Chapter 10

Supporting Information

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Chapter 7—Potential Mitigation Measures

No references in this chapter.

10.2 Glossary

26a permit—written approval required under Section 26a of the TVA Act, which must be obtained from TVA prior to construction, operation, or maintenance of boat docks, piers, boathouses, rafts, buoys, floats, boat-launching ramps, fills, nonnavigable houseboats, or other such obstructions which may affect navigation, flood control, public lands, or reservations along or in the Tennessee River or its tributaries.

100-year floodplain—that area inundated by the 100-year flood.

100-year flood—the level of flooding with a 1-percent chance of being equaled or exceeded in any given year; does not indicate a time period of 100 years between floods of this magnitude.

access rights—property rights across TVA-owned shoreland held by some adjacent landowners. These rights provide ingress to and egress from the water and allow the landowner to request TVA permits for proposed docks and other water-use facilities.

adaptive management—regarding this EIS, includes environmental monitoring and the process by which TVA may adjust its reservoir system operations policy after implementation to further address effects of operations.

aeration—the mixing of air and water, usually by bubbling air through water or by contact of water to air.

algae—small (generally microscopic) plants that live either floating in the water or attached to submerged objects.

alluvium—material such as earth, sand, gravel, or other rock or mineral materials, transported by and laid down by flowing water.

anaerobic—oxygen-deficient conditions.

ancillary services—those services necessary to support the transmission of electric power from seller to purchaser, to maintain reliable operations of the transmission system; includes system control, reactive supply and voltage control, regulation, and spinning and supplemental operating reserve.

aquatic—typically living in water.

aquatic invasive plants—those species of plants that spread at a prolific rate and can crowd or out-compete other species with such speed and thoroughness that the ecosystems become negatively affected. This definition includes those plants that are exotic, or non-native, to the southeastern United States, as well as some native species that are capable of growing at levels sufficiently high to substantially alter the environment.

aquatic macrophytes—larger, generally rooted or floating aquatic plants.

aquifer—a geological formation that contains water, especially one that supplies the water for wells and springs.

archaeological resources—material remains of past human activity.

backlands—the land extending beyond 0.25 mile from the TVA system shoreline.

backwater—locations along a river where the water level depends on the level at a downstream dam rather than strictly on the rate of flow in the stream channel.

balancing guide—the elevation defining the bottom of the normal operating zone that is used to help maintain relative balance among tributary storage projects for the Preferred Alternative.

bank stabilization—the physical strengthening of a streambank or shoreline to resist erosion. Typical stabilization techniques include placing of riprap, timbers, tires, or vegetation along the eroding area.

Base Case—serves to document TVA's existing reservoir operations policy. For purposes of this EIS, it is the No-Action Alternative. Under the Base Case, TVA would continue operating individual projects in accordance with existing guidelines as defined by guide curves, priorities, and project commitments and constraints.

benthic—refers to the bottom of a stream, river, or reservoir and the organisms that live there.

best management practices—construction or maintenance practices that have been shown to be the most effective and practical ways of preventing impacts environmental resources.

biodiversity—the number and types of species in the TVA region.

Board of Directors (Board)—TVA's three-member board. Members are appointed by the President of the United States and confirmed by the Senate. The President also determines which Board member will serve as Chairman. Each member serves a term that lasts 9 years.

buildout—a term used by TVA in this EIS when referring to the estimated maximum amount (percentage) of shoreline that could eventually be developed for residential uses.

carbon dioxide (CO_2)—a colorless, odorless nonpoisonous gas that results from fossil fuel combustion and is normally a part of the ambient air.

carbon monoxide (CO)—a colorless, odorless, poisonous gas produced by incomplete fossil fuel combustion.

census block group—the smallest geographic area, usually containing 600 to 3,000 people, for which the Bureau of the Census collects and publishes sample data.

cfs—cubic foot per second; typically used as a measure of flow in a stream. A cubic foot is equivalent to about 7.5 gallons.

channel capacity—the maximum rate of flow that may occur in a stream or river without causing it to flood its banks.

Clean Water Act (CWA)—an Act passed in 1972 to protect the Nation's water quality. The CWA is the primary law for regulating discharges of pollutants into the waters of the United States by enforcing water quality standards that are defined in Section 301 of the Act.

commercial (barge) waterway—a marked, 9-foot-draft navigation channel suitable

for barge transportation, that exists on the Tennessee River and its tributaries.

consumptive use—the difference between water withdrawals from and returns back to the river system. It is the water that may be evaporated in industrial cooling, released from plants to the atmosphere, consumed by humans or livestock, or otherwise used and not returned to surface water or groundwater.

contiguous—adjacent, touching.

Council on Environmental Quality (CEQ)—the council responsible for developing environmental policy and advising federal agencies concerning implementing the National Environmental Policy Act (NEPA). Congress created the CEQ specifically to administer NEPA. Congress intended that each federal agency assume responsibility for meeting NEPA requirements, with guidance from the CEQ.

critical-period, 500-year storage—the maximum storage volume required to store the inflow from a storm with a recurrence interval of 500 years, or the probability of occurring in any give year of 0.002. The storage volume required for a specific reservoir also takes into account the reservoir's natural inflow/ discharge and inflows from upstream projects.

croplands—lands used for growing agricultural crops, such as soybeans and corn, and for pasture.

cubic yard—a measure of volume used in many construction activities; the amount of material that would fill a space 1 yard (3 feet) on each side (27 cubic feet); equals 0.00062 acre-foot.

cultural resources—any historic structure, historic site, or archaeological site that is protected by the National Historic Preservation Act (NHPA) or other preservation legislation.

cumulative impacts—impacts that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable actions, regardless of what agency or person undertakes such actions (40 CFR 1508.7).

derates/derating—a temporary or permanent reduction in a power plant's capacity to generate electricity caused by, among other things, age, loss of efficiency in, loss of availability of, or loss of reliability of the unit due to a number of impacts—including cooling water temperature.

designated uses—categories of beneficial uses of water in a stream that have been specifically identified by the Tennessee Department of Environment and Conservation (TDEC).

detention space—see "flood storage space."

dewatering areas—low-lying areas that are isolated from a mainstem river channel by a series of dikes allows those areas to be pumped out or "dewatered" during spring and summer. These lands can then be used for agricultural or wildlife management purposes; mosquito production is also controlled and timber resources are protected.

direct impacts—effects that are caused by the action and occur at the same time and place (40 CFR 1508.4).

discretionary operating zone—for tributary reservoirs, the storage space between the flood guide and minimum operations guide.

dissolved oxygen (DO)—the oxygen dissolved in water, necessary to sustain aquatic life; usually measured in milligrams per liter (mg/L) or parts per million (ppm).

draft—the depth below the water surface that a towboat and barge extends when fully loaded.

drawdown—the process of lowering reservoir levels. Drawdown usually is measured in feet or units of storage volume.

drawdown zone—fluctuation of pool levels, in combination with the steeper slopes of the tributary reservoirs, exposes what is referred to as a "bath tub ring" or barren drawdown zone around the shoreline.

dredging—the removal of material from an underwater location, primarily for deepening harbors and waterways.

easement—an interest in land owned by one party that allows another party to have specific, limited use of the land.

ecosystem—a community of organisms in a region and their surrounding physical resources and conditions.

edge—the junction of two different habitats, such as forest and grassland.

effluent—contaminated water, treated or untreated, discharged through a pipe from a wastewater source; generally applies to municipal and industrial wastewaters but can include wastewaters from other sources such as mining operations, yard drainage from industrial operations, and drainage from landfills.

EIS—Environmental Impact Statement**—**the most detailed type of environmental assessment document identified in NEPA.

embayment—a bay or arm of the reservoir.

emergent wetland—wetlands dominated by erect, rooted herbaceous plants such as cattails and bulrush.

emission shifting—the change in fuel emissions resulting from either a change in mode of transportation or a change in the number of trips of the existing mode.

endangered species—an animal or plant that is in danger of extinction throughout all or a significant part of its range.

Endangered Species Act—a federal law, first passed in 1973, leading to federal lists of endangered and threatened wildlife and plants, that requires federal agencies to ensure that actions they proposed to authorize, fund, or carry out are not likely to jeopardize the continued existence of listed species or adversely modify critical habitat.

Energy Vision 2020—a combined integrated resource plan and Programmatic EIS. In Energy Vision 2020 (TVA 1995), TVA identified and proposed to select short- and long-range

strategies that would enable TVA to meet the additional needs of its customers for electricity from 1996 to 2020. TVA identified a portfolio of energy resource options from seven alternative strategies that best met TVA's evaluation criteria regarding costs, rates, environmental impacts, debt, and economic while meeting customer energy needs. Energy Vision 2020 identified short-term and long-term actions to provide flexible, competitive energy choices.

erosion—natural processes by which soil or rocks are moved from one location to another. Typical examples include streambank or shoreline erosion in which soil particles are washed away by the forces of water.

eutrophication—the nutrient enrichment and response in productivity of a water body (i.e., relatively high levels of aquatic plant life); this is a natural aging process that can be accelerated by nutrients added by humans.

Executive Order 11988—an order to federal agencies signed by the President requiring them to avoid taking or supporting siting actions in floodplains and to minimize the effects of such actions if they cannot be practically avoided.

Executive Order 11990—an order to federal agencies signed by the President requiring them to avoid new construction in wetlands and to minimize the effects of such actions if they cannot be practically avoided.

Executive Order 12898—an order to federal agencies signed by the President that requires some federal agencies to consider potential disparate effects of proposed actions on minority and low-income populations.

Executive Order 13112—an order to federal agencies signed by the President that requires federal actions to address invasive species ("alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health").

farmland conversion—shifting the use of land to non-farm uses, with irretrievable losses occurring when the land is developed.

fill period—the spring period of lessening runoff, when reservoirs are filled at a rate designed to maintain flood storage and reach targeted summer pool elevations

flats—includes mudflats as well as flats of other natural and artificial substrate types, such as various mixtures of sand, silt, cobble and gravel.

floodplain—the part of a stream valley that is covered with water during a flood event; typically associated with a flood that could occur at a given frequency.

floodway—the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that a specific recurrence interval flood (typically a 100-year flood) can be passed without substantial increases in flood heights. Minimum federal standards limit increases to 1.0 foot, provided that hazardous water velocities are not produced.

flood storage—the volume within an elevation range on a TVA reservoir that is reserved for the storage of floodwater.

flood crest—the highest (peak) water level in a stream or river during a flood.

flood guide—a curve defining the seasonal allocation of flood storage. It represents the elevation of the reservoir above which the space is reserved for temporary and intermittent storage of water to help reduce flows at downstream locations.

foraging habitat—an area where an animal or select group of animals search for and obtain food.

forb—a nonwoody plant other than a grass.

fossil fuels—any organic fuel, such as coal, oil, and natural gas.

geographic information system (GIS)—a collection of computer hardware and software that helps people efficiently capture, store, update, manipulate, analyze, and display information about the location of the Earth's natural, cultural, economic, and human resources, and the human-made environment. Location is normally shown on maps with associated textual and numeric information that describes the characteristics of those resources.

global warming –the theory that certain gases, such as carbon dioxide (CO_2), methane (CH_4), and chlorofluorocarbon (CFC) in the earth's atmosphere effectively restrict radiation cooling, thus elevating the earth's ambient temperatures.

grasslands—an area dominated by grasses; includes lawns, pastures, and hayfields.

greenhouse effect—the buildup of carbon dioxide and other trace gases that allows light from the sun's rays to heat the Earth but prevents a counterbalancing loss of heat.

greenhouse gases—emissions that are thought to be associated with global warming (also referred to as greenhouse emissions). The term "greenhouse gases" includes CO_2 (generally a product of combustion), methane (generally a product of natural gas and decomposition of organic material), nitrous oxide (a product of combustion), and chlorofluorocarbons (freons). Because emissions of CO_2 from combustion represent the largest quantity of greenhouse gas emissions, CO_2 often is used as a gauge of total greenhouse gas emissions. (See "global warming.")

gross regional product (GRP)—the sum dollar value of goods and services created in the region; because the GRP measures the sum of wages income and corporate profit, it is a broad measure of full economic effects.

groundwater—water that is located under the surface of the earth.

guide curves—see specific guide curve definitions (e.g., minimum operations guide and flood guide).

habitat—the combined physical and biological features of a particular location that provide conditions necessary for the survival of one or more species.

habitat suitability model—a model developed to describe the suitability of an area to a particular species or group of species. It normally includes measurements of many of the species' requirements, such as food or nest sites, and is useful in describing how the species will be affected by changes to an area.

headwater—the upstream portion of a watershed.

hydric soil—soil that is saturated, flooded, or ponded long enough during the growing season to develop anaerobic (oxygen deficient) conditions in the upper part.

hydrology—the field of study of the distribution and movement of water.

hydroturbine—a wheel with attached blades mounted to a shaft. Water released from a reservoir pushes against these blades, causing the turbine to spin, which powers the generating unit.

impoundment—in this EIS, another term for reservoir.

indirect impacts—effects that are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable (40 CFR 1508.4).

Interagency Team and Public Review Group (IAT/PRG)—individuals from the six Valley states, including 13 members of the public and representatives from 12 federal agencies, who were involved in review and development of the Reservoir Operations Study.

inter-basin transfer (IBT)—when water is moved from one watershed to another watershed. In 2000, the 13 IBTs from the Tennessee River watershed diverted 5.61 million gallons per day.

invasive species—an organism that successfully establishes itself, proliferates, and displaces native organisms in an ecosystem to the detriment of that ecosystem. Invasive species may include organisms referred to as non-native, exotic, alien, weeds, and pests, and may also include native species capable of rapid population expansion.

invertebrates—animals without backbones; used to refer to all animals except fish, amphibians, reptiles, birds, and mammals (the vertebrates).

karst—an irregular limestone region with sinks, underground streams, and caverns.

kilowatt hour (kWh)— the amount of energy equal to 1,000 watt-hours; common measure for use of electricity over time.

Lake Improvement Plan—the Tennessee River and Reservoir Operations and Planning Review (TVA 1990), commonly referred to as the Lake Improvement Plan. The Lake Improvement Plan proposed changes in TVA reservoir operations to maintain minimum flows below dams at critical times and locations, to increase dissolved oxygen (DO) below 15 dams by aerating releases, and to delay unrestricted summer drawdown until August 1 on 10 tributary reservoirs. These actions were proposed to recover over 170 miles

of aquatic habitat lost from intermittent drying of the river bed below TVA tributary dams and improve levels of DO in over 300 miles of river where water quality was impaired in late summer and fall by releases through TVA dams.

landscape visibility—a combination of several factors that include the context of those viewing the landscape and the concern they have toward the scenic value of the lands under study. Other factors include duration of view, number of viewers, viewing distance, and discernable details that can be influenced by light/shadow, atmospheric conditions, and air quality.

load—the amount of electric power that is drawn from TVA's electric system at a given point in time.

lock—an enclosed dam chamber with gates at each end that allows water to be admitted and released; the change in water levels allows vessels to be raised and lowered so they can pass over unnavigable parts of a river. The locks in the dams on the Tennessee River make navigation possible for 652 miles**—**from Knoxville, Tennessee, to Paducah, Kentucky.

loess—a type of soil consisting of windblown silt.

macroinvertebrates—aquatic insects, snails, and mussels whose species and genus can be determined with the naked eye**.**

macrophytes—aquatic plants large enough to be seen by the naked eye.

mainstem or mainstream storage reservoirs—reservoirs located along the Tennessee River between Fort Loudoun Reservoir and the Ohio River. These reservoirs are managed with seasonal lowering (typically less than 5 to 10 feet) of water levels to provide storage for flood control and were designed to serve multiple purposes, especially commercial navigation and hydropower production.

managed area—specific, defined, land in public, institutional, or private ownership that has been established and is operated to protect significant features or resources.

mass wasting— the slumping, sliding, or toppling of sections of bank, caused by structural failure.

megawatt hour (MWh)— the amount of energy equal to 1 million watt-hours; common measure for use of electricity over time.

minimum flow—a release from one or more dams provided to meet downstream water needs (e.g., aquatic habitat, water supply, and waste assimilation), hydropower production, reservoir level targets, and other commitments; a minimum flow does not represent the lowest flow rate that TVA can pass from a dam or dams. Project minimum flows are the minimum flow required to be released from a specific dam over a specific time period. System minimum flows are minimum flows needed at some point in the system to meet certain specific needs for power, waste assimilation, navigation, and other beneficial uses.

Minimum Operations Guide (MOG)—a seasonal elevation guide for some tributary storage projects that denotes a level below which only minimum flows should be released. The system MOG is a seasonal storage guide based on the sum of the storage in 10 tributary storage projects.

minimum pool—the lowest planned water elevation set by TVA for a mainstem reservoir.

mitigation—an action that either would result in avoidance of an effect or lessen adverse effects on a resource.

modal diversion—shifting of cargoes from barge to the rail or truck mode.

modeling—for this study, use of computers to predict the effects of altered reservoir operations.

multi-purpose reservoirs—reservoirs which were constructed and are operated to accommodate multi-purposes.

National Environmental Policy Act (NEPA)—a 1970 federal law that requires federal agencies to determine the environmental impacts of proposed actions, to consider alternatives to those actions, and to include a consideration of the environmental impacts when deciding which actions to conduct. The federal agency must prepare an EIS for actions "significantly affecting the quality of the human environment" (42 USC 4332).

National Historic Preservation Act (NHPA)—a 1966 federal law that requires agencies to avoid or mitigate impacts on significant archaeological or historic resources.

National Wetlands Inventory (NWI)—a program of the U.S. Fish and Wildlife Service that maps and categorizes wetlands of the United States based on "Classification of Wetlands and Deepwater Habitats of the United States."

native species—a species, not introduced from another location, which historically occurred or currently occurs in a particular ecosystem or habitat.

navigable waterway—the Tennessee River and tributaries of the Tennessee River having a marked, 9-foot-draft navigation channel suitable for barge transportation.

Neotropical migrant birds—birds that nest in the United States or Canada and migrate to spend the winter in Mexico, Central America, the Caribbean, or South America.

nonpoint source pollution—pollution such as nutrient increases, fecal wastes, and siltation occurring from sources such as agriculture or general urban development of an area.

normal operating zone—the operating space between the flood guide and the balancing guide for the Preferred Alternative.

nutrient enrichment—the addition of excessive nutrients above those naturally found in a water system.

nutrient loading—the addition of nutrients such as phosphorus or nitrogen from various sources in a watershed.

objectives—reflect the public and TVA's range of preferences for emphasizing

selected benefits from reservoir operations (such as improving recreation, reducing flood risk, and increasing tailwater aquatic habitat conditions).

operating guidelines—a set of guidelines that include guide curves, minimum flow requirements, water release requirements, and other requirements to meet system operating objectives.

option—one of many possible distinct types of water control operations or practices (such as maintaining specified winter or summer pool elevations and releasing minimum flows) that could be conducted at reservoir projects as part of one or more system-wide alternatives.

oxygen injection—a technique to improve dissolved oxygen levels in tailwaters, in which liquid oxygen is turned into gaseous form and then injected into the water before it enters a dam's turbine.

peaking capacity—a generating unit's or system's maximum output, generally applied to power resources whose output can be quickly changed to meet changing power requirements.

peaking power—supplying additional power quickly when daily power demands are highest.

permit for shoreline use—approval of proposed uses of TVA shoreline areas that can vary from the construction of water-use facilities or shoreline stabilization to the use of TVA lands for a variety of purposes, including vegetation management, recreational use, and agricultural use. These activities may be covered by a 26a permit or a TVA land use permit, depending on the type of activity.

personal income (PI)—wages and salary income, including transfer payments, dividend interest, and rent less personal social security payments.

physiographic regions—general divisions of land; each area has characteristic combinations of soil materials and topography**.**

point source pollution—pollution that typically comes from an identifiable source, such as industrial and municipal discharges.

policy alternative—a set of operational changes that would rebalance system operations to emphasize certain operating objectives, such as increased power production or opportunities for recreation. A policy alternative may emphasize several operating objectives at the same time.

pool recovery zone—the operating space below the balancing guide. Operations within this zone are usually made at minimum flow rates to try to fill the reservoirs back to within their normal operating zones.

Power Service Area—in this EIS, the area that receives its electricity from TVA sources. The Power Service Area includes 170 counties in much of Tennessee and parts of Alabama, Kentucky, Georgia, Mississippi, North Carolina, and Virginia.

Preferred Alternative—the policy alternative that TVA staff would prefer to

implement in order to achieve the overall project purpose.

prime farmland soils—types of soils with physical and chemical properties that economically can sustain high crop yields.

programmatic review—a type of environmental review that is appropriate when a decision involves a policy or program, or a series of related actions by an agency over a broad geographic area, as compared to a specific project or action.

project minimum flow—see minimum flow.

protected species—in the context of this EIS, any plant or animal species that is on a state or federal list of endangered, threatened, or special concern or in need of management of some form.

pumping station—a structure housing pumps used to move water through a pipeline from one location to another over some higher elevation.

qualitative—analysis based on professional judgment and/or limited data.

quantitative—analysis based on hard data or numbers that can be substantiated from observations or modeled data.

ramping rate—how many hydropower turbines are simultaneously brought online or taken offline at a hydropower plant. The term ramping rate also indicates an increase or decrease in generation by an individual hydro turbine unit.

raptors—birds of prey such as hawks, eagles, and owls.

recreation period—see summer pool elevation.

recreation trip—engaging in one or more recreation activities at one or more recreation sites for an unspecified amount of time but generally more than 3-4 hours. Several recreation visits could be made during one recreation trip (i.e., a person could go camping, fishing, and boating, which would be counted as three visits to different recreation sites during one trip). (See “recreation visit” below.)

recreation visit—the visit to an area or site to engage in some form of recreation activity. Although no timeframe is associated with a visit, it generally is approximately equal to a visitor hour. A person could enter different recreation sites during a day or could make multiple visits to the same site in one day, which would be counted as more than one visit. (See “recreation trip” above.)

Regional Resource Stewardship Council—a 20-member council first convened in March 2000. The council is a formally authorized Federal Advisory Committee. The members of the Regional Council represent public and private stakeholders who benefit from TVA’s management of the river system. Members are nominated by the governors of the seven states in the TVA power service area, the distributors of TVA power, and TVA’s directly served customers. They serve 2-year terms. Representatives of other interested groups are chosen by TVA.

regulating zone(s)—regulating zones provide guidance for the temporary storage of floodwaters and for the effective recovery of flood control space at each project. Each regulating zone is associated with a discharge rate at which flood storage recovery efforts should be made.

regulating zone guide—this curve represents the reservoir elevation at which the flood storage recovery policy changes, usually resulting in higher discharge rates when the pool is above the guide.

reregulation weir—same as weir.

reserve margin—extra standby power generation capacity that is maintained to ensure power system reliability.

reservoir (pool) level—the elevation of the water in a reservoir at a given time.

Reservoir Operations Study (ROS)—a study and Programmatic EIS. The purpose of this ROS is to determine whether changes in TVA's reservoir operating policies would produce greater overall public value. TVA is using the EIS process to elicit and prioritize the values and concerns of stakeholders; identify issues, trends, events, and tradeoffs affecting reservoir operating policies; formulate, evaluate, and compare alternative reservoir operating policies; provide opportunities for public review and comment; and ensure that any decision to change its operating policies reflects a full range of stakeholder input.

reservoir-triggered seismicity (RTS)—the initiation of earthquakes by the impoundment or operation of a reservoir; reservoir-triggered earthquakes can be identified by a change in the pattern of earthquake activity in the immediate vicinity of a reservoir that usually begins during or shortly after (days to a few years) initial filling of the reservoir; rapid reservoir elevation changes can also trigger earthquakes.

residence time—the amount of time on average that water remains in a reservoir.

restricted drawdown—a lowering of reservoir pool levels that is limited by one or more restrictions on the rate of change.

riparian zone—an area of land with vegetation or physical characteristics that reflect permanent water influence; typically, a streamside zone or shoreline edge.

riprap—stones placed along the shoreline for bank stabilization and other purposes.

riverine—having characteristics similar to a river.

run-of-river reservoir—a project that relies on the flow of a stream or river to produce hydropower, with little or no capacity to store water; one of two major categories of projects, the other being storage. These projects pass water through a dam at nearly the same rate it enters the reservoir, so they are managed with minimal changes in seasonal reservoir levels.

runoff—rain that flows off from the land into streams. About 40 percent of rainfall in

the drainage area of the Tennessee River system becomes runoff.

scenic attractiveness—a measure of scenic quality and its importance based on the perception of natural beauty that is expressed in the landscape.

scenic integrity—the measure of disturbance to a landscape and the degree to which the landscape deviates from the character and quality that are desired and valued for its scenic attractiveness. Scenic integrity is influenced by both the type and degree of shoreline development and pool-level elevations.

scope—range of operation; extent of activity or influence.

scoping—for this EIS, the process by which TVA gathered and analyzed comments from the public and government agencies on reservoir operating policies and then used that information to identify critical issues and subsequently develop alternative operating policies.

scrub/shrub—woody vegetation less than 20 feet tall, under the Cowardin et al. (1979) wetland classification system. Species include true shrubs, young trees, and trees or shrubs that are small or stunted because of environmental conditions.

sediment—material that is moved and deposited by wind and/or water.

shoreland—same as shoreline area.

shipper savings—costs that shippers avoid by moving cargo via barge versus rail or highway. Shipper savings are realized when navigation channels are deepened, or when available depth is sustained at consistent levels.

shoreline—the line where the water of a TVA reservoir meets the shore when the water level is at the normal summer pool elevation. This area is measured in miles in the SMI EIS.

Shoreline Aquatic Habitat Index (SAHI)—the index used to determine the quality of shoreline aquatic habitat, based on seven characteristics important to support good populations of sport and commercial fish.

shoreline area—the surface of land lying between the minimum winter pool elevation of a TVA reservoir and the maximum shoreline contour or TVA backlying property line (whichever is further). This area is measured in acres in the SMI EIS.

Shoreline Management Initiative (SMI)—An Assessment of Residential Shoreline Development Impacts in the Tennessee Valley (TVA 1998), known as the Shoreline Management Initiative, or SMI. In the SMI, TVA reviewed existing permitting practices and established a policy that better protects shoreline and aquatic resources, while accommodating reasonable access to the water by adjacent residents. The SMI document represents a review of alternative actions as well as an EIS. Seven alternatives for managing residential development were analyzed. This action affected 30 reservoir projects where TVA (under Section 26a of the TVA Act) has approval authority over proposed obstructions (such as docks, bank stabilization, and vegetation management). In 1998,

13 percent of the total shorelines miles on TVA's reservoirs was developed for residential uses, and lake front property owners had access rights along an additional 25 percent of the shoreline that was undeveloped. The SMI projected that up to 38 percent of TVA shoreline would eventually be developed for residential uses.

spillways—structures designed to allow relatively high flows of water over the top of a dam or through a separate structure. Spillways can be gated or uncontrolled.

storage reservoir—a reservoir that is capable of seasonally adjusting streamflow patterns to accomplish a variety of purposes.

stratification—the seasonal layering of water within a reservoir due to differences in temperature or chemical characteristics of the layers. (See "temperature stratification" below.)

substrate—the base or material to which a plant is attached and from which it receives nutrients.

summer operating zone—a zone that allows for fluctuations in reservoir levels for power production, flood control, and mosquito control.

surcharge zone—the area of the guide curve above the Top-of-Gates line. It represents the operating space above top of gates. It is available on reservoirs where TVA owns either flowage easements or fee simple land to an elevation several feet above the Top-of-Gates level.

surface water—water visible on the surface of the ground or in a stream, in contrast to groundwater.

suspended load—fine particles that move along in the mass of flowing water. Cloudy or muddy water typically includes suspended sediment.

system minimum flow—see minimum flow.

tailwater—the part of a river downstream from a dam; in this area, the flow and quality of the water are substantially affected by the dam discharge.

temperature stratification—the variation of water temperature with depth in a reservoir. The coldest water is typically the densest and is found on the bottom of the reservoir, whereas the warmest water is at the surface. In the Tennessee Valley, reservoirs usually begin stratifying in spring and become very stratified in May and June. Stratification disappears by winter.

Tennessee River system—the Tennessee River and its tributaries, the drainage area of which covers about 41,000 square miles, including 125 counties within much of Tennessee and parts of Alabama, Kentucky, Georgia, Mississippi, North Carolina, and Virginia.

Tennessee Valley 201-county region—the combined TVA Power Service Area and the Tennessee River watershed, comprising 201 counties within a 58-million acre area.

terrestrial—typically found on land.

thermal plant—a power plant that produces electricity from heat energy released by combustion of a fossil fuel (coal, oil, or gas) or consumption of a fissionable material (nuclear).

threatened species—an animal or plant that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

tiering—refers to the coverage of general matters in broader EISs with subsequent narrower EISs or Environmental Assessments incorporating by reference the general discussions from the programmatic EIS and concentrating solely on the issues specific to the subsequent project-specific action.

Top of Gates—this is the elevation at which spilling must occur to accommodate any additional inflow to the reservoir. The "Top of Gates" line indicates the elevation of the reservoir at the dam when the spillway gates are fully seated on the spillway crest.

tributary—a river or stream flowing into a larger stream; in this EIS, refers to the streams and rivers that eventually flow into the Tennessee River.

tributary storage reservoirs—storage reservoirs located on tributaries to the Tennessee River.

turbid—the clouded appearance of water because of the fine sediment it contains.

turbidity—all the organic and inorganic living and nonliving materials suspended in a water column. Higher levels of turbidity affect light penetration and typically decrease productivity of water bodies.

turbine pulsing—the operation of a hydroturbine for a short duration (from 15 to 60 minutes), often at regular intervals from 2 to 24 hours apart for the purpose of maintaining a minimum flow at some downstream location.

turbine venting—a technique to improve dissolved oxygen levels in tailwaters, in which air is drawn into hydroturbines and mixed with water as power is generated.

unrestricted drawdown—lowering of reservoir levels with no restrictions on the rate of change.

upland—the higher parts of a region, not closely associated with streams or lakes.

vascular plants—plants with specialized tissues that conduct water and synthesized foods.

vector—an insect (such as a mosquito) or other organism that can transmit a disease.

waste assimilation—the process by which a river accepts and dilutes wastewater.

wastewater—spent or used water from agricultural, residential, or industrial sources that contains dissolved or suspended matter.

wastewater discharge—water released into a stream or reservoir after being processed through a wastewater (sewage) treatment plant.

water column—the vertical section of water in a reservoir from its surface to its bottom.

water-compelled rates—a concept inferring that costs (rates) of shipping goods by rail are lower when water transportation is available to the shipper due to competitive factors and the need for the railroads to maximize utility.

water control system—the interconnected system of dams and reservoirs, tailwaters, navigation locks, and hydropower generation facilities on the Tennessee River and its tributaries.

water intake—a pipe or more complex structure designed and used to withdraw water from a stream or reservoir.

water quality—the physical, chemical, and biological characteristics of water compared to recognized standards of quality necessary to maintain certain uses.

water supply—water removed from a stream or reservoir for municipal or industrial use.

Weekly Scheduling Model (WSM)—the TVA reservoir system simulation model used to estimate reservoir elevations, discharges, and hydropower generations over a period of time.

weirs—structures (could be considered as low dams) placed in a river to temporarily back up or divert water. Generally, these structures are less than 10 feet high.

wetlands—areas inundated by surface or groundwater often enough to support a prevalence of vegetation or aquatic life that requires saturated or seasonably saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, and similar areas such as sloughs, potholes, wet meadows, mud flats, and natural ponds.

winter drawdown elevation—the planned winter elevation for a reservoir.

winter operating zone—a zone that denotes normal reservoir level fluctuations in the December-through-March period on mainstem projects.

10.3 Index

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