Table 4-56. Comparison of cooling-water alternatives

Evaluation factors	Once-through cooling lake (1000 acres)	Recirculating cooling lake (1300 acres)	Once-through cooling towers (2.8°C approach)	Recirculating cooling tower (2.8°C approach and treatment of blowdown)	Direct discharge
Schedule for implementation	36-month construction schedule could be accelerated to complete lake in one construction season (6 months).	40-month construction schedule could be accelerated to complete lake, but would take longer (two construction seasons, i.e., about 18 months) than 1000-acre due to construction of recirculating system, road relocation, and additional embankments.	27-month construction schedule might be accelerated to complete the cooling tower in slightly more than 1 year.	27-month construction schedule; cannot be accelerated because of long-lead-time procurement of pumps.	Would not require any additional time for implementation.
Preliminary cost capital (million $)	25	73	50-55	75	0
Operating (million $/year)	3.4	2.9	5.5	3.2	3.4
Thermal compliance	Would meet South Carolina water-quality standards with changes in operating power levels.	Would meet South Carolina water-quality standards with changes in operating power levels.	Would meet South Carolina 32.2°C standard but variance would be required from ΔT of 2.8°C requirement.	Would meet South Carolina water-quality standards.	Would require reclassification of Steel Creek to be permittable.

Table 4-56. Comparison of cooling-water alternatives (continued)

Evaluation factors	Once-through cooling lake (1000 acres)	Recirculating cooling lake (1300 acres)	Once-through cooling towers (2.8°C approach)	Recirculating cooling tower (2.8°C approach and treatment of blowdown)	Direct discharge
Modification to operation	Power reduction would be necessary between late spring and early fall to maintain balanced biological community in lake. Average annual 14% power reduction. Amenable to installation of precoolers (~ $10M capital) that would allow an increase in power efficiency.	4% inherent operating power loss. Greater than 14% power loss to maintain a balanced biological community.	Operating power of 100%; infrequent periods (once in 4.5 years) might require some reductions.	Higher temperature of recirculating cooling water would cause a reduction in operating power levels; averages 6.5% power reduction.	Operating power of 100%.
<u>Environmental Factors</u>					
Thermal effects	Balanced biological community in the lake. Steel Creek corridor, delta, and Savannah River swamp protected from thermal effects downstream from embankment.	Same as for once-through 1000-acre lake.	Steel Creek corridor, delta, and Savannah River swamp protected from thermal effects.	No effects expected.	Steel Creek corridor, delta, and Savannah River swamp to be thermally impacted. Zone of passage to remain in the Savannah River. Also, there is a serious thermal shock effect.

Table 4-56. Comparison of cooling-water alternatives (continued)

Evaluation factors	Once-through cooling lake (1000 acres)	Recirculating cooling lake (1300 acres)	Once-through cooling towers (2.8°C approach)	Recirculating cooling tower (2.8°C approach and treatment of blowdown)	Direct discharge
Discharge flow effects	11 cubic meters per second to be discharged. Flow will impact downstream wetlands and will cause increased streambank erosion and delta growth below embankment.	About 0.5 cubic meter per second to be discharged below embankment. Erosion and wetland impacts downstream of embankment very small.	11.0 cubic meters per second. Erosion and delta growth would be greater than the 1000-acre lake due to erosion over longer reach of Steel Creek.	About 0.6 cubic meter per second; erosion and wetlands impacts downstream of embankment very small.	11 cubic meters per second to be discharged. Flow will impact downstream wetlands and will cause increased streambank erosion and delta growth below embankment.
Habitat impacts	735 to 1015 acres of wetlands would be affected by inundation or flow effects. 775 acres of uplands inundated.	240 acres of wetlands and 1060 acres of uplands would be inundated.	635 to 915 acres of wetlands would be affected by inundation and flow effects.	Slight impacts to wetlands.	Direct discharge will eliminate between 730 to 1000 acres of wetlands in the Steel Creek corridor, delta, and Savannah River swamp.
Water withdrawal	About 11 cubic meters to be withdrawn from the Savannah River.	About 1.8 cubic meters per second to be withdrawn from the Savannah River.	Same as 1000-acre once-through lake.	About 1.4 cubic meters per second to be withdrawn from the Savannah River.	Same as 1000-acre once-through lake.
Entrainment/ impingement	Water withdrawal will cause impingement of an additional 16 fish per day and entrainment of 3 to 6% of fish eggs and larvae passing SRP intakes.	Water withdrawal will cause impingement of less than 3 fish per day and entrainment of 0.5 to 2% of fish eggs and larvae passing SRP intakes.	Same as 1000-acre once-through lake.	Slightly less than recirculating cooling lake.	Same as 1000-acre once-through lake.

Table 4-56. Comparison of cooling-water alternatives (continued)

Evaluation factors	Once-through cooling lake (1000 acres)	Recirculating cooling lake (1300 acres)	Once-through cooling towers (2.8°C approach)	Recirculating cooling tower (2.8°C approach and treatment of blowdown)	Direct discharge
Endangered species	Habitat for American alligator and wood stork to be affected. Consultations with U.S. Fish and Wildlife Service in progress.	Habitat for American alligator affected; foraging habitat for wood stork not affected.	Same as 1000-acre once-through lake.	No impacts to endangered species.	Same as 1000-acre once-through lake.
Radiocesium remobilization	Radiocesium releases primarily related to flow. Maximum release to be no more than 4.4 curies in first year. Release within applicable standards.	Radiocesium releases would be smaller due to reduction in the amount of water discharged. Maximum release would be about 0.8 curie in the first year.	Radiocesium release would be smaller than for 1000-acre once-through lake and direct discharge. Maximum release would be 3.3 curies in the first year.	Same as 1300-acre recirculating cooling lake.	Radiocesium releases due to both hot water and flow effects. Maximum release to be about 4.4 curies in first year. Release within applicable standards.
Archeological sites	Four sites would be protected by monitoring and mitigation. One site to be flooded; recovery plan approved. Further surveys identified 10 potentially significant sites; mitigative measures to be taken as appropriate.	Same as 1000-acre once-through lake.	Five sites would be protected by monitoring and mitigation.	No archeological sites would be impacted.	Same as once-through cooling towers.