Appendix A

Base Case Water Control System Description Tables

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Table A-01 General Project Characteristics

Project	Year Completed	Length of Reservoir (miles)[2]	Miles of Shoreline	Navigation Facilities	Turbine Units (rated capacity in MW)[6]	Turbine Discharge Capacity[6] (total cfs for all units)	
						Most Efficient Load (MEL)	Maximum Sustainable Load (MSL)
Mainstem Projects							
Kentucky	1944	184.3	2,064.3	2 Locks, canal[3]	5 (223)	–[8]	70,000
Pickwick	1938	52.7	490.6	2 Locks, canal[4]	6 (240)	–[8]	89,000
Wilson	1924[1]	15.5	166.2	2 Locks	21 (675)	–[8]	115,000
Wheeler	1936	74.1	1,027.2	2 Locks	11 (412)	–[8]	120,000
Guntersville	1939	75.7	889.1	2 Locks	4 (135)	–[8]	50,000
Nickajack	1967	46.3	178.7	Lock	4 (104)	–[8]	45,000
Chickamauga	1940	58.9	783.7	Lock	4 (160)	–[8]	45,000
Watts Bar	1942	95.5*	721.7	Lock	5 (192)	–[8]	47,000
Fort Loudoun	1943	60.8*	378.2	Lock	4 (155)	–[8]	32,000
Total Mainstem		**663.8**	**6,699.7**	**14 Locks**	**64 (2,296)**		
Tributary Projects							
Norris	1936	129.0	809.2		2 (131)	6,900	9,100
Melton Hill	1963	44.0	193.4	Lock	2 (72)	17,000	22,000
Douglas	1943	43.1	512.5		4 (156)	19,000	24,600[9]
South Holston	1950	23.7	181.9		1 (39)	2,700	3,300[10]
Boone	1952	32.7*	126.6		3 (92)	10,900	13,200
Fort Patrick Henry	1953	10.4	31.0		2 (59)	6,100	9,000
Cherokee	1941	54.0	394.5		4 (160)	15,700	17,800
Watauga	1948	16.3	104.9		2 (58)	2,700	3,300
Wilbur	1912[1]	1.8	4.8		4 (11)	2,500	2,900
Fontana	1944	29.0	237.8		3 (294)	9,000	11,300
Tellico	1979	33.2	357.0	Canal[5]	0[7]	–	–
Chatuge	1942	13.0	128.0		1 (11)	1,500	1,650
Nottely	1942	20.2	102.1		1 (15)	1,420	1,900
Hiwassee	1940	22.2	164.8		2 (176)	8,100	9,800
Apalachia	1943	9.8	31.5		2 (100)	2,700	2,900
Blue Ridge	1930[1]	11.0	68.1		1 (22)	1,600	1,800
Ocoee #1	1911[1]	7.5	47.0		5 (19)	3,200	3,800

Table A-01 General Project Characteristics (continued)

Project	Year Completed	Length of Reservoir (miles)[2]	Miles of Shoreline	Navigation Facilities	Turbine Units (rated capacity in MW)[6]	Turbine Discharge Capacity[6] (total cfs for all units)	
						Most Efficient Load (MEL)	Maximum Sustainable Load (MSL)
Tributary Projects (continued)							
Ocoee #2	1913[1]	–	–		2 (23)	900	1,050
Ocoee #3	1942	7.0	24.0		1 (29)	1,100	1,500
Tims Ford	1970	34.2	308.7		1 (45)	3,700	4,000
Normandy	1976	17.0	75.1		0[7]	–	–
Great Falls	1916[1]	22.0	120.0		2 (34)	2,700	3,700
Upper Bear Creek	1978	14.0	105.0		0[7]	–	–
Bear	1969	12.0	52.0		0[7]	–	–
Little Bear Creek	1975	6.0	45.0		0[7]	–	–
Cedar Creek	1979	9.0	83.0		0[7]	–	–
Total Tributary		**622.1**	**4,307.9**	**1 Lock**	**45 (1,546)**		
Total Projects		**1,285.9**	**11,007.6**	**15 Locks**	**109 (3,842)**		

Notes:

cfs = Cubic feet per second; MW = Megawatts.

1 Projects acquired from others.
2 Normal summer pool. *Fort Loudoun–49.9 miles on the Tennessee River, 6.5 miles on the French Broad River, and 4.4 miles on the Holston River; Watts Bar–72.4 miles on the Tennessee River and 23.1 miles on the Clinch River; Norris–73 miles on the Clinch River and 56 miles on the Powell River; Boone–17.4 miles on the South Fork Holston River and 15.3 miles on the Watauga River.
3 Includes new main lock chamber (110 feet wide and 1,200 feet long) and the Barkley Canal.
4 Tennessee–Tombigbee Waterway; Bay Springs Reservoir is connected to Pickwick Reservoir by a navigation canal.
5 River diversion through a canal increases energy generation at Fort Loudoun.
6 Actual capacity and turbine flows at any time depend on several factors, including operating head, turbine capability, generator cooling, water temperature, and power factor. Capacities and turbine flows include modernization of turbine units (HMODs) already performed, as well as those in the design, construction, or authorization phase. Turbine discharge assumes availability of all units at maximum discharge.
7 Project design does not include power generation capacity.
8 Mainstem projects can be operated well below MSL values but are predominately operated at MSL values because of higher capacities that can be achieved with acceptable loss of efficiency.
9 Primarily operated at this flow rate during flood control operations or emergency power demands.
10 Limited to a flow rate of 3,000 cfs during non-flooding situations to minimize downstream streambank erosion.

Source: TVA file data.

Table A-02 Reservoir Operating Characteristics

Project	Reserved Flood Storage January 1 to Top of Gates[2] (1,000 acre-feet)	Top of Gates Elevations (feet above mean sea level)	Flood Guide Elevations (feet above mean sea level)			Minimum Targeted Summer Level (feet above mean sea level)	Operating Range of Elevations for Run-of-River Projects[4] (feet above mean sea level)
			Jan 1	Mar 15	Jun 1	Aug 1	
Mainstem Projects							
Kentucky	4,008	375	354	354	359	–	
Pickwick	493[3]	418	408	408	414	–	
Wilson	0	507.88	–	–	–	–	504.5–507.8
Wheeler	349	556.28	550	550	556	–	
Guntersville	162	595.44	593	593	595	–	
Nickajack	0	635	–	–	–	–	632–634
Chickamauga	345	685.44	675	675	682.5	–	
Watts Bar	379	745	735	735	741	–	
Fort Loudoun[1]	111	815	807	807	813	–	
Total Mainstem	**5,847**						
Tributary Projects							
Norris	1,473	1,034	985	1,000	1,020	1,010	
Melton Hill	0	796	–	–	–	–	790–796
Douglas	1,251	1,002	940	958.8	994	990	
South Holston	290	1,742	1,702	1,713	1,729	1,721	
Boone	92	1,385	1,358	1,375	1,382	1,382	
Fort Patrick Henry	0	1,263	–	–	–	–	1,258–1,263
Cherokee	1,012	1,075	1,030	1,042	1,071	1,060	
Watauga	223	1,975	1,940	1,952	1,959	1,949	
Wilbur	0	1,650	–	–	–	–	1,635–1,650
Fontana	580	1,710	1,644	1,644	1,703	1,693	
Tellico[1]	120	815	807	807	813	--	
Chatuge	93	1,928	1,912	1,916	1,926	1,923	
Nottely	100	1,780	1,745	1,755	1,777	1,770	

Table A-02 Reservoir Operating Characteristics (continued)

Project	Reserved Flood Storage January 1 to Top of Gates[2] (1,000 acre-feet)	Top of Gates Elevations (feet above mean sea level)	Flood Guide Elevations (feet above mean sea level)			Minimum Targeted Summer Level (feet above mean sea level)	Operating Range of Elevations for Run-of-River Projects[4] (feet above mean sea level)
			Jan 1	Mar 15	Jun 1	Aug 1	
Tributary Projects (continued)							
Hiwassee	270	1,526.5	1,465	1,482	1,521	1,515	
Apalachia	0	1,280	–	–	–	–	1,272–1,280
Blue Ridge	69	1,691	1,668	1,678	1,687	1,682	
Ocoee #1	0	830.76	820	820	829		
Ocoee #2	0	1115.2	–	–	–	–	Not applicable[6]
Ocoee #3	0	1,435	–	–	–	–	1,428 –1,435
Tims Ford	220	895	873	879	888	–[5]	
Normandy	48	880	864	866.7	875		
Great Falls	0	805.3	–	–	–	–	785–800
Upper Bear Creek	0	797	–	–	–	–	790–797
Bear Creek	37	602	565	572.8	576	–	
Little Bear Creek	25	623	603	615	620	–	
Cedar Creek	76	584	560	574.2	580	–	
Total Tributary	**5,979**						
Total Projects	**11,826**						

Notes:

[1] Projects are operated in tandem because of diversion canal to increase power generation at Fort Loudoun.
[2] The observed flood storage varies, depending on rainfall and runoff.
[3] Includes additional storage volume from Bay Springs Reservoir.
[4] The observed range varies, depending on demands on the river system.
[5] Tims Ford has no August 1 target level; it does have a minimum elevation requirement of 883 feet above sea level from May 15 through October 15.
[6] Does not have a permanent pool.

Source: TVA file data.

Table A-03 Minimum Flows, Techniques, Requirements, and Commitments

Project	Techniques	Minimum Flows (cfs)	Frequency and Duration of Flows	Operating Objective
Mainstem Projects				
Kentucky	Appropriate daily scheduling	18,000	Bi-weekly average: June–August	Water supply, water quality
		15,000	Bi-weekly average: May and September	
		12,000	Daily average: October–April	
		5,000	Year-round instantaneous flows if Paducah, Kentucky, stage on Ohio River is greater than 16 feet (occurs about half the time)	Navigation
		15,000	Continuous when Paducah stage is between 14 and 16 feet (occurs about half the time)	Navigation
		20,000	Continuous when Paducah stage is less than 14 feet (occurs about 2% of time)	Navigation
Pickwick[1]	Appropriate daily scheduling	15,000	Bi-weekly average: June–August	Water supply, water quality
		9,000	Bi-weekly average: May and September	
		8,000	Daily average: October–April	
		16,000	Instantaneous when Kentucky headwater is at 354-foot elevation	Navigation
		8,000	Instantaneous when Kentucky headwater is at 355-foot elevation	Navigation
Wilson	Appropriate daily scheduling	8,000	Instantaneous when Pickwick headwater is at or below 409.5-foot elevation	Navigation
Wheeler and Guntersville	Appropriate daily scheduling (45% Wheeler plus 55% Guntersville flows)	10,000	Daily average: July–September	Operation of downstream nuclear plant
		11,000	Daily average: December–March	
		7,000	Otherwise	
Chickamauga	Appropriate daily scheduling	13,000	Bi-weekly average: June–August	Water supply, water quality
		7,000	Bi-weekly average: May and September	
		3,000	Daily average: October–April	

Table A-03 Minimum Flows, Techniques, Requirements, and Commitments (continued)

Project	Techniques	Minimum Flows (cfs)	Frequency and Duration of Flows	Operating Objective
Mainstem Projects (continued)				
Watts Bar	No more than 15 hours of zero flow for holding pond drainage	1,200	Daily average	Operation of downstream nuclear plant
Douglas and Cherokee flows for Knoxville	Appropriate daily scheduling of Cherokee and Douglas along with local inflow	2,000	Daily average	Water supply, water quality
Norris	Turbine pulsing and reregulation weir	200	Daily average: pulse every 12 hours for 30 minutes	Water supply, water quality
For Bull Run fossil plant	Appropriate daily scheduling	800	Daily average: February–March	Thermal compliance–operation of downstream fossil plant
		1,000	Daily average: April–May	
		1,200	Daily average: June	
		1,500	Daily average: July–September	
		2,000	Daily average: October	
		600	Daily average: November–January	
Melton Hill	Appropriate daily scheduling	400	Daily average	Water supply, water quality
Douglas	Turbine pulsing	585	Daily average: every 4 hours for 30 minutes	Water supply, water quality
Douglas for Knoxville	Appropriate daily scheduling of Cherokee and Douglas along with local inflow	2,000	Daily average	
South Holston	Turbine pulsing and reregulation weir	90	Daily average: pulse every 12 hours for 30 minutes	Water supply, water quality
Boone	Turbine pulsing	400	Daily average	Water supply, water quality

Table A-03 Minimum Flows, Techniques, Requirements, and Commitments (continued)

Project	Techniques	Minimum Flows (cfs)	Frequency and Duration of Flows	Operating Objective
Tributary Projects				
Fort Patrick Henry[2]	Turbine pulsing	800	Average 3-hour discharge–year round	Water supply, water quality
		1,250	Instantaneous: January	Operation of downstream fossil plant
		1,300	Instantaneous: February–March	
		1,500	Instantaneous: April–May	
		1,833	Instantaneous: June–September	
		1,450	Instantaneous: October–November	
		1,350	Instantaneous: December	
Cherokee	Turbine pulsing	325	Daily average: every 6 hours for 30 minutes	Water supply, water quality
Cherokee for Knoxville	Appropriate daily scheduling of Cherokee and Douglas along with local inflow	2,000	Daily average	
Watauga measured from Wilbur[3]	Turbine pulsing	107	Daily average: small unit every 4 hours for 1 hour or large unit every 4 hours for 15 minutes	Water supply, water quality
Fontana measured from Chilhowee[4]	Appropriate daily scheduling	1,000	Daily average: May–October Fontana and Santeetlah plus local inflow	Water supply, water quality
Chatuge	Turbine pulsing and reregulation weir	60	Daily average: every 12 hours for 30 minutes	Water supply, water quality
Nottely	Small hydro unit when large unit is not generating	55	Continuous	Water supply, water quality
Apalachia[5]	Turbine pulsing	200	Daily average: every 4 hours for 30 minutes	Water supply, water quality
	Appropriate daily scheduling of discharges from Apalachia and Ocoee #1	600	Daily average	
Blue Ridge[2]	Small hydro unit when large unit is not generating	115	Continuous	Water supply, water quality

Table A-03 Minimum Flows, Techniques, Requirements, and Commitments (continued)

Project	Techniques	Minimum Flows (cfs)	Frequency and Duration of Flows	Operating Objective
Tributary Projects (continued)				
Ocoee #1	Turbine pulsing	140	Daily average: every 4 hours for 1 hour	Water supply, water quality
	Appropriate daily scheduling of discharges from Apalachia and Ocoee #1	600	Daily average	
Tims Ford	Small hydro unit when large unit is not generating	80	Continuous	Water supply, water quality
For Fayetteville	Appropriate daily scheduling	120	Continuous	
Normandy for Shelbyville	Appropriate daily scheduling	40 155	Continuous	Water supply, water quality
Upper Bear Creek		5	Continuous	Water quality, water supply
Bear Creek for Red Bay		21	Continuous	Water quality, water supply
Little Bear Creek		5	Continuous	Water quality, water supply
Cedar Creek		10	Continuous	

Notes:

cfs = Cubic feet per second.

[1] Minimum tailwater below Pickwick is maintained at or above a 355-foot elevation for navigation. Continuous minimum discharge from Pickwick is used to maintain this minimum elevation whenever Kentucky headwater is at or below a 355-foot elevation. These discharges vary as the Kentucky headwater varies between elevations of 354 and 355 feet.

[2] Fort Patrick Henry is required to supply a minimum flow for the John Sevier Steam Plant that equals the plant cooling water intake plus a minimum bypass flow for the current time of year. The minimum bypass flow is defined as follows in the National Pollutant Discharge Elimination System permit for John Sevier:

> To the maximum extent practicable (considering only the short and long term availability of water for release from upstream impoundments and alternative sources of generation to meet the public demand for power), not less than 350 cfs nor one-third of the plant cooling water flow, whichever is greater, shall be passed over the dam during the period from June 1 to September 30 at any time the plant is in operation. During the winter months, or during the period of October 1 to May 31, the minimum bypass flow shall be 100 cfs. These are the minimum volumes of cold-water to be provided which will ensure the protection of spawning, development and survival of fish eggs, larvae, and fry and to provide living space for fish consistent with classified uses downstream from the diversion dam.

[3] Watauga minimum flow is met at downstream Wilbur.

[4] Fontana minimum flow is met at downstream Chilhowee Dam.

[5] Apalachia plus Ocoee #1 must meet a combined minimum flow of 600 cfs as the combined daily average.

Source: TVA file data.

Table A-04 Ramping Constraints by Project

Project	Number of Turbine Units	Ramping Rate
Watauga	2	Ramp units up and down a maximum of one unit per hour for downstream safety
Cherokee	4	Ramp units up and down a maximum of two units per hour to minimize downstream bank erosion
Douglas	4	Ramp units up and down a maximum of two units per hour to minimize downstream bank erosion
Apalachia	2	Ramp units up a maximum of one unit per hour for downstream safety
South Holston	1	Maximum turbine flow of 3,000 cubic feet per second (cfs) (below Maximum Sustainable Level [MSL] flows) for hydropower needs required to minimize downstream bank erosion; MSL flows allowed for flood control
Pickwick	6	Turbines limited to a ramp rate of 60 megawatts (MW) per hour when ramping up and a maximum of 40 MW per hour when ramping down for downstream navigation and bank stabilization
Kentucky	5	When Paducah stage is greater than 16 feet–maximum hourly discharge variation of one unit per hour When Paducah stage is less than 16 feet but greater than 14 feet–maximum hourly discharge variation of one unit per hour If Kentucky is not spilling–maximum daily discharge variation of 35,000 cfs per day
Chickamauga	4	From November through April, ramp units up and down a maximum of one unit per hour for Sequoyah Nuclear Plant thermal compliance

Source: TVA file data.

Table A-05 Fishery Types, Dissolved Oxygen Targets, and Type of Aeration Facilities at Reservoir Tailwaters

Project	Fishery Type	DO Target (mg/L)	Type of Aeration Facilities
Mainstem Projects			
Watts Bar		4	Oxygen injection
Fort Loudoun		4	Oxygen injection
Tributary Projects			
Norris	Cold-water	6	Turbine venting
Douglas	Warm-water	4	Turbine venting, surface water pumps, oxygen injection
South Holston	Cold-water	6	Turbine venting, aerating weir
Boone	Cold-water	4	Turbine venting
Fort Patrick Henry[1]	Cold-water	4	Upstream improvements
Cherokee	Warm-water	4	Turbine venting, surface water pumps, oxygen injection
Watauga	Cold-water	6	Turbine venting
Fontana	Cold-water	6	Turbine venting
Chatuge[2]	Warm-water	4	Aerating weir
Nottely	Warm-water	4	Turbine air injection
Hiwassee	Cold-water	6	Turbine venting, oxygen injection
Apalachia[3]	Cold-water	6	Turbine venting
Blue Ridge	Cold-water	6	Oxygen injection
Tims Ford	Cold-water	6	Turbine air injection, oxygen injection

Notes:

mg/L = Milligrams per liter.

[1] The first 4 miles below Fort Patrick Henry are classified as a cold-water fishery; below this point, the tailwater is classified as a warm-water fishery.
[2] Chatuge is classified by state standards as a warm-water fishery but has a trout fishery in its tailwater.
[3] Below the powerhouse.

Source: TVA file data.

Table A-06 Year 2030 Additional Net Water Supply Demand by Project

Project	Additional Net Water Demand (cfs)
Mainstem Projects	
Kentucky	49.91
Pickwick	42.39
Tennessee–Tombigbee Waterway flows	968.80
Wilson	23.99
Wheeler	132.45
Guntersville	17.15
Nickajack	21.70
Chickamauga	31.12
Watts Bar	14.44
Fort Loudoun	16.92
Tellico	1.44
Tributary Projects	
Norris	5.44
Melton Hill	21.99
Douglas	43.22
South Holston	3.79
Boone	-8.62
Fort Patrick Henry	167.60
Cherokee	-133.87
Watauga	23.84
Wilbur	–
Fontana	1.42
Chatuge	3.32
Nottely	0.66
Hiwassee	0.30
Apalachia	0.69
Blue Ridge	16.91
Ocoee #1	-9.02
Ocoee #2	–
Ocoee #3	–
Tims Ford	24.01
Normandy	0.00
Great Falls	–
Upper Bear Creek	0.00
Bear Creek	–
Little Bear Creek	–
Cedar Creek	0.00

Note:

cfs = Cubic feet per second.

Source: TVA file data.

Table A-07 Drawdown Limits for Tributary Reservoirs

Project[1]	Description	Drawdown Limits[2]
Apalachia	Concrete	3 feet per day not to exceed 12 feet per week
Blue Ridge	Hydraulic fill	2 feet per day not to exceed 7 feet per week for 28 feet; then 3 feet per week
Chatuge	Impervious rolled fill	2 feet per day not to exceed 7 feet per week for 28 feet; then 3 feet per week
Cherokee	Concrete and impervious rolled fill	2 feet per day not to exceed 7 feet per week for 28 feet; then 3 feet per week
Douglas	Concrete and impervious rolled fill	2 feet per day not to exceed 7 feet per week for 28 feet; then 3 feet per week
Fontana	Concrete	2 feet per day not to exceed 7 feet per week for 28 feet; then 3 feet per day not to exceed 12 feet per week
Great Falls	Concrete	2 feet per day not to exceed 12 feet per week
Hiwassee	Concrete	2 feet per day not to exceed 7 feet per week
Norris	Concrete and earth fill	2 feet per day not to exceed 7 feet per week for 28 feet; then 3 feet per week
Nottely	Impervious rolled fill	2 feet per day not to exceed 7 feet per week for 28 feet; then 3 feet per week
South Holston	Impervious rolled fill	2 feet per day not to exceed 7 feet per week for 28 feet; then 3 feet per week
Watauga	Impervious rolled fill	2 feet per day not to exceed 7 feet per week for 28 feet; then 3 feet per week

Notes:

[1] For those reservoirs not shown, the drawdown rate would follow the rate shown for Blue Ridge.
[2] Restrictions are based on dam safety and erosion considerations.

Source: TVA file data.

Table A-08 Fill and Drawdown Dates

Mainstem Project	Operating Mode	Reservoir Fill Target Date	Target Date for Start of Reservoir Drawdown
Kentucky	Storage	May 1	July 5; sloped to December 1
Pickwick	Storage	April 5	July 1; 1-foot fluctuation for mosquito control from mid May to mid-September
Wilson	Run-of-river	Mid-April	December 1
Wheeler	Storage	Mid-April	August 1; 1-foot fluctuation for mosquito control from mid-May to mid-September
Guntersville	Limited drawdown	Mid-April	July 1; with 1-foot drawdown to November 1; 1-foot fluctuation for mosquito control from mid-May to mid-September
Nickajack	Run-of-river	–	–
Chickamauga	Storage	Mid-April	July 1; with 1.5-foot drawdown to mid-August, remainder of winter drawdown begins on October 1; 1-foot fluctuation for mosquito control from mid-May to mid-September
Watts Bar	Storage	Mid-April	August 1; 1-foot drawdown to September 1, then begin remainder of winter drawdown
Fort Loudoun[1]	Storage	Mid-April	November 1
Tributary Project	**Operating Mode**	**Reservoir Fill Target Date**	**Date for Start of Unrestricted Reservoir Drawdown**
Norris	Storage	June 1	August 1
Melton Hill	Run-of-river	–	–
Douglas	Storage	June 1	August 1
South Holston	Storage	June 1	August 1
Boone	Storage	Mid-May	Labor Day (follows guide curve)
Fort Patrick Henry	Run-of-river	–	–
Cherokee	Storage	June 1	August 1
Watauga	Storage	June 1	August 1
Wilbur	Run-of-river	–	–
Fontana	Storage	June 1	August 1
Tellico[1]	Storage	Mid-April	November 1

Table A-08 Fill and Drawdown Dates (continued)

Tributary Project	Operating Mode	Reservoir Fill Target Date	Date for Start of Unrestricted Reservoir Drawdown
Chatuge	Storage	June 1	August 1
Nottely	Storage	June 1	August 1
Hiwassee	Storage	June 1	August 1
Apalachia	Run-of-river	–	–
Blue Ridge	Storage	June 1	August 1
Ocoee #1	Storage	May 1	November 1
Ocoee #2	Run-of-river	–	–
Ocoee #3	Run-of-river	–	–
Tims Ford[2]	Storage	Mid-May	October 15
Normandy	Storage	May 1	November 1; usually falls throughout summer to meet downstream minimum flows
Great Falls	Storage	August 1	October 1
Upper Bear Creek	Run-of-river	–	–
Bear Creek	Storage	Mid-April	November 15
Little Bear Creek	Storage	Mid-April	November 1
Cedar Creek	Storage	Mid-April	November 1

Notes:

[1] Tellico, connected by canal to Fort Loudoun, has a pool elevation the same as Fort Loudoun. Because Fort Loudoun is targeted to reach its summer pool level by April 15 and its drawdown does not begin until November 1, Tellico has a flat summer pool.

[2] Tims Ford, by design and original project allocation, has always been operated with a minimum summer pool level of 883 feet, which applies until October 15.

Source: TVA file data.

Table A-09 Hydro Modernization Projects To Be Completed by 2014

Power Plant	Status in October 2001[1,2]	Runner Performance Planned	Increased Flow[3]
Phase 2 and Phase 3 Projects			
Douglas (Units 1–4)	Phase 3	High efficiency and capacity	Yes
Guntersville (Units 1–4)	Phase 3	Increased efficiency and capacity	No
Raccoon Mountain (Units 1–4)	Phase 3	High capacity	Yes
Fort Loudoun (Units 3–4)	Phase 3	Increased efficiency and capacity	Mix
Boone (Units 1–3)	Phase 2	High efficiency, low flow	Insignificant
Chatuge (Unit 1)	Phase 2	High capacity	Yes
Apalachia (Units 1–2)	Phase 2	Increased efficiency and capacity	Insignificant
Watts Bar (Units 1–5)	Phase 2	Increased efficiency and capacity	Yes
Phase 1 and Not Started Projects			
Cherokee (Units 1–4)	Phase 1	High efficiency, low flow	Yes
Wheeler (Units 1–8)	Phase 1	High efficiency, low flow	Not expected
Wilson (Units 19–21)	Phase 1	Increased efficiency and capacity	Expected
Fort Loudoun (Units 1–2)	Not started	Increased efficiency and capacity	Mix
Wilson (Units 1–4)	Not started	High efficiency	Yes
Wilson (Units 5–8)	Not started	High efficiency	Yes
Ocoee #3 (Unit 1)	Not started	Increased efficiency and capacity	Yes
Nickajack (Units 3–4)	Not started	Increased efficiency and capacity	Yes
South Holston (Unit 1)	Not started	Increased efficiency and capacity	No
Melton Hill (Units 1–2)	Not started	Increased efficiency and capacity	No
Watauga (Units 1–2)	Not started	Increased efficiency and capacity	Yes
Blue Ridge (Unit 1)	Not started	Increased efficiency and capacity	Yes
Wilbur (Units 1–4)	Not started	Increased efficiency and capacity	Insignificant

Notes:

HMOD = Hydro Modernization.
Phase 1 = No plans developed to date; Phase 2 = Design; Phase 3 = Construction.

[1] HMOD projects that have been completed or are scheduled to start soon include:

Tims Ford (Unit 1)	Wheeler (Units 9–11)
Chickamauga (Units 1–4)	Kentucky (Units 1–5)
Wilson (Units 9–18)	Nottely (Unit 1)
Norris (Units 1–2)	Fontana (Units 1–3)
Fort Patrick Henry (Units 1–2)	Hiwassee (Units 2)
Guntersville (Units 1 and 4)	Douglas (Units 2, 3, and 4)
Douglas (Unit 1)	Guntersville (Unit 3)
Raccoon Mountain (Unit 3)	Fort Loudoun (Unit 4)
Guntersville (Unit 2)	Hiwassee (Unit 1)

[2] HMOD projects that were in Phase 2 (design) and Phase 3 (construction) in October 2001 are included in the Base Case. Projects that were in Phase 1 or not started in October 2001 are addressed in the cumulative effects analysis.

[3] HMOD flows for completed projects and those in Phase 2 (design) and Phase 3 (construction) are included in Table A-01.

Source: TVA file data 2001.

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