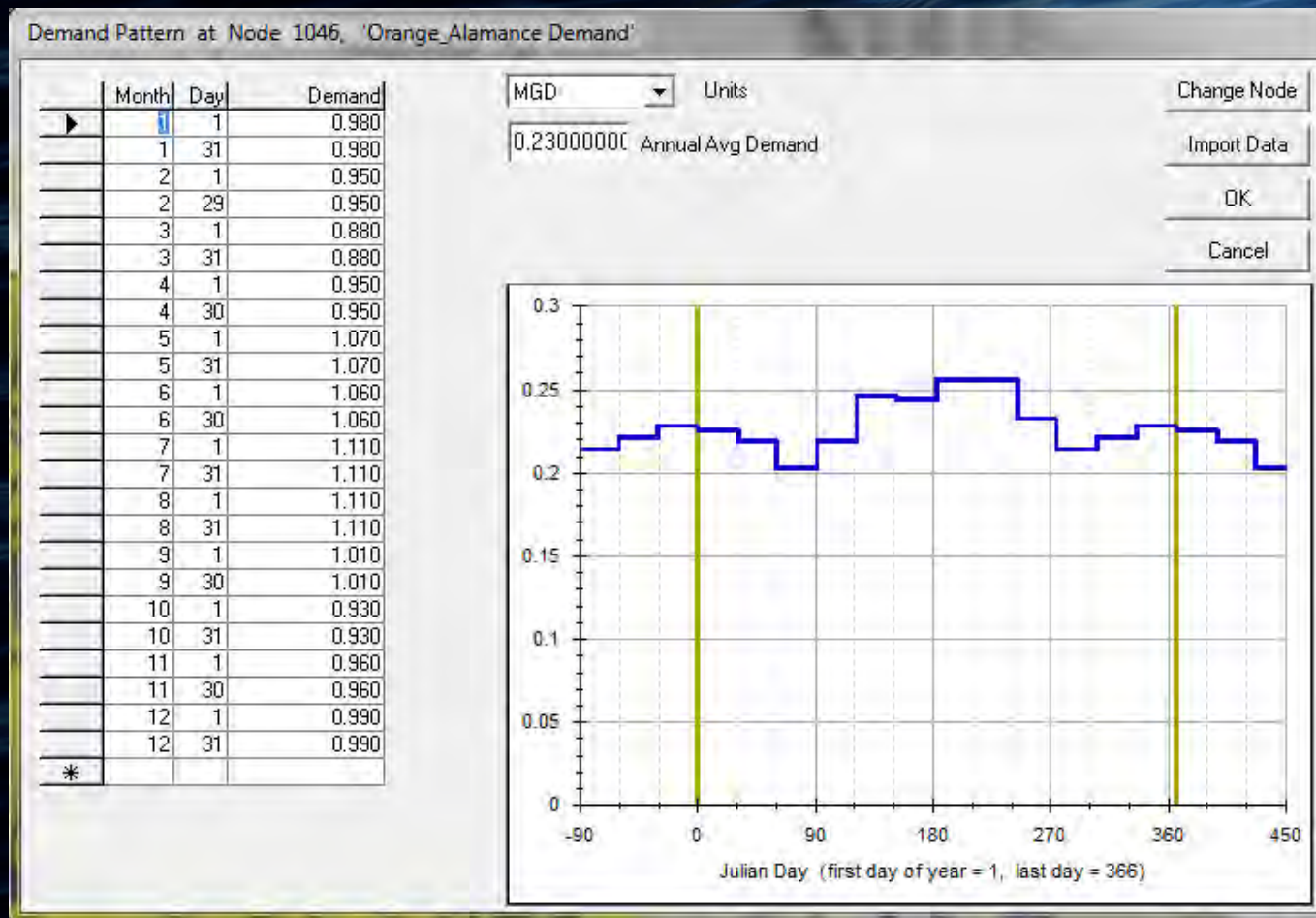
# WFER SAE Curve



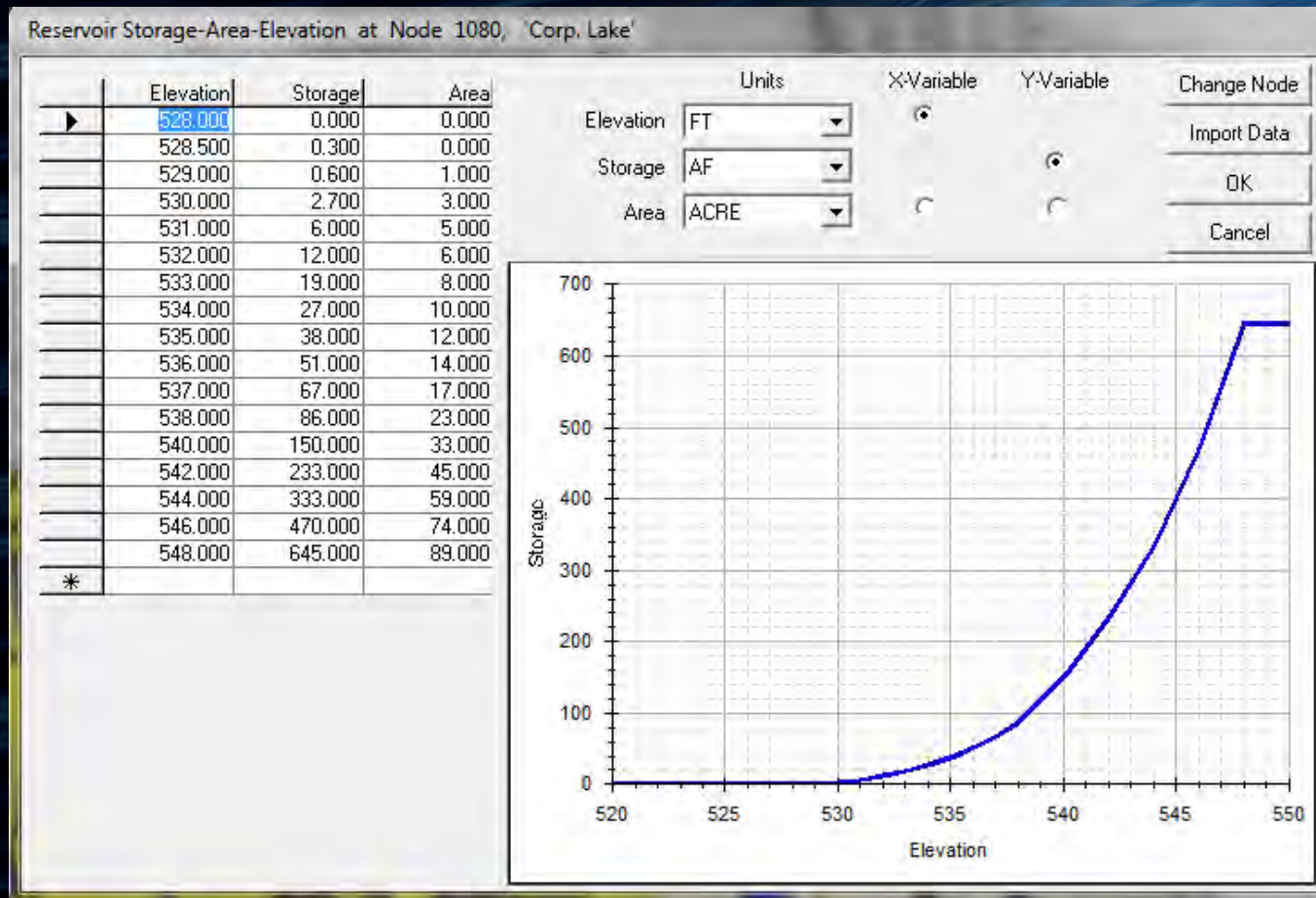
# Lake Orange SAE Curve



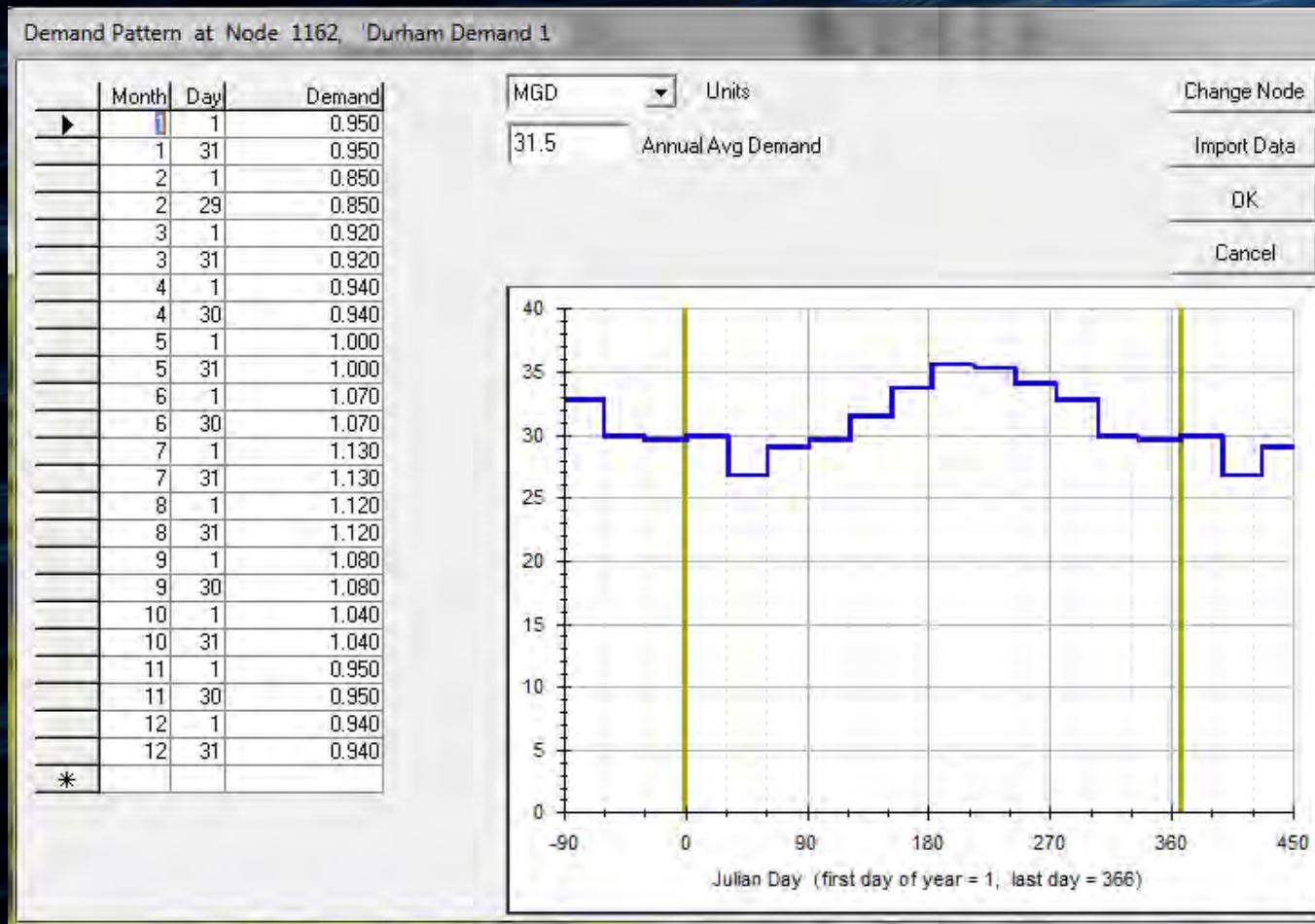
# Orange-Alamance Demand Pattern



# Corporation Lake SAE Curve

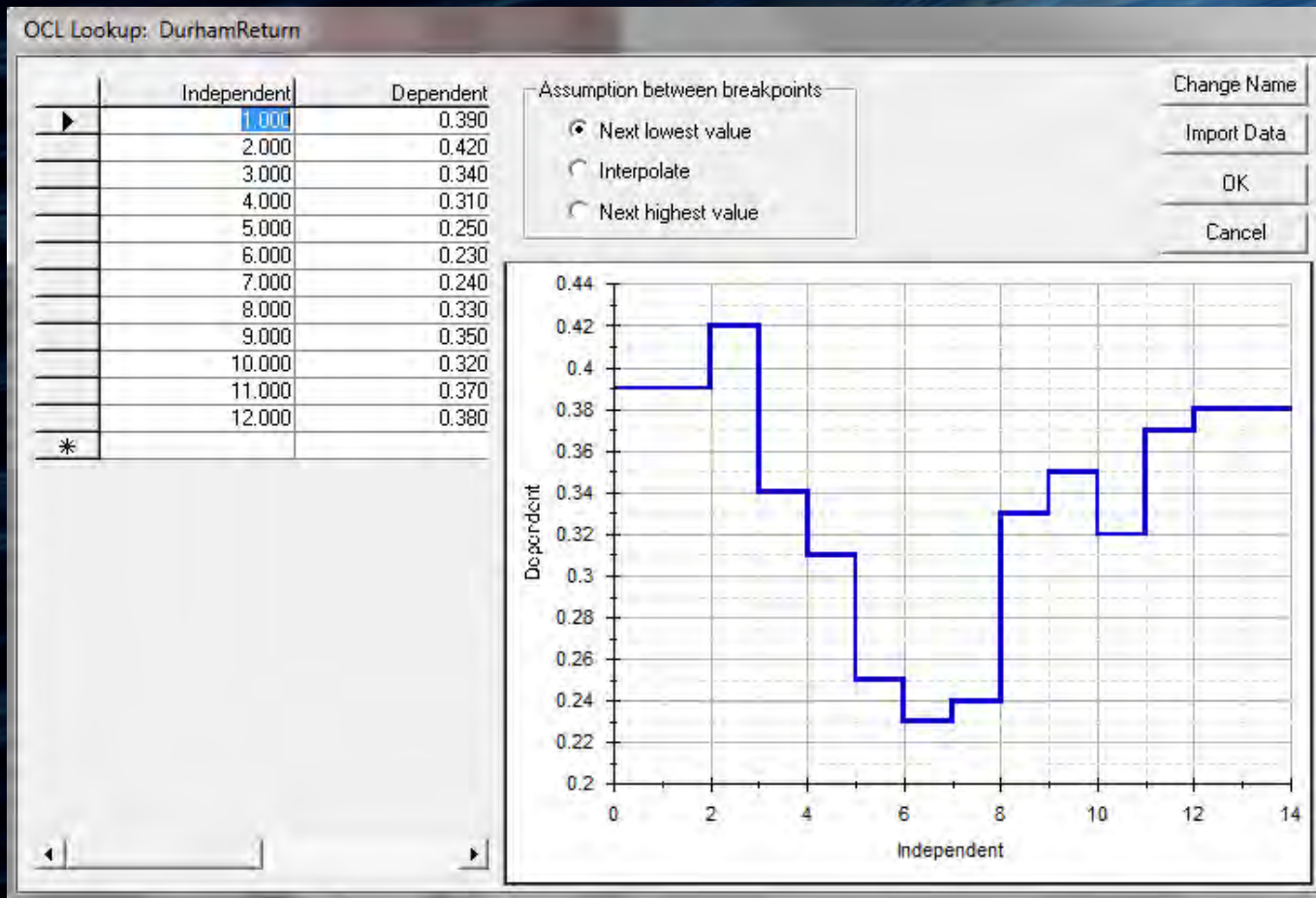


# Durham Demand Pattern

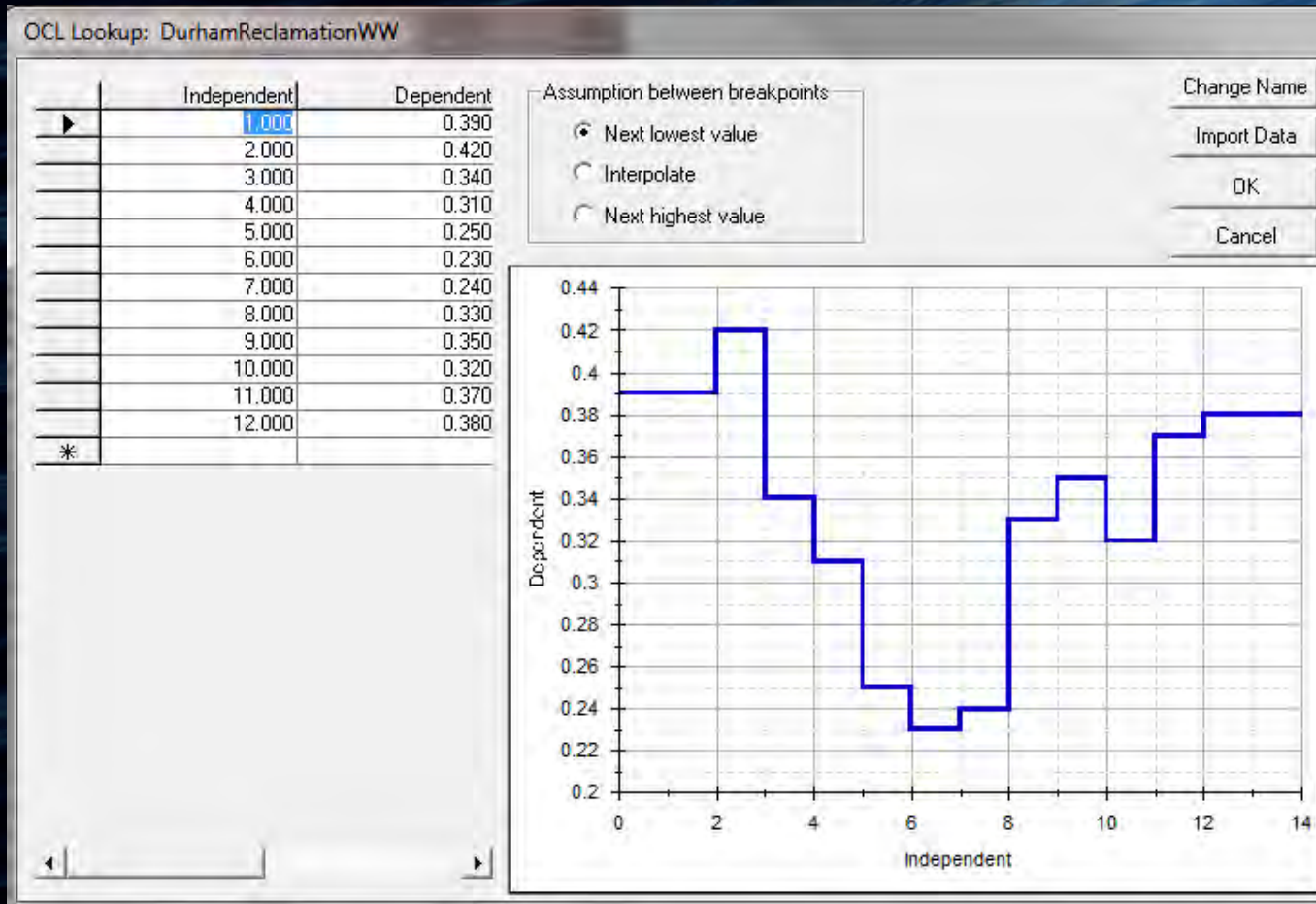




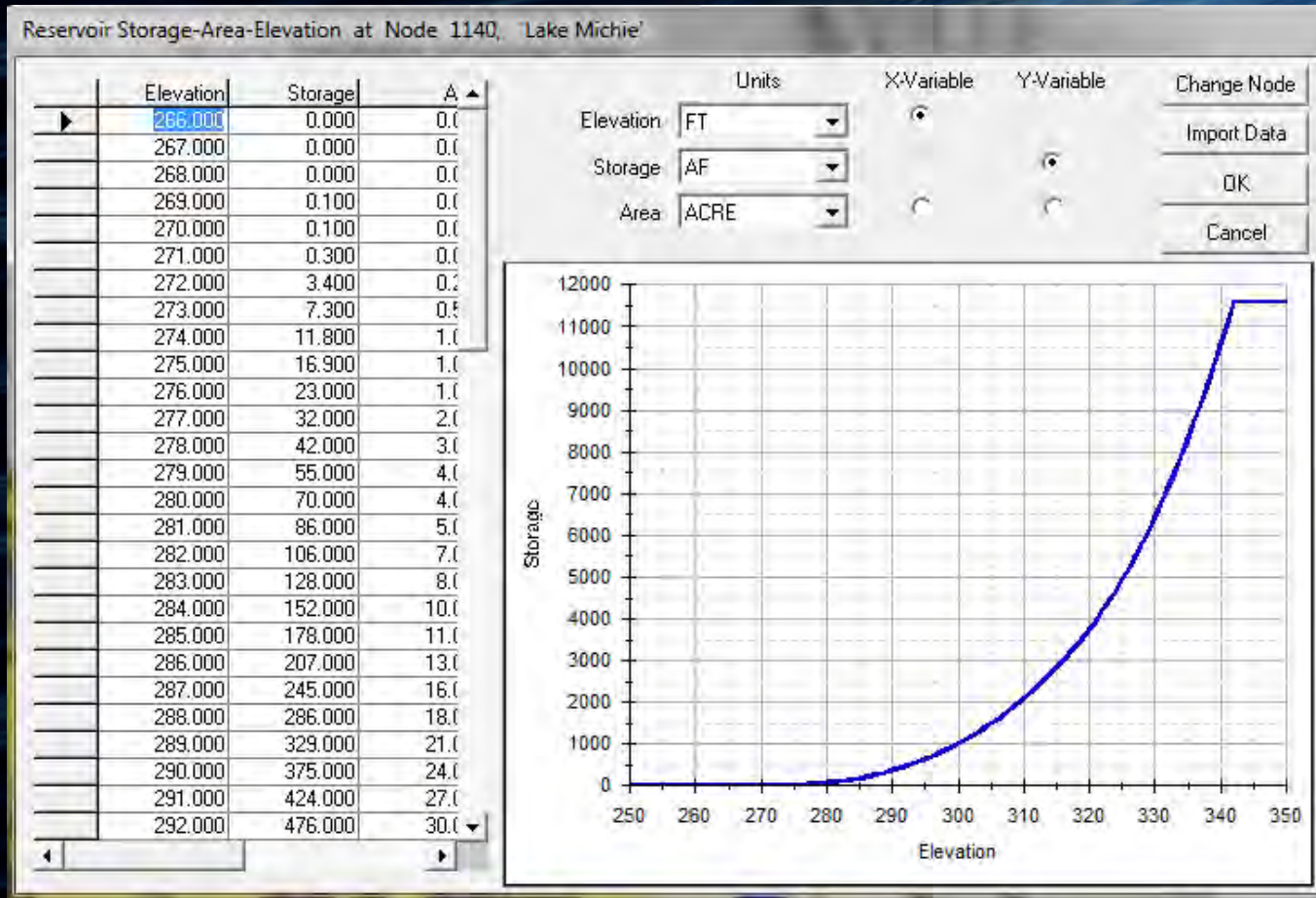
# Durham Neuse Discharge Pattern



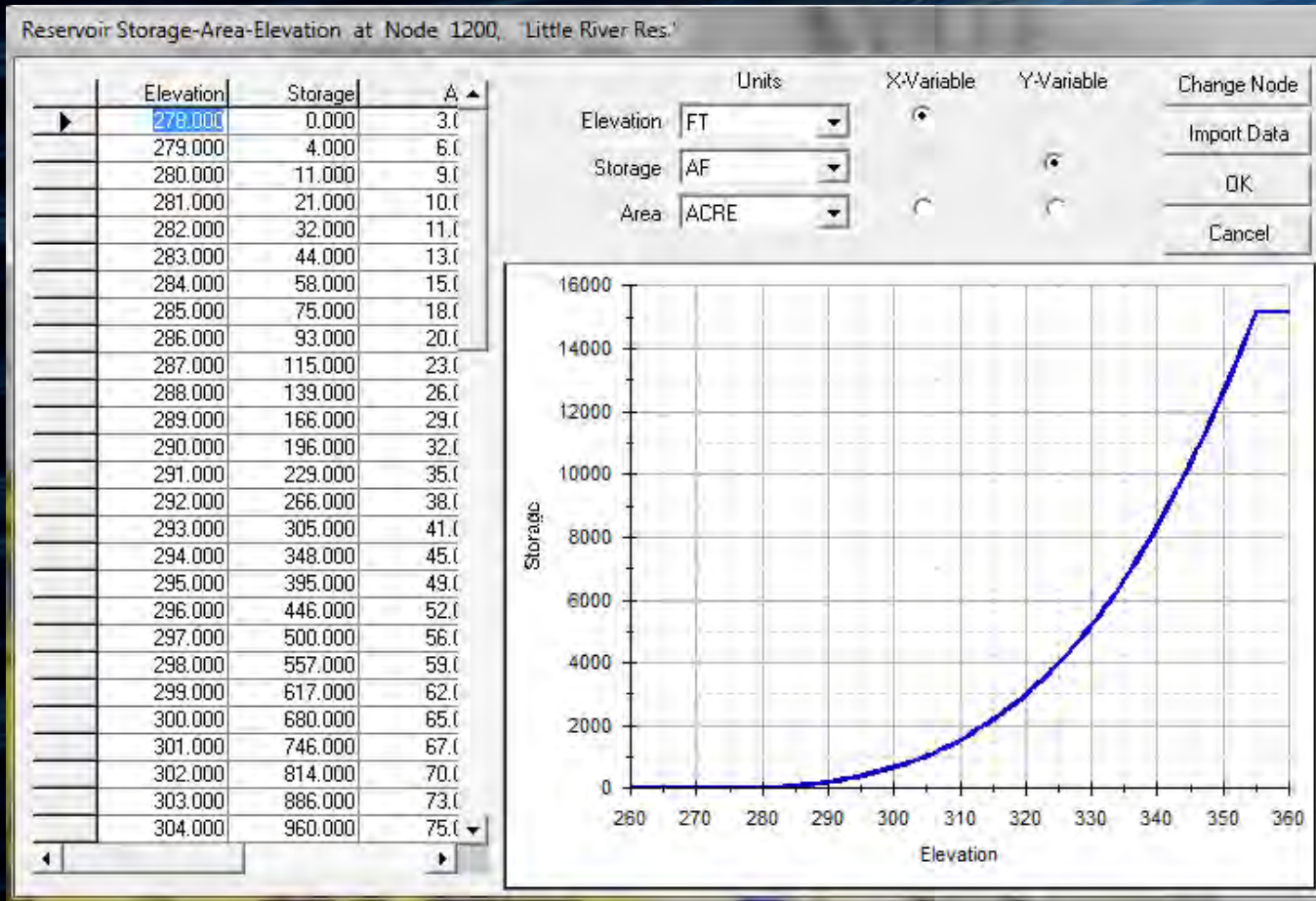
# Durham Cape Fear Discharge Pattern



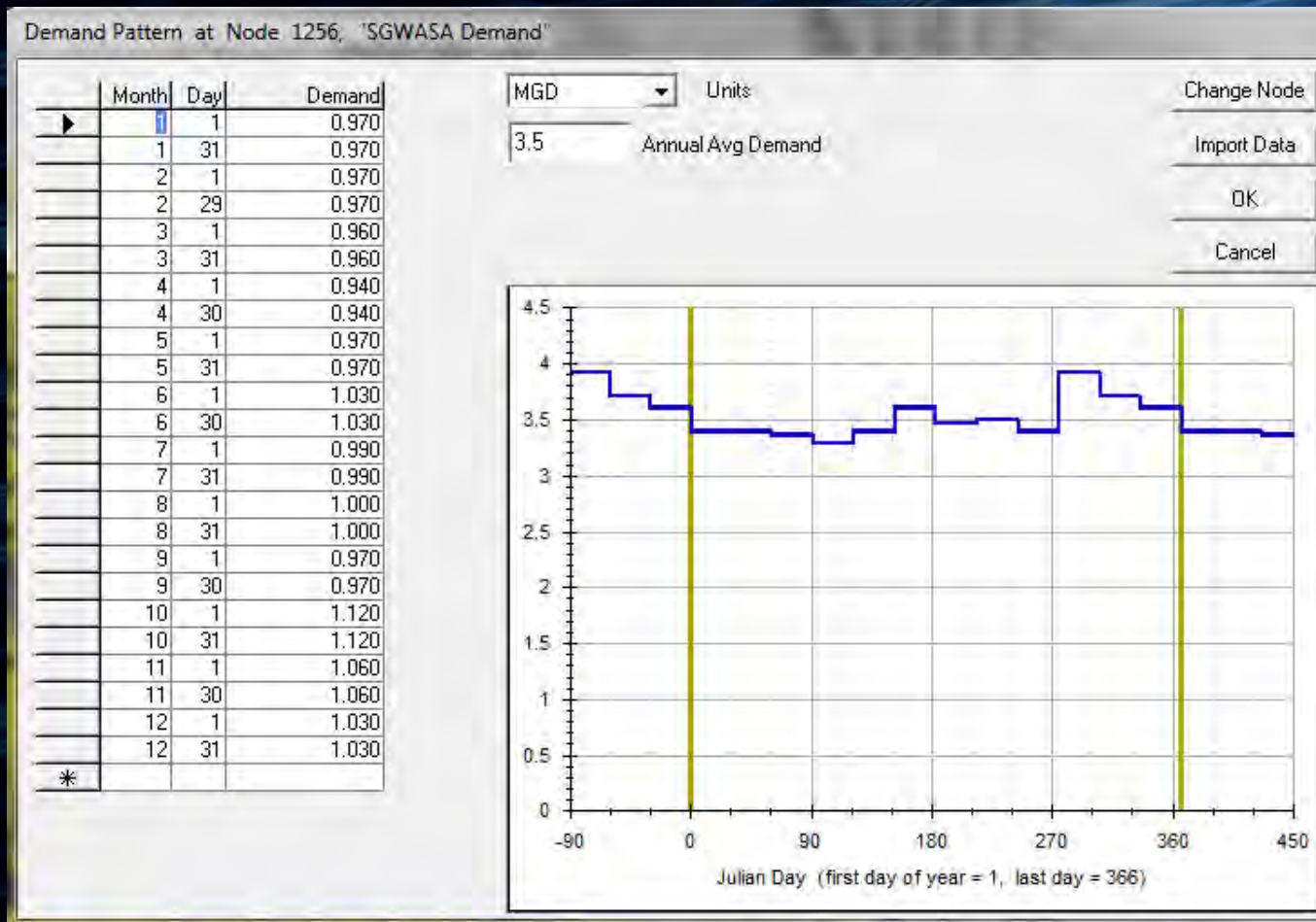
# Lake Michie SAE Curve



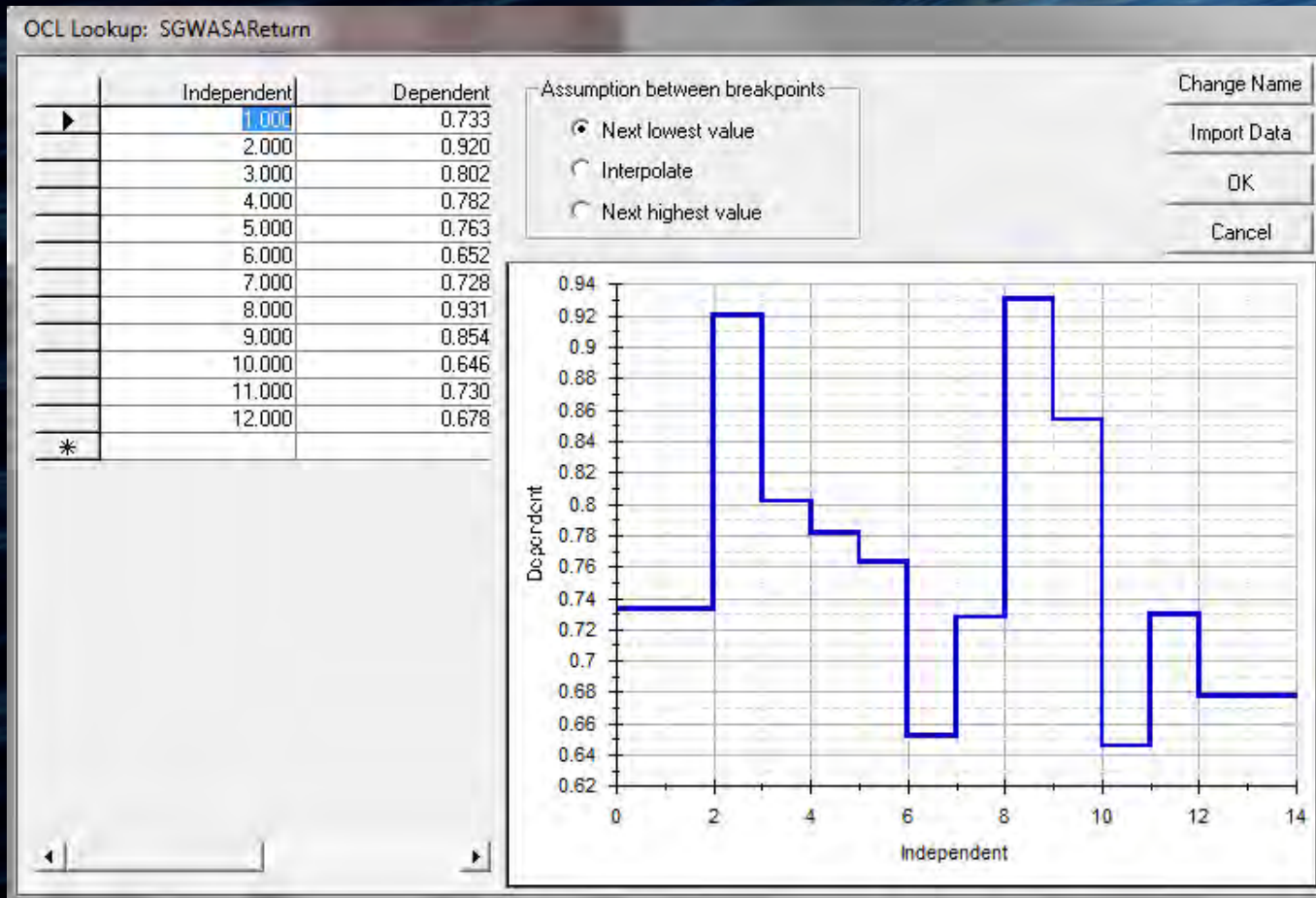
# Little River Reservoir SAE Curve



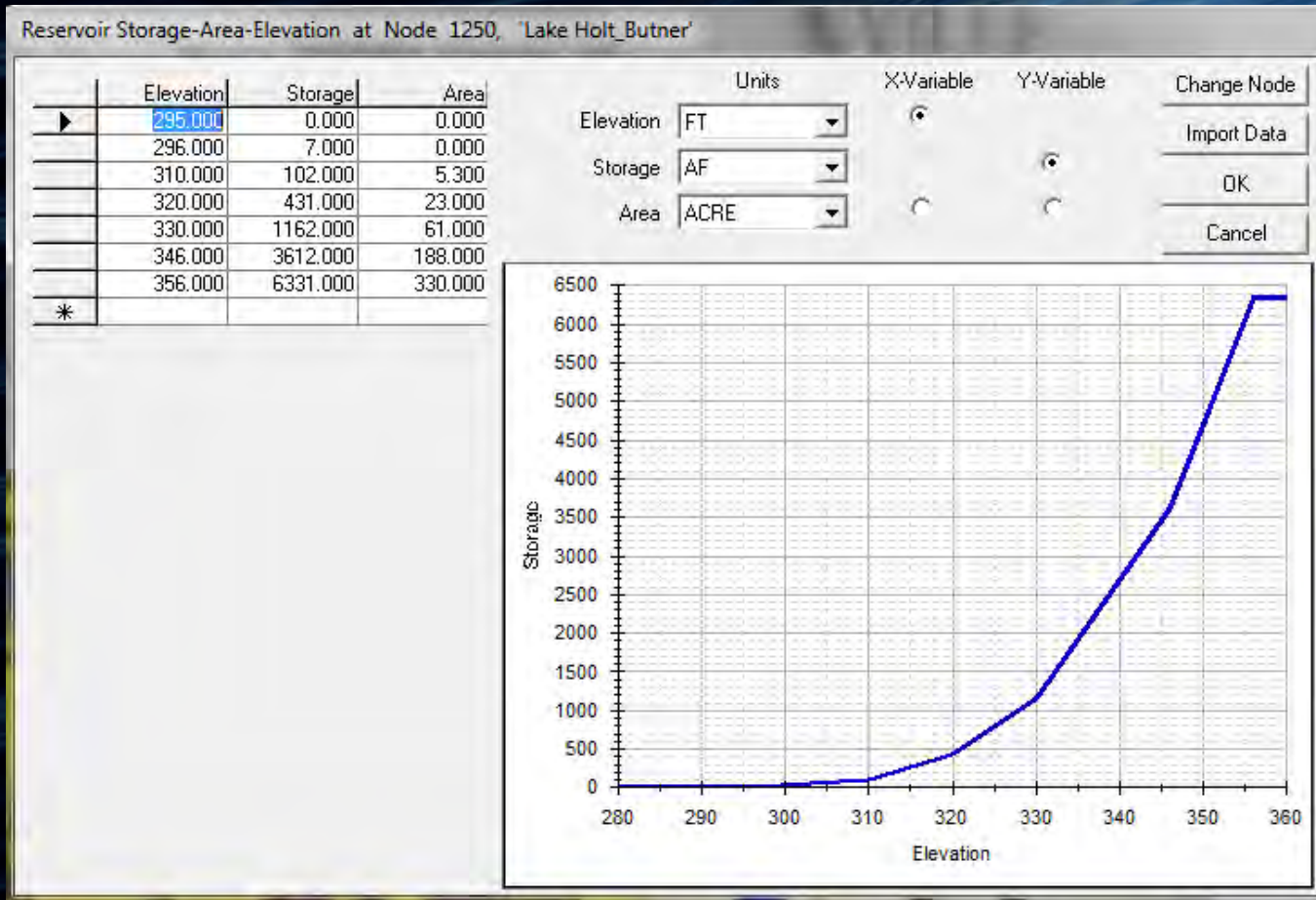
# SGWASA Demand Pattern



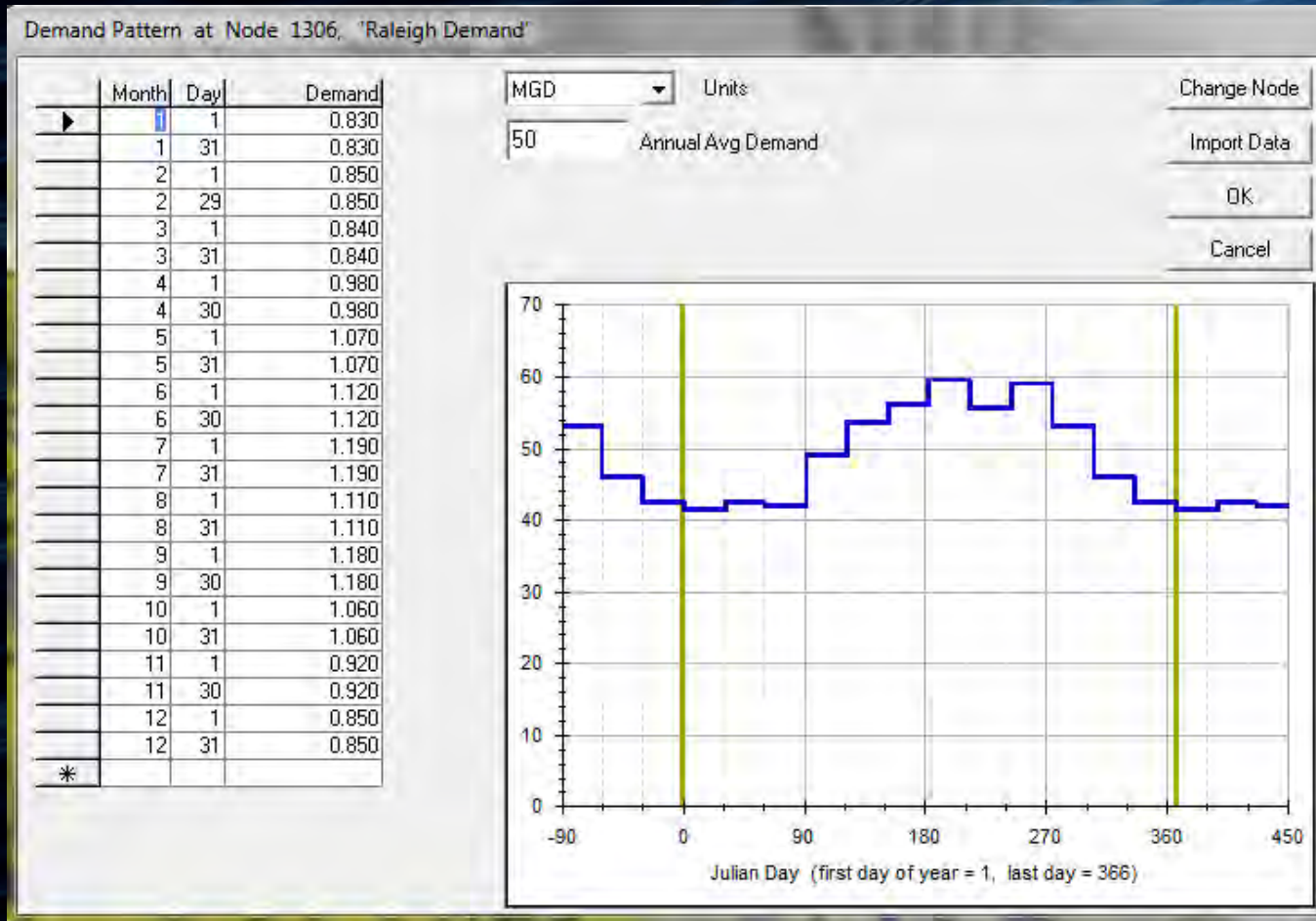
# SGWASA Discharge Pattern



# Lake Holt SAE Curve

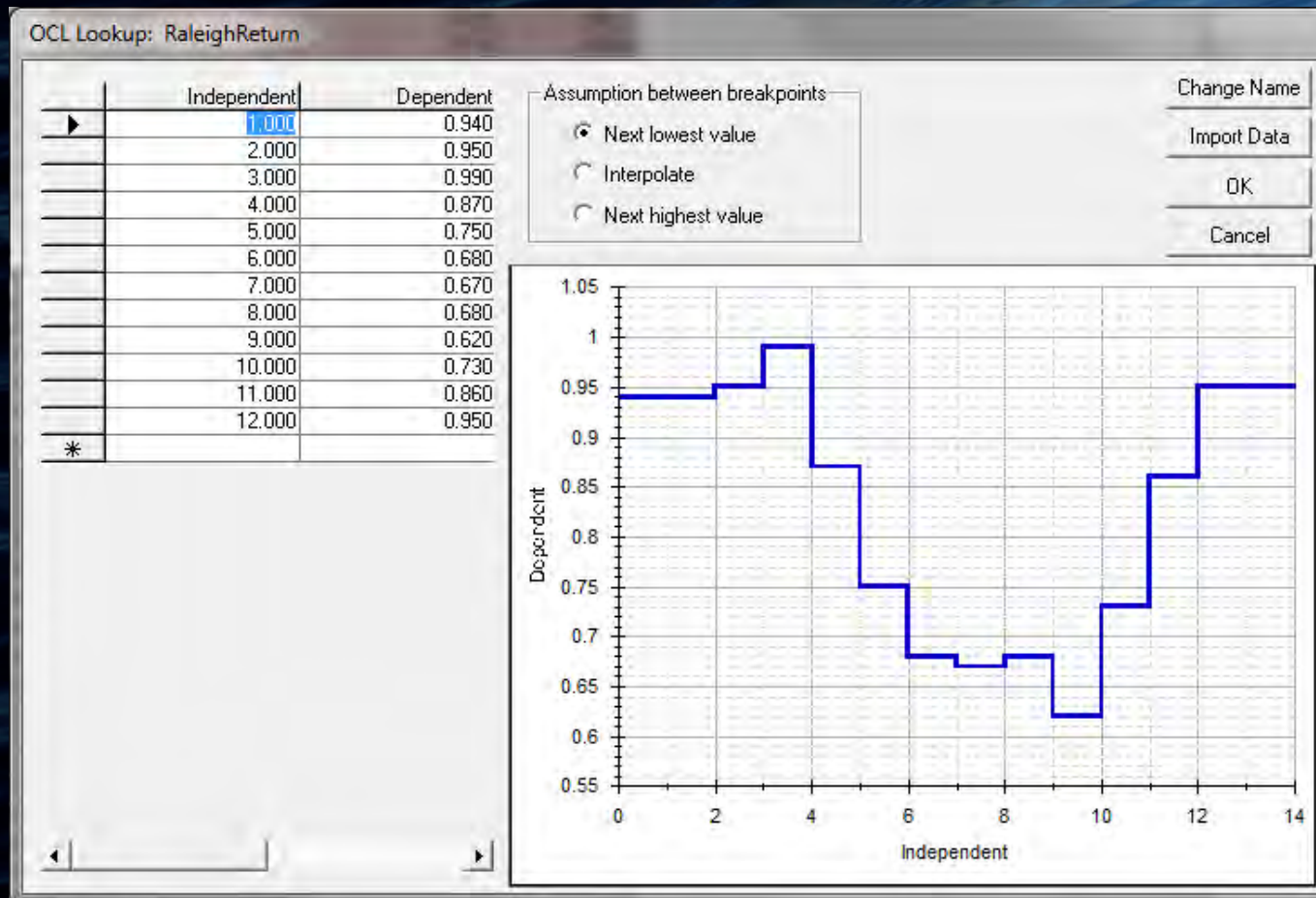


# Raleigh Demand Pattern

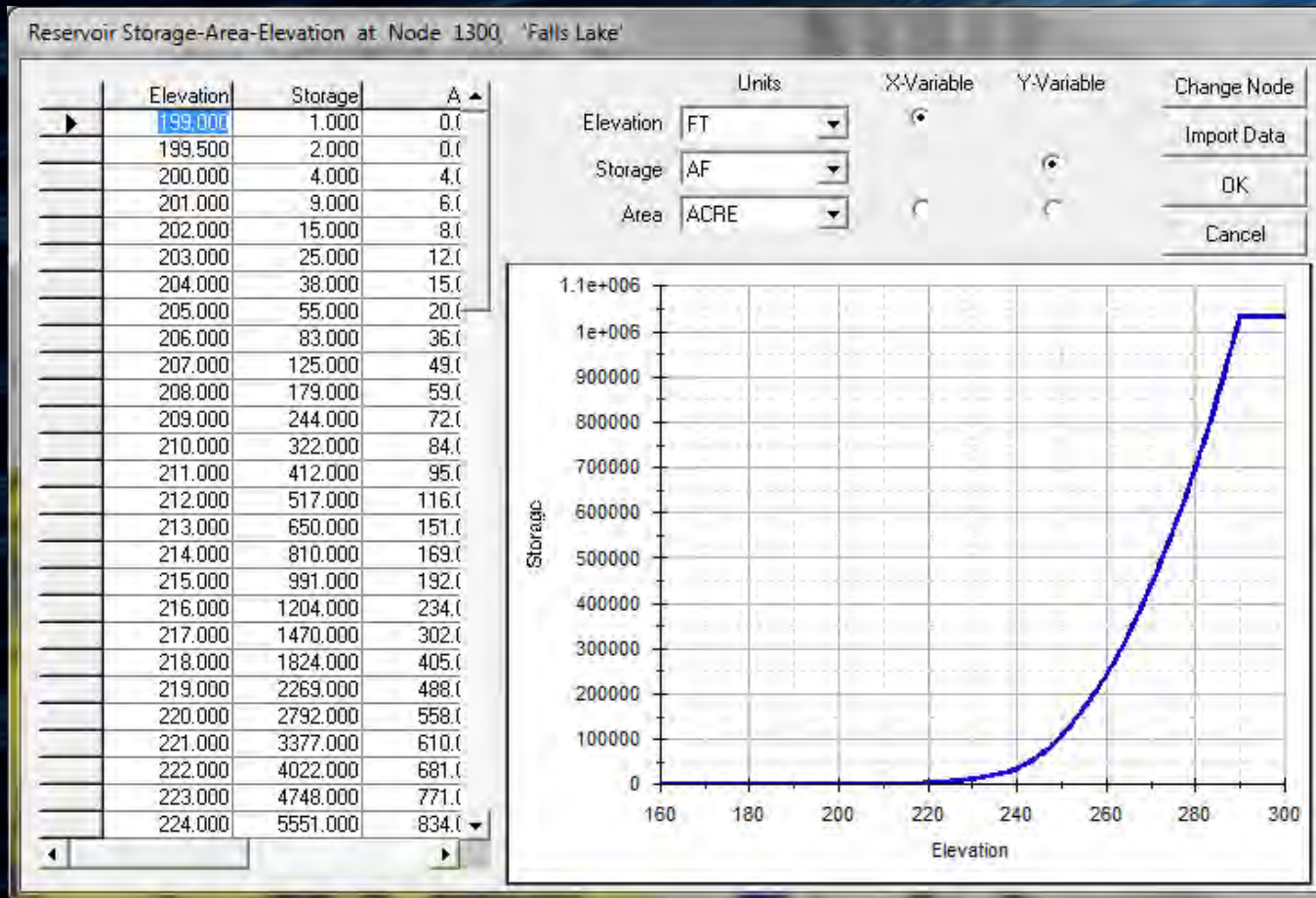




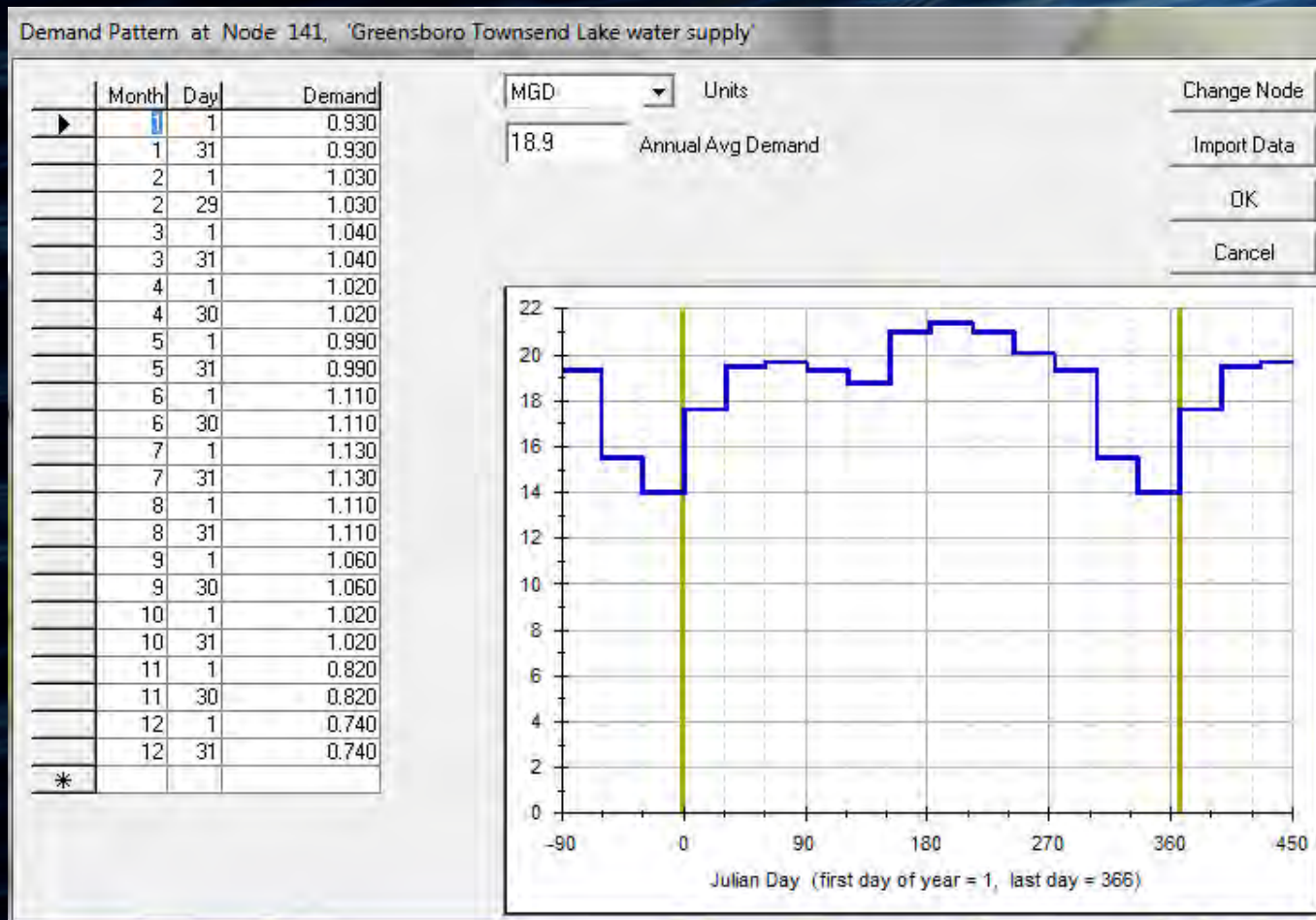
# Raleigh Discharge Pattern



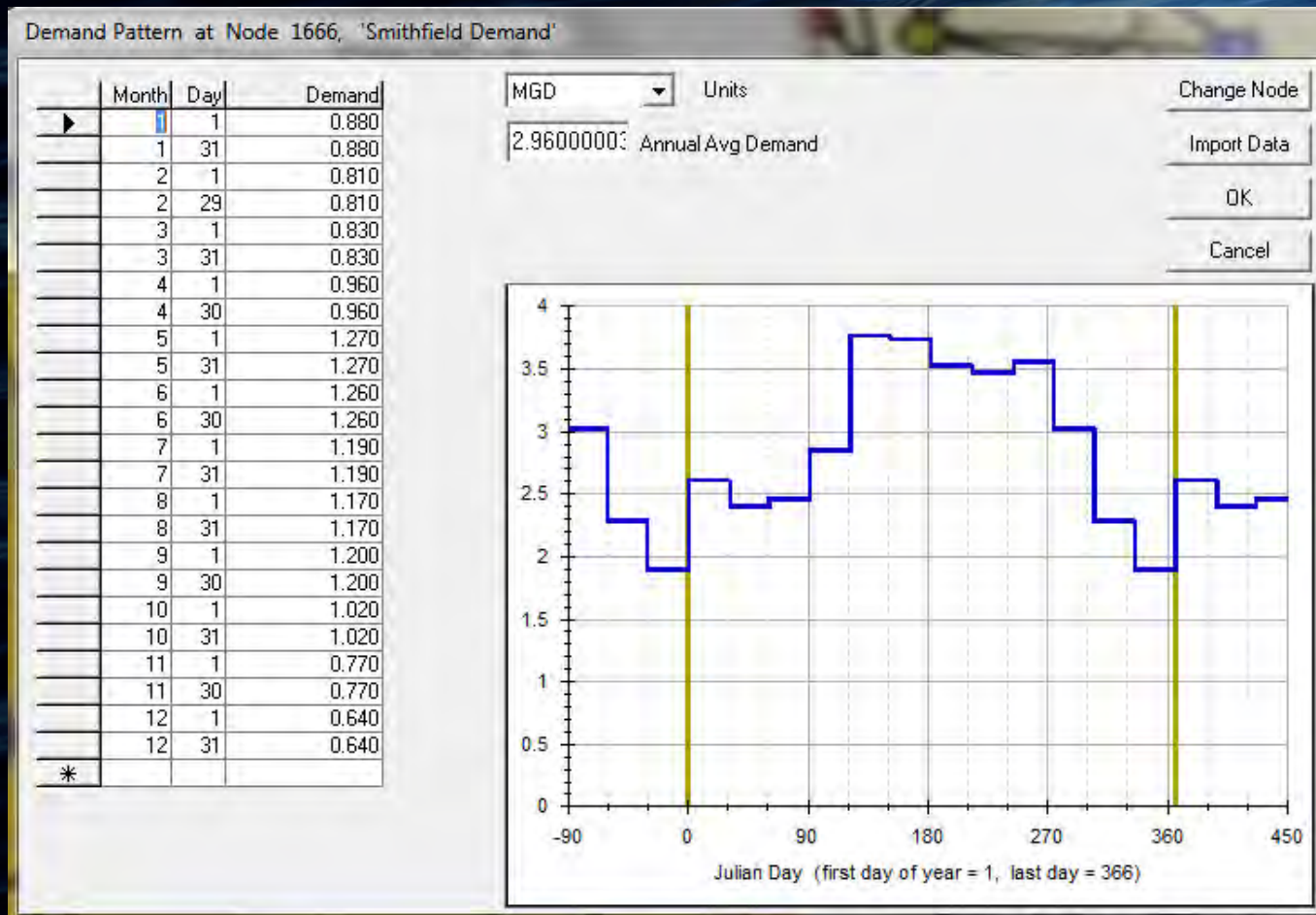
# Falls Lake SAE Curve



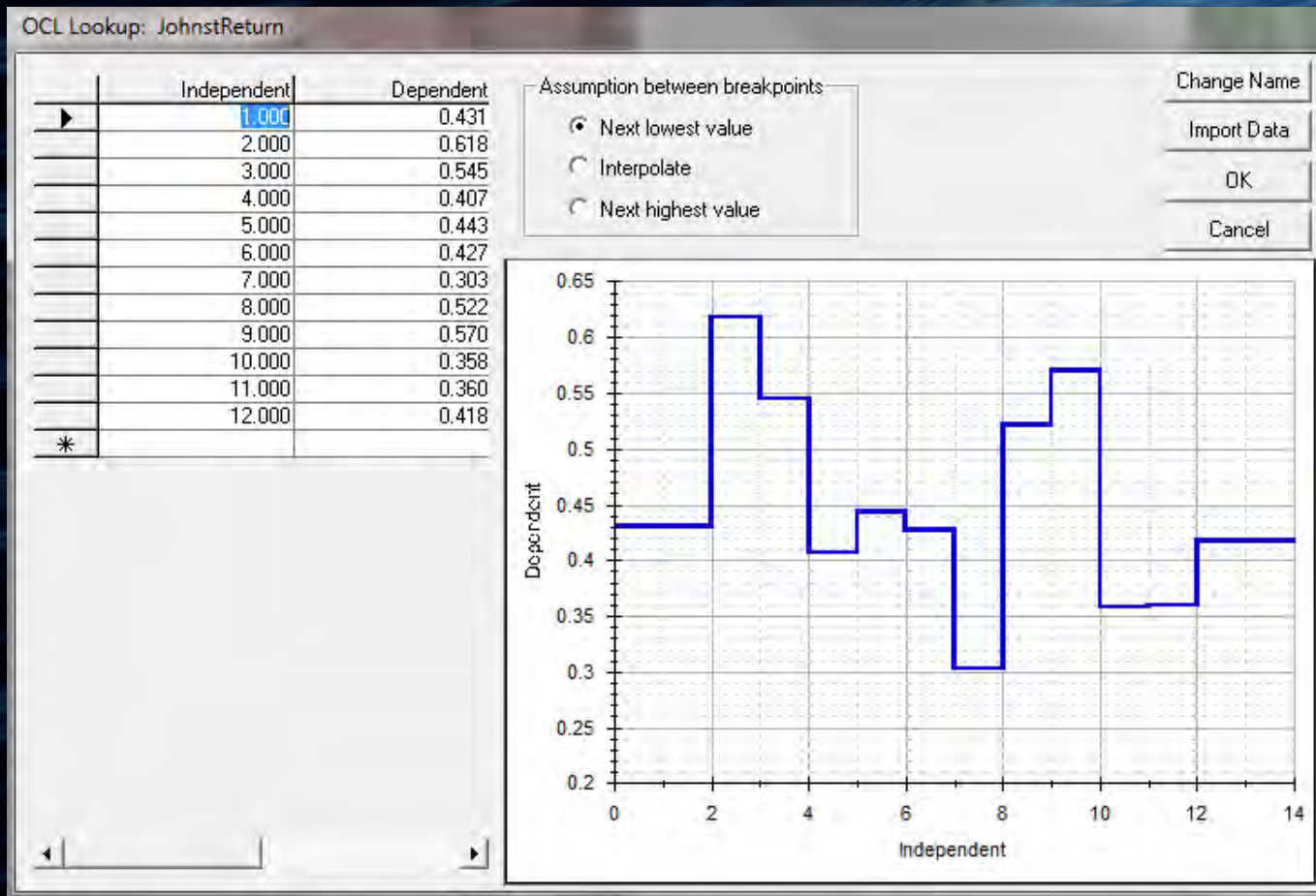
# Johnston Co. Demand Pattern



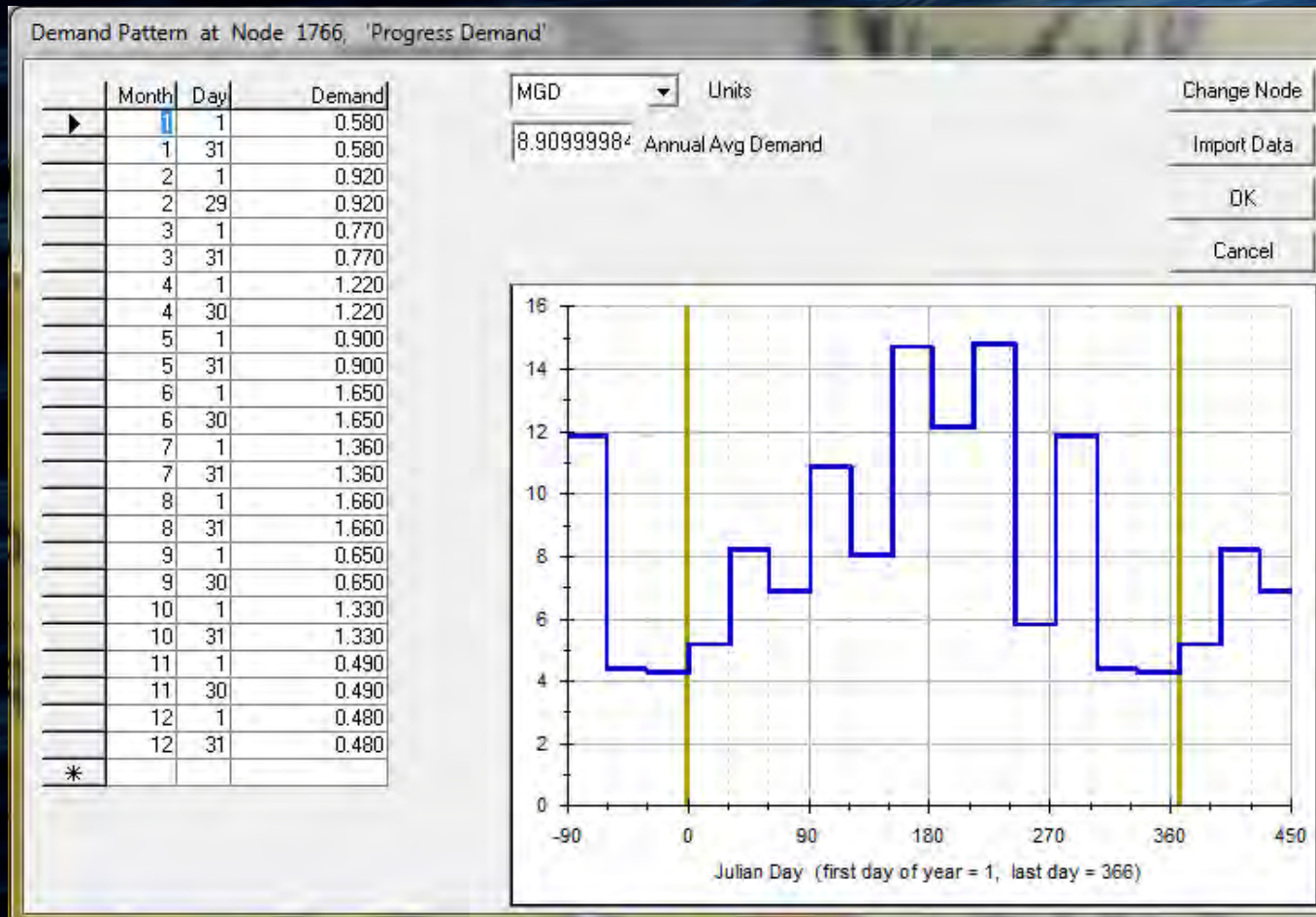
# Smithfield Demand Pattern



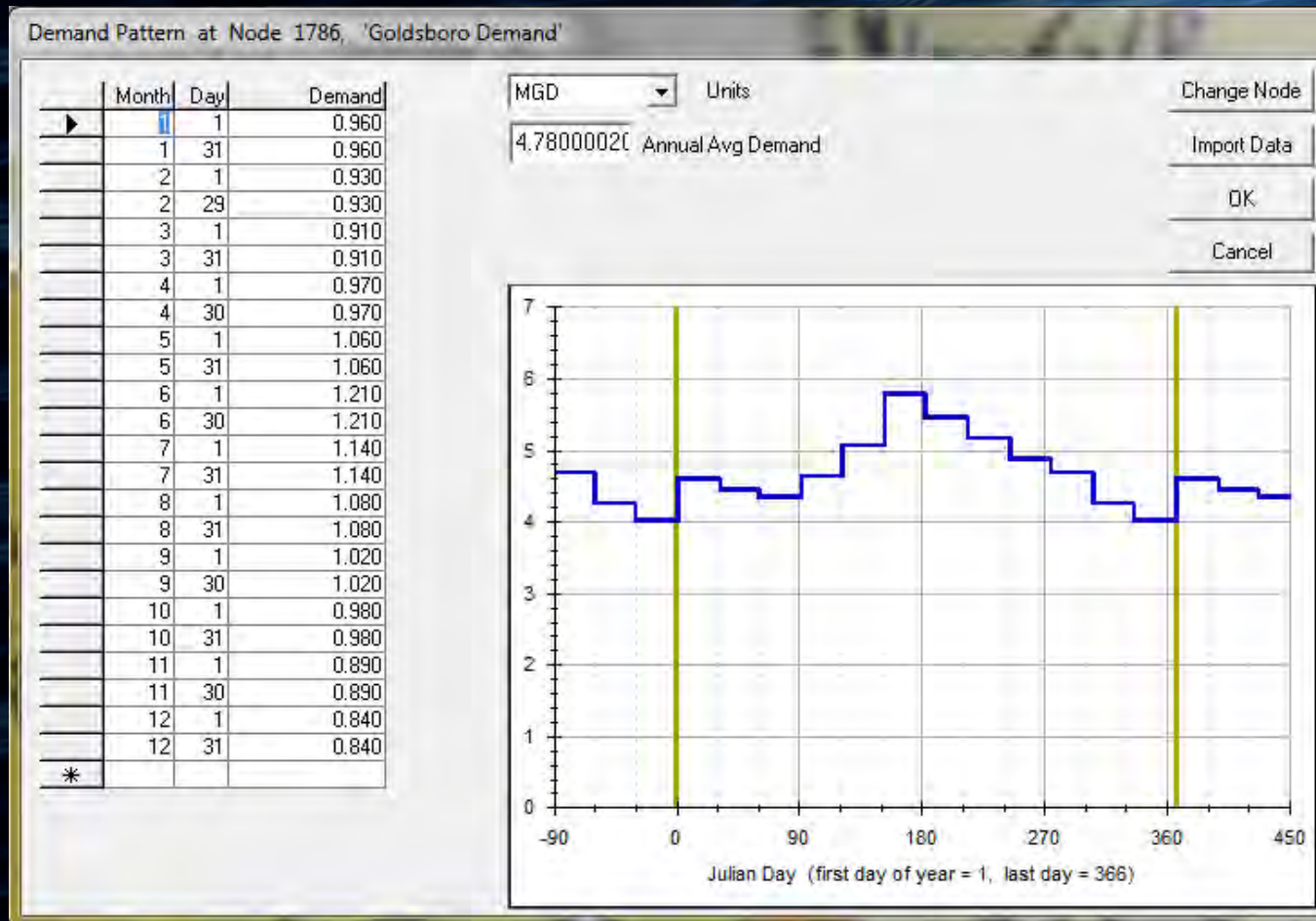
# Johnston Co. (includes Smithfield) Discharge Pattern



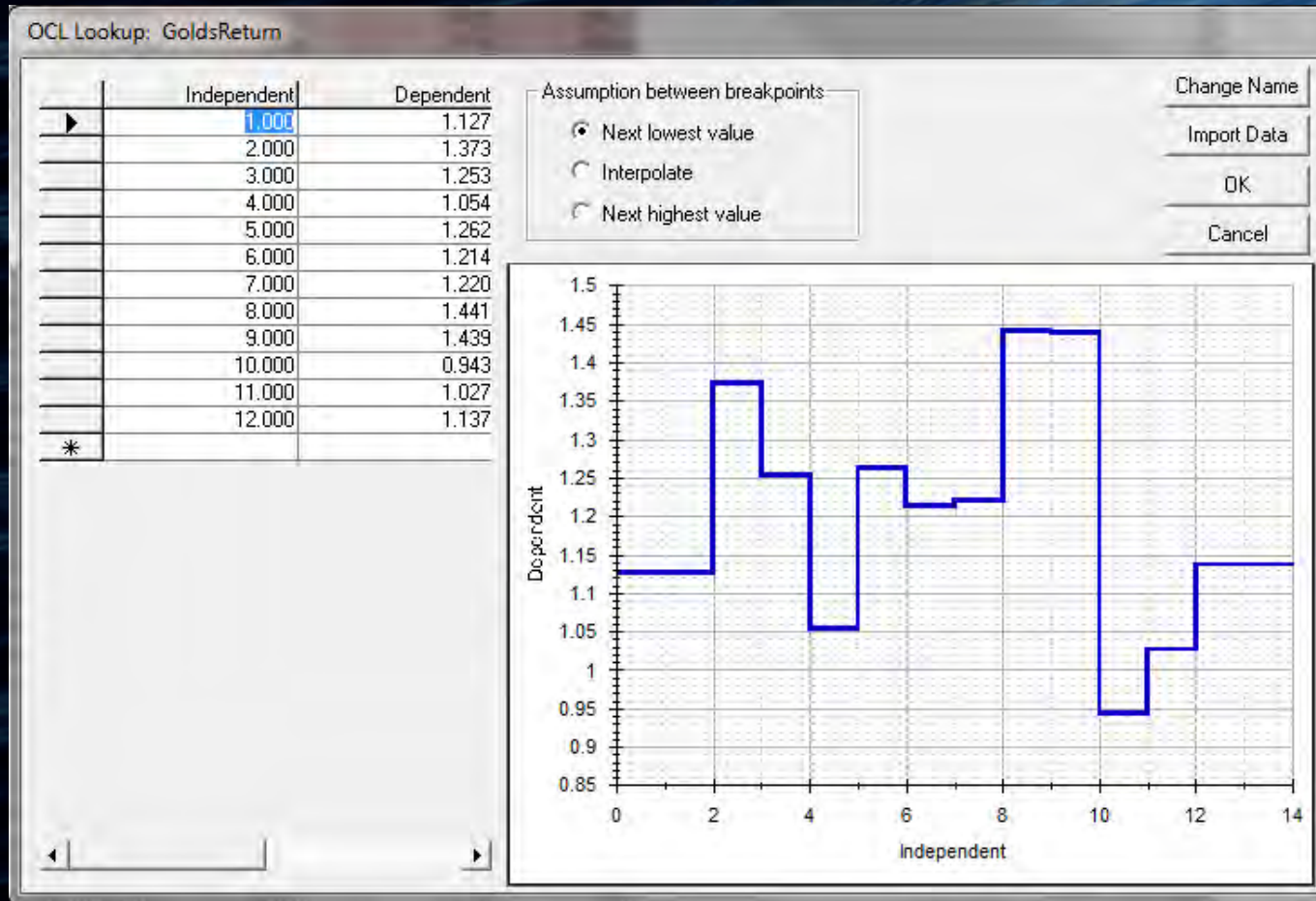
# Progress Lee Demand (Net) Pattern



# Goldsboro Demand Pattern

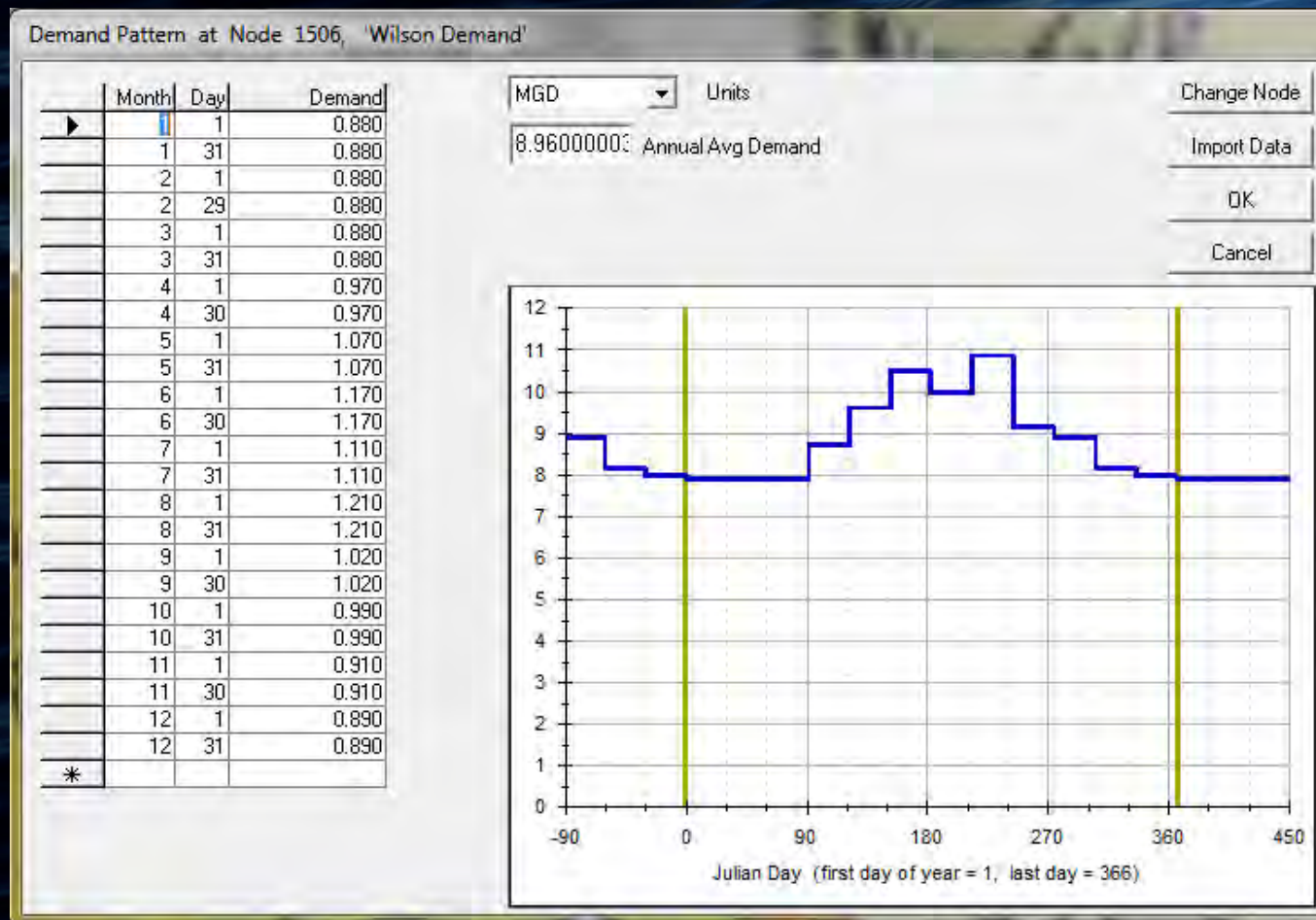


# Goldsboro Discharge Pattern

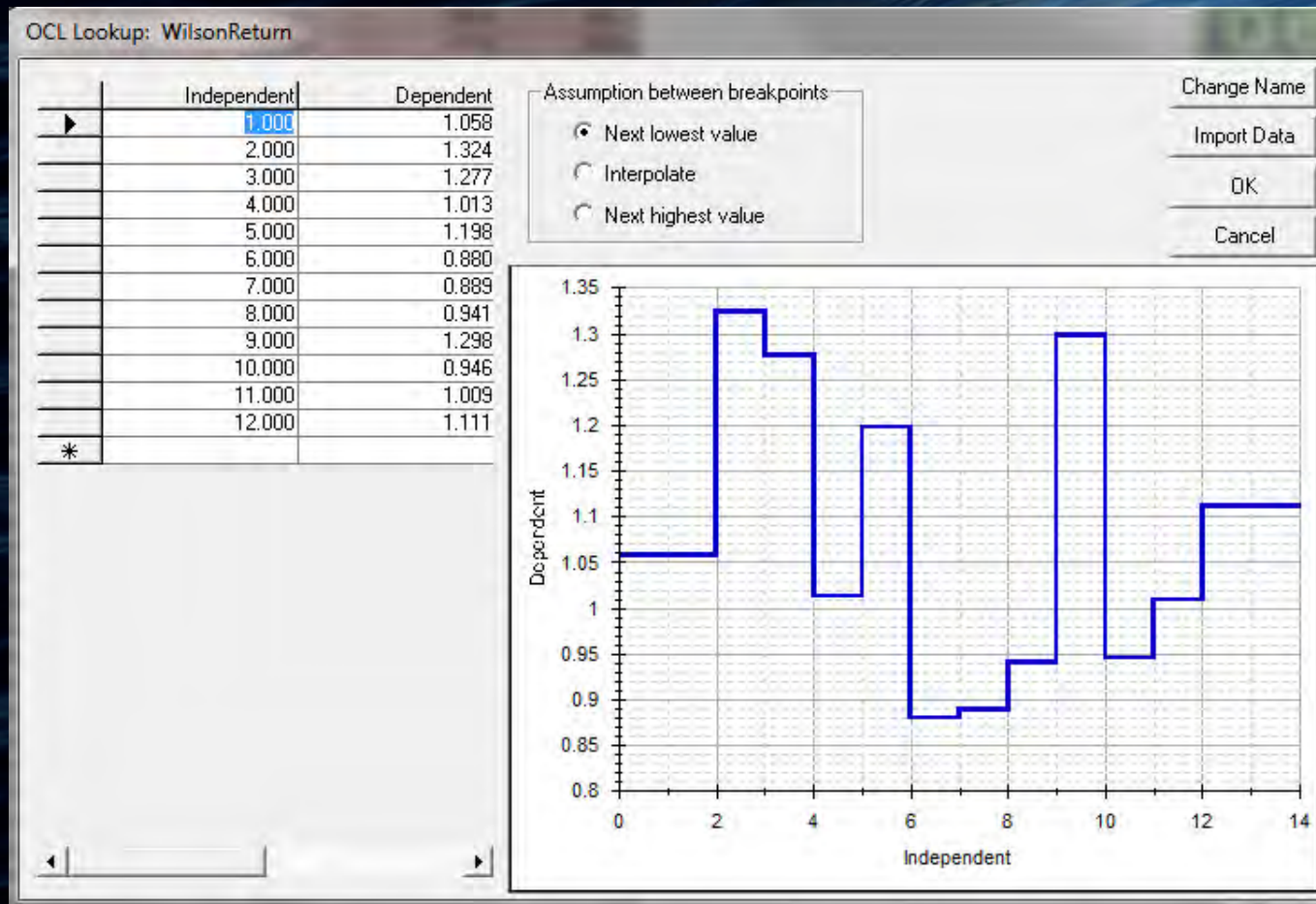




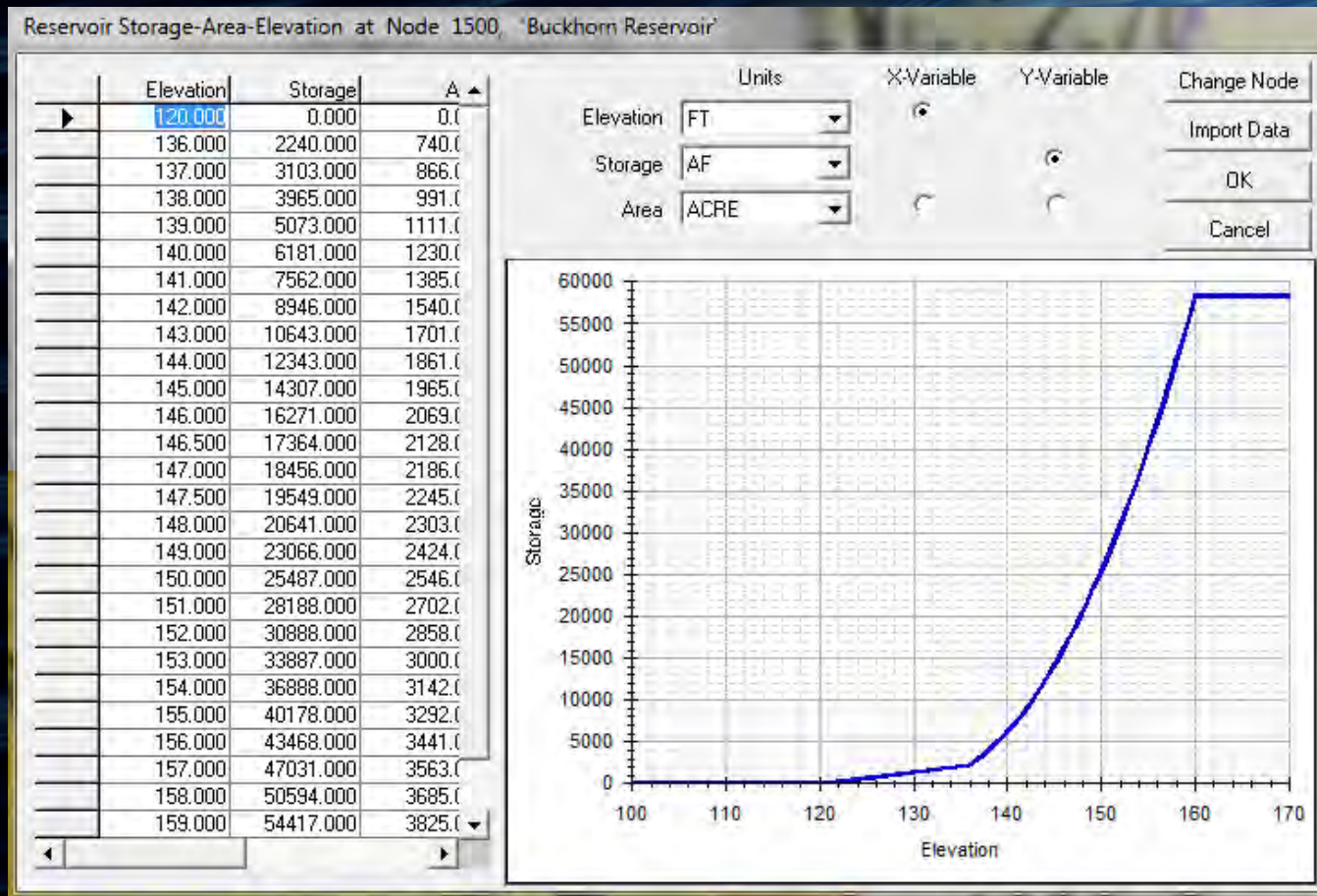
# Wilson Demand Pattern



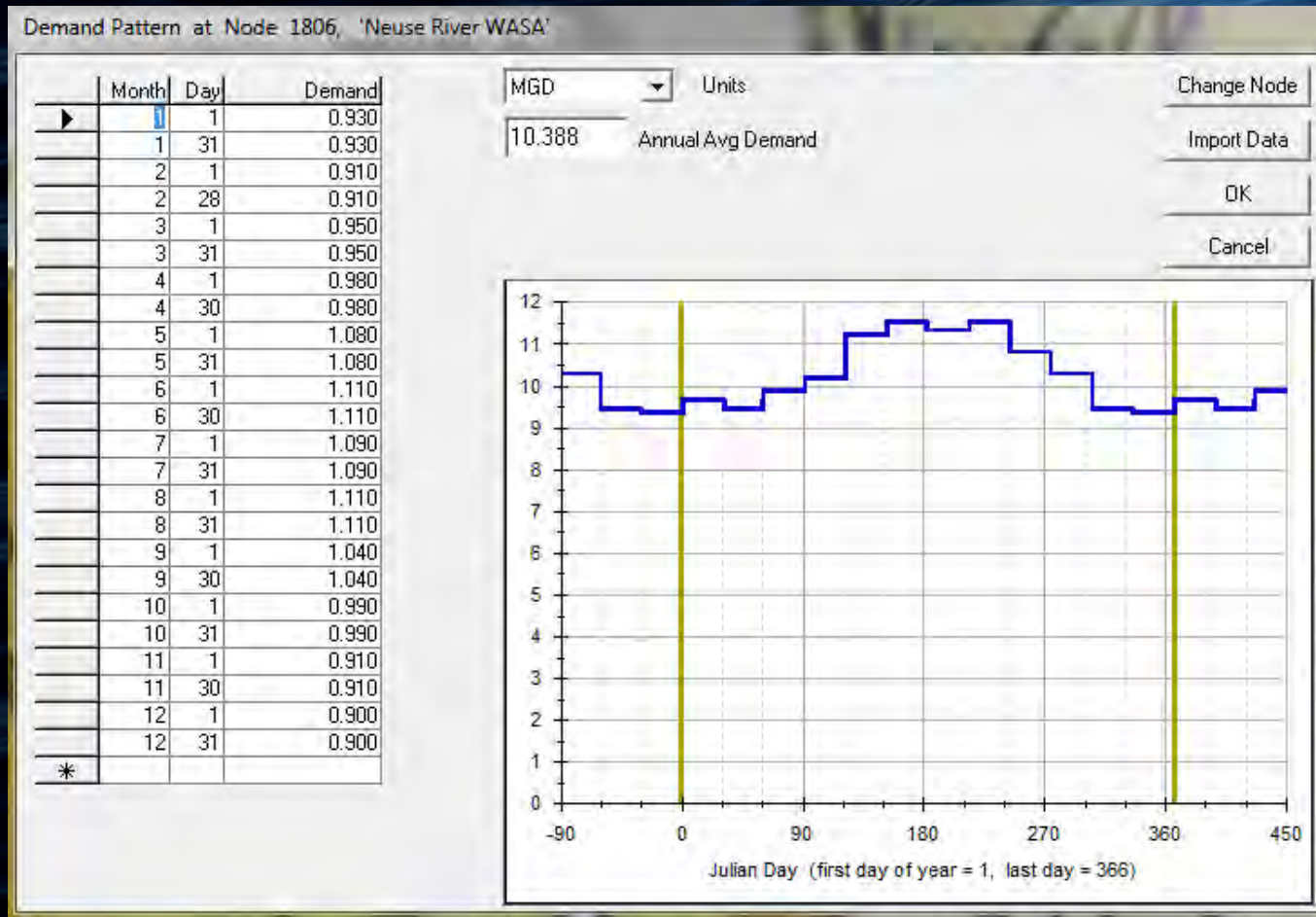
# Wilson Discharge Pattern



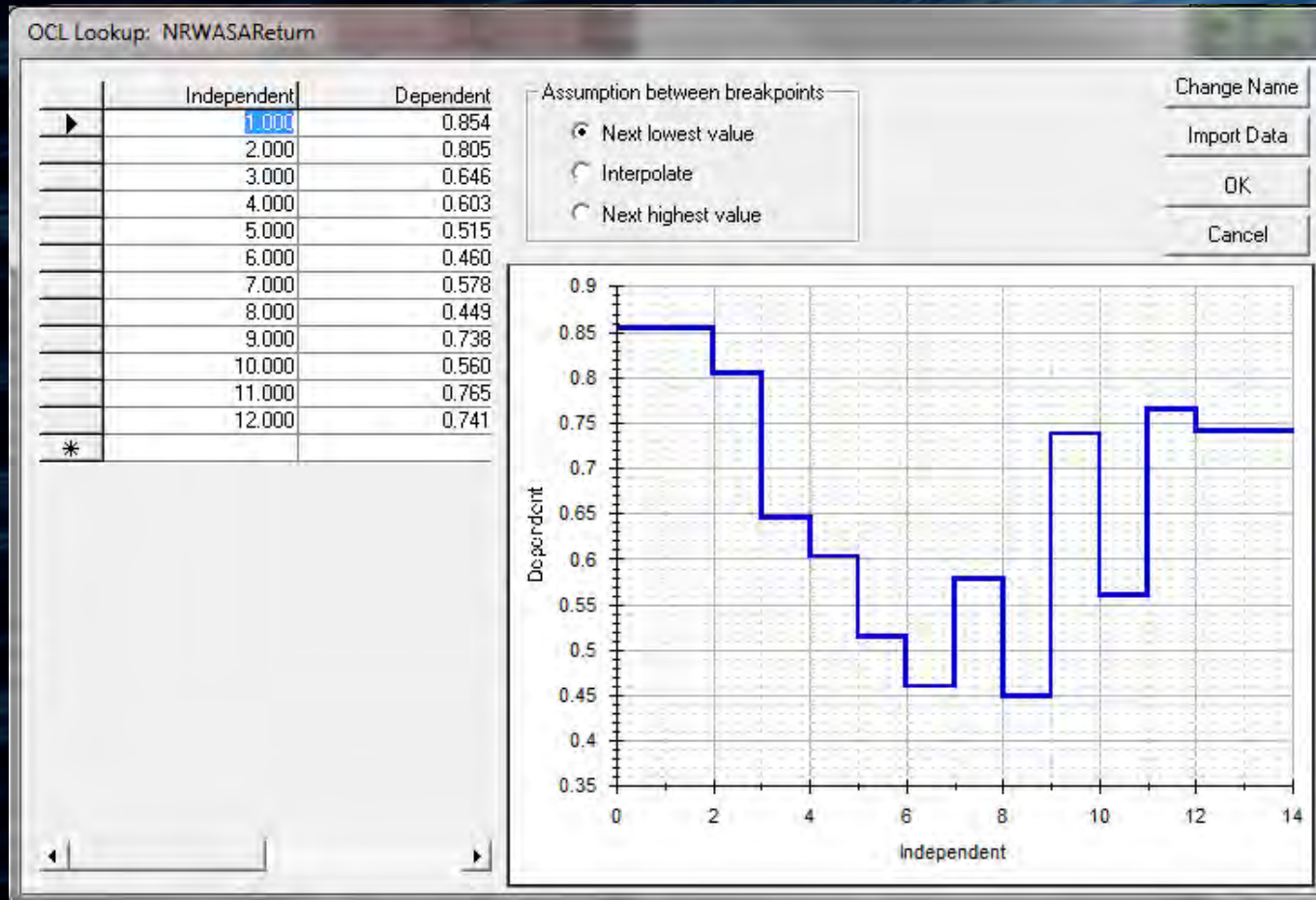
# Buckhorn SAE Curve



# Neuse River WASA Demand Pattern



# Neuse River WASA Discharge Pattern



# Neuse Reservoirs

Reservoir									
	Node Number	Node Name	Dead Storage	Dead Stor Units	Lower Rule	Upper Rule	Max Storage	Max Stor Units	▲
	1010	Orange Upstream Pond	635.0	FT	None	None	643.0	FT	
	1050	West Fork Eno Reservoir	603.0	FT	Pattern	Pattern	633.0	FT	
	1060	Lake Orange	601.7	FT	Pattern	Pattern	615.0	FT	
	1080	Corp. Lake	528.0	FT	None	None	538.0	FT	
	1100	Lake Ben Johnston	501.0	FT	None	None	515.0	FT	
	1120	Teer Quarry	154.0	FT	None	None	300.0	FT	
	1140	Lake Michie	312.5	FT	Pattern	Pattern	341.0	FT	
	1200	Little River Res.	296.0	FT	Pattern	Pattern	355.0	FT	
	1230	Beaverdam Lake	230.0	FT	Pattern	Pattern	289.2	FT	
	1250	Lake Holt_Butner	320.0	FT	Pattern	Pattern	356.0	FT	
	1270	Lake Rogers	274.0	FT	Pattern	Pattern	281.0	FT	
	1290	Wake Forest Lake	279.0	FT	Pattern	Pattern	296.8	FT	
	1300	Falls Lake	236.5	FT	Pattern	Pattern	289.2	FT	
	1310	Lag Falls Release	0.0	AF	None	None	999.0	KAF	
	1400	#1	289.0	FT	None	None	321.5	FT	
	1402	#2	307.5	FT	None	None	341.5	FT	
	1404	#3	323.5	FT	None	None	358.5	FT	
	1406	#5A	286.5	FT	None	None	329.0	FT	
	1408	#18	300.0	FT	None	None	334.0	FT	
	1410	#20A	286.0	FT	None	None	328.7	FT	
	1412	#23 (Lake Crabtree)	256.0	FT	None	None	298.0	FT	
	1414	#11A	277.4	FT	None	None	331.5	FT	
	1416	#25	215.5	FT	None	None	274.1	FT	
	1418	#22B	315.0	FT	None	None	354.0	FT	
	1420	Lake Wheeler	275.0	FT	Pattern	Pattern	285.0	FT	
	1422	#13	234.0	FT	None	None	285.0	FT	
	1440	Lake Benson	228.0	FT	Pattern	Pattern	234.0	FT	
	1445	Lake Johnson	312.0	FT	None	None	343.3	FT	
	1450	Lake Raleigh	264.0	FT	None	None	288.0	FT	
	1500	Buckhorn Reservoir	120.0	FT	Pattern	Pattern	148.0	FT	
	1640	Lag Clayton Gage	0.0	AF	None	None	999.0	KAF	
	1740	Little River Reservoir (Ral	236.0	FT	None	None	260.0	FT	
	1790	Lag Goldsboro Gage	0.0	AF	None	None	999.0	KAF	

# Neuse Reservoir Rules

Reservoir Rules							
	Node Number	Node Name	Units	Month	Day	Lower Rule	Upper Rule
	1050	West Fork Eno Reservoir	FT	1	1	603.0	633.0
	1050	West Fork Eno Reservoir	FT	12	31	603.0	633.0
	1060	Lake Orange	FT	1	1	601.7	615.0
	1060	Lake Orange	FT	12	31	601.7	615.0
	1140	Lake Michie	FT	1	1	312.5	341.0
	1140	Lake Michie	FT	12	31	312.5	341.0
	1200	Little River Res.	FT	1	1	326.0	355.0
	1200	Little River Res.	FT	12	31	326.0	355.0
	1230	Beaverdam Lake	FT	1	1	236.5	251.5
	1230	Beaverdam Lake	FT	12	31	236.5	251.5
	1250	Lake Holt_Butner	FT	1	1	320.0	356.0
	1250	Lake Holt_Butner	FT	12	31	320.0	356.0
	1270	Lake Rogers	FT	1	1	274.0	281.0
	1270	Lake Rogers	FT	12	31	274.0	281.0
	1290	Wake Forest Lake	FT	1	1	279.0	296.8
	1290	Wake Forest Lake	FT	12	31	279.0	296.8
	1300	Falls Lake	FT	1	1	236.5	251.5
	1300	Falls Lake	FT	12	31	236.5	251.5
	1420	Lake Wheeler	FT	1	1	285.0	285.0
	1420	Lake Wheeler	FT	12	31	285.0	285.0
	1440	Lake Benson	FT	1	1	232.0	234.0
	1440	Lake Benson	FT	12	31	232.0	234.0
	1500	Buckhorn Reservoir	FT	1	1	120.0	148.0
	1500	Buckhorn Reservoir	FT	12	31	120.0	148.0

# Drought Plans

- Included drought plans when the triggers allowed them to be modeled
  - Triggers such as stage/storage or flow can be modeled
  - Demand based triggers such as peak day demand compared to plant capacity cannot be modeled



# Neuse Drought Plans

	Stage 1		Stage 2		Stage 3		Stage 4		Stage 5	
	Trigger	Response	Trigger	Response	Trigger	Response	Trigger	Response	Trigger	Response
Orange-Alamance	180 dsr	10%	135 dsr	20%	90 dsr	30%				
Hillsborough	180 dsr	10%	135 dsr	20%	90 dsr	30%				
Durham	See next slide									
SGWASA	< 60% (-76 in)	5%	<50% (-129 in)	10%	< 40% (-155 in)	20%	< 30% (-186 in)	25%	< 0% (below top of intake)	50% Rationing
Creedmore	Use SGWASA									
Raleigh	50%	vol 8%	30%	15%	10%	30%				
Goldsboro	intake 52 ft msl	Voluntary	Intake 50 ft msl	mandatory, 30%?	Intake 49.5 ft msl	Crisis - additional 15-20%				
Wilson	Buckhorn 144 ft (-4 ft), < 60%	5%	Buckhorn 142 ft (-6 ft), < 43%	10%	Buckhorn 140 ft (-8 ft), < 30%	15%	Buckhorn 138 ft (-10 ft), < 19%	25%	135 ft (-13 ft), < 10%	rationing (50%?)

Note: Some plans are based on peak demands and cannot be modeled and are not included in these tables.

# Durham Drought plan

Stage	Imposition Trigger Volumes: Percent of Lake Storage Remaining			
	May - October		November - April	
	Additional Sources Available	No Additional Sources Available	Additional Sources Available	No Additional Sources Available
Move to Stage 1	75%	80%	40%	45%
Move to Stage 2	55%	60%	35%	40%
Move to Stage 3	40%	45%	30%	35%
Move to Stage 4 (Emergency)	30%	35%	20%	25%

Stage	Rescission Trigger Volumes: Percent of Lake Storage Remaining	
	May - October	November - April
Return to Stage 3	45% for at least 7 days	35% for at least 7 days
Return to Stage 2	60% for at least 7 days	40% for at least 7 days
Return to Stage 1	80% for at least 7 days	45% for at least 7 days
Return to Normal	95% for at least 7 days	95% for at least 7 days

Water Shortage Response Stage	Reduction Goals, Relative to Normal Use	
	May - October	November - April
Stage 1	15%	7%
Stage 2	30%	12%
Stage 3	40%	17%
Stage 4 (Emergency)	55%	30%