Revised Finding of No Significant Impact for the Natural Fluctuation of Water Level in Par Pond and Reduced Water Flow in Steel Creek below L Lake at the Savannah River Site

Agency: U.S. Department of Energy

Action: Revised Finding of No Significant Impact

Summary: The Department of Energy (DOE) prepared an environmental assessment (EA) (DOE/EA-1070) for the proposed natural fluctuation of water level in Par Pond, and reduced water flow in Steel Creek below L Lake at the Savannah River Site (SRS) near Aiken, South Carolina. Based on analyses in the EA, DOE determined that the proposed action was not a major Federal action significantly affecting the quality of the human environment within the meaning of the National Environmental Policy Act (NEPA) of 1969. Therefore, the preparation of an environmental impact statement (EIS) was not required, and DOE issued a Finding of No Significant Impact (FONSI) dated August 29, 1995.

DOE originally determined that maintaining a base flow of 10 cubic feet per second (cfs) in Steel Creek and Lower Three Runs (LTR) below the L Lake and Par Pond dams (respectively) would protect the aquatic biological communities within the receiving streams. For Steel Creek, this decision was based on the belief that a base flow of 10 cfs was representative of "historical natural flow" within the creek prior to construction of L Lake dam. For LTR, the decision to maintain a minimum base flow of 10 cfs in the stream reach below Par Pond was based on fish assemblage structure information and the relationship between discharge and habitat predicted by an instream flow model. Over the last few years, the SRS region has experienced rainfall below the historical average. Assuming a continuation of these climatic conditions, maintaining base flows of 10 cfs in Steel Creek and LTR below the L Lake and Par Pond dams (respectively) will require the release of additional water from L Lake and Par Pond to compensate for the loss of runoff from the watershed. In order to sustain increased lake discharges while maintaining minimum pool levels in the reservoirs, DOE would need to pump makeup water from the Savannah River (SR). This action would be costly because utilization of the river water pumping system is energy intensive. In addition, further reductions in releases from the SR dams could reduce the surface elevation of the SR below the level of the SRS river water intake pumps. DOE has therefore proposed to reduce the 10 cfs base flow requirement in both Steel Creek and LTR to eliminate the need for increased lake discharges and pumping makeup water from the SR.

Recent studies conducted by the Savannah River National Laboratory (SRNL) have determined that base flows of 4.5 cfs and 5.0 cfs in the reaches of Steel Creek and LTR immediately below the L Lake and Par Pond dams (respectively) would be sufficient to support balanced biological communities within the receiving streams (Paller 2007, 2008). Based upon these studies, DOE has determined that a proposed reduction in the required base flows in Steel Creek and LTRC immediately below the L Lake and Par Pond dams from 10 cfs to 4.5 cfs and 5.0 cfs (respectively) does not constitute a major Federal action which significantly affects the human

environment as defined by NEPA. Therefore, the preparation of an EIS is not required, and DOE is issuing this revised FONSI.

Public Availability: Copies of the existing EA and FONSI or further information on the DOE NEPA process are available from:

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Background: In DOE/EA-1070, DOE assessed the impacts of reducing base flows in Steel Creek and LTR below the L Lake and Par Pond dams (respectively) and found that maintaining flows of 10 cfs in each stream would be sufficient to sustain balanced biological aquatic communities. For Steel Creek, this finding was based on the belief that 10 cfs was representative of "historical natural flow" within the creek prior to construction of L Lake dam. For LTR, the 10 cfs flow criterion was based on fish assemblage structure information and the relationship between discharge and habitat predicted by an instream flow model. Under normal climatic conditions, the 10 cfs base flow requirement would be met by groundwater influx, surface runoff from the surrounding catchment, and discharges from the upstream reservoir. However, over the last few years, the SRS region has experienced below normal rainfall levels and flows within Steel Creek and LTR below the dams have become primarily limited to discharges and seepage from L Lake and Par Pond. In order to meet the 10 cfs base flow requirement, DOE will need to release additional water from the reservoirs to compensate for the lack of natural runoff. To sustain an increase in lake discharges while maintaining minimum pool levels in the reservoirs, DOE will be forced to pump makeup water from the SR. If implemented, this action would be expensive because utilization of the river water pumping system is energy intensive.

Proposed Action: The proposed action is to reduce base flow requirements in the reaches of Steel Creek and LTR immediately below the L Lake and Par Pond dams (respectively) from 10 cfs to 4.5 cfs and 5.0 cfs, respectively.

Purpose and Need for Agency Action: The existing FONSI requires that DOE maintain a 10 cfs base flow in the reaches of Steel Creek and LTR below the L Lake and Par Pond dams (respectively) in order to support balanced biological communities within the receiving streams. The purpose of the proposed action is to reduce the base flow requirements in Steel Creek and LTR to preclude the need for compensatory lake releases during extended periods of diminished rainfall. DOE needs to take this proposed action to prevent the necessity for pumping makeup water from the SR into L Lake and Par-Pond, as both a cost savings and drought contingency measure.

Environmental Impacts: The reaches of Steel Creek and LTR immediately below the L Lake and Par Pond dams qualify as second order streams. Recent SRNL studies of 12 free flowing (i.e., not impounded), second order Sand Hills stream sites on the SRS determined that the

existing base flow requirement of 10 cfs is more than is necessary to support a balanced biological aquatic community in streams of this kind (Paller 2007, 2008). All stream sites studied supported fish communities with species diversity and composition and numerical abundance greater than, comparable to, or slightly below what is typical of relatively undisturbed second order streams in the SRS region. Review of data from the study sites shows that the proposed base flows of 4.5 cfs and 5.0 cfs for the reaches of Steel Creek and LTR immediately below the L-Lake and Par Pond dams (respectively), are greater than the average flow rate observed for all study stream sites during low rainfall years (or dry periods). During high rainfall years (or wet periods), flow within the Steel Creek and LTR stream reaches below the dams would be augmented by natural runoff and groundwater influx from the surrounding drainage area. Although fluctuations in flow in the stream reaches immediately below the dams would not be as great as in an unimpounded stream, the SRNL studies concluded that maintaining continuous base flows of 4.5 cfs and 5.0 cfs in Steel Creek and LTR (respectively) would be sufficient to support balanced biological aquatic communities typical of similar second order streams.

Determination: Based on the information and analyses contained in the SRNL studies, DOE has determined that the proposed reduction in base flows in the reaches of Steel Creek and LTR immediately below the L Lake and Par Pond dams to 4.5 cfs and 5.0 cfs, respectively, does not constitute a major Federal action significantly affecting the quality of the human environment within the meaning of NEPA. Therefore, an EIS is not required and DOE is issuing this revised FONSI.

Signed in Aiken, South Carolina, this 29th day of January, 2009.

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