

**APPENDIX E. PUBLIC COMMENTS AND DOE RESPONSES  
DRAFT ENVIRONMENTAL IMPACT STATEMENT  
SHUTDOWN OF THE RIVER WATER SYSTEM  
AT THE SAVANNAH RIVER SITE**

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## APPENDIX E

### PUBLIC COMMENTS AND DOE RESPONSES

#### DRAFT ENVIRONMENTAL IMPACT STATEMENT

#### SHUTDOWN OF THE RIVER WATER SYSTEM AT THE SAVANNAH RIVER SITE

##### E.1 Introduction

The U.S. Department of Energy (DOE) published the Draft Environmental Impact Statement (EIS) on the Shutdown of the River Water System in November 1996. DOE announced the availability of the document in the *Federal Register* on November 15, 1996. On December 4, 1996, DOE held public meetings to receive oral and written comments on the Draft EIS in North Augusta, South Carolina. The public comment period ended on December 30, 1996. The Final EIS (FEIS) is available for review in DOE reading rooms in Washington, D.C. and Aiken, South Carolina, and DOE has distributed it to individuals, public agencies, Federal and state officials who requested a copy, and to persons and agencies who commented on the Draft EIS.

Court reporters documented comments from 29 people in official transcripts. DOE also received 16 letters on the Draft EIS through regular mail, facsimile transmission (fax), and electronic mail (E-mail). Five of the letters were from Federal agencies and three were from agencies and offices of the State of South Carolina.

This appendix presents the comments received and the DOE responses to those comments. It includes comments made at the public meetings and the letters submitted to DOE. If a statement or comment prompted a revision to the EIS,

DOE identified the revision by a vertical line (change bar) in the margin of the document along with a letter-code.

- Hearings H1
- Letters L1 through L16

DOE numbered the specific comments in each letter or oral presentation sequentially (01, 02, etc.) to provide unique identifiers. Table E-1 lists the individuals, government agencies, and other organizations that submitted comments and their unique identifiers. The hearing comments are organized in categories, which are discussed below.

The comments and statements reflected a number of issues about the EIS. The following sections describe those issues and provide responses to the comments. The U.S. Environmental Agency (EPA) gave the Draft EIS a rating of EC-2, which means that EPA had environmental concerns about the project and that it wanted more information to assess the impacts fully. In particular, the issue of ecological risks warranted further discussion in the Final EIS. EPA stated that "overall the draft EIS is well written and illustrated. We agree that the format used enhances the clarity of the presentation of analyses."

**Table E-1. Public Comments on the Draft River Water Environmental Impact Statement.****Comment Received at the December 4, 1996 Public Meeting**

Comment Source Number	Commentor	Page No.
H1	Karen Patterson	E-9

**Correspondence Received from Government Agencies and the Public**

Comment Source Number	Commentor	Page No.
L1	Todd V. Crawford	E-12
L2	Todd V. Crawford	E-14
L3	K. G. Craigo	E-16
L4	Andreas Mager, Jr. National Marine Fisheries Service	E-18
L5	John G. Irwin Savannah River Forest Station	E-21
L6	Robert E. Duncan South Carolina Department of Natural Resources	E-24
L7	I. Lehr Brisbin, Jr. Savannah River Ecology Laboratory	E-26
L8	F. Ward Whicker Colorado State University	E-34
L9	Tim Connor Energy Research Foundation	E-39
L10	Heinz J. Mueller U.S. Environmental Protection Agency	E-52
L11	Gary Wein Savannah River Ecology Laboratory	E-64
L12	W. Lee Poe, Jr.	E-71
L13	Sally C. Knowles South Carolina Department of Health and Environmental Control	E-75
L14	Rodney P. Grizzle Office of the Governor	E-80
L15	Citizen Advisory Board	E-91
L16	Willie R. Taylor U.S. Department of the Interior	E-95

## E.2 Synopsis of Comment Categories

### Future Missions/Costs

DOE wrote this EIS to determine if, in a period of decreasing funding, it should continue to operate the River Water System at the Savannah River Site; the system has no current mission and will become more expensive to operate. The proposed action of the EIS is to shut down the River Water System and to place all or part of the system in a standby condition that would enable restart if conditions or mission changes required its operation. Commentors expressed concerns about the true cost savings that shutdown would bring or how future unknown missions could require the use of the system. One organization expressed concern that shutdown might be "penny wise and dollar foolish" (Energy Research Foundation letter L9 of December 30, 1996) because the recession of L-Lake could undermine the DOE environmental remediation program. Six commentors made 15 comments on future mission and cost issues.

### Loss of Terrestrial, Aquatic, or Wetlands Habitat/Effects on Endangered Species

The implementation of the shutdown alternatives would cause a reduction in habitat for fish, amphibians, reptiles, semiaquatic mammals, wading birds, and waterfowl; replace the reservoir ecosystem with a small stream ecosystem; potentially expose animals foraging in the lakebed after drawdown to contaminated sediments, cause a loss of submerged and floating-leaved aquatic plants; cause a loss of foraging habitat for bald eagles; potentially expose wood storks to increased levels of contaminants; and over time displace L-Lake alligators. Commentors in 12 letters and in both sessions of the public hearing expressed concern about these impacts.

### Land Use/Privatization

DOE discussed land use in the 1996 *SRS Future Use Project Report*, which summarized stakeholder-preferred future use recommendations that DOE uses to consider ongoing and future land use needs. The report recommended unchanged SRS boundaries and maintenance of the land under Federal ownership; prohibition of residential uses of SRS land; multiple land uses (e.g., recreation, natural resource management) and consideration of privatization; and pursuit of natural resource management where possible. Three letters and one meeting comment discussed future land use/privatization issues.

### Human (Occupational and Public) Health/Ecological Risk

Analysis of the proposed action indicates that the level of L-Lake would recede to the original Steel Creek stream channel, thereby exposing contaminated sediment, and that the surface-water level of Par Pond would continue to fluctuate naturally near full pool of about 200 feet. The changes in the lakebed would expose sediments (e.g., a lake level of 196 feet would expose about 340 acres of sediment). The exposed sediment would dry and could become suspended in the atmosphere, available for inhalation by onsite workers and the offsite population within 50 miles. DOE would also stop pumping water to the reactor areas and stream flows would revert to original levels, which would not expose additional sediments. Minimal impacts would occur from increased concentrations of contaminants in the affected streams. The effects of increased concentrations are addressed in Sections 4.2.8.2 and B.6. Four comment letters and several meeting participants expressed concerns about human

health risks from radiological exposure; several letters were concerned about ecological risk.

### **Potential Remediation and NEPA/CERCLA Integration**

DOE has established the process for environmental restoration activities at the SRS in accordance with the Federal Facility Agreement (FFA). In evaluating the shutdown of the River Water System, the EIS considers a number of actions that DOE would have to

implement before shutting the system down or continuing operation with a small pump. DOE also considers potential future actions that could affect decisions on appropriate actions for the River Water System. Commentors in three letters and at the meetings expressed concerns about coordinating the EIS and FFA processes, expediting the FFA process to facilitate the implementation of cleanup and operational shutdown activities; and the possibility of an expensive cleanup action.

## **E.3 Summary Analysis of Hearing Comments and Issues**

The public meetings consisted primarily of informal discussions on the draft EIS. The transcripts yielded a number of public comments and concerns, but because of the informal nature of the hearing, these comments were not sequential or easy to assign identifying numbers. Therefore, this section contains a synopsis of the hearing comments. The comments are grouped in the categories listed in Table E-2. Table E-2 also lists the number of comments received in each category. The sections following the table discuss the comments by category, the DOE responses, and any resulting changes to the Final EIS. DOE did not identify comments from the meetings that dealt with Potential Remediation.

Transcripts of the public meetings are available for review at the DOE Public Reading Room at the University of South Carolina, Aiken

Campus, Gregg-Graniteville Library, 2nd floor, University Parkway, Aiken, South Carolina, 803-648-6851.

### **Future Missions/Cost**

A number of commentors identified concerns about future missions at the SRS and potential interactions with the River Water System. In addition, commentors were concerned about whether shutting down the River Water System would actually save money. These concerns included the following:

- The potential future need for L-Lake
- Keeping the River Water System available for the accelerator project
- The future of the River Water System

**Table E-2.** Summary of informal public hearing comments applicable to the River Water Environmental Impact Statement.<sup>a</sup>

Comment category	Number of comments
Future missions/cost	15
Loss of habitat/endangered species	3
Land use/privatization	1
Human health	3
Potential remediation	0
No specific category	5

a. DOE held two sessions of the public hearings on December 4. Three commentors contributed 13 comments at the afternoon session; 6 commentors contributed 14 comments at the evening session.

- Maintaining the level of Par Pond
- Impacts on SRS if the system is shut down
- The amount of money a shutdown would save
- The amount of water in the watershed to generate enough flow
- The lack of cohesive and unified plans for new missions at the SRS
- The need for water emergency purposes
- Consistency with the SRS 10-year plan

The hearing attendees asked several questions about the future of the River Water System, including its use for potential new missions, potential future needs for L-Lake, and maintaining the level of Par Pond.

DOE proposes to shut down the River Water System but maintain it for potential future uses. The Proposed Action (and Preferred Alternative) offers flexibility in the portions of the system that would be maintained, the time it would take to restart the system, and the methods employed during layup to enable restart. The Proposed Action represents a middle ground between two other alternatives evaluated in the EIS. Under the No-Action Alternative, DOE would operate the system with a small pump that is sufficient to maintain L-Lake at its normal water level and provide water for other minor uses. Under the other bounding alternative, Shut Down and Deactivate, DOE would shut down the system with no measures to permit restart of the system.

DOE presented three examples for restarting the system. DOE does not wish to imply that it expects to need to restart the system for the situations presented but selected them to cover a range of actions that maintenance in standby would support (i.e., pump to L-Lake, Par Pond, or a new facility).

Under either shutdown alternative, L-Lake is expected to drain and expose very low levels of contamination in the lake exclusive of the

stream channel and floodplain. Because the stream channel and floodplain that are beneath L-Lake have similar contamination levels as the upstream and downstream reaches of exposed channel and floodplain, DOE believes the example possibility of refilling the system as a mediation measure is very remote. DOE has not identified future missions that would require L-Lake.

Similarly, DOE presented an example of restarting the system to pump to Par Pond. Maintenance in standby would enable DOE to honor its commitment to remedy the unlikely drawdown of Par Pond in the near term until final CERCLA remedial actions are implemented. DOE believes that Par Pond would not fall below the 195 foot level unless there was a catastrophic drought that would also affect water quality in other regional lakes and streams. In calendar year 1996, a dryer-than-average year, the lowest daily lake level was 199.21 feet. Nevertheless, DOE prefers to maintain the River Water System after shutdown and, if necessary, would restart the system, pump to Par Pond, and bring the water level to an appropriate level above 195 feet. See Section 3.3.1.1.

One commentor asked how much money a shutdown would save. DOE describes costs of shutdown versus operation (no action) in Sections 3.1, 3.2, and 3.3. Maximum savings would occur in the Shutdown and Deactivate Alternative. This alternative would save about \$1.5 million per year. Annual savings under the Shutdown and Maintain Alternative would vary from about \$175,000 and \$1.4 million depending on the time required to restart the system, whether the system piping is pressurized by a jockey pump or drained, and whether the line that Accelerator Production of Tritium (APT) would use is maintained or deactivated.

There are other known or potential costs associated with the shutdown alternatives (e.g., a septic tank and tile field to replace blending water for the L-Area sanitary

wastewater discharge). DOE has revised Section 3.3 to include these costs.

The impacts on SRS if DOE selects a shutdown alternative are documented in Chapter 4. As presented in Section 4.1.5, the most dramatic effects would be on the ecology of L-Lake. DOE believes there are also beneficial impacts associated with a shutdown action. In addition to cost savings, DOE has considered indirect beneficial impacts such as reduced energy consumption, reduced entrainment of fish larvae and fish eggs and impingement of fish in the Savannah River, and restoration of the pre-SRS ecosystem, including 225 acres floodplain forest.

Although planning for new missions is not within the scope of this EIS, DOE identified its Preferred Alternative in response to potential new missions. The example that was presented for a new mission was APT. Other potential missions that might require enough cooling water to make the use of the River Water System a viable option include the Tritium Extraction Facility, International Thermonuclear Experimental Reactor and Mixed Oxide Fuel Manufacturing Plant. Under the Proposed Action, the River Water System could be restarted in time to provide cooling water for these potential missions.

The average annual natural flow to L-Lake dam is estimated to be 10 cubic feet (0.28 cubic meters) per second. This rate is based on watershed size, adjacent gaged sites of similar size that are upstream of river water discharges, and the characteristics of Steel Creek when it was not receiving the large cooling water flows from P- or L-Reactor. DOE performed an in-stream flow study and found that this discharge would support an aquatic community similar to that which existed prior to the restart of L-Reactor. This natural flow would not be sufficient to sustain L-Lake, but it would allow regrowth and restoration of diverse ecosystem as the lake recedes.

DOE has carefully evaluated the shutdown alternatives and has not identified a need for continued or new uses of the River Water System. The system has not been used for emergency purposes, and DOE is well equipped to respond to emergencies without the River Water System (e.g., to provide firewater).

DOE has determined that current river water flows to C- and P-Reactors are not needed. For example, although the 10-Year Plan identifies P-Area transition to long-term monitoring in 2002, the P-Area sanitary wastewater plant was disconnected in November 1996. Because it is a package unit, it is being maintained for potential use at another location.

#### **Loss of Terrestrial, Aquatic, or Wetlands Habitat/Effects on Endangered Species**

A number of commentors identified concerns about sensitive habitats and threatened and endangered species in the area of L-Lake and Par Pond, including the following:

- Use of L-Lake by wood storks
- Proximity of bald eagle nests to L-Lake
- Coordination with other SRS environmental organizations such as the Savannah River Ecology Laboratory on the restoration of natural habitat to Steel Creek

Tables S-2 and 3-4 list expected impacts to wood storks and bald eagles from the alternatives; Section 4.1.5 discusses potential impacts to ecological resources. DOE coordinates with many Federal and state agencies; it has received comments from Savannah River Ecology Laboratory (Letters 7 and 11). DOE appreciates the comments from Savannah River Ecology Laboratory and has attempted to take these comments into consideration in writing the FEIS.

### Land Use/Privatization

One commentor was concerned about the condition of Steel Creek below the dam. This person asked if the stream had returned to a normal vegetative system as it was in 1951.

No studies characterizing the wetland vegetation of the Steel Creek corridor before the establishment of the SRS are available, but Upper Three Runs, a relatively undisturbed blackwater stream on the SRS, can illustrate the likely wetland vegetation of the Steel Creek corridor before the development of the SRS. Trees adjacent to the stream include tulip poplar, beech, sweetgum, willow oak, swamp chestnut oak, water oak, sycamore, and loblolly pine. Dogwood, red buckeye, and American holly are also abundant. Tag alder is common along sandy stream margins. Macrophytes in wet sites with open canopies include eelgrass (*V. americana*), pondweed (*Potamogeton epihydrous*), and bulrush (*Scirpus subterminalis*). Golden club (*Orontium aquaticum*), wapato (*S. latifolia*), water primrose (*Ludwigia* spp.), and knotweed (*Polygonum* spp.) occur on small floodplains.

Although the Steel Creek corridor has not fully re-established its historic vegetative system, signs of recovery are evident.

A recent mapping effort by the Savannah River Ecology Laboratory mapped aerial coverage of the Steel Creek corridor and delta in 1996. Three vegetation classes were identified: marsh, scrub-shrub, and hardwood. The hardwood class covered the largest acreage, 1,185.1, and was predominated by a young developing stand of bald cypress, tupelo, and ash. The marsh class covered 48.3 acres and was dominated by cutgrass (*Leersia* spp.) and wapato. The scrub-shrub class covered 20.7 acres and was predominated by willow and buttonbush.

### Human (Occupational and Public) Health/Ecological Risk

A number of commentors identified the following concerns about increased radioactivity levels that could result from a shutdown of the River Water System and the subsequent exposure of the bed of L-Lake:

- The effect of wind blowing the radioactive contamination from the lakebed
- The amount of low-level and other radioactive contaminants in the area
- The types of instruments used to determine radioactivity levels and the readings they showed

As discussed in Section 4.1.8.2 in the EIS and Figures 4-23 and 4-24, the Multimedia Environmental Pollutant Assessment System (MEPAS) code (Droppo et al. 1995) evaluated several contaminant pathways to human receptors including those arising from suspension and resuspension of sediment particles from the dry lakebed. Factors considered in the impact evaluation included contaminant concentrations in the soil, area of exposed dry sediment, average wind speed, maximum wind speed, number of disturbances in the sediment by humans, number of thunderstorms per year, annual average rainfall, local mass-loading factors, resuspension factors, atmospheric dispersion, and plum depletion. All of these factors were used to estimate impacts to onsite workers and offsite populations through the inhalation and ingestion pathways. These impacts resulting from the drawdown of L-lake estimated as latent cancer fatalities are presented in Section 4.1.8.2.2.

Section 4.1.8.1 of the EIS discusses the methods used to obtain a contaminant concentration in the L-Lake sediments. These validated data are presented in Table 4-14 and in Appendix C. To

obtain these data, samples obtained from the L-Lake sediment were analyzed in the laboratory using appropriate instrumentation (e.g., hyper-pure germanium solid state detectors were used to detect and identify radionuclides). All laboratory analyses were performed by trained laboratory technicians using state-of-the-art equipment traceable to the National Institute of Standards and Technology.

Appendix C presents the results of DOE's measurements of radioactivity and radioactive contamination. The ecological and human health analyses presented in this EIS utilize this comprehensive data to determine the potential risks associated with those contaminants found in the lakebed sediments and contaminants that could be released as a result of human or natural actions (wind). Any necessary remedial actions for the two locations will be assessed in accordance with the process set forth in the Federal Facility Agreement.

#### **No Specific Category**

A number of commentors expressed concerns that did not belong in a specific category. The following sections address these concerns.

- **Amount of Water Pumped**

Although the current River Water System demand is 5,000 gallons per minute, DOE is operating one of the 10 pumps in Pumphouse 3G, which supplies approximately 28,000 gallons of river water per minute to C-, K-, L-, and P-Areas. DOE has purchased and will soon operate a small 5,000-gallon-per-minute pump and save about 23,000 gallons per minute of excess withdrawal. Because the small pump will operate before DOE decides which alternative to select, it is used as the

baseline condition for assessing the No-Action Alternative.

- **Pump and Treat**

*Pump and treat* is a groundwater cleanup method that pumps contaminated groundwater to treatment systems to reduce contaminant concentrations. After treatment, the water is either injected back to the groundwater aquifer or discharged to a surface-water stream. In relation to this EIS, DOE has not identified relevant applications of this method.

- **Water Reduction Impacts**

A reduction in water flow would cause areas currently beneath L-Lake to become exposed and dry out. DOE analyzed the impacts of such a drying process, which could result in increased levels of airborne contaminants and erosion. DOE expects these increased levels to occur over a short period (less than a year after complete equilibrium) and to be far below levels of Federal and state regulatory concern.

- **References cited in text and qualifications of EIS authors**

Each referenced document cited in the EIS appears in a reference list (Chapter 6); the documents referenced in the EIS and its appendixes are available in public reading rooms at the University of South Carolina, Aiken Campus, Gregg-Graniteville Library, 2nd floor, University Parkway, Aiken, South Carolina, 803-648-6851.

The EIS contains a List of Preparers, which includes each person who contributed to the EIS and that person's qualifications, education, and skills.

## COMMENT FORM

PUBLIC MEETING ON THE  
DRAFT ENVIRONMENTAL IMPACT STATEMENT  
SHUTDOWN OF THE RIVER WATER SYSTEM  
AT THE SAVANNAH RIVER SITE  
DECEMBER 4, 1996

Please provide the following information:

Karen Patterson

Full name (please print)

The organization you represent (if any)

Street address

1103 Conger Dr.

Aiken SC 29803

City, state, zip code

COMMENT - Please use back of form for continuation.

The EIS use a CDC (1995) number of 23.5/100 deaths  
cancer from cancer per year. Last week the journal  
Cancer published a number of 130-135/100,000 cancer  
deaths per year. Since this is a huge difference, I would  
appreciate knowing the reason for the big difference  
and why DOE has selected the CDC number.

H1-01

PK64-32PC

# CANCER: THE GOOD NEWS

**IN THE RUSH OF SCIENTIFIC OPTIMISM THAT FOLLOWS** the year's specific and the first major well-known Nixon declared war on America's second biggest killer, cancer. Twenty-five years and \$36 billion later, the news from the cancer front is good and bad.

The good news is that, for the first time since 1990, the overall cancer death rates in the U.S. are coming down. According to a report published last week in the journal *Cancer*, the number of cancer deaths fell from a peak of 125 per 100,000 in 1990 to 130 last year—a 3.1% drop. Researchers encouraging that trend seems to be accelerating. Experts predict that within 20 years, deaths from cancer could easily be cut an additional 25%, and what lack they could be cut in half. As Health Secretary Donna Shalala proudly declared last week, "We are starting to win the war on cancer."

The bad news is that all those billions spent on research into basic science may have had little to do with it. Doctors have said

found a magic bullet against cancer, and it is becoming increasingly clear that they probably never will. Instead, most of the giant investments have been consumed from such factors as changes in life style, reduced exposure to chemicals in the work place and better detection of malignant growth.

The single most important factor in the new cancer statistics—both good and bad—was smoking. Cigarette consumption has dropped sharply in the past 10 years, from 4.1% per capita annually in 1984 to 2.8% today, and the effects of that drop are finally starting to show up. Lung cancers still account for 30% of all cancer deaths, but in those demographic groups that cut back sharply—male Caucasians, for example—lung-cancer death rates have dropped impressively (6.7%). Conversely, a lot of women took up smoking over the same period, which may account for the rise in lung-cancer rates among older women over the past five years (6.4%).

Cancer awareness has paid off as well. Patients are much more conscious today of cancer's early warning signs—and more likely to go in for regular Pap smears and prostate exams. These tests, meanwhile, have become exquisitely sensitive. Breast cancers, for example, can now be spotted when they are only 2 cm in size, compared with 3 cm a few years ago. "The smaller the cancer," says Harmon Byre, chief medical officer of the American Cancer Society, "the better the chances of survival."

The good news may be short-lived, however. American teens are taking up tobacco in alarming numbers. Today, 19% of all eighth-graders use tobacco regularly, up from 14% in 1991. By tenth grade, about 28% are smoking. If they keep it up, they can forget about living longer—or healthier—lives. —By Dick Thompson/Washington

## All Cancers

Change in death rates since 1991



## Lung



## Breast



## Prostate



## Colorectal



gineering all 7,000 would be impossible.

For the time being, therefore, many researchers are shifting their focus to goals that are more achievable. If the genes responsible for regulating senescence can't yet be manipulated, they wonder, is it possible to directly treat parts of the body they affect? Jerry Shay, a biologist specializing in cancer research at the University of Texas Southwestern Medical Center in Dallas, does not rule it out. Instead of engineering genes, he says, "we might be able to squirt some chemical to trigger telomerase at a particular site. The enzyme would turn on for a few weeks, change the expression of cells and revert them to a younger profile. We wouldn't have to treat the whole body."

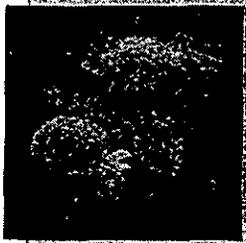
Still other researchers are using what they've learned about telomeres and the other cellular mechanisms to attack the diseases that keep the very old from becoming still older. Researchers at Geron Pharmaceuticals recently published a study in which telomerase RNA was used to block the enzyme in a cancer culture, leading to withering of telomeres and the death of the no-longer-so-prolific cells. Elsewhere, investigators are looking into using the anticaramelization drug pimgedine to help clear arteries and improve cardiac health. Remove heart disease from the constellation of late-life illnesses, and you add three years to the national life expectancy. The detection of a gene that seems to confer protection against Alzheimer's disease may help treat yet another scourge of the aged, currently afflicting 4 million Americans.

While none of these therapies would take human beings anywhere near the tripled and quadrupled life-spans achieved in fruit flies and nematodes, they could at least improve our life expectancies—the number of years even our shortened telomeres and caramel-gummed cells would allow us to achieve if illness didn't claim us first. For much of the time our species has been on the planet, that figure is thought to have been a mere 20 years—barely long enough for contemporary people living contemporary lives to move out of their parents' home. The fact that those lives now routinely exceed 60 years is a monumental achievement. A little more progress in studying telomerase, glycosylation and other aspects of senescence science, and researchers like Butler believe there's no reason today's adults could not realistically hope to see 120.

For people dreaming of immortality, that prospect may fall a little short. But for those of us who are contemplating a life that ends around age 60, four or five additional decades sounds like a splendid first step.

—With reporting by Elaine Lafferty/Los Angeles, Alice Park/New York and Dick Thompson/Washington

C-1359



## E.4 Responses to Comments on Draft RWEIS: Hearings

### Response to Comment H1

The percentage of cancer deaths reported in the EIS, 23.5 percent, represents the number of deaths due to cancer (505,322) as compared to the total number of deaths from all causes (2,148,463) occurring in the United States during 1990. These mortality statistics were published by the Center for Disease Control, National Center for Health Statistics report *Advance Report of Final Mortality Statistics, 1990*. The 1990 rate of 135 cancer deaths per 100,000 standard population reported in the journal *Cancer* is the age-adjusted cancer death rate as published in the same CDC document. These statistics use two different representative populations, the total number of deceased individuals and the entire U.S. population, and, thus, are not directly comparable.

The age-adjusted rate is computed by applying age-specific death rates for a given cause of death (in this instance, cancer) to a standard population distributed by age. The standard population used by CDC for determining age-adjusted rates is the total population as enumerated in 1940. The age-adjusted death rates show what the level of mortality would be if no changes occurred in the age composition of the population from year to year and thus better show the changes in the risk of death over a duration than when the age distribution is changing. Therefore, the age-adjusted rate is not comparable with and appears to be lower than the unadjusted or crude death rates specified for the population enumerated by 1990 census data.

**NEPA at Savannah River**

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**From:** Todd v. Crawford  
**To:** Andrew R. Grainger  
**Subject:** EIS's APT and River Water Shut Down  
**Date:** Friday, October 25, 1996 9:58AM

I would like to encourage you to keep the above two EIS's consistent.

I was pleased to see that the preferred alternative for a source of cooling water for the APT is the river. Earlier rumors had it being the groundwater which concerned me from the standpoint of groundwater resources and weakening the "head reversal" over much of the 200-area. I do not know what is now the preferred action with respect to the Shut Down of the SRS River Water System EIS but I do know that the push behind this EIS was the desire to shut down the river water system.

L1-01

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## E.5 Responses to Comments on Draft RWEIS: Letters

### Response to Comment L1-01

As indicated throughout this EIS, the DOE Preferred Alternative is to shut down the River Water System but to maintain all or portions in a standby condition. This condition would enable potential restart to support a new mission. Section 3.3.2 has been revised to include the additional cost of maintaining the

section of existing pipe that would be used to supply make-up water to recirculating cooling towers located at the Accelerator Production of Tritium (APT) site (the preferred APT cooling water alternative) as well as the cost to maintain sufficient pumping capacity to supply full flow, on a once through basis, to heat exchangers located at the APT site.

**NEPA at Savannah River**

**From:** Todd v. Crawford  
**To:** Andrew R. Grainger  
**Subject:** Draft EIS Shutdown SRS River Water System  
**Date:** Monday, December 02, 1996 10:32AM

I have another commitment on December 4, 1996 which will prevent me from attending the public hearing so wanted to send you this comment.

I support putting the system in a standby situation. I support the condition indicated in Table 3.1 as 30 months, Jockey pump. I do not believe any significant new mission could come into place before 30 months. HOWEVER, I believe that enough of the R-Area piping system should be maintained to provide cooling water for the APT.

I also believe that the regulatory situation with EPA and SCDHEC needs to be carefully negotiated so that L-Lake does not have to be cleaned up as a CERCLA site upon exposing some of the Cs-137 contaminated sediments.

L2-01  
L2

**Response to Comment L2-01**

Section 3.3.1.3 confirms that 30 months is sufficient time to make the required upgrades and replacements to the River Water System without affecting the schedule for a new mission such as Accelerator Production of Tritium (APT). Section 3.3.2 has been revised to indicate the additional cost of maintaining the R-Area piping system.

**Response to Comment L2-02**

DOE is committed to coordinating NEPA actions being considered in this EIS with SRS remediation activities planned and conducted in accordance with CERCLA under the FFA, and proposes to initiate discussions with EPA and SCDHEC to determine reasonable means of expediting the FFA process to achieve appropriate coordination.

Neither DOE or its regulators would agree not to require cleanup of the exposed sediments

until characterization and evaluations under CERCLA are complete. Because there has been little, if any, additional contamination since DOE built L-Lake, the concentration of contaminants in L-Lake exclusive of the Steel Creek channel and floodplain is relatively low and based on preliminary evaluations summarized in Appendix A. However, DOE believes that institutional controls for a period that allows sufficient natural radioactive decay are consistent with current land use plans and is probably the most reasonable and cost efficient option. This option will have to be considered among other alternatives consistent with CERCLA requirements.

Contamination in the portion of the Steel Creek channel and floodplain that is beneath L-Lake is approximately equal to that which exists above and below the lake and the portion which is beneath L-Lake would probably receive the same remediation, if any.

Dec. 13, 1996

Andrew R. Grainger  
SR NEPA Compliance Officer  
Savannah River Operations Office  
P.O. Box 5031  
Aiken, South Carolina 29804-5031

Dear Mr. Grainger:

I would like to see this site closed permanently. I would recommend that this land be made a part of Sumter National Forest for multi use management. However, timber harvest should be restricted, especially, along rivers, streams, roadways, and other areas of high visibility. Thank you for the opportunity to comment.

Sincerely,  
K. H. Craig

107 Locksley Drive  
Greenwood, L.C. 29649

L3-01

PK64-12PC

**Response to Comment L3-01**

At this time, the Forest Service of the U.S. Department of Agriculture performs many of the functions at the SRS that it performs in the National Forest System by managing more than 90 percent of the Site area through an

Interagency Agreement. Although there is limited public access to these SRS areas, Forest Service management includes activities normally performed in national forests – timber and wildlife management programs, including limited timber sales and care of threatened or endangered species.



**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
 NATIONAL MARINE FISHERIES SERVICE

Southeast Regional Office  
 9721 Executive Center Drive N.  
 St. Petersburg, Florida 33702

December 18, 1996

Mr. Andrew R. Grainger  
 SR NEPA Compliance Officer  
 U.S. Department of Energy  
 Savannah River Operations Office  
 P.O. Box 5031  
 Aiken, South Carolina 29804-5031

Dear Mr. Grainger:

The National Marine Fisheries Service (NMFS) has reviewed the Draft Environmental Impact Statement (DEIS) for Shutdown of the River Water System at the Savannah River Site (DOE/EIS-0268D). We find that the document is well written and adequately addresses matters pertaining to aquatic resources under our purview. We concur with your determination that the Proposed Action will not significantly harm aquatic resources of the Savannah River.

The Proposed Action, which involves shutdown of the River Water System and placing it in standby status, would substantially eliminate withdrawals from the Savannah River. This would benefit both resident and migratory fishes of the Savannah River since entrainment and impingement of fish eggs, larvae, juveniles, and adults would be eliminated except in situations requiring restart. This mode of operation represents a significant improvement over conditions that existed when withdrawal levels approximated 380,000 gallons per minute (24 cubic meters per second) and estimated average losses of about 17,600,000 fish larvae and 9,300,000 fish eggs were experienced during the February-July spawning period. It is also an improvement over conditions that would exist under the No Action Alternative (existing condition) which accounts for fish losses of about 234,000 larval fish and 117,000 eggs during the February-July spawning period.

Since any restart of the system could have a significant adverse effect of aquatic resources of the Savannah River, such plans should be thoroughly coordinated with the NMFS and other Federal and state agencies having stewardship responsibilities for fish and wildlife.

Finally, in accordance with Section 5.10.2 of the DEIS we note that the Department of Energy plans to initiate formal consultation with the NMFS concerning possible effects on the shortnose sturgeon. The appropriate NMFS contact person for such consultation is Mr. Charles Oravetz who is Chief of the NMFS Southeast Region's Protected Species Branch. Mr. Oravetz may be reached at the letterhead address, or at (813) 570-5312.

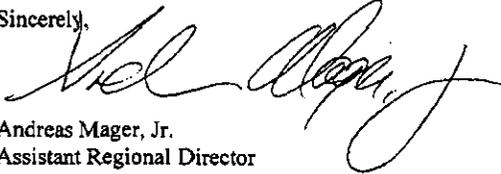


PK64-13PC

Comment L4. Page 1 of 2.

We appreciate the opportunity to review the DEIS. Related questions or comments should be directed to the attention of David Rackley who is Chief of the NMFS Habitat Conservation Division Charleston Branch Office. He may be reached at 219 Fort Johnson Road, Charleston, South Carolina 29412-9110, or at (803) 762-8574.

Sincerely,



Andreas Mager, Jr.  
Assistant Regional Director  
Habitat Conservation Division

PK64-13PC

Comment L4. Page 2 of 2.

**Response to Comment L4-01**

Should it be necessary to restart the River Water System, DOE would discuss and coordinate any restart plans with Federal and state regulatory agencies (including National Marine Fisheries Service, United States Fish and Wildlife Service, South Carolina Department of Health and Environmental Control, and South Carolina Department of Natural Resources) to ensure that possible impacts to fish and wildlife resources *are adequately addressed and mitigated if unavoidable.*

**Response to Comment L4-02**

DOE submitted a copy of the DEIS and a biological assessment to the National Marine

Fisheries Service's Southeast Regional Office (Protected Species Branch) on December 31, 1996, in accordance with the requirements of the Endangered Species Act and its implementing regulations. DOE subsequently received a letter from Mr. Andrew Kemmerer, Regional Administrator of the NOAA-National Marine Fisheries Service, that states:

We have reviewed the information provided and concur that the proposed project is not likely to adversely impact threatened or endangered species under our jurisdiction....This concludes consultation responsibilities under Section 7 of the ESA.



United States  
Department of  
Agriculture

Forest  
Service

Savannah River P. O. Box 710  
Forest Station New Ellenton, SC 29809

File Code: 1900  
Route To:

Date: December 19, 1996

Subject: Draft EIS For River Water Shut Down  
SRFS Response

To: Andrew Grainger, DOE  
703-47A, Rm 236

After review of the draft by the Forest Service at Savannah River, we believe there are a number of opportunities that need to be incorporated in the final EIS. If the elected alternative is to shut down the system and maintain the distribution network, there are a number of cost-effective options to stabilize exposed sediments in L-Lake.

If natural re-vegetation is slow, a mixture of grass species can be established through seeding and fertilization comparable to what the SRS already uses to stabilize bare soil areas and prevent erosion. This can be implemented on an as needed basis as the basin sediments dewater. Another option is to establish tree species. Most of these soils originally supported an upland pine type prior to L-Lake. With the low level of contamination in the upper portion, these areas could be returned to productive forests. Following the draw down of Par Pond, pine began to naturally invade the open areas. This is likely to occur again. However, more uniform and assured regeneration could be obtained through hand planting. Mixed species of hardwoods can also be planted to enhance wildlife. These can be implemented in conjunction with the normal SRS reforestation efforts.

The Forest Service, in developing the mitigation plan for Pen Branch, designated check strips that could be left alone to follow natural vegetation succession. This enhanced the value of the project for researchers, maintained some open habitat for certain species, and reduced reforestation costs. In areas of the old L-Lake basin that contain higher radioactive contaminants, the DOE can plant dense canopies of hardwoods or pines to discourage ground vegetation that deer and hogs forage upon that might increase contaminant uptake, distribution, and exposure to hunters.

As the water level drops and the old Steel Creek channel is gradually exposed, we would expect that some minimal effort to create debris dams and pools to stabilize the most contaminated sediments will be possible. The increase velocity and re-initiation of a stream channel has the potential of moving contaminants in the old flood plain sediments downstream. Small dams to create pools to trap sediment could be installed.

Phyto remediation opportunities also exist in the flood plain areas that are more heavily contaminated. Cesium is readily accumulated by vegetation. The materials can be harvested and composted or incinerated to concentrate the



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FS-6200-28b(3/92)

L5-01

PK64-14PC

contaminants. The DOE and USDA are collaborating on the development of this technology. While it may not be cost-effective at this point in time in terms of the risks to human health, the flood plain does offer opportunities for research activities to develop this technology using R&D funding sources such as the recent NABIR initiative through the Office of Science, Technology, and Business Development.

It is not apparent from reading DEIS what the plans are for managing vegetation on the pipeline corridors. If there is a need to keep water lines functional, treatments will be required to prevent them from being overgrown with woody stem vegetation.

The Forest Service is available to provide additional information on these options or assist with implementation

  
JOHN G. IRWIN  
Forest Manager

CC: K. Sidey, DOE

L5-  
(continued)

PK64-14PC

**Response to Comment L5-01**

DOE is committed to restoring the Steel Creek stream ecosystem and associated floodplain forest that existed prior to the creation of L-Lake. If DOE selects the Proposed Action, the Record of Decision for the EIS will contain a commitment to prepare a Mitigation Action Plan as well as a more detailed implementation plan that provides a practical, step-by-step guide to restoring the plant communities of the riparian corridor and floodplain that were lost when L-Lake was created. As noted in

Section 3.2.1 of this EIS, DOE would apply appropriate measures to stabilize the lakebed. These could include fertilizing and seeding bare areas to prevent erosion and could include a variety of other soil conservation measures. DOE fully intends to seek the assistance of the soil scientists, ecologists, and foresters of the Savannah River Forest Station in the development and implementation of a soil conservation and reforestation plan that involves stabilizing exposed L-Lake sediments and ensuring that trees and shrubs propagate in the Steel Creek floodplain.

# South Carolina Department of Natural Resources



James A. Timmerman, Jr., Ph.D.  
Director

December 20, 1996

Andrew R. Grainger  
SR NEPA Compliance Officer  
U.S. Department of Energy  
P.O. Box 5031  
Aiken, SC 29804-5031

REF: Shutdown of the River Water System

Dear Mr. Grainger:

The South Carolina Department of Natural Resources has evaluated potential impacts of the proposed shutdown on wildlife and fisheries habitat, water quality, recreation and other factors relating to the conservation of natural resources.

We believe that the proposed activity has potential to impact the fisheries and wildlife habitat of L-Lake and Parr Pond. L-Lake and Parr Pond to some extent, contain excellent habitat for a number of wildlife species such as the bald eagle, American alligator, white-tailed deer and various fur bearers. They also support well balanced fish communities and a number of wading birds, water fowl and osprey.

The concern is that due to the small size of the watershed for L-Lake and Parr Pond, water quality problems could occur if the reservoirs are allowed to drop significantly below full pool. In addition, fluctuating water levels could have negative effects on fish recruitment and other wildlife usage.

L-Lake was intended to be a naturalized wildlife and fisheries habitat and should be managed to optimize it's natural resource value. To allow water levels to lower would not be compatible with that initiative. However, if the Department of Energy would remove the dam and restore the wetland forest and stream channel of Steel Creek, we believe that an equitable exchange of natural resources may occur. It is our position that no lowering and/or dewatering of L-Lake should occur without an approved plan for Steel Creek restoration. The restoration plan should be submitted to and approved by appropriate resource agencies. Elements of the plan should include tree plantings, stream bank stabilization, monitoring and contingency plans. Restoration should address upstream and downstream impacts with consideration given to reduce flows.

It should be noted that a possibility exists that some level of contamination may be present in the aquasols that comprise the lake bottoms of both reservoirs. Before any plan is initiated to lower water levels, the bottom sediments should be tested for contamination. If hazardous materials are found in the sediments, then a plan for removal of those contaminants should be submitted prior to any shutdown of the SRS River Water System.

Sincerely,

  
Robert E. Duncan  
Environmental Programs Director

Rembert C. Dennis Building • 1000 Assembly St • P.O. Box 167 • Columbia, S.C. 29202 • Telephone: 803/734-4007

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L6-01

L6-02

L6-03

L6-04

PK64-12PC

**Response to Comment L6-01**

The EIS discusses potential impacts of the proposed action to fish and wildlife habitat of L-Lake in considerable detail in Section 4.1.5.2. These impacts include, but are not limited to: (1) the elimination of most fish habitat in L-Lake, (2) the loss of most wading bird foraging habitat in L-Lake, (3) the loss of most waterfowl wintering habitat in L-Lake, and (4) the loss of bald eagle foraging habitat in L-Lake. More subtle impacts that may result from the proposed action are also discussed in Section 4.1.5.2. These include increased predation on amphibians, reptiles, and small mammals that would be forced to venture farther from shoreline cover to drink and forage around reservoir edges. Potential impacts to fish and wildlife habitat of Par Pond are considered in Section 4.3.5.2.

**Response to Comment L6-02**

The EIS discusses effects of fluctuating water levels on fish recruitment and other wildlife usage in Section 4.1.5.2 (L-Lake), Section 4.3.5.2 (Par Pond) and Section 4.3.5.3 (threatened and endangered species using both reservoirs).

**Response to Comment L6-03**

L-Lake was designed and built by DOE to be a cooling reservoir. DOE was required to monitor L-Lake's fish and wildlife as a condition of an amended NPDES permit (#SC0000175) issued by SCDHEC in 1984. Further, as a condition of this NPDES permit, DOE was required to conduct studies to demonstrate that a "balanced biological community (BBC)" existed in the lower half of the reservoir only; the upper half was designated as a mixing zone and was never intended to support a BBC.

DOE is committed to restoring the stream ecosystem and associated floodplain forest that

existed prior to the creation of L-Lake. Although a final restoration plan has not been prepared, DOE is currently drafting a plan for restoration of the upper portion of Steel Creek and its floodplain forest in consultation with ecologists and foresters at the Savannah River Forest Station and WSRC-Savannah River Technology Center. If DOE selects the proposed action, the Record of Decision for the EIS will contain a commitment to prepare a Mitigation Action Plan as well as a more detailed implementation plan that provides a practical, step-by-step guide to restoring the plant communities of the riparian corridor and floodplain that were lost when L-Lake was created. DOE will make copies of the Mitigation Action Plan available to all interested parties. As noted in Section 3.2.1 of this EIS, DOE would apply appropriate measures to stabilize the lakebed and minimize erosion. DOE would also, in consultation with the ecologists and foresters, develop a reforestation plan that involves planting and/or transplanting trees and shrubs that are likely to survive and propagate in the Steel Creek floodplain. The Mitigation Action Plan would also contain monitoring requirements to ensure successful restoration.

**Response to Comment L6-04**

DOE has performed extensive sampling of both Par Pond and L-Lake to determine the types and levels of contaminants existing in the bottom sediments. The ecological and human health analyses presented in this EIS utilize this comprehensive data to determine the potential risks associated with those contaminants found in the lakebed sediments. Any necessary remedial actions for the two locations will be assessed in accordance with the process set forth in the Federal Facility Agreement.



The University of Georgia

(803) 725-2472  
FTS 239-2472  
FAX 803-725-3309

Savannah River Ecology Laboratory

Drawer E  
Aiken, SC 29802

December 23, 1996

Mr. Andrew R. Grainger  
Engineering and Analysis Division  
SR NEPA Compliance Officer  
U.S. Department of Energy  
Savannah River Operations Office  
P.O. Box 5031, Code DRW  
Aiken, SC 29804-5031

Dear Mr. Grainger:

I am submitting herewith for your consideration comments on the "Shutdown of the River Water System at the Savannah River Site - Draft Environmental Impact Statement". These comments are based largely on information gathered here in my research program sponsored by the DOE at the Savannah River Ecology Laboratory. Much of this information has been obtained only recently and some newly-published references from my program apparently were not available to the authors of the Draft EIS when it was written.

I have kept my comments brief and they outline only the general findings in each of the areas of concern which are addressed. For further details concerning our findings about these matters I would refer you to the indicated publication(s) and/or I would be glad to provide you or anyone else in your office with any additional information I can.

At the very least, I hope that these comments will convey my concern that if actions such as the draining of L-Lake are undertaken, follow-up studies should be supported to evaluate environmental issues such as these.

Thank you for your consideration of these comments.

Yours very truly,

I. Lehr Brisbin, Jr.  
Senior Ecologist  
Savannah River Ecology Laboratory

enclosure

An Equal Opportunity/Affirmative Action Institution

PK64-15PC

Comments on the "Shutdown of the River Water System at the Savannah River Site - Draft Environmental Impact Statement"

Submitted by:

I. Lehr Brisbin, Jr.  
Senior Ecologist  
Savannah River Ecology Laboratory, P. O. Drawer E  
Aiken, SC 29802; 803-725-2472; fax: 803-725-3309

December 20, 1996

There is a considerable amount of new information available in the form of research data that has not yet been formally published in the peer-reviewed scientific literature or which in some cases, appears in recently-published manuscripts which were apparently not available to the writers of this Draft EIS. This information has resulted from DOE-funded research programs here at the Savannah River Ecology Laboratory. I will attempt to summarize below the general areas and findings of this new work and its implications for the River Water Shutdown environmental impact concerns. Further information can be obtained by contacting me directly at the above address.

The new information provided here can be grouped into three general areas: (1) potential environmental impacts upon American alligators (*Alligator mississippiensis*) resident on the SRS, (2) potential for contaminant uptake by upland game birds, particularly mourning doves (*Zenaidura macroura*) utilizing exposed former lakebed sediments which may be contaminated with radionuclides and/or heavy metals, and (3) radionuclide uptake and transport by migratory waterfowl and general displacement of the waterfowl themselves through habitat loss. Each of these areas of concern will be discussed separately below.

#### Potential for Environmental Impacts on Alligators

The findings concerning potential environmental impacts upon alligators, which are predicted for the "Shut Down and Deactivate" alternative (page 4-152), lack recent information which appears in a newly-published research paper from the Savannah River Ecology Laboratory's alligator research program (Brisbin et al., 1996). This paper was apparently not available to the writers of this EIS when it was drafted. New data in the above-cited paper now suggest that the drawdown of Par Pond apparently also had a negative affect on alligator reproduction in addition to the previously reported probable decrease in the survivorship of young alligators due to a lack of emergent shoreline macrophyte cover. This newly reported effect was indicated by a lower quality of young (as judged by reduced weight-length relationships) hatching from eggs in nests which were constructed during the drawdown. Moreover, as also shown in this same paper, most of the resident breeding female alligators in Par Pond did not leave the reservoir during the drawdown but rather remained in their degraded breeding locations and experienced what was almost certainly negative impacts upon their

L7-01

PK64-15PC

reproductive output. These findings would suggest that the prediction in the EIS that breeding alligators resident in L-Lake would simply leave the drained reservoir and set-up breeding territories elsewhere may not be correct, and without further research and documentation, this prediction may significantly underestimate the potential impact of this action on the resident alligators. Although no formal census of alligator nesting activity has yet been undertaken for L-Lake, that reservoir now has a sizeable resident population of breeding-sized adults and if reproduction is currently not taking place there it almost certainly will in the near future. The draining of L-Lake thus has the potential to significantly reduce the overall reproductive output of the site's alligator population as a whole. I feel that further research should be undertaken during the coming year to clearly document the extent to which breeding activity is taking place at L-Lake and in the associated wetlands surrounding that reservoir and particularly downstream from the dam.

Because of their long life spans and high trophic levels, alligators also tend to accumulate certain contaminants such as mercury. As indicated in the Draft EIS, the drawdown and/or periodic fluctuation of SRS reservoir water levels could significantly affect the bioavailability of mercury in the sediments of some of these lakebeds. As also documented in your Draft EIS, the *drawdown and refill of Par Pond affected mercury levels in Par Pond fish*. Mercury concentrations in the muscle of Par Pond alligators, which may be legally harvested as nuisance animals and be marketed for human consumption if they should leave the site, averaged about 4 mg/kg dry mass, a concentration above that considered suitable for human consumption (Yanochko et al., in press). After the refill, one of the largest alligators ever recorded in South Carolina was found dead of as yet unknown causes in Par Pond and, as will be detailed later in another letter under separate cover to your office, analyses revealed an extremely high mercury concentration in the liver of this individual. These observations suggest that mercury may be a serious problem in Par Pond alligators, and that mercury dynamics may be altered by drawdown and refill. Little is known of contaminant levels in L-Lake alligators, or the potential consequences of major habitat alterations on contaminant dynamics. Further work is clearly needed to clarify these issues, and to predict the effects on those animals that may remain in the area of the Steel Creek corridor and watershed if L-Lake is drained.

Because the SRS alligator population has a long history of documented study, and because this population is uniquely situated at the northern limit of the species' range in the inland southeastern United States, these animals represent an important natural resource whose response to the river water shutdown process should be carefully monitored and evaluated during the course of any activity which may impact their population numbers, reproductive success and/or spatial distribution.

#### ***Uptake and Distribution of Radionuclide Contaminants by Upland Game Birds***

Analyses have now been completed and a manuscript written for submission to *The Journal of Wildlife Management*, describing the uptake and concentration of radiocesium (cesium-137) by doves which were attracted to old-field food resources which developed on the exposed lakebed sediments produced by the drawdown of the Par Pond reservoir. A companion paper has also been submitted to a toxicology journal, describing the uptake and concentration of

heavy metals in these same birds. The information contained in these manuscripts should be considered in any assessment of potential environmental impacts associated with the proposed river water shutdown. Potential effects should be related to the issue of impacts upon the well-being of the birds themselves and, even more importantly, with regard to the issue of the transport of contaminants from the exposed lakebed sediments to the hunting public who might consume such birds as food (mourning doves are legal game birds in South Carolina, and they are commonly harvested and eaten by the public in lands bordering the SRS).

L7-04

Preliminary risk assessment analyses undertaken by Drs. Joanna Burger and Michael Gochfield of the Rutgers University Consortium for Risk Evaluation with Stakeholder Participation (CRESP), suggest that the risk of exceeding a  $10^{-6}$  risk of excess lifetime cancer could be exceeded by hunters consuming birds for every day of the legal 70-day hunting season if those birds were to contain the average level of radiocesium we found in dove meat during our Par Pond dove study. Other details concerning the assumptions and consequences of this risk assessment can be obtained by contacting our laboratory. Of particular importance to the present EIS is the potential for newly-exposed L-Lake bottom sediments to similarly attract doves which might forage in areas showing possibly even higher concentrations of radiocesium than were found in the case of the drawdown Par Pond reservoir.

L7-05

#### **Radiocesium Uptake by Migratory Waterfowl**

Studies which have not yet been published, from the waterfowl research program at the Savannah River Ecology Laboratory, have shown that an unexpected sudden increase in radiocesium body burdens occurred in American coots (*Fulica americana*) following the refill of the Par Pond reservoir. As discussed in a presentation made to the Par Pond CERCLA Natural Resource Trustees, coots were found to average as high as 2,774 bequerels of radiocesium/kg of live weight in January-February of 1995. Possible mechanisms of this body burden increase and its relevance to future reservoir drawdowns and associated management activities at the SRS were discussed in a published abstract and a poster presentation which was made at a national scientific meeting. The unexpectedly high increase in radiocesium body burdens of these waterfowl suggests the importance of continuing to monitor both contaminant levels and the spatial/temporal movement patterns of waterfowl using SRS reservoirs. During the present winter (1996-97) for example, large concentrations of wintering waterfowl have moved away from Par Pond to L-Lake which on one of our most recent aerial census counts, was being used by more than 2000 waterfowl! The draining of L-Lake would certainly displace these birds, many of which would undoubtedly leave the site and thus be vulnerable to hunter harvest and other sources of disturbance which they would not normally face in the "sanctuary" of the SRS wetlands. The potential for the proposed river water shutdown to impact regional populations of wintering waterfowl in this part of the Central Savannah River area (CSRA) thus also needs to be considered, I feel, in any evaluation of proposed alternatives for reservoir and wetland management on the SRS. The extraordinary importance of the SRS reactor cooling reservoirs as a wintering site and sanctuary of regional importance for wintering waterfowl, particularly diving ducks, and the potential for these birds to accumulate and transport radionuclide contaminants offsite to the hunting public, have all been well-documented in a number of publications from our laboratory's research program (e.g., Brisbin et al., 1973; Mayer et al., 1986; Brisbin, 1991;

L7-06

Stephens et al., in press). I feel that publications such as these describing original detailed research findings should be cited by the Draft EIS, in addition to the more general review articles which are currently referenced.

Appendix B of the Draft EIS uses fish-eating species for calculating radiocesium dose to birds. However, our data (Brisbin et al., 1973) showed that herbivorous avian species (e.g., coots) were the proper worse-case indicator species for radiocesium uptake, not the fish-eating carnivorous avian species. The fish-eater model should rather be considered as a worse case indicator species for other contaminants such as mercury impacts. Moreover, this section did not refer to our published studies of radionuclide contaminant levels and doses to wood duck (*Aix sponsa*) eggs/embryos from the SRS including sites such as Steel Creek, Par Pond and Pond B (Kennamer et al., 1993; Colwell et al., 1996).

L7-07

### References

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- Yanochko, G. M., C. H. Jagoe, and I. L. Brisbin, Jr. In press. Tissue mercury concentrations in alligators (*Alligator mississippiensis*) from the Florida Everglades and the Savannah River Site, South Carolina. *Archives of Environmental Contamination and Toxicology*.

**Response to Comment L7-01**

The FEIS includes a discussion of the recently-published study of the effect of the Par Pond drawdown on alligator reproduction and the implications of this study with respect to the Proposed Action.

**Response to Comment L7-02**

The FEIS discusses elevated levels of mercury in muscle tissue of Par Pond alligators. This issue was not addressed in the 1995 *Environmental Assessment 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* (DOE 1995) or the DEIS because this information was not available to the preparers. DOE will also relay this information to the South Carolina Department of Natural Resources, the agency that issues permits for the destruction of nuisance alligators, to ensure that permittees are apprised of the potential risk.

**Response to Comment L7-03**

DOE agrees that the SRS alligator population is a unique and important resource and worthy of study. However, in an era of reduced funding and intense scrutiny of all Federal expenditures, DOE is not certain of its ability to provide financial support for many worthwhile research projects that have been proposed by cooperating scientists.

**Response to Comment L7-04**

The FEIS includes a discussion of the recently-completed Par Pond mourning dove studies, the results of which were not available when the *Environmental Assessment 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* (DOE 1995) and the DEIS were prepared.

The FEIS presents a discussion of uptake and concentration of radiocesium and mercury by

doves feeding on vegetation in the Par Pond lakebed during the drawdown. Although levels of both contaminants are lower in L-Lake than Par Pond, these studies are clearly relevant to the L-Lake drawdown and merit discussion.

**Response to Comment L7-05**

As noted in the response to the previous comment, the FEIS includes a discussion of uptake and concentration of radiocesium and mercury by doves feeding on vegetation in the Par Pond lakebed during the drawdown. Although levels of both contaminants are lower in L-Lake than Par Pond, these studies are clearly relevant to the L-Lake drawdown and merit discussion.

In a recently-completed study of mourning doves that fed on vegetation in Par Pond during the 1992-1994 drawdown Kenamer et al. (1997) found that only one of 102 doves collected from Par Pond exceeded the European Economic Community limit for radioactivity in "fresh meat" (human food). Based on the maximum observed concentration of cesium-137 in 102 doves collected during this study (22 picocuries per gram), no more than 41 Par Pond doves could be consumed by an individual before the EPA accepted cancer risk of  $1 \times 10^6$  is exceeded (one "excess" cancer per million people). Based on the average concentration of cesium-137 in these doves (5.95 picocuries per gram), no more than 152 Par Pond doves could be consumed by an individual before the EPA accepted cancer risk of  $1 \times 10^6$  is exceeded.

However, the authors of this study point out that (1) no dove hunting is allowed on the SRS, (2) doves collected from nearby control sites contained only background levels of cesium-137, and (3) radiocesium in edible tissues of doves is quickly eliminated when the birds leave contaminated areas. The authors suggest that a dove's entire body burden of radiocesium would be eliminated in 12 to 15 days once it left the SRS, due to the species' small size and high basal metabolic rate. When all of these factors are considered, the risk to hunters from eating

doves that are killed offsite after feeding in L-Lake during a drawdown would be small to insignificant.

**Response to Comment L7-06**

The FEIS contains more background information on a more detailed discussion of waterfowl usage of Par Pond and L-Lake than the DEIS and presents a more detailed discussion of possible impacts of the Proposed Action to wintering waterfowl.

**Response to Comment L7-07**

The DEIS and associated "Ecological Effects of Alternative" (Appendix B) Assessment focused

on fish-eating birds either because these species were known to be sensitive to contaminants (e.g., the osprey) or because they were species protected by the Endangered Species Act (e.g., the wood stork and the bald eagle). The known tendency of carnivorous species to accumulate higher levels of (most) contaminants than herbivorous species was also factored into the selection of receptor species. Based on this comment, however, a discussion of radiocesium uptake and body burdens in birds has been added to the FEIS.



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December 23, 1996

Andrew R. Grainger  
U.S. Department of Energy  
Savannah River Operations Office  
P.O. Box 5031  
Aiken, SC 29804-5031

Dear Mr. Grainger:

I wish to offer a few comments on the Draft Environmental Impact Statement - "Shutdown of the River Water System at the Savannah River Site." DOE/EIS-0268D (November 1996). I am very interested in this because of my research over the past 15 years on Pond B, Par Pond, L-Lake, and other reservoirs on the SRS (see attached references). My beliefs concerning the proposed action (shutting down the river water distribution system) are that:

1. The environmental impacts to L-Lake would be dramatic, and highly undesirable. These include: Loss of fisheries, wildlife, and wetland habitat; increased erosion and sedimentation throughout the Steel Creek corridor; Increased contaminant movement downstream (mainly  $^{137}\text{Cs}$  in floodplain sediments from high water flows); Increased contaminant accumulation in L-Lake fish and wildlife due to a decreased water volume/floodplain sediment ratio and reduced potassium inputs from the river water (potassium reduces  $^{137}\text{Cs}$  uptake).
2. The environmental impacts to Par Pond would be more subtle, but they can be expected to include reduced biodiversity and increased  $^{137}\text{Cs}$  uptake by fish and wildlife due to the cessation of biotic and nutrient inputs from the river; and fluctuation and possible loss of littoral zone and wetland habitat, and exposure of contaminated sediments, under drought conditions.
3. The expected cost savings as stated in the Draft EIS are likely to be heavily overshadowed in the future by costs associated with the effects of the water shutdown. These include sediment control, stabilization or removal of the Steel Creek Dam, and the likely need under CERCLA for remediation (removal) of contaminated sediments in the Steel Creek floodplain.

L8-01

L8-02

L8-03

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Andrew R. Grainger  
December 23, 1996  
Page 2

Before a final decision is made concerning termination of the river water distribution system at the SRS, it is respectfully requested that more thorough and careful consideration be given to:

1. Privatizing the pumping and maintenance operation of the system in an effort to reduce costs.
2. The inevitable environmental impacts of allowing L-Lake to dry up, such as loss of aquatic and wetland habitat, sedimentation of the corridor, and exposure of the contaminated Steel Creek floodplain. Key scientific references on such impacts were developed on Par Pond when it was drawn down. These and others are conspicuously missing in the Draft EIS, and apparently were not considered.
3. The true, total cleanup costs, environmental and aesthetic damage, and worker risks involved, should the L-Lake drawdown expose sediments with sufficient levels of Cs-137 to warrant remedial action.

L8-04

L8-05

L8-06

Sincerely,



F. Ward Whicker, Ph.D.  
Professor

FWW:jb

PK64-18PC

## Response to Comment L8-01

DOE acknowledges that implementing the Proposed Action would profoundly affect L-Lake and its plant and animal communities, as the reservoir ecosystem that currently exists would be replaced by a stream ecosystem. The EIS discusses these impacts in Section 4.1.5.2. These impacts include, but are not limited to: (1) the elimination of most fish habitat in L-Lake, (2) the loss of most wading bird foraging habitat in L-Lake, (3) the loss of most waterfowl wintering habitat in L-Lake, and (4) the loss of bald eagle foraging habitat in L-Lake. More subtle impacts that may result from the Proposed Action are also discussed in Section 4.1.5.2. These include increased predation on amphibians, reptiles, and small mammals that would be forced to venture farther from shoreline cover to drink and forage around reservoir edges.

As discussed in Section 4.1.5.1.3 of the EIS, approximately 225 acres of floodplain wetlands were inundated when the headwaters of Steel Creek were impounded to form L-Lake. Approximately 122 acres of wetland vegetation have become established along the shore of L-Lake as a result of secondary succession and an aggressive planting program funded by DOE and carried out by the Savannah River Ecology Laboratory. Under the Proposed Action, L-Lake would gradually recede and could empty in as few as 10 years. As the reservoir recedes, littoral (shoreline) wetland vegetation would be lost, would become re-established during periods (high rainfall) when reservoir levels stabilize, and would be lost again during drought periods when the reservoir level drops precipitously, until the reservoir reaches an equilibrium. These anticipated cycles of dessication-revegetation-dessication are described in Section 4.1.5.2.2 of the EIS. The analysis in the EIS assumes that the old Steel Creek channel would ultimately become re-established in the L-Lake basin, with some pooling of water just upstream of the dam as described in Section 4.1.2.2 of the EIS. The wetland acreage that ultimately develops would

be approximately the same as that which existed circa 1983, before Steel Creek was impounded. Thus, although there would be short- and intermediate-term losses of wetland habitat as the reservoir recedes, there would be no appreciable loss of wetlands over the long term.

There are no plans to increase flows in Steel Creek downstream of the L-Lake dam. The EIS is based on a minimum flow in Steel Creek below the L-Lake dam and in Lower Three Runs below the Par Pond dam (during drawdown) of 10 cubic feet (0.28 cubic meters) per second under any of the alternatives (see Chapter 3.0 of the EIS). Therefore DOE does not believe that there would be an increase in erosion and sedimentation or in contaminant movement downstream. On the contrary, the EIS asserts that stream flows below the two dams would show less seasonal fluctuation and less flooding, which could slow the movement of contaminants downstream. Similarly, because DOE has committed to maintaining flows of 10 cfs in Steel Creek downstream of the L-Lake dam, there is no reason to believe that low stream levels caused by droughts would expose contaminated sediments.

DOE is committed to restoring the stream ecosystem and associated floodplain forest that existed prior to the creation of L-Lake. Although a final restoration plan has not been prepared, DOE is currently drafting a plan for restoration of the upper portion of Steel Creek and its floodplain forest in consultation with ecologists and foresters at the Savannah River Forest Station and WSRC-SRTC. If DOE selects the Proposed Action, the Record of Decision for the EIS will contain a commitment to prepare a Mitigation Action Plan as well as a more detailed implementation plan that provides a practical, step-by-step guide to restoring the plant communities of the riparian corridor and floodplain that were lost when L-Lake was created. As noted in Section 3.2.1 of this EIS, DOE would apply appropriate measures to stabilize the lakebed and minimize erosion. DOE would also, in consultation with the ecologists and foresters of the Savannah River

Forest Station and WSRC-SRTC, develop a reforestation plan that involves planting and/or transplanting trees and shrubs that are likely to survive and propagate in the Steel Creek floodplain.

### **Response to Comment L8-02**

The 1995 *Environmental Assessment 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* (DOE 1995) assessed the expected impacts of allowing Par Pond to fluctuate from a full pool of approximately 200 feet (61 meters) to 195-feet (59.4 meters). The alternatives considered in the *Shutdown of the River Water System at the Savannah River Site EIS* would also allow Par Pond to fluctuate between 200 feet (61 meters) and 195 feet (59.4 meters). The alternatives differ only to the extent that DOE would maintain the operability of the River Water System. The actions considered in this EIS, at least in relation to Par Pond, have therefore already undergone a thorough NEPA review. Sections 4.3.5.1 and 4.3.5.2 review the findings of the 1995 EA and supplement them with the results of a number of recently-completed monitoring studies.

### **Response to Comment L8-03**

The FEIS discusses a number of mitigative actions (Section 4.1.5.22) that would, in addition to restoration, help control sediment. These include: (1) lowering reservoir levels slowly to minimize erosion and encourage the establishment of plants around lake margins, (2) planting grasses on exposed slopes to stabilize bare areas and prevent erosion, (3) planting pine trees in upland areas once they have stabilized, and (4) planting hardwoods in areas where survival is likely.

The comment also addressed the cost of removing the L-Lake Dam. If DOE decides to reactivate the River Water System immediately or after a period of standby, DOE would leave most, if not all of the dam in place after L-Lake

drains. See the response to Comment L10-14 for the regulatory basis for this plan.

The DOE response regarding the cost of cleanup is fully covered in its responses to Comments L9-03, -11, and -18. Basically, DOE believes that the draining of L-Lake would not increase the cost of a complete cleanup of contaminated areas in the Steel Creek Watershed, including cleanup of that portion of the watershed that is beneath L-Lake.

### **Response to Comment L8-04**

DOE has not ruled out privatizing operations that would result in cost savings. Currently, the River Water System maintenance and operations requires eight staff representing about one-third of the annual costs. DOE believes that the system could not be operated with fewer staff by another organization. Due to the size of the system (pumphouse with 10 operable pumps, each with traveling screens measuring 60 feet tall by 6 feet wide, discharging to lines that feed a 1 and 1/2 mile stretch of very large pipe from which distribution piping to the reactor areas originates), it is likely that only an organization such as a power generating utility company would have the experienced staff to operate and maintain the pumping system and associated lakes (L-Lake and Par Pond). Another large component of the operating costs is energy usage, in fact, approximately one-fourth of the costs. There is no apparent savings in energy costs with privatization either. There are other factors to consider, such as, required dredging of the intake canals from the Savannah River every ten years, and degradation of the 40-year old piping system.

### **Response to Comment L8-05**

As noted in the response to Comment 08-01, DOE acknowledges that implementing the Proposed Action would dramatically alter L-Lake, as the reservoir ecosystem that currently exists would be replaced by a stream

ecosystem. The EIS discusses these impacts in Section 4.1.5.2.

As noted previously in the response to Comment 08-01, DOE does not believe that implementation of the Proposed Action would result in higher stream flows in the Steel Creek corridor or in increased erosion and sedimentation. There may be some losses of soil as the waters of L-Lake recede and bare lakebed is exposed to weathering. As noted in Section 3.2.1 of the EIS, DOE would apply appropriate measures to stabilize the lakebed and minimize erosion.

The EIS (Section 4.1.2.2.2) suggests that there could be increased sediment loading to Steel Creek if the ponded area just upstream of the L-Lake dam fills with silt and unusually-heavy rainfall forces some of this accumulated silt downstream. DOE believes that this is unlikely, however, given the plans to stabilize the exposed lakebed and the amount of silt that this basin would be able to accommodate.

The EIS discusses the impacts of allowing L-Lake to drain in considerable detail in

Section 4.1. DOE believes this constitutes an adequate impact analysis, and one that satisfies the requirements of NEPA. The NEPA regulations (at 40 CFR 1502) make clear that NEPA documents are intended to "...provide full and fair discussion of significant environmental effects..." and be "...analytical rather than encyclopedic."

#### **Response to Comment L8-06**

As indicated in the FEIS, Section 4.1.8 and Appendix A, the L-Lake drawdown is unlikely to expose L-Lake sediments with sufficient levels of Cs-137 to warrant active remediation (e.g., soil cover, excavation). However, DOE does anticipate the need for appropriate land use and administrative controls, erosion control measures, monitoring, and similar activities, which can be accomplished at moderate cost relative to cost savings realized from DOE's proposed action. Potential cleanup costs, environmental and aesthetic damage, and worker risk in the event remediation of contaminated lakebed sediments is required are addressed in Chapter 3 of this FEIS.

# ENERGY RESEARCH FOUNDATION

Frances Close  
Board Chairwoman

Theodore K. Harris, Esq.  
President

December 30, 1996

Andrew R. Grainger  
Engineering and Analysis Division  
SR NEPA Compliance Officer  
U.S. Department of Energy  
Savannah River Operations Office  
P.O. Box 5031, Code DRW  
Aiken, South Carolina 29804-5031

Attention: RWEIS

Dear Mr. Grainger:

The attached five pages contain the Energy Research Foundation's comments on the Draft Environmental Impact Statement, Shutdown of the River Water System at the Savannah River Site, (DOE/EIS-0268D).

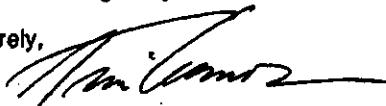
Beyond the specific concerns we've enumerated, we strongly urge decision-makers at SRS to carefully reconsider the proposed action forming the basis for this DEIS and to look diligently and creatively for alternatives that would preserve L Lake and its extraordinary and valuable ecosystem. We believe enactment of the proposed action could result in the loss to the nation and the region of a rare and valuable ecological resource. We also believe the proposed action, as presented, poses an unacceptable risk to federal taxpayers in that the action may require a costly and prolonged environmental remediation effort which would be unnecessary without the proposed action.

We encourage SRS decision-makers to find ways to lower the projected maintenance and energy costs associated with providing a steady flow of river water upstream of the L Lake dam. We think this can be done in ways that substantially reduce long-term costs while preserving the valuable ecological resource.

We also encourage SRS decision-makers to consider that the proposed action runs the considerable risk of developing into a debacle that would further undermine the credibility of the national DOE environmental remediation program and the environmental remediation program at SRS in particular. To be blunt, allowing L Lake to recede appears, almost by design, to be penny wise and dollar foolish. Aren't there enough contaminated areas at SRS that require active remediation (not to mention costly sampling and analysis) without purposely creating another?

We trust our comments on this matter will receive careful attention and that whatever decisions ensue about the fate of the River Water System, L Lake, and other aspects of this proposal will be made thoughtfully and without haste.

Sincerely,



Brian Costner, Director, 537 Harden Street, Columbia, SC 29205, 803/256-7298, fax: 803/256-9116  
Tim Connor, Associate Director, S. 1016 Buena Vista Drive, Spokane, WA 99204, 509/838-4580, fax: 509/624-9188

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L9-01

L9-02

L9-03

PK64-19PC

Dec. 27, 1996

**Energy Research Foundation**

**Comments on DOE/EIS-0268D, Shutdown of the River Water System at the Savannah River Site**

**Summary Comments:** The Draft EIS attempts to frame considerations for a decision on whether to shutdown the system for pumping river water from the Savannah River to reactor areas at SRS. The sole stated purpose for the proposed shutdown is the potential savings in annual operational costs associated with the river water system. The DEIS estimates that maintaining the equivalent capacity of the existing system would cost just over \$2 million annually, and that shutting down the system would result in costs of between \$.5 million and \$1.3 million annually, depending on whether the system is completely deactivated or maintained with capacity for restart. The evidence presented suggests that a decision to completely deactivate the system would be irresponsible, so the annual cost savings projected under the proposed alternative is approximately \$1 million.

The principle negative effect of the proposed action is the gradual disappearance of a 1,000 acre lake (L Lake), the loss of valuable wetlands associated with the permanent drawdown, and the resulting destruction of the abundant fish and wildlife community that has developed since the lake was created in 1984. The gradual disappearance of the lake under the proposed action would also expose sediments known to be contaminated with cesium-137, a radionuclide with a half-life of approximately 30 years. By exposing these sediments, the proposed action clearly invites the possibility that state and federal environmental regulators may require an expensive cleanup action. If so, it is conceivable--perhaps probable---that the objective of the proposed action (cost savings) could backfire. What is more certain is that in order for the projected cost savings to be realized, regulators will have to agree, in advance, not to require active remediation of the exposed soils.

L Lake was created on Steel Creek which is the most heavily contaminated of all site surface streams at SRS because of large releases of cesium-137 in the early years of plant operation. Out of the estimated total inventory of 560 curies of cesium-137 released to SRS surface streams, a little more than half (an estimated 284 Ci) were released into Steel Creek. Due to radioactive decay, the remaining inventory in Steel Creek should now be substantially less than 200 Ci (the DEIS provides an estimate of 58 Ci) but this is still a substantial inventory and one that warrants concern. Not only would the loss of pumped river water result in the gradual loss of the water "cover" over the contaminated sediments, it would also result in an unfavorable change in water chemistry with the likely consequence of enhanced uptake of cesium-137 by largemouth bass and other aquatic organisms.

Further, the loss of L Lake would require a decision about the fate of the L Lake dam: either removing the large dam or maintaining it. Annual maintenance of the dam is estimated at \$500,000 but there is no cost provided in the EIS for removing the dam. Loss of the dam would, of course, result in the loss of an important flood control mechanism for Steel Creek, a capacity that could be important to avoiding episodes where flood waters suddenly move large amounts of contaminated sediments downstream toward the Savannah River and the site boundary.

L9-04

L9-05

L9-06

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page 2

Another negative factor is that deactivating the river water pumping system would result in a loss of capacity to provide makeup water to Par Pond. Without capacity to pump water to Par Pond there is the clear risk that, in the event of a regional drought, the pond water level would drop below 195 feet and result in contaminated soils becoming exposed.

L9-07

Under Section X of the SRS Federal Facility Agreement, DOE is required to prepare a Site Evaluation (SE) report of L Lake and other sites listed in Appendix G of the FFA. The SE report is to be submitted to EPA and SCDHEC for their approval. Considering the effect the proposed action would have on the condition of L Lake, it is clear that taking the proposed action without submission and approval of a site evaluation report would violate the spirit, and perhaps the letter, of the FFA.

L9-08

Finally, the proposed action appears to be in clear conflict with Executive Order 11990 for the protection of wetlands and DOE's own policy of preserving and protecting SRS wetland resources in accordance with the national "no net loss" of wetlands goal. Indeed, the DEIS concedes that there would be major losses of prime habitat for wading birds under the proposed action. The EO requires steps to mitigate loss of wetlands but there are no substantive plans to offset these losses included in the DEIS.

L9-09

#### SPECIFIC COMMENTS

**Cost and Alternatives:** Given that the sole basis for the proposed action in this Draft EIS is the potential for cost savings, the final EIS should provide a better organized, more thorough, and better documented discussion of the factors that will ultimately effect direct and indirect costs.

L9-10

**Direct Costs:** The only purported benefits projected to accrue from the proposed action is the savings in direct costs by the shutdown of the river water pumping system. The final EIS should include further analysis of possible approaches for reducing the direct costs associated with maintaining at least that part of the River Water System that will effectively avoid the greatest potential for ecological and human health impacts--the loss of L Lake. These approaches should include, but not be limited to, such options as the installation of higher efficiency pumps, potential for reducing energy costs associated with pump operation, and the potential for working with independent contractors, independent conservation and/or wildlife foundations, and other state and federal agencies whose mission involves the protection of natural wetland resources. It is at least conceivable, for example, that the personnel costs associated with maintaining the supply of river water to L Lake and the maintenance of the L Lake dam could be donated by a private or public foundation with an interest in preserving the valuable L Lake ecosystem. If so, this by itself would reduce the projected cost of the No Action alternative from roughly \$2 million annually to \$.5 million annually. And still there should be a way to substantially lower these costs to benefit the taxpayer.

L9-11

Even without these potential direct cost savings, it should be noted that the benefits of the No Action alternative as presented in the EIS would appear, on their face, to be well worth the projected costs. Not only would the L Lake habitat be preserved but the No Action alternative would avoid the unavoidable and substantial costs to both the Department of Energy and the U.S. Environmental Protection Agency for the additional sampling, analysis, etc., that would be required in order to determine

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what, if any, remedial actions are necessary to satisfy CERCLA requirements as L Pond recedes.

**Indirect Costs:** Whatever the projected savings in direct costs under the proposed action, this potential savings must be evaluated against the prospect that the proposed action will necessitate a costly cleanup effort as the declining level of L Lake exposes soils contaminated with radioactive cesium-137. In our view, the National Environmental Policy Act (NEPA) requires a thorough evaluation of the potential remediation costs that are likely to result from the proposed action. The final EIS should include this evaluation.

In addition to the legal issues of NEPA compliance, it would be plainly irresponsible for the Department of Energy to proceed with this action without having obtained a substantive answer from the U.S. Environmental Protection Agency that the action:

- a) is unlikely to subject SRS to immediate enforcement actions for violations of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and other federal and/or state laws, and,
- b) is unlikely to result in subsequent determinations by EPA that the consequences of the proposed action will necessitate significant cleanup actions involving substantial costs to ensure protection of public health and the environment.

The prospective environmental remediation costs associated with the proposed action could actually result in a substantial net loss to the taxpayer. In addition to fully analyzing the potential environmental remediation costs, the final environmental impact statement should thoroughly consider other potential indirects costs that may be associated with the proposed action and alternatives. For example, under the Shut Down and Deactivate option the substantial cost of removing the current L Lake dam is not factored into the cost equation and should be.

Finally, the EIS should factor in the contingency costs of maintaining surface water outfalls which receive water from the River Water System. Loss of water in these canals would inevitably lead to their becoming clogged with new vegetation which would either have to be removed on a regular basis or at a future time when circumstances may require reactivation of the system--either to support future site missions or to mitigate unforeseen environmental effects. The final EIS should include the maintenance costs of keeping the canals clear and the one-time costs for future canal clearing operations should use of the outfalls again become necessary.

**Human Health Risks:** The analysis and discussion of human health risks associated with the proposed action are inadequate in several respects.

- 1) The Draft EIS contains only a few scattered clues as to what the extensive sediment analysis at L Lake, as referenced on page A-3, revealed. This data (reportedly involving in-situ measurements at over 90 locations) and its implications, should be at the center of the discussion of the worker and public health consequences of the proposed action. Yet, the results of this sampling aren't provided--apparently because the data is reported to be unvalidated. It is ERF's view that SRS should not have distributed for comment a draft EIS without having taken the time to validate such important data. It is puzzling and somewhat disturbing that SRS would

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publish a draft EIS without having validated this data for use in assessing the affected environment. It is clear that Figure A-1 on page A-6 was composed using this unvalidated data. This was improper because it allows authors of the DEIS to present a synthesis of data without producing the underlying data that supports the presentation. Furthermore, it was improper not to publish a disclaimer on Figure A-1, noting the fact that it was composed using unvalidated data.

2) On page B-2 there is a discussion of a much more limited core sampling effort involving 8 sediment cores. Here it is reported that Cs-137 concentrations from these core samples ranged as high as 103 picocuries per gram, with a mean concentration of 8.7 picocuries. This, alone, should give SRS decision-makers pause because one must, for the time being, make the conservative assumption that the draw down of L Lake that will occur as a result of the proposed action will expose sediments at or near this level of contamination. If so, there is a good likelihood that a major environmental remediation effort will be required by EPA to deal with this contamination. The cost of such a remediation could easily negate--even exceed--whatever cost savings are projected by shutdown of the River Water System.

3) Figure A-1 on page A-6 should be recomposed using validated data from sediment samples. The figure should, to the extent practicable, provide the locations of specific sampling locations so readers can get a clearer sense of how the designated isopleths are composed. It should also include a depiction of the areas greater than 2 picocuries per gram of sediment Cs-137 because it is this level of contamination that would (assuming the formula being used in the DEIS for these conversions is accurate) reach the  $10^{-4}$  risk level for the residential scenario, a more likely threshold for remediation than the  $10^{-6}$  risk level for the residential scenario that is presented (along with two worker scenario risk projections) in Figure A-1.

Moreover, it is important that the Department's decision-makers have a clearer understanding of the potential hazard that would be created if the Department pursues the proposed action. At this point it would be prudent for DOE to assume that EPA will require remedial actions for those areas where risk levels are at or exceed the  $10^{-4}$  lifetime risks calculated at the 2 pCi/gram level for Cs-137.

4) With the shutdown of the river water system it is inevitable that the water chemistry in L Lake and Steel Creek will change. Among other changes, there will be lower nutrient loading and a decline in specific conductance. As was observed during a recent drawdown at Par Pond, the decline in potassium (attributable to lower levels of potassium in groundwater and other natural inflows relative to Savannah River water) results in increased biologic mobility of cesium-137. This change is likely to increase the cesium-137 concentrations in largemouth bass and other aquatic organisms not only in what remains of L Lake but in the entire Steel Creek system down to the Savannah River. This is significant because the State of South Carolina (with support from the Environmental Protection Agency's Region IV office) has already issued a fish consumption advisory for the Savannah River near and downstream of SRS because of the relatively high concentrations of Cs-137 in fish. While this increase in health risk may only be marginal, it does provide another reason to carefully consider the environmental and human health consequences of the proposed action.

L9-17

L9-18

L9-19

L9-20

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page 5

**Ecological Impacts, Risks and Potential Opportunities:** Overall, the Draft EIS does a thorough job of detailing and explaining the real and potential ecological effects of the proposed action and alternatives. The discussion of the ecological effects of the proposed action should include an independent assessment of the value of the L Lake ecosystem, such as estimates of the value of the lake's fishery, the value of the extraordinary wading bird habitat, and the value of the lake in terms of maintaining the site's bald eagle population. The value of the L Lake ecosystem should be assessed within a regional context. For example, it would be useful to know the extent to which ecosystems similar in abundance and variety are found elsewhere in the Central Savannah River Area and the southeast United States.

This discussion could also benefit by assessing the value of L Lake as a potential ecological research area within the mission associated with SRS's designation as a National Environmental Research Park.

#### **Coordination with EPA and other Federal and State Agencies**

Given the potential for increasing human health risks and the threatened loss of a substantial natural resource like L Lake, the Department of Energy must ensure that its decision making is coordinated with the Environmental Protection Agency, the South Carolina Department of Health and Environmental Control, and other federal and state agencies who may have a legitimate role to play in deciding the fate of L Lake.

Specifically with regard to EPA, L Lake, Steel Creek, and other contaminated areas potentially affected by the proposed action, are listed in Appendix G of the SRS Federal Facility Agreement (FFA) as sites requiring evaluation under terms of the FFA. DOE is obliged to conduct actions at sites listed in Appendix G in accordance with specified requirements of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). These obligations include the submission to EPA and SCDHEC of Removal Site Evaluation Reports (SEs) so these agencies can make determinations as to what, if any, remedial actions are required at the listed site(s). Under Section X of the FFA, if DOE should disagree with the response actions recommended by EPA and SCDHEC, it can then submit the matter for dispute resolution.

In our view, any decision to move ahead with the shutdown of the water system at SRS without approval by EPA and SCDHEC of the SE for L Lake is a violation of the intent of Section X of the FFA. We therefore recommend that concurrent with this NEPA process, the SE for L Lake should be prepared and reviewed by the agencies under terms set forth in the FFA. A determination on the required SE for L Lake should be used to inform the options set forth in this DEIS.

#### **Executive Order 11990**

The proposed action in this Draft Environmental Impact Statement appears to violate Executive Order 11990, "Protection of Wetlands," which requires federal agencies to avoid impacts to wetlands if a practicable alternative exists. In addition, federal policy is to achieve the goal of "no net loss" of wetlands. In this case, DOE has not proposed a mitigation measure to accompany the proposed action; the net loss would occur. More importantly, a practicable alternative to the proposed action does exist in the form of the "no action" alternative described in the DEIS.

L9-21  
L9-2  
L9-23  
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Comment L9. Page 6 of 6.

**Response to Comment L9-01**

DOE has carefully evaluated the beneficial and adverse effects of the action. Although DOE acknowledges loss of L-Lake and approximately 189 acres of littoral (shoreline fringe) wetlands, it is committed to restoring the valuable ecosystem that L-Lake inundated, including 225 acres of bottomland forest wetlands.

As indicated in this FEIS, Sections 4.1.8 and Appendix A, the L-Lake drawdown is unlikely to expose L-Lake sediments with sufficient levels of cesium-137 to warrant active remediation (e.g., soil cover, excavation). However, DOE acknowledges that the final decision on remediation would be made after completion of the FFA process. DOE does anticipate the need for appropriate land use and administrative controls, erosion control measures, monitoring, and similar activities, which can be accomplished at moderate cost relative to cost savings realized from DOE's proposed action. This EIS addresses potential cleanup costs (see Appendix A), environmental and aesthetic damage (see Sections 4.1.5 and 4.1.7), and worker risk (see Section 4.1.8) in the event remediation of contaminated lakebed sediments is required.

**Response to Comment L9-02**

The small pump layout scheme presented in Section 3.3.2 could preserve L-Lake and save up to \$307,000 per year compared to savings of up to \$797,000 per year for schemes that could not preserve L-Lake. This range of layout options for the proposed action is presented to enable the decisionmaker to evaluate the tradeoffs between three layout schemes. Section 3.3.2 has been revised to clarify that the small pump layout scheme could preserve L-Lake.

**Response to Comment L9-03**

DOE believes that the reversion of L-Lake to original Steel Creek levels would enhance the efficiency of rather than jeopardize final investigation and if necessary remediation of the

Steel Creek channel and floodplain, which is an Integrator Operable Unit (IOU) under the FFA. Investigation would include the portions of Steel Creek upstream, downstream, and beneath L-Lake. Clearly the reach of the Steel Creek stream channel and floodplain that is currently beneath L-Lake would be more cost effectively investigated as the channel is exposed by the drawdown of L-Lake.

Contamination in L-Lake exclusive of the Steel Creek channel and floodplain is discussed in Appendix A. Because there is little, if any, additional contamination since DOE built L-Lake, the concentration of contaminants in this area is relatively low. Please see the DOE response to Comment L9-18 for details on this portion of the lake.

**Response to Comment L9-04**

Responses to Comments L9-03 and L9-18 are responsive to this comment as well. Also see the DOE responses to the EPA letter (L10).

If remediation is required in Steel Creek below L-Lake, failure to remediate the portion beneath L-Lake would cause continuing releases that negate the remediation. If remediation is not necessary above or below L-Lake it is doubtful that remediation would be required in the reach that is presently beneath L-Lake. Although there is considerable variability in contaminant concentrations from point to point in the streambed, the "hot spots" and average concentrations are essentially equal in the three reaches.

Neither DOE or its regulators would agree not to require active remediation of the exposed sediments until characterization and evaluations under the FFA are complete.

**Response to Comment L9-05**

Continued saturation of contaminated Steel Creek sediments is expected under the proposed action. As discussed in the EIS, aerial radiological surveys conducted since 1974

indicate that the radionuclides in the Steel Creek system have remained channeled in a zone that correlates with the historic stream channel and floodplain for the creek. Additionally, studies performed by DOE in support of the L-Reactor Operation EIS (DOE 1984) indicate that most contaminants deposited in Steel Creek stream bed are in the upper regions of the floodplains. Since the floodplains are likely to remain unchanged under all alternatives (i.e., these areas will remain saturated), incremental impacts are likely to be small.

#### **Response to Comment L9-06**

If DOE decides to implement a shutdown alternative, it would maintain both the Par Pond and L-Lake Dams at an annual cost of approximately \$500,000 compared to approximately \$2,250,000 per year to continue to operate the River Water System. After drawdown and a decision to deactivate the River Water System, DOE would not continue L-Lake Dam maintenance. It would either breach the L-Lake Dam or take the necessary actions to ensure continuous, unobstructed flow through the existing outflow structure.

It would be premature to make a decision on the dam deactivation option to pursue, which would not be implemented for approximately 10 years after a shutdown decision. DOE believes that this cost, in terms of present worth, is small relative to the immediate and cumulative savings that would occur under shutdown.

#### **Response to Comment L9-07**

DOE believes that Par Pond would not fall below the 195 foot level unless there was a catastrophic drought that would affect water quality in other regional lakes and streams. In calendar year 1996, a dryer-than-average year, the lowest daily lake level was 199.21 feet. Nevertheless, DOE prefers to maintain the River Water System after shutdown and, if necessary, it would restart the system, pump to Par Pond, and bring the water level to an appropriate level above 195 feet. See Section 3.3.1.1.

#### **Response to Comment L9-08**

Section X of the FFA requires that if EPA and SCDHEC determine further response action is necessary for an area, then DOE agrees to amend Appendix C of the FFA to include such areas and to conduct additional work at such areas under terms of the Agreement.

To expedite the FFA process, DOE will not submit a Site Evaluation Report for regulatory review but rather will propose for the assessment of L-Lake, with the performance of further evaluations such as the completion of appropriate studies under the terms of the FFA. This approach is consistent with the terms of the FFA and supports ongoing initiatives to expedite the FFA process (Johnston 1997).

#### **Response to Comment L9-09**

As discussed in Section 4.1.5.1.3 of the FEIS, approximately 225 acres of creek bottom wetlands were inundated when the headwaters of Steel Creek were impounded to form L-Lake. Savannah River Ecology Laboratory (SREL) scientists have estimated that there are approximately 190 acres of jurisdictional wetlands around the edges of L-Lake. These are areas with the requisite soils and hydrology to support wetland vegetation. Approximately 122 acres of wetland vegetation have actually become established along the shore of L-Lake as a result of secondary succession and an aggressive planting program funded by DOE and carried out by the SREL. Under the Proposed Action, L-Lake would gradually recede and could empty in as few as 10 years. As the reservoir recedes, littoral (shoreline) wetland vegetation would be lost, would become re-established during periods (high rainfall) when reservoir levels stabilize, and would be lost again during drought periods when the reservoir level drops precipitously, until the reservoir reaches an equilibrium. These anticipated cycles of dessication-revegetation-dessication are described in Section 4.1.5.2.2 of the FEIS. The analysis in

the FEIS is based on the expectation that the old Steel Creek channel would ultimately become re-established in the L-Lake basin, with some pooling of water just upstream of the dam as described in Section 4.1.2.2.2 of the FEIS. The wetland acreage that ultimately develops would be approximately the same as that which existed circa 1983, before Steel Creek was impounded. Thus, although there would be short- and intermediate-term losses of wetlands as the reservoir recedes, there would be "no net loss" of wetlands over the long term.

The FEIS discusses a number of possible mitigative actions (Section 4.1.5.2.2) including: (1) lowering reservoir levels slowly to minimize erosion and encourage the establishment of wetland plants around lake margins, (2) planting grasses on exposed slopes to stabilize bare areas and prevent erosion, (3) planting loblolly and longleaf pine in upland areas once they have stabilized, and (4) planting hardwoods in areas where survival is likely. Although a final restoration plan has not been prepared, DOE is currently drafting a plan to implement these mitigative measures if DOE selects a shutdown alternative.

#### **Response to Comment L9-10**

In addition to cost savings, DOE has considered indirect beneficial impacts such as reduced energy consumption, reduced entrainment of fish larvae and fish eggs and impingement of fish in the Savannah River, and restoration of the pre-Lake ecosystem, including 225 acres of bottomland forest wetlands.

DOE acknowledges that cost savings is the predominant direct beneficial impact. DOE has followed Council on Environmental Quality regulations in its revision of Section 3.3 to include costs of shutdown that "can be supported by credible scientific evidence, are not based on pure conjecture, and are within the rule of reason."

#### **Response to Comment L9-11**

DOE responds to this comment by its components:

##### **Avoid the loss of L-lake**

##### *Higher efficiency pumps/potential for reducing energy costs*

DOE intends to operate a high efficiency pump (5,000 gallons per minute) that will reduce costs and save energy. Schedules indicate that operation of the River Water System with this pump and issuance of this Final EIS are nearly concurrent. Use of this pump would avoid loss of L-Lake under the No-Action Alternative or selection of the small pump layup scheme under the Proposed Action.

##### **Working with independent contractors**

DOE has not ruled out privatizing operations that would result in cost savings. It is doubtful that a private contractor could provide personnel with the required skills at less cost. Also, there is no apparent savings in energy costs by privatizing. DOE has an active vendor forum program in place and has received no proposals for privatizing the River Water System.

##### *Working with independent conservation and/or wildlife foundations*

DOE welcomes dialog with conservation and/or wildlife foundations but has received no proposals for involvement with the River Water System during the first 10 months of this NEPA process. DOE has revised the Foreword in this EIS to invite such dialog.

##### *Working with other state and federal agencies*

Other state and federal agencies have also been informed of the action that DOE is considering. It is unlikely that another government agency would seek to increase its mission in light of the reduction of budgets and downsizing that is underway.

*Donation by private or public foundation to maintain river water supply and L-Lake dam*

DOE welcomes such proposals and has revised the Foreword to indicate its willingness to consider donations for the preservation of L-Lake.

**Benefits of No Action alternative appear to be well worth the projected costs**

*Preserve L-Lake habitat*

DOE believes that there are both adverse and beneficial impacts in the loss of L-Lake. DOE attempts to evaluate both the positive and negative aspects of this issue in this EIS.

*Avoid costs to satisfy CERCLA requirements as L Pond recedes*

DOE is aware of the costs of investigation and potential remediation of the Steel Creek IOU including the stream channel and floodplain that is currently beneath L-Lake. It is not convinced that the drawdown of L-Lake and inclusion of the portion of L-Lake that is outside the stream channel and floodplain will increase these costs. Because the contamination of the channel and floodplain occurred prior to the impoundment of L-Lake, there is relatively little contamination in the lake exclusive of the channel and floodplain. The response to comment L9-18 provides additional discussion pertinent to cost for remediation.

**Response to Comment L9-12**

The DOE response regarding the cost of cleanup is fully covered in its responses to Comments L9-03, -11, and -18. Basically, DOE believes that the draining of L-Lake would not increase the cost of a complete cleanup of the Resource Conservation and Recovery Act (RCRA)/CERCLA units within the Steel Creek watershed, including cleanup of that portion of the watershed that is beneath L-Lake.

In accordance with NEPA, DOE has prepared this EIS at the earliest possible time to insure that planning and decisions on the operation of the River Water System reflect environmental values.

DOE has responded to the cleanup effort in the manner recommended by its Office of Policy and Assistance. Because the investigation and potential cleanup of the Steel Creek watershed is not ready for proposal, DOE treats it as a connected action, with indirect effects. DOE addresses this connected action in Appendix A and Section 4.5, Cumulative Impacts but defers alternatives for the connected action until feasibility studies under the FFA are initiated. If, at that time, the actions under the FFA call for the procedural and documentation requirements of NEPA, DOE would incorporate NEPA values in the FFA documents or, after consultation with stakeholders, could choose separate but integrated NEPA and FFA processes. This approach is described in *L-Lake Site Evaluation and Remedial Alternatives Study* in Section 1.4 and is fully compatible with the applicable order, recommendation, and policy statement of DOE.

**Response to Comment L9-13**

DOE will comply fully with applicable Federal and state laws in making its decisions on the operation of the River Water System. In addition, DOE will coordinate as necessary with EPA and SCDHEC to ensure that the decisions it makes on the system as a result of this EIS are compatible with potential remedial decisions it will make for L-Lake under the SRS FFA.

In response to historic releases of hazardous substances to the environment at the SRS, EPA included the Site on the National Priority List (NPL) under Section 105 of the CERCLA. This action became effective on December 21, 1989. A site on the NPL falls under the jurisdiction of CERCLA, which bases control on risk.

CERCLA requires decisions on site remediation to go through a formal process under the FFA. The proposed operational shutdown activities, while supporting possible future SRS operations, would also ensure the ability to refill L-Lake if an interim or final remedial action required the stabilization of exposed sediments. DOE would coordinate proposed operational shutdown activities with the activities and commitments in the FFA.

#### **Response to Comment L9-14**

The DOE position on potential remediation costs associated with the proposed action is fully covered in response to Comments L9-03, -11, and -18.

This comment also addressed the cost of removing the L-Lake Dam. If DOE decides to deactivate the River Water System immediately or after a period of standby, DOE plans to leave most, if not all of the dam in place after L-Lake drains.

DOE bases this plan on correspondence with the U.S. Army Corps of Engineers who, in turn, notified other relevant State and Federal permitting and resource agencies (i.e., U.S. Department of Interior, NOAA/National Marines Fisheries Service, EPA, SCDHEC, and the SC Department of Natural Resources). Based on the information provided by DOE and the fact that the agencies offered no comments or concerns, the Corps of Engineers concludes that DOE is not required to remove the embankment.

DOE would select an economical option that is protective of human health and the environment such as breaching or ensuring unobstructed flow through the existing conduit.

#### **Response to Comment L9-15**

DOE considers vegetation control in outfall canals to be within the uncertainty of the preliminary surveillance and maintenance cost and one-time cost to restart presented in

Section 3.3.2. Further, any attempt to estimate them would be based on conjecture because DOE doesn't know which outfall, if any, would be used in the event of an order to restart the River Water System.

#### **Response to Comment L9-16**

DOE believes that both the Draft and Final EIS clearly indicate what the sediment analysis of L-Lake revealed.

Validated data from 1996 sampling have been used in the Final EIS for the evaluations of human health and the environment, including Appendix A. The *in situ* gamma analyses represent scoping level analyses using special methods. The detailed results of these studies are available in the DOE Reading Room.

DOE believes that it was appropriate to use unvalidated data during preparation of the Draft EIS while the validation process was underway. Validation was completed just prior to issuance of the Draft EIS, and DOE determined that the validated data did not negate any of the evaluations in the Draft EIS. DOE has added a description of the sampling data sets used in the Final EIS (Appendix F) and has expanded and revised all affected sections based on validated 1996 data for L-Lake (see Sections 4.1.5 and 4.1.8 and Appendixes A, B, C, and F).

#### **Response to Comment L9-17**

As per guidance provided by the DOE Office of NEPA Oversight, EIS analyses are based on reasonable exposure conditions such as those represented by average concentrations. Using a maximum concentration to assess exposures would present the highest consequences but would not represent concentrations found throughout the dried lakebed. Both the human health and ecological impact analyses in the FEIS are based on validated data from extensive sampling of the entire lakebed.

**Response to Comment L9-18**

In support of the EIS, DOE has undertaken a study to identify and evaluate the likely range of remedial action alternatives that it might ultimately consider under the FFA with respect to the contaminated sediments within L-Lake exclusive of the Steel Creek stream channel and floodplain. A summary of the study results is presented in Appendix A. Based on these preliminary evaluations, DOE believes that institutional controls to prevent residential use of this area for a period that allows for natural radiological decay to safe levels may be the most reasonable remedial option. Natural decay would reduce cesium-137 (the primary contaminant of concern) to near background levels in 100 years. During that period, onsite worker exposure levels would be well below the current SRS occupational standards for radiation protection. This evaluation suggests that institutional control, and potentially no action, would be adequate to ensure protection of public health and the environment. Costs associated with those remedial options would not be great. For example, approximately \$15,000 would be required for sign placement and deed notification under the institutional control option.

**Response to Comment L9-19**

DOE included Figure A-1 in the FEIS to show data points upon which the remedial options study is based. The revised remedial goal option for the onsite worker scenario at the  $10^{-6}$  risk level presented in the FEIS is not representative of  $10^{-4}$  risk level for the residential scenario as was the case for the DEIS. Therefore, the FEIS was revised to separately evaluate the onsite resident at the  $10^{-4}$  risk level in the remedial options analyses presented in Appendix A.

**Response to Comment L9-20**

DOE found that calculated radiation doses to minnows in Par Pond, L-Lake, and Steel Creek were  $1.3 \times 10^{-5}$ ,  $4.9 \times 10^{-5}$ , and  $5.2 \times 10^{-5}$  rad

per day, respectively, well below the DOE aquatic organism limit of 1.0 rad per day. In addition to minnows, the Final EIS analyzed radiological impacts to largemouth bass. The calculated total radiation dose to largemouth bass in Par Pond was  $3.9 \times 10^{-4}$  rad per day, virtually all of which was due to exposure to one isotope, cesium-137. The calculated total radiation dose to largemouth bass in L-Lake was slightly lower,  $2.1 \times 10^{-4}$  rad per day, nearly all due to cesium-137.

**Response to Comment L9-21**

The FEIS presents a detailed description of the existing L-Lake ecosystem, with discussions of water quality, plankton, fish, wading birds, waterfowl, amphibians and reptiles, semi-aquatic mammals, and Federally-listed species, such as the bald eagle, that forage in and around the reservoir. The FEIS emphasizes L-Lake's ecological "value" as wading bird habitat, wintering waterfowl habitat, alligator habitat, and bald eagle foraging habitat. The importance of L-Lake as habitat for Federally-listed species is in a regional, as well as local, context in Section 4.3.5.3.

DOE has designated 30 areas on SRS totaling more than 14,000 acres as National Environmental Research Park (NERP) Set Aside Areas. These Set Aside Areas are undisturbed natural areas (e.g., Carolina bays and mature hardwood forests) that are protected to promote biological diversity locally and regionally and to provide baseline data to evaluate impacts of development on the SRS. They also serve as examples of how ecosystems should look and function after contaminated areas are remediated and restored. L-Lake, which is a man-made impoundment and has historically been influenced by SRS operations, would not be a good candidate for protection under the NERP Set-Aside program.

**Response to Comment L9-22**

DOE believes that submittal of a Site Evaluation Report for regulatory review under the terms of Section X of the FFA is unnecessary, and proposes further assessment of L-Lake under the FFA for consideration of early and final remedial actions. This approach is consistent with the terms of the FFA and supports ongoing initiatives to expedite the FFA process. (See the responses to Comments L10-01 and L9-09.)

**Response to Comment L9-23**

The response to Comment L9-09 addresses the "no net loss" of wetlands issue and mitigation

measures. DOE agrees that continued operation of the River Water System is a reasonable and practicable alternative within the meaning of NEPA as it was evaluated in the EIS with the same scientific rigor and thoroughness as the other alternatives. However, the No-Action Alternative does not satisfy the purpose and need for agency action (see Section S.2 and Chapter 2 of the EIS), which is to identify surplus infrastructure such as the River Water System and develop an action plan for its disposition. This assumes that the River Water System has no mission and will become increasingly expensive to operate in the future.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 4  
ATLANTA FEDERAL CENTER  
100 ALABAMA STREET, S.W.  
ATLANTA, GEORGIA 30303-3104

December 30, 1996

EAD/OEA-mh

Andrew R. Grainger  
SR NEPA Compliance Officer  
U.S. Department of Energy  
P.O. Box 5031  
Aiken, SC 29804-5031

SUBJECT: Draft Environmental Impact Statement (DOE/EIS-0268D) for the  
Shutdown of the River Water System at the Savannah River Site (SRS),  
Aiken, South Carolina

Dear Mr. Grainger:

We have reviewed the subject Environmental Impact Statement (EIS) in accordance with Section 102(2)(C) of the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act. The proposed action is to shut down the SRS River Water System and to place all or portions of the system in a standby condition. Overall, the Draft EIS is well written and illustrated. We agree that the format used enhances the clarity of the presentation of analyses (page 4-1). Our detailed comments are provided as an attachment.

This NEPA action should be coordinated to the fullest extent possible with Federal Facilities Agreement (FFA) activities. This coordination could be achieved in two ways: (1) a joint EIS/FFA Record of Decision (ROD); or, (2) expediting the FFA process so that implementation of the preferred alternative under the EIS ROD can be coordinated with the necessary FFA remedial action. It is EPA's opinion that coordinating the two decisions could best facilitate implementation of cleanup and operational shutdown activities.

Based on our review, we rate the Draft EIS "EC-2"; that is, we have environmental concerns about the project and more information is needed to fully assess the impacts. In particular, the issue of ecological risks warrants further discussion in the Final EIS.

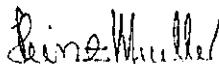
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If you have questions about these comments, please contact Marion Hopkins of my staff at 404/562-9638. The EPA Remedial Project Manager for SRS is Jeff Crane. If you have questions specific to the FFA process, you may contact him at 404/562-8546.

Sincerely,



Heinz J. Mueller, Chief  
Office of Environmental Assessment

Attachment

PK64-22PC

Page One of Five

**Comments On  
Draft Environmental Impact Statement  
Shutdown of the River Water Distribution System at the  
Savannah River Site  
(DOE/EIS-0268D; November 1996)**

General Comments

1. As summarized in Table S-2, the preferred alternative would result in the potential for increased exposure to contamination due to three primary changes in the physical state of the environment:

Reduction of areal extent of impounded water would expose underlying contaminated sediments and thereby:

- 1) Increase exposure to contamination by terrestrial fauna;
- 2) Increase mobilization of contaminated sediments due to runoff erosion and wind dispersion; and,
- 3) Decreased base flow of streams receiving both point source and non-point source discharges (e.g., contaminated ground water recharging streams) could effect an increase in contaminant concentrations within the stream.

The resulting increases of contaminant exposure under the preferred alternative should be coordinated with a consideration of appropriate action under the terms of the FFA. The EIS provides a thorough documentation of the presence of L-Lake contamination. Therefore, in light of the thorough evaluation of L-Lake in the EIS, the L-Lake Site Evaluation under the terms of Section X of the FFA appears to be redundant documentation and unnecessary for the purposes of Section X of the FFA. The draft EIS provides sufficient information to add L-Lake to Appendix C of the FFA for consideration of early and final remedial actions.

Additionally, Appendix A to the EIS is an excellent resource for scoping the RI/FS for L-Lake. The thoroughness of the EIS documentation for L-Lake should support an expedited documentation process for a final remedy selection for L-Lake.

2. Section 1.4, pp. 1-6, and 7 The discussion of the FFA remedy selection process overstates the level of complexity and time necessary to yield cleanup decisions under the terms of the FFA. Terms such as "rigorous alternatives analysis", "long and involved" may be true for DOE internally; however, such terms are not implicit in the cleanup process under the FFA.

L10-03

L10-0

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The reference to a "near-term operational decision...in light of a long-term potential remedial action" is misleading. Whereas a remedial action for L-Lake may be a long-term solution, the evaluation and decision making process leading to a remedial action, as required under the FFA, may be expedited. DOE should be capable of accelerating a remedial action decision for L-Lake if DOE is interested in such an acceleration. In fact, as stated in General Comment 1 above, effort should be made to coordinate a cleanup decision and the preferred alternative. This coordination could be achieved in two ways:

- 1) a joint EIS/FFA ROD; or,
- 2) expediting the FFA process so that implementation of the preferred alternative under the EIS ROD can be coordinated with the necessary FFA remedial action.

It should be recognized under the two scenarios above that the end state objectives of the EIS ROD and the FFA ROD are similar (i.e., protect human health and the environment), although the cause for the RODs under the two programs differ considerably (i.e., EIS is operations driven, FFA is cleanup driven). Therefore, it is DOE's responsibility to pursue *the approach which will best ensure protection of human health and the environment while effectively managing its resources to accomplish the objectives of both its operating program and cleanup program*. It is EPA's opinion that coordinating the two decisions could best facilitate implementation of cleanup and operational shutdown activities which minimize funding needs for documentation and meet the common objectives of both programs.

3. Section 3.3.1.2, p. 3-6 Currently, L-Lake is a site included on Appendix G of the FFA. Appendix G includes sites which may require further investigation for consideration of remedial action. DOE's preferred alternative of standby is supported based on future site missions requiring water and the potential need to refill L-Lake as a CERCLA remedial action. Refilling Par Pond was chosen as an interim remedial action to stabilize the exposed sediments around the periphery of Par Pond. Final remedial action objectives have not been set for Par Pond. Therefore, it appears inappropriately presumptive at this time to defend the preferred alternative of the EIS (i.e., standby) on the potential for establishing final remedial action objectives for L-Lake which require continued operation of the river water distribution system. Rather than base the EIS decision on a potential CERCLA ROD, the EIS and CERCLA programs should be combined to streamline documentation requirements and to select an alternative which is consistent with the objectives of the two programs.

L10-04

L10-05

L10-06

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Specific Comments

1. Section S.3, p. S-2 Reference is made to "...apply other measures to minimize potential adverse effects of exposed sediments, which contains contaminants, in the lake bed." It is assumed that this is a reference to measures deemed necessary under the terms of the FFA. This reference should be clarified by expressing the expected approach, including scheduling, under the FFA. L10-07
2. Section I.1, p. I-4 A table illustrating the historic, current, and expected future flow rates to all waterways would help to convey the information presented in this section. L10-08
3. Section I.1, p. I-4 It appears that the reduction of flow through the river water distribution system from 23,000 gpm to 5,000 gpm could result in elevating concentrations of contaminants in portions of some streams due to a reduction of base flow rates with point source (e.g., NPDES discharges) and non-point source (e.g., ground water contaminant plume) discharges remaining constant. The appropriateness of the categorical exclusion, considering the reduced flow rates potential impact to stream contaminant levels, should be more thoroughly described. L10-09
4. Section I.4, p. I-7 The second to last paragraph of this section (L-Lake Site Evaluation...) states the basis for the EIS decision is various human health exposure scenarios. Exposure to ecological receptors is a primary decision factor for the actions under consideration and should be included in this discussion. L10-10
6. Section I.4, p. I-7 The last paragraph of this section (L-Lake Site Evaluation...) summarizes the approach to considering human health exposure and risk under the two decision making processes. Again, ecological risk is not mentioned. Additionally, as mentioned in General Comment 2 above, coordinating the decisions under the two programs could best facilitate effective use of DOE's resources. Such a coordinated decision must include the CERCLA risk evaluation methodology for remedy selection. L10-11
7. Section I.4, p. I-7 See Specific Comment 3 above. Irrespective of the appropriateness of the NEPA process for considering impacts to site streams for reducing base stream flow by a total of 18,000 gpm, implementation of the reduced pumping scenario (i.e., 5,000 gpm) should be evaluated under the terms of the FFA for consideration of remedial action to offset such an effect. Currently, the FFA mechanism for such consideration would be documented in the Remedial Investigation (RI) work plans for the Integrator Operable Units for the affected streams. However, timing of the development of these work plans and the startup of the reduced base flow may necessitate an earlier consideration of appropriate FFA action to offset reduced stream base flow. Alternatively, development and submission of the appropriate Integrator Operable Unit RI work plans to document the consideration of such early remedial actions could be expedited. L10-12

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- Additionally, impact of reduced flow for non-point source discharges should be considered under the State's NPDES Program. It appears that the second to last subsection (Wastewater Discharges...) addresses this issue. A figure would be helpful to show the location of the permitted discharges. A table would be helpful which lists the streams, the reduced flow per stream and the discharge points per stream
9. Tables S-1 and 3-3 Present worth cost of the alternatives would more fairly portray the implications of life-cycle costs of the actions due to variations in long-term maintenance costs (e.g., Shutdown Deactivate may not require long-term maintenance of the L-Lake dam).
10. Section 4.1.1.2, p. 4-16 The fourth sentence begins "Elimination of river water from the geologic system could stimulate an earthquake..." Is this correct? If so, please elaborate.
11. Section 4.8, p. 4-186 This section refers the reader to Section 4.1 for details of commitments of natural resources associated with the loss of L-Lake. Given that Section 4.1 is eighty-five pages of material, it may be more appropriate to summarize the loss of natural resources in Section 4.8.
12. Section 5.4, pp. 5-2, and 3 This section states that "Natural Resource Trustees are responsible for evaluating natural resource injuries and for assessing damages related to such an injury." The EIS would benefit from a discussion of who the Trustees are and what their input in the proposed action has been to date.
13. Appendix A, p. A-1 The introduction states that "DOE anticipates that it will be several years before decisions for L-Lake can be made." DOE, as the Lead Agency under CERCLA, has the ability, and obligation under its new "10 Year Plan", to pursue acceleration of FFA activities. This section inappropriately describes the FFA schedules as being inflexible and apparently incapable of acceleration. See General Comment 2.
14. Appendix A, Section A.2 Although there are inadequacies in the evaluation (e.g., ecological risk based RGOs, preliminary RAOs which include 55 years of excavation at a cost of 1.7 billion), Appendix A and portions of the EIS are an excellent resource for scoping a streamlined RI/FS for L-Lake in a manner consistent with the "SAFER Methodology."
15. Appendix A, Section A.2.1 EPA agrees with the final two sentences of the opening paragraph to this section. Additionally, EPA believes that scoping the RI/FS for L-Lake, utilizing section A.2 as a starting point and following the "SAFER methodology" may support considerable streamlining of the RI/FS for this site. This streamlining may negate the need for developing significantly more detailed information beyond that which already exists, as expressed in the opening sentence to this paragraph.

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16. Appendix A, Section A.2.2 The lack of an ecological risk assessment is a fundamental gap in this analysis which would have to be addressed in scoping a final remedial action for L-Lake.
17. Appendix A, Section A.3 Accelerating the RI/FS for this site to be coordinated with the EIS action should negate the need for additional "Mitigation Plan" documentation identified in this section.

L10-21

L10-22

PK64-25PC

### **Advance Delivery of Comments Included in Letter L10**

DOE received a letter from EPA by facsimile transmission on December 13, 1996. DOE addresses the comments in that letter, which was from Jeffrey L. Crane to Brian Hennessy, in the responses to EPA's formal comment transmission in Letter L10.

### **Response to Comment L10-01**

DOE is committed to coordinating NEPA actions being considered in this EIS with SRS remediation activities planned and conducted in accordance with CERCLA under the FFA, and has initiated discussions with EPA and SCDHEC to determine reasonable means of expediting the FFA process to achieve appropriate coordination.

As a first measure to expedite the FFA process, DOE has compared data on L-Lake contamination used to support the NEPA analyses presented in the EIS with criteria used under the FFA for Site Evaluations to decide if additional characterization and, if necessary, remediation, is needed (i.e., to determine if the site should be included on the RCRA/CERCLA Units List in Appendix C of the FFA). On the basis of this comparison and discussions with EPA and SCDHEC staff, DOE has proposed to assess L-Lake under the FFA and bypass preparation and review of a Site Evaluation Report. DOE agrees with EPA that available data are sufficient to expedite the FFA process for scoping additional studies to characterize and, if necessary, remediate L-Lake.

DOE also intends to coordinate this NEPA action with FFA activities by ensuring that data obtained in the context of NEPA evaluations are appropriately utilized in FFA activities. In addition, DOE will continue to ensure that its operational decisions regarding the River Water System made on the basis of this EIS are consistent with potential remedial decisions for L-Lake that may be made under the FFA, as demonstrated by the analysis presented in

Appendix A of this EIS and by the fact that its preferred action in this EIS preserves the option of refilling the lake in the event that such action is determined to be necessary under the FFA. Further, if DOE selects a shutdown alternative, DOE would implement measures to limit potential risk from contaminated lake sediments that are exposed as lake drawdown occurs. These actions may include implementing institutional and/or administrative access controls, monitoring exposures to workers and visitors, implementing measures to control erosion of exposed lake sediments by wind and water, and surveying and monitoring of exposed sediment to further characterize the area and to ensure risk levels are at or below predicted levels.

DOE proposes that these and other potential measures to coordinate the NEPA and EIS processes be considered in the context of ongoing discussions being conducted under the FFA, which provides the appropriate framework for planning L-Lake remediation.

### **Response to Comment L10-02**

In response to this comment, DOE has provided further evaluation of ecological risk in Appendix B.

### **Response to Comment L10-03**

DOE will continue to consider appropriate remedial actions under the FFA in response to increases in contaminant exposure that could result if the DOE decision is implementation of its preferred alternative. DOE is encouraged that EPA feels that the documentation process for L-Lake remedy selection can be expedited due to the thorough analysis provided in the EIS. DOE agrees that a formal Site Evaluation prepared under the terms of Section X of the FFA is unnecessary, and be further assessed under the FFA. (See response to Comment L10-01.)

**Response to Comment L10-04**

In response to this comment, DOE revised Appendix A and the referenced statements in Section 1.4. DOE's experience indicates that the level of complexity and time necessary to yield cleanup decisions under the FFA can vary widely depending on the complexity of the site, availability of appropriate cleanup methods, and other factors. In the case of L-Lake, DOE believes that the decisionmaking process can be expedited considerably with respect to some actions. As noted in response to Comment L10-01, DOE believes that existing analyses are sufficient to allow for further assessment of L-Lake under the FFA (i. e., no Site Evaluation Report is needed) and to initiate the process for scoping additional studies that may be necessary under the FFA. Such actions would be relatively uncomplicated and expeditious.

However, DOE believes that a final cleanup decision for L-Lake under the FFA would be premature at this time. This belief was established in view of the possible need for additional characterization, risk determination and prioritization, and appropriate funding, and the fact that the impoundment is an important site to be considered in addressing remedial decisions for the Steel Creek IOU. There is a probable need for more detailed characterization of the lakebed sediments, which DOE could most cost-effectively conduct as sediments are exposed during drawdown (if DOE selects a shutdown alternative). In addition, final remedial decisions for the lake should be made in consideration of remediation options for the Steel Creek IOU, the determination of which will be based on comprehensive review of data available for component streams and contributing sources in the watershed (including submerged stream channel and floodplain areas within L-Lake) and appropriate risk evaluations. This process will take considerable time and resources.

**Response to Comment L10-05**

In response to this comment, DOE has revised Section 3.3.1.1 to confirm its commitment to remedy the unlikely drawdown of Par Pond in the near term until final CERCLA remedial actions are implemented. It has also revised Section 3.3.1 to clarify its intent in providing the three restart examples.

**Response to Comment L10-06**

As indicated in response to Comment L10-01, DOE believes that documentation requirements for L-Lake remediation can be streamlined by initiating the scoping process under the FFA without submittal of the Site Evaluation Report. This EIS demonstrates that a timely operational decision to implement its proposed action would be cost-effective, protective of human health and the environment, and provide for orderly consideration of relative risk and associated funding priorities under the FFA. The proposed action would also preserve the capability to supply cooling water in support of future site missions, refill Par Pond, or to refill L-Lake until final decisions are made with respect to these matters.

**Response to Comment L10-07**

As indicated in response to Comments L10-01, measures that DOE would apply to limit potential risk from contaminated lake sediments exposed as a result of lake drawdown may include institutional and/or administrative access controls, monitoring exposures to workers and visitors, erosion controls, and surveying and monitoring of exposed sediment to further characterize the area and to ensure risk levels are at or below predicted levels. In accordance with its NEPA implementing regulations at 10 CFR 1021.331, DOE would detail these commitments in its Record of Decision and, if necessary, would explain how these measures would be planned and

implemented in a Mitigation Action Plan. DOE would coordinate with EPA and SCDHEC to ensure such measures are consistent with actions that may be taken under the FFA regarding L-Lake and the extent to which such measures could be implemented under the FFA in consideration of such factors as scheduling. However, DOE would take appropriate measures to limit risk as part of NEPA actions considered in this EIS and the NEPA Record of Decision, irrespective of its obligations under CERCLA and the FFA.

#### **Response to Comment L10-08**

In response to this comment, DOE prepared the suggested table. See Table 1-1 in Section 1.1

#### **Response to Comment L10-09**

In response to this comment, DOE revised Section 1.1 to include a more thorough description of the process and the appropriateness of the categorical exclusion for operation of the 5,000 gallon per minute pump. DOE reviewed this categorical exclusion considering the reduced flow rates and increased concentrations in onset streams and determined that incremental adverse impacts would be very small (Section 4.2.2 compares September 1996 concentrations to those that will occur when operating the small pump and those that would occur under shutdown).

Although the streams are not used as a source of drinking, exposures to involved workers are assumed to occur due to incidental ingestion of sediments and through dermal absorption. It should be noted that the increase in contaminant concentrations in the streams would not result in incremental adverse impacts to uninvolved workers or offsite populations.

The first table in Section 4.2.8.2 has been revised to indicate the incremental risk for the involved worker resulting from small pump operation under the No-Action Alternative. Table 4-26 presents the tritium concentrations that relate to the stream (Pen Branch) with the

largest increase in concentrations under this alternative. The values presented in this table represent very small increases in risk that would not result in measurable adverse impacts to the workers.

The hypothetical maximally exposed offsite individual and the drinking water population at Beaufort, Jasper, and Port Wentworth withdraw drinking water from the Savannah River. Because contaminant discharges would remain constant and the flow in the Savannah River downstream of the discharges of Fourmile Branch and Pen Branch would not change, concentrations in the Savannah River would not change and would remain well below drinking water limits. Further, Section B.6 demonstrates that ecological effects from contaminants are unlikely under each alternative, including the No-Action Alternative and its discharges of 5,000 gallons per minute to onsite streams.

#### **Response to Comment L10-10**

In response to this comment, DOE has revised the referenced paragraph to include the fact that exposures to ecological receptors, as well as human receptors, are evaluated for realistic exposure conditions. Appendix B has been revised to more thoroughly evaluate risk to ecological receptors.

#### **Response to Comment L10-11**

DOE acknowledges that ecological risk is an important component of decisionmaking on the River Water System and has provided detailed evaluations in Sections 4.1.5, 4.2.5, and 4.3.5. These evaluations are supported, in part, by the revised and expanded discussions in Appendix B.

As the responses to Comments L10-01 and L10-04 indicate, DOE will coordinate the decisionmaking processes of NEPA and CERCLA to the fullest extent practical.

**Response to Comment L10-12**

As indicated in the Response to Comment L10-09, DOE does not expect adverse impacts from this operational decision. It will rely on the prioritization and scheduling processes of the FFA to determine the need for expediting Integrator Operable Unit RI work plans. DOE believes that if it is necessary to reduce contaminant concentrations, the preferable method would be to reduce the discharge of contaminants by a customary method such as closing and capping the source rather than to augment the flow in the affected onsite streams.

**Response to Comment L10-13**

DOE agrees that the suggested figure and table permit a quicker understanding of the SRS wastewater discharge paths and will include them in the Final EIS. Non-point source (e.g., ground water contaminant plume seepage) discharges are not regulated under South Carolina's NPDES program. Nonetheless, the impact of reduced stream flow on such discharges is being evaluated by DOE and the results will be discussed in the Final EIS.

**Response to Comment L10-14**

DOE considered expressing the present worth of costs of the layup and restart expenditures in these tables. However, it decided that such presentation would be confusing due to the unknown need to restart and the period of layup. Further, in the absence of detailed project plans for layup and restart options, such "fine tuning" is not justified. If DOE decides to shut down and maintain the River Water System, it would prepare detailed project plans to further assist in identifying the preferred layup option.

Section 3.2 confirms that under the shutdown and deactivate alternative, maintenance of L-Lake dam would be discontinued after the lake is entirely drained.

**Response to Comment L10-15**

Elimination of river water from the geologic system could *not* stimulate an earthquake. This statement has been corrected in Section 4.1.1.2 of the document.

**Response to Comment L10-16**

Section 4.8 has been revised to include a table summarizing the irreversibly and irretrievably committed natural resources.

**Response to Comment L10-17**

A goal of NEPA is to provide the public, state, and Federal agencies and other interested parties an opportunity to present their views and comments on a proposed Federal action and its alternatives through the public scoping process and the document review process. DOE acknowledges the Natural Resources Trustees as one of many stakeholders with an interest in the Proposed Action and its impacts. In their role as primary Federal Trustee, DOE notified the SRS Natural Resource Trustees of the proposal concerning the shutdown of the River Water System in March 1996 and presented the Trustees with additional information at the June 11, 1996, meeting where comments were solicited. The roles and responsibilities of the Natural Resource Trustees in the evaluation of natural resource injuries and the assessment of damages related to such an injury are authorized in Section 107(f) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA). DOE conducts these activities under the authority of and in compliance with the requirements of 43 CFR 11.

Because the role and responsibilities of the Natural Resource Trustees vested in CERCLA, DOE expanded the section of primary interest to the Natural Resource Trustees (Section 4.8, Irreversible or Irretrievable Commitment of

Resources). DOE believes that additional discussion within the text of the EIS is not warranted.

#### **Response to Comment L10-18**

DOE does not intend to imply that FFA schedules are inflexible and incapable of acceleration, and has revised the introduction to clarify its intent to explore reasonable means to streamline the remedial decision process with respect to L-Lake. DOE remains committed to pursue acceleration of FFA activities under its 10-Year Plan. (See response to Comments L10-01 and -04.)

#### **Response to Comment L10-19**

DOE agrees that information presented in the EIS will assist in streamlining the RI/FS process for L-Lake consistent with EPA's Streamlined Approach for Environmental Restoration (SAFER) methodology. (See responses to Comments L10-01 and -04.)

#### **Response to Comment L10-20**

DOE agrees that information presented in the EIS will assist in streamlining the RI/FS process for L-Lake consistent with SAFER methodology and that the SAFER methodology will be useful in determining additional data needs, if any. (See responses to Comments L10-01 and -04.)

#### **Response to Comment L10-21**

See response to comment L10-02.

#### **Response to Comment L10-22**

As noted in response to Comment L10-01, DOE would implement measures to limit potential risk from contaminated lake sediments that are exposed if its operational decision results in lake drawdown. These actions may include implementing institutional and/or administrative access controls, monitoring exposures to workers and visitors, implementing measures to control erosion of exposed lake sediments by wind and water, and surveying and monitoring of exposed sediment to further characterize the area and to ensure risk levels are at or below predicted levels. In accordance with its NEPA implementing regulations at 10 CFR 1021.331, DOE would detail these commitments in its Record of Decision and, if necessary, would explain how these measures would be planned and implemented in a Mitigation Action Plan.

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12/31/98 TUE 15:59 FAX 803 725 3309

BREI.



# The University of Georgia

(803) 725-2472  
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Savannah River Ecology Laboratory

Drawer E  
Aiken, SC 29802

## FAX COVER SHEET

DATE: \_\_\_\_\_

TO: Drew Armitage

OPTIONAL FORM 105 (7-89)

### FAX TRANSMITTAL

# OF PAGES: 865

To: <u>BRUCE BRADFORD</u>	From: <u>DREW GRAINGER</u>
Department: <u>HNUS</u>	Phone #: <u>5-1523</u>
Fax #: <u>642-8454</u>	Fax #:

FAX #:

FROM:

Larry Kern

Number of pages (including cover sheet): 5

COMMENTS: \_\_\_\_\_  
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**MEMO**

TO: Drew Granger

FROM: Gary R. Wein, Savannah River Ecology Laboratory

December 31, 1996

Listed below are some general comments on the *Draft Environmental Impact Statement: Shutdown of the River Water System at the Savannah River Site*. Hopefully these comments and suggestions are helpful and self-explanatory. If not please do not hesitate to contact me for further information or detail (5-8228).

cc: Janeczek

PK64-26PC

Comment L11. Page 2 of 5.

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12/31/86 THU 16:58 FAX 803 725 3309

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Page	Section	Paragraph	Comments
S-3	S.5	3	The site description makes no note that upland pine communities are predominantly pine silviculture.
3-4	3.2.1	bullet 2	Portions of L-Lake that are non-floodplain areas are not mentioned. How will these areas, that make up most of what would be the former lake bed be handled to avoid soil erosion or restored?
4-2	4.1	2	While the construction of artificial reefs is mentioned, other activities that were conducted to promote a Balanced Community such as the planting of vegetation, fish are not mentioned. Nor is the latter addition of the canal.
Biological stocking, etc. discharge			
4-12	figure 4-6,7,8,9		There are GIS layers available that would make the production of these figures easier and also allow the construction of one or two figures rather than the 4.
4-20	4.1.1.2		The section on Plant Nutrients is mistitled and should be changed to Nutrient Loading. There is no discussion of plant nutrients in this section but those based on sampling water chemistry. Also there is no discussion of impacts of heated effluent on water chemistry. One of the major impacts on nutrient availability in L-Lake was not the augmented flows with reactor operations but the heating of Savannah River water by the reactor releasing nutrients. This is the reason we cook food, to make nutrients more available to our digestive systems. This is an analogous situation.
4-21	4.1.2.1		Chuck Jagoe of SREL may have mercury data in fish that contradict the findings of Paller (1996) and suggest that mercury levels in fish of L-Lake may be higher than those found in Par Pond.
4-38	4.1.5.1		No mention is made of affected plant communities. The presence of animals is more determined by the structure provided by the plant communities than the mere presence of water.
4-40	4.1.5.1.1	3	Birds have been censused by researchers associated with SREL since 1988 or 1989 on a quarterly basis. Contact Dr. L Lehr Brisbin, Laura Janeczek, or Bobby Kennamer for additional details.
4-41	4.1.5.1.2		Plankton. The most definitive and complete survey of plankton in L-Lake is not mentioned or referenced in this section. See Taylor

L11-01

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Comment L11. Page 3 of 5.

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Page	Section	Paragraph	Comments	
			et al.1993 as listed on page 4-199.	
4-48	4.1.5.1.3	2	See Collins and Wein. 1995. Wetlands 15:374-385 for a 1992 survey of extant and seedbank wetland vegetation from 43 sites in L-Lake.	L11-10
4-50	4.1.5.2.1	1	What is source of information that causes the authors to predict an expected reservoir decline in productivity?	L11-11
4-50	4.1.5.2.2	1	Many of the semiaquatic and terrestrial animals depend upon L-Lake for more than food and drink. This a bit simplistic and anthropomorphic. They do need L-Lake as a source of food resources, habitat for breeding, etc.	L11-12
4-50	4.1.5.2.2	2	Failure to maintain water levels in L-Lake is a major disturbance to the existing ecosystem, no matter how you cut it. What is the loss of habitat in acres per year if you follow the shut down and deactivate scenario.	L11-13
4-53	4.1.5.2.2		Wetlands Ecology. I find this section a bit confusing. There is an initial attempt to suggest that water loss in L-Lake will mimic natural yearly fluctuations in bottomland hardwoods or Carolina bays. Neither of these systems are anything like a lake or reservoir. The loss of water is permanent and gradually decreasing not a yearly event. The rest of the section can best be summarized as "succession will occur." A discussion of succession should include potential plant propagule sources (seedbank, wind dispersed, surviving plants) and patterns of colonization expected as the water level drops. I would recommend that this section be rewritten and its objective be stated in an initial introductory paragraph.	L11-14
4-53	4.1.5.2.2	8	The list of 7 species listed as colonizer of Lost Lake only includes 3 wetland species and all but the buttonbush are indicative of highly disturbed undesirable habitats. I am not sure what the point of this paragraph is, but it does not assure me that a productive community will replace the current one.	L11-15
4-107	4.2.5.1.1	3	Steel Creek. Some recent work by Joel Snodgrass and Gary Meffe of SREL has recently summarized and evaluated long terms trends in Steel Creek fish using John Aho's data. This recent work may paint a different picture than the one that is presented.	L11-16

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Comment L11. Page 4 of 5.

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Page	Section	Paragraph	Comments
4-113	4.2.5.2.1	2	Steel Creek. Please note that Steel Creek was highly disturbed before L-Lake was constructed and that a return to conditions before its construction does not mean a return to the aquatic community before L-Lake is desirable.
4-115	4.2.5.2.1	3	<i>Quercus alba</i> , <i>Q. Velutina</i> , and <i>Carya tomentosa</i> are not the species I would have selected as future invaders of this area. More than likely it will be willow, loblolly pine, and sweetgum. If the site is at all wet you might expect cypress, willow, cottonwood, or tupelo. The noted species are much more commonly found on our bluff forests in thin strands along our stream drainages in locations that are almost never flooded. I would delete this sentence.
4-139	4.3.5.1.3		Wetland Ecology. Par is not a palustrine swamp but a lacustrine emergent marsh with persistent and nonpersistent herbaceous vegetation. The reference that calls Par Pond a palustrine swamp should be checked for accuracy.

**General Comment**

How does the loss of habitat at L-Lake affect the overall abundance of this habitat type in the southeastern US? Is this a rare habitat type or is it abundant and common?

L11-  
 L11-18  
 L11-19  
 L11-20

**Response to Comment L11-01**

The description of SRS natural communities in the DEIS has been expanded in the FEIS to include a discussion of upland pine communities that are managed for timber production and the enhancement of wildlife habitat.

**Response to Comment L11-02**

The FEIS makes clear that portions of what is now L-Lake formerly supported mixed upland forests of loblolly pine, longleaf pine, and several hardwood species. As the lake level recedes, these native pine and hardwood species would be allowed to recolonize upland areas. It may also be necessary to hand-plant some of these species to accelerate the process of revegetation.

**Response to Comment L11-03**

The FEIS notes (in Section 4.1.5.1.2) that 40,000 bluegill and 4,000 largemouth bass were stocked in L-Lake in 1985 and 1986 to speed the development of a Balanced Biological Community. The FEIS also describes (in Section 4.1.5.1.3) the planting of wetland vegetation in L-Lake, also part of the effort to establish a Balanced Biological Community.

**Response to Comment L11-04**

The soil scientists who prepared these figures used readily-available aerial photographs and soils surveys, rather than relying on other SRS organizations for the production of GIS layers.

**Response to Comment L11-05**

The entire discussion in this section is on plant nutrients; the plant nutrients in question are the aquatic macrophytes and phytoplankton of the reservoir. This is implied by the discussions of primary productivity [which Odum defines as "energy stored by photosynthetic and chemosynthetic activity of producer organisms (chiefly green plants)"] and eutrophication (a

trophic condition in which a body of water is rich in nutrients and high in plant productivity). This section of the FEIS has been renamed "Nutrient Loading" for the sake of clarity and to prevent any possible confusion.

**Response to Comment L11-06**

A number of studies have been conducted to determine mercury levels in the fish of Par Pond and L-Lake. Most of these studies, particularly in recent years, have determined that mercury levels are higher in Par Pond fish than L-Lake fish. A 1996 SREL study of potential wood stork prey (small sunfish and bass) also showed that levels of mercury were higher in Par Pond fish than L-Lake fish.

**Response to Comment L11-07**

The aquatic plant communities of L-Lake were described in considerable detail in the DEIS. A brief section describing the terrestrial plant communities surrounding L-Lake has been added to the FEIS.

**Response to Comment L11-08**

The FEIS contains an expanded and updated discussion of waterfowl usage of L-Lake and Par Pond.

**Response to Comment L11-09**

The Final EIS contains a thorough discussion of the development of the zooplankton community in L-Lake over the 1986-1992 period. The journal article mentioned by the comments (Taylor et al. 1993) focuses on the effects of heated reactor effluent over a short period (1986-1989).

**Response to Comment L11-10**

Collins and Wein (1995) is now the basis for some of the discussion in Section 4.1.5.2.2, as it suggests species that will recolonize the lakebed as the reservoir recedes.

**Response to Comment L11-11**

The FEIS presents sources for this assertion.

**Response to Comment L11-12**

This statement in the DEIS is simplistic and somewhat misleading. The FEIS is less simplistic, explaining that L-Lake provides many amphibians, reptiles, and semi-aquatic mammals with critical habitat needs (e.g., breeding and nesting habitat) as well as food and water.

**Response to Comment L11-13**

The FEIS discusses the two "end points" (reservoir ecosystem and stream ecosystem), but does not attempt to quantify the amount of fish and wildlife habitat that would be present in the interim stages. This is intentional, because it would be difficult to predict the rate of reservoir withdrawal with sufficient accuracy - the rate of change would be largely dependent on seasonal and annual cycles of rainfall. Clearly, these cycles would be impossible to predict.

**Response to Comment L11-14**

The "Wetlands Ecology" section of the DEIS has been reorganized and heavily revised, based on this and other comments. As noted previously, Collins and Wein (1995) is now the basis for some of the discussion in Section 4.1.5.2.2 of the FEIS, as it suggests plant species that would recolonize the lakebed as the reservoir recedes.

**Response to Comment L11-15**

See the response to Comment 11-14.

**Response to Comment L11-16**

The FEIS describes the results of a number of fish studies in the Steel Creek drainage conducted over a number of years. Subtle

differences in interpretation of the same fish population studies would not affect in a meaningful way the predictions of impacts associated with the Proposed Action.

**Response to Comment L11-17**

The DEIS makes clear that Steel Creek is a highly disturbed system, noting that it began receiving thermal effluent from P- and R-Reactors in 1954. Clearly, a return to conditions that existed prior to the creation of the Savannah River Plant (or even prior to agricultural development in the watershed) would be preferable to some semi-disturbed or altered state. The FEIS is even more explicit, explaining that pre-1984 conditions are not the desired endpoint, but rather a condition in which historical stream flows are restored and the kinds of plant and animal communities that existed under historical (pre-SRS) stream flows and conditions (before cooling water and contaminants were introduced) are restored.

**Response to Comment L11-18**

The DEIS has been revised and the offending sentence removed. The FEIS makes clear that species such as alder, willow, and cottonwood will likely colonize wetter areas and species such as sweetgum, red maple, and loblolly pine will likely colonize drier areas.

**Response to Comment L11-19**

Section 4.3.5.1.3 of the FEIS has been revised accordingly.

**Response to Comment L11-20**

The FEIS attempts to place the reservoir and its plant and animal communities in more of a regional context, as the commentor recommends. For example, its regional importance as a wintering area for waterfowl (diving ducks in particular) is stressed.

January 3, 1997  
807 E. Rollingwood Rd.  
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Engineering & Analysis Division  
SR NEPA Compliance Officer  
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FAX 725-7688

Attn.: RWEIS

**Re: Comments on November 1996 DEIS, "Shutdown of the River Water System at the Savannah River Site."**

Thank you for the opportunity to comment on the Draft EIS, "Shutdown of the River Water System at the Savannah River Site." My comments are later than the established comment period but I hope you will find them useful and be able to respond to them in your preparation of the final EIS.

I would like to provide four general comments and my recommendation on how I see the EIS decision. They are in the section on *General Comments*. In addition I am providing several specific comments.

**General Comments:**

- The proposed action described in the public meeting on December 4 and in the draft EIS seem to be inconsistent. In the public meeting, the proposed action was stated to be shutdown the water system and maintain it so it could be restarted in a relatively short time. In the draft EIS, the description of the proposed action is much less definitive. The EIS should be more specific on the consideration on the proposed action. As I understand the draft EIS, I support the shutdown portion but not the maintaining some part for the capability to pump to Par Pond, refill L-Lake, or to support some unspecified future mission. Based upon the information given in the DEIS, the risk of needing water for Par Pond or L-Lake is quite low and acceptable. Equipment replacement cost and time to restart the system is minimal and would be available from whatever new mission comes to SRS in the future and requires the water. The increased annual savings from shutdown justify this risk.
- The question of river water rights came up at the public meeting but no answers were available at the meeting. The EIS should include information on problems (political, permitting, etc.) that may be encountered in restarting river water withdrawal if it is stopped as part of this EIS's decision. Are there any water rights issues?
- Increased groundwater use should be more clearly defined in the EIS if it is required to replace river water. The EIS contains statements about increased ground water usage in various places in the EIS and draws the conclusion that the 200 gal/min

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L12-02

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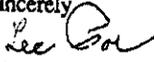
groundwater in K and L-Areas will not result in the aquifer condition changing (p. 4-31). Dispersed throughout the report, comments are made about increased ground water usage. No where could I find this subject integrated so a reasonable conclusion could be reached on the impact of the increased ground water usage caused by decreased river water usage. Examples of some of these ground water usage are: compressor cooling water requirements (p. 1-8), fire protection requirements for L & K-Areas (p. 1-4), sanitary waste water treatment usage, etc.

- Some of the terms and schedules identified in the DEIS are inconsistent with similar actions in other DOE reports. For example on page 1-8 the statement is made that DOE intends to deactivate P-Area by early 1997. The DOE draft 10-Year Plan identifies R, P, and C-Areas transition to Long Term Monitoring in 2001, 2002, and 2003 respectively. The terms and schedules used are different.

**Specific Comments:**

- The lead-in statement on page S-4 calling out Table S-2 does not describe the intent of the table.
- Tables S-2 and 3-4 and other ecological sections use unfamiliar words such as "equilimnion," "hypolimnion," etc. that are not included in the glossary.
- The paragraph on page 1-7 on CERCLA radiological analyses differences from those in the DEIS needs to be expanded to say why these two approaches are different and what is the relationship between them. Why is the issue raised?
- Tables S-2 and 3-4 entries should be reviewed to ensure wording provides an understanding of the relative consequences of the no action and the shutdown alternatives.
- I presume the "affect" referenced under esthetics on Tables S-2 and 3-4 is intended to say "viewed by".

Thanks again for the opportunity to review this draft EIS I hope these comments will help DOE make the appropriate decision.

Sincerely  
  
W. Lee Poe, Jr.

**Response to Comment L12-01**

DOE did not intend to convey a different understanding of the proposed action at the public meeting. The proposed action must provide flexibility in choosing layup options. Under the proposed action DOE presents in Section 3.3.2 a wide variety of layup options that vary in the time to restart (from 1 to 30 months), the layup scheme (e.g., maintain in a dry pipe condition), and cost.

DOE has revised Section 3.3.1.1 to confirm its commitment to remedy the unlikely drawdown of Par Pond in the near term until final CERCLA remedial actions are implemented.

DOE has also revised Section 3.3.1 to clarify its intent in providing the three restart examples. Basically, DOE does not wish to imply that it expects to actually need to restart the system for the situations presented but has selected them to cover a range of actions that maintenance in standby would support (i.e., pump to L-Lake, Par Pond, or a new facility).

The example that was presented for a new mission was Accelerator Production of Tritium (APT). Other potential missions that might require enough cooling water to make the use of the River Water System a viable option include Tritium Extraction Facility, International Thermonuclear Experimental Reactor, and Mixed Oxide Fuel Manufacturing Plant.

**Response to Comment L12-02**

There are no current river water rights issues (e.g., permitting) associated with restarting the River Water System which would likely cause a problem at restart. A permit is not required to withdraw water from the river. [See response to L15-2 for detail on regulatory issues which may need to be addressed, including a possible Section 316(b) study]. Likewise, there are no "water rights" regulations governing SRS's use of Savannah River water. It is not anticipated that downstream users of Savannah River water would be affected by the shutdown or

potentially a restart of the River Water System. Any use of river water for other missions (e.g. APT) would be addressed in an EIS addressing that project.

**Response to Comment L12-03**

DOE revised Sections 1.4, 4.1.3.2 and 4.8 to clarify potential increased groundwater usage.

**Response to Comment L12-04**

The quoted dates for long-term monitoring from the DOE Draft 10-Year Plan are correct (DOE 1996). However, the P-Area sanitary wastewater plant was disconnected in November 1996. Because it is a package unit, it is being maintained for potential use at another location.

DOE has revised Section 1.4 to identify this shut down action in 1997 rather than deactivation of P-Area by early 1997.

**Response to Comment L12-05**

DOE has revised the lead-in statement to Tables S-2 and 3-6 to describe the intent of the table.

**Response to Comment L12-06**

DOE has expanded the glossary to include epilimnion and other unfamiliar words that had not been previously included.

**Response to Comment L12-07**

As stated in the EIS, CERCLA radiological analyses report impacts in terms of cancer morbidity (incidence) while impacts under NEPA are reported as latent cancer fatalities. Cancer morbidity is calculated by applying the EPA ingestion, inhalation, or external exposure slope factor to the lifetime committed effective dose equivalent. The fatal cancer risk is calculated by multiplying the lifetime committed effective dose equivalent by an ICRP fatal cancer lifetime risk, health-effects conversion factor. The two risks are not directly

related; however, the fatal cancer risk can be approximated by multiplying the cancer morbidity risk by the ratio of the fatal cancer lifetime risk health-effects conversion factor to the total cancer lifetime risk health-effects conversion factor.

The differences between the two types of radiological analyses are discussed so that the reader understands that the risks reported in the Occupational and Public Health sections of this EIS are different than those risks reported in Appendix A or other documents related to ongoing CERCLA activities for L-Lake.

**Response to Comment L12-08**

DOE reviewed Tables S-2 and 3-6 and determined that the wording, as supported by the introductory bullets, provides an understanding of the relative consequences of the no action and the shutdown alternatives.

**Response to Comment L12-09**

The aesthetics sections of Tables S-2 and 3-6 have been revised to state that the action "could be viewed by 1,800 SRS workers who pass by daily."



Commissioner: Douglas E. Bryant

Board: John H. Burriss, Chairman  
William M. Huk, Jr., MD, Vice Chairman  
Roger Leaks, Jr., Secretary

Promoting Health, Protecting the Environment

Richard E. Jabbour, DDS  
Cyndi C. Mosteller  
Brian K. Smith  
Rodney L. Grandy

January 3, 1997

Department of Energy  
Savannah River Operations Office  
Attn: Mr. Andrew R. Grainger, SR NEPA Compliance Officer  
P.O. Box A  
Aiker, SC 29802

Shutdown of the River Water System at the Savannah River Site; Draft EIS  
Environmental Review

Dear Mr. Grainger:

We have reviewed the above referenced EIS received November 13, 1996. The South Carolina Department of Health and Environmental Control Bureau of Water Pollution Control administers applicable regulations pertaining to water quality standards and classifications, including wetland protection, in accordance with the South Carolina Pollution Control Act, the South Carolina Constitution, the Federal Clean Water Act, and associated regulations for these statutes. We are providing the following comments addressing impacts the proposed action will have to water quality, aquatic ecology and wetlands ecology in L-Lake, Par Pond, Steel Creek, Lower Three Runs Creek and other stream systems on the Savannah River Site.

**Surface Water**

Water quality in Par Pond would revert to that typically found in reservoirs due to reduction of nutrients from the Savannah River, however DOE could resume pumping to Par Pond if conditions warranted. The Department is of the opinion that existing water quality would be maintained or improved.

L13-01

L-Lake would gradually recede and revert to stream conditions with potential for lake bed erosion and turbidity increases. The implementation of best management practices may be appropriate if natural vegetation is not quickly established and erosion becomes a problem. These practices may include use of mulches, hay bales, silt fences, or other devices capable of preventing erosion and migration of sediments. In addition, exposed lake bed subject to erosion should be stabilized with vegetative cover which may include sprigging, trees, shrubs, vines or ground cover. During lake drawdown, a reduction in nutrients will reduce productivity, with the result that the reservoir may shift to a less eutrophic or even mesotrophic condition until drained. A reduction in dissolved oxygen, temperature and increased acidity in the epilimnion and hypolimnion of the lake is also anticipated, however these conditions will be temporary (lasting until the lake is drained) and should not contravene water quality standards nor change existing uses of L-Lake.

L13-02

L13-03

Existing NPDES permits for discharges into L and K areas must be reviewed by the Department and will be subject to NPDES regulations. The EIS reports that an alternate compliance method (septic tanks) will be

L13-04



PK64-30PC

Page 2  
Mr. Andrew R. Grainger  
January 3, 1997

required for the existing L-Area Sanitary Wastewater Treatment Plant. Septic tank installation must be permitted by the Department Lower Savannah Health District.

Steel Creek may be impacted by siltation below the L-Lake dam as potentially contaminated sediments are scoured from the lake bed and transported downstream after the lake is drained. It is anticipated that transported material will be detained in a small impounded area until filled with sediment, after which point the material could move downstream into Steel Creek during storm events. Although contaminants (e.g. cesium-137) are also present in Steel Creek sediments downstream of the L-Lake dam, the Department is concerned about the transport of additional contaminated sediments in the lake. Sediment material collected in the impounded area adjacent to the L-Lake dam should be periodically tested, removed and disposed of in accordance with the Department Bureau of Solid and Hazardous Waste requirements to avoid downstream migration.

#### Aquatic Ecology

The proposed draining of L-Lake would not require any State or Federal permits; however, SRS is responsible for insuring that water quality standards are not violated by this change. Certain precautions such as draining during cooler weather and releasing water from the surface of the lake will minimize adverse effects downstream. The proposed draining of L-Lake will replace a 1000-acre reservoir ecosystem with a small stream ecosystem. The SRS has put considerable effort into demonstrating a balanced biological community in the lake by constructing artificial fish habitats, planting littoral vegetation and implementing an intensive monitoring program. Thus, an aquatic life use of the lake has been established. Although this reservoir community habitat is significant, it does not represent the natural stream community and aquatic life uses of Steel Creek prior to construction of the Lake. Therefore, the Department supports stream restoration.

#### Wetlands

The draining of L-Lake will result in the eventual loss of approximately 122 acres of littoral community consisting of submerged, emergent, and floating-leaved aquatic plant species. However, the slow rate at which the lake is expected to recede should allow this community to migrate in shoreline areas and revert, through succession, to a stream wetland community. Re-establishment of the stream reach should result in the eventual regeneration of much of the approximately 225 acres of bottomland hardwood forested wetlands that were lost when L-Lake was constructed. The Department supports the reestablishment of the natural (pre-impoundment) wetland system associated with Steel Creek. Stream wetland restoration may require regrading to pre-impoundment contours and planting appropriate species in adequate densities to assure reestablishment of a stream associated wetland community.

The EIS reports that the proposed action should not result in other impacts to streams or lakes on the SRS. In addition, the Department is of the opinion that the proposed action will not change the existing

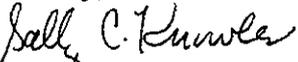
PK64-30PC

Comment L13. Page 2 of 3.

Page 3  
Mr. Andrew R. Grainger  
January 3, 1997

status of navigation in waters on the Site. We appreciate the opportunity to comment on this EIS. Please call Mark Giffin at (803) 734-5302 if you have any questions.

Sincerely,

  
Sally C. Knowles, Director  
Division of Water Quality

SCK:MAG

PK64-31PC

Comment L13. Page 3 of 3.

**Response to Comment L13-01**

DOE agrees that changes in Par Pond water quality would be expected following a prolonged reduction of nutrient input, including that pumped from the Savannah River, and has documented this conclusion in the CERCLA Interim Action Proposed Plan and the environmental assessment that was prepared in response to public comments on the Interim Action Proposed Plan (DOE 1995).

If the No-Action Alternative or the Proposed Action is selected, DOE could resume pumping if conditions warranted. DOE could continue pumping if it selects the No-Action Alternative or resume pumping if it selects the Proposed Action. Your comment that SCDHEC is of the opinion that existing water quality would be maintained or improved is noted.

**Response to Comment L13-02**

DOE intends to implement best management practices. The FEIS discusses a number of possible mitigative actions (Section 4.1.5.2.2 including: (1) lowering reservoir levels slowly to minimize erosion and encourage the establishment of wetland plants around lake margins, (2) planting grasses on exposed slopes to stabilize bare areas and prevent erosion, (3) planting loblolly and longleaf pine in upland areas once they have stabilized, and (4) planting hardwood in areas where survival is likely.

**Response to Comment L13-03**

DOE agrees with the SCDHEC comment. To aid restoration, DOE would allow L-Lake to drain slowly and naturally over what is expected to be about a 10-year period.

**Response to Comment L13-04**

DOE agrees that existing National Pollutant Discharge Elimination System permits for discharges into L-Area must be reviewed by SCDHEC for compliance with National

Pollutant Discharge Elimination System regulations.

DOE would obtain any permits required for implementation of the selected alternative (e.g., permit for septic tank installation) to treat the L-Area sanitary wastewater. Section 5.7.2.2 was modified to clarify this point.

**Response to Comment L13-05**

DOE will take appropriate measures to mitigate the passage of any impounded sediment downstream of the dam. Any sediment removed from the area will be managed in accordance with applicable regulations.

**Response to Comment L13-06**

Under CERCLA, DOE will investigate restoring the stream ecosystem and associated floodplain forest that existed prior to the creation of L-Lake. Although a final restoration plan has not been prepared, DOE is currently drafting a plan for restoration of the upper portion of Steel Creek and its floodplain forest in consultation with ecologists and foresters at the Savannah River Forest Station and WSRC-SRTC.

If DOE selects the Proposed Action, the Record of Decision for the EIS will contain a commitment to prepare a Mitigation Action Plan as well as a more detailed implementation plan that provides a practical, step-by-step guide to monitoring, mitigation, and restoration of plant communities of the riparian corridor and floodplain during the drawdown of L-Lake.

**Response to Comment L13-07**

See response to Comment L13-06. Additionally, it may be necessary to do some minor re-contouring of the basin (i.e., earthmoving) to ensure that stream flows are unimpeded by silt and sand that may have accumulated in certain areas and to encourage the stream to follow its historic, meandering channel (to the extent practicable). DOE will, in

consultation with the ecologists and foresters of the Savannah River Forest Station and WSRC-SRTC, develop a reforestation plan that

involves planting and/or transplanting trees and shrubs that are likely to survive and propagate in the Steel Creek floodplain.



State of South Carolina  
Office of the Governor

DAVID M. BEARDEN  
GOVERNOR

OFFICE OF EXECUTIVE  
POLICY AND PROGRAMS

January 7, 1997

Mr. Andrew R. Grainger  
SR NEPA Compliance Officer  
Savannah River Operations Office  
Post Office Box 5031  
Aiken, South Carolina 29804-5031

Project Name: Draft Environmental Impact Statement Shutdown of the River Water System at the Savannah River Site DOE/EIS-0268D (Aiken, South Carolina)

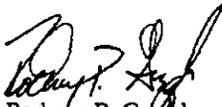
Project Number: EIS-961120-020

Dear Mr. Grainger,

The Grant Services Unit, Office of the Governor, has conducted an intergovernmental review on the above referenced activity as provided by Presidential Executive Order 12372. All comments received as a result of the review are enclosed for your use.

The State Application Identifier number indicated above should be used in any future correspondence with this office. If you have any questions call me at (803) 734-0485.

Sincerely,

  
Rodney P. Grizzle  
Grants Services Supervisor

Enclosures

PK64-33PC



Office of the Governor • Grant Services  
South Carolina Project Notification and Review  
1205 Pendleton Street  
Room 329  
Columbia, SC 29201

State Application Identifier EIS-961120-020
Suspense Date 12/20/96

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NOV 15 1996

DHEC-OCRM  
CHARLESTON OFFICE

Jeannie R. Kelly  
S.C. Coastal Council

The Grant Services Unit, Office of the Governor is authorized to operate the South Carolina Project Notification and Review System (SCPQRS). Through the system the appropriate state and local officials are given the opportunity to review, comment, and be involved in efforts to obtain and use federal assistance, and to assess the relationship of proposals to their plans and programs.

Please review the attached information, mindful of the impact it may have on your agency's goals and objectives. Document the results of your review in the space provided. Return your response to us by the suspense date indicated above. Your comments will be reviewed and utilized in making the official state recommendation concerning the project. The recommendation will be forwarded to the cognizant federal agency.

Should you have no comment, please return the form signed and dated

If you have any questions, call me at (803) 734-0495.

- Project is consistent with our goals and objectives.
- Request a conference to discuss comments.
- Please discontinue sending projects with this CFDA# to our office for review.
- Comments on proposed Application is as follows:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Signature: <u>Rob Miller</u>	Date: <u>12-5-96</u>
Title: _____	Phone: _____

PK64-33PC



Office of the Governor • Grant Services  
South Carolina Project Notification and Review

1205 Pendleton Street  
Room 329  
Columbia, SC 29201

State Application Identifier EIS-961120-020
Suspense Date 12/20/96

Beth McClure  
S.C. Department of Parks, Recreation and Tourism

The Grant Services Unit, Office of the Governor is authorized to operate the South Carolina Project Notification and Review System (SCPNRS). Through the system the appropriate state and local officials are given the opportunity to review, comment, and be involved in efforts to obtain and use federal assistance, and to assess the relationship of proposals to their plans and programs.

Please review the attached information, mindful of the impact it may have on your agency's goals and objectives. Document the results of your review in the space provided. Return your response to us by the suspense date indicated above. Your comments will be reviewed and utilized in making the official state recommendation concerning the project. The recommendation will be forwarded to the cognizant federal agency.

*Received*

Should you have no comment, please return the form signed and dated *11/21/96*.

If you have any questions, call me at (803) 734-0495.

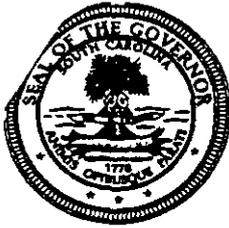
**GRANT SERVICES**  
Rodney Grizzle

- Project is consistent with our goals and objectives.
- Request a conference to discuss comments.
- Please discontinue sending projects with this CFDA# to our office for review.
- Comments on proposed Application is as follows:

No comments.

Signature: <u>T. J. Bell</u>	Date: <u>11/21/96</u>
Title: <u>Planner</u>	Phone: <u>803/734-0189</u>

PK64-34PC



Office of the Governor • Grant Services  
South Carolina Project Notification and Review

1205 Pendleton Street  
Room 329  
Columbia, SC 29201

42682

State Application Identifier  
EIS-961120-020

Suspense Date  
12/20/96

Bruce E. Rippeteau  
South Carolina Archaeologist

The Grant Services Unit, Office of the Governor is authorized to operate the South Carolina Project Notification and Review System (SCPNRS). Through the system the appropriate state and local officials are given the opportunity to review, comment, and be involved in efforts to obtain and use federal assistance, and to assess the relationship of proposals to their plans and programs.

Please review the attached information, mindful of the impact it may have on your agency's goals and objectives. Document the results of your review in the space provided. Return your response to us by the suspense date indicated above. Your comments will be reviewed and utilized in making the official state recommendation concerning the project. The recommendation will be forwarded to the cognizant federal agency.

Should you have no comment, please return the form signed and dated.

If you have any questions, call me at (803) 734-0495. Rodney Grizzle

- Project is consistent with our goals and objectives.
- Request a conference to discuss comments.
- Please discontinue sending projects with this CFDA# to our office for review.
- Comments on proposed Application is as follows:

*In case of avoidance or data recovery of cultural resources uncovered during project, please notify our office or SHPO.*

Signature: *Bruce E. Rippeteau*

Date: 11/18/96

Title: *WA archaeologist*

Phone: 777-8170

L14-01

PK64-34PC



Office of the Governor • Grant Services  
South Carolina Project Notification and Review

1205 Pendleton Street  
Room 329  
Columbia, SC 29201

State Application Identifier EIS-961120-020
Suspense Date 12/20/96

Hardee Clark Stith  
~~State Development Board~~  
*South Carolina Department of Commerce*

The Grant Services Unit, Office of the Governor is authorized to operate the South Carolina Project Notification and Review System (SCPQRS). Through the system the appropriate state and local officials are given the opportunity to review, comment, and be involved in efforts to obtain and use federal assistance, and to assess the relationship of proposals to their plans and programs.

Please review the attached information, mindful of the impact it may have on your agency's goals and objectives. Document the results of your review in the space provided. Return your response to us by the suspense date indicated above. Your comments will be reviewed and utilized in making the official state recommendation concerning the project. The recommendation will be forwarded to the cognizant federal agency.

Should you have no comment, please return the form signed **Received**

If you have any questions, call me at (803) 734-0495.

*Rudney Grizzle*

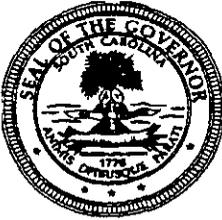
**GRANT SERVICES**

- Project is consistent with our goals and objectives.
- Request a conference to discuss comments.
- Please discontinue sending projects with this CFDA# to our office for review.
- Comments on proposed Application is as follows:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Signature: <u><i>[Signature]</i></u>	Date: <u>1/31/96</u>
Title: _____	Phone: _____

PK64-35PC



Office of the Governor • Grant Services  
South Carolina Project Notification and Review

1205 Pendleton Street  
Room 329  
Columbia, SC 29201

State Application Identifier  
EIS-961120-020

Suspense Date  
12/20/96

Steve Davis  
S.C. Department of Health and Environmental Control

The Grant Services Unit, Office of the Governor is authorized to operate the South Carolina Project Notification and Review System (SCPNRS). Through the system the appropriate state and local officials are given the opportunity to review, comment, and be involved in efforts to obtain and use federal assistance, and to assess the relationship of proposals to their plans and programs.

Please review the attached information, mindful of the impact it may have on your agency's goals and objectives. Document the results of your review in the space provided. Return your response to us by the suspense date indicated above. Your comments will be reviewed and utilized in making the official state recommendation concerning the project. The recommendation will be forwarded to the cognizant federal agency.

Should you have no comment, please return the form signed and dated. *D*

If you have any questions, call me at (803) 734-0495. Rodney Grizzle

- Project is consistent with our goals and objectives. GRANT SERVICES
- Request a conference to discuss comments.
- Please discontinue sending projects with this CFDA# to our office for review.
- Comments on proposed Application is as follows:

THIS DOCUMENT IS UNDER REVIEW  
BY THE DEPARTMENT

Signature: *[Signature]*

Date: 11/26/96

Title: \_\_\_\_\_

Phone: \_\_\_\_\_

PK64-35PC

**A95 AGENCY REFERRAL LIST**  
EIS-961120-020

Referrals Mailed: \_\_\_\_\_

**Project Number:**  
EIS-961120-020

**Project Name:**  
Draft Environmental Impact Statement Shutdown of the River Water System at the Savannah River Site DOE/EIS-0268D (Aiken, South Carolina)

**Contact Name:**  
Mr. Andrew R. Grainger

**Project Address:**  
SR NEPA Compliance Officer  
Savannah River Operations Office  
Post Office Box 5031  
Aiken, South Carolina 29804-5031

**Project Phone:**  
1-800-242-8269

Coastal Council  
SC Dept of Natural Resources  
Wildlife & Marine Resources  
Land Resources Commission  
DHEC  
SC Dept of Commerce  
State Development Board  
Parks, Recreation & Tourism  
State Ports Authority  
Adjutant General EPD  
State Archaeologist  
Human Affairs Commission  
Lower Savannah COG (Dist. 5)  
BCD COG (Dist. 9)

PK64-36PC

South Carolina Department of  
**Natural Resources**



December 20, 1996

James A. Timmerman, Jr., Ph.D.  
 Director

Omeagia Burgess  
 Grant Services  
 Office of the Governor  
 Edgar Brown Building, Room 329  
 1205 Pendleton Street  
 Columbia, SC 29201

REF: EIS - 961120-020 - Shutdown of the River Water System

Dear Ms. Burgess:

The South Carolina Department of Natural Resources has evaluated potential impacts of the proposed shutdown on wildlife and fisheries habitat, water quality, recreation and other factors relating to the conservation of natural resources.

We believe that the proposed activity has potential to impact the fisheries and wildlife habitat of L-Lake and Parr Pond. L-Lake and Parr Pond to some extent, contain excellent habitat for a number of wildlife species such as the bald eagle, American alligator, white-tailed deer and various fur bearers. They also support well balanced fish communities and a number of wading birds, water fowl and osprey.

The concern is that due to the small size of the watershed for L-Lake and Parr Pond, water quality problems could occur if the reservoirs are allowed to drop significantly below full pool. In addition, fluctuating water levels could have negative effects on fish recruitment and other wildlife usage.

L-Lake was intended to be a naturalized wildlife and fisheries habitat and should be managed to optimize its natural resource value. To allow water levels to lower would not be compatible with that initiative. However, if the Department of Energy would remove the dam and restore the wetland forest and stream channel of Steel Creek, we believe that an equitable exchange of natural resources may occur. It is our position that no lowering and/or dewatering of L-Lake should occur without an approved plan for Steel Creek restoration. The restoration plan should be submitted to and approved by appropriate resource agencies. Elements of the plan should include tree plantings, stream bank stabilization, monitoring and contingency plans. Restoration should address upstream and downstream impacts with consideration given to reduce flows.

It should be noted that a possibility exists that some level of contamination may be present in the aquasols that comprise the lake bottoms of both reservoirs. Before any plan is initiated to lower water levels, the bottom sediments should be tested for contamination. If hazardous materials are found in the sediments, then a plan for removal of those contaminants should be submitted prior to any shutdown of the SRS River Water System.

Sincerely,

Robert E. Dungan  
 Environmental Programs Director

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DEC 30 1996

GRANT SERVICES

Rembert C. Dennis Building • 1000 Assembly St • P.O. Box 167 • Columbia, S.C. 29202 • Telephone: 803/734-4000

EQUAL OPPORTUNITY AGENCY

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105

PK64-36PC



Office of the Governor • Grant Services  
South Carolina Project Notification and Review

1205 Pendleton Street  
Room 329  
Columbia, SC 29201

State Application Identifier EIS-961120-020
Suspense Date 12/20/96

Dr. James A. Timmerman, Jr.  
South Carolina Wildlife and Marine Resources Department

The Grant Services Unit, Office of the Governor is authorized to operate the South Carolina Project Notification and Review System (SCPNRS). Through the system the appropriate state and local officials are given the opportunity to review, comment, and be involved in efforts to obtain and use federal assistance, and to assess the relationship of proposals to their plans and programs.

Please review the attached information, mindful of the impact it may have on your agency's goals and objectives. Document the results of your review in the space provided. Return your response to us by the suspense date indicated above. Your comments will be reviewed and utilized in making the official state recommendation concerning the project. The recommendation will be forwarded to the cognizant federal agency.

Should you have no comment, please return the form signed and dated.

If you have any questions, call me at (803) 734-0495. Rodney Grizzle

- Project is consistent with our goals and objectives.
- Request a conference to discuss comments.
- Please discontinue sending projects with this CFDA# **GRANT SERVICES** our office for review.
- Comments on proposed Application is as follows:

**RECEIVED**  
DEC 30 1996  
**GRANT SERVICES**

Comments attached

Signature: <u>Danny Johnson for Robert E. E. Jensen</u>	Date: <u>12/20/96</u>
Title: <u>Env. Programs Director</u>	Phone: <u>737-0800</u>

PK64-37PC



Commissioner: Douglas E. Bryan  
Board: John H. Burtas, Chairman  
William M. Hull, Jr., MD, Vice Chairman  
Roger Lesko, Jr., Secretary  
*Promoting Health, Protecting the Environment*

Richard E. Jabbour, DDS  
Cyrus C. Mosteller  
Brian K. Smith  
Rodney L. Grandy

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DEC 9 1996

**Bureau of Ocean and Coastal Resource Management**  
Christopher L. Brooks, Bureau Chief

GRANT SERVICES

December 5, 1996

Ms. Omega Burgess  
Office of the Governor, Grant Services  
1205 Pendleton Street, Room 329  
Columbia, SC 29201

Re: EIS961120-020  
DEIS-Shutdown of the River Water at  
The Savannah River Site  
Various Counties  
A-95

Dear Ms. Burgess:

The staff of the Bureau of Ocean and Coastal Resource Management (OCRM) certifies that the above referenced project is consistent with the Coastal Zone Management Program. This certification shall serve as the final approval by the OCRM.

Interested parties are provided ten days from receipt of this letter to appeal the action of the OCRM.

Sincerely,

Robert D. Mikell  
Manager, Planning  
and Federal Certification Section

JHA  
JHA/25173/jk

cc: Mr. Christopher L. Brooks  
Mr. H. Stephen Snyder



PK64-37PC

**Response to Comment L14-01**

Because the alternatives, including the Proposed Action, would not require any construction, there would be little if any risk of damaging historic or archaeological resources or areas of cultural resources or areas of cultural

importance to Native American tribes. Should the potential for impacts become apparent or if impacts, unexpected as they are, were to occur, DOE would notify the State of South Carolina Office of the Governor or the State Historic Preservation Office.

## Savannah River Site

**CITIZENS ADVISORY BOARD****Recommendation No. 31**

January 28, 1997

**Recommendation on the Shutdown of the River Water System at SRS**

The SRS Citizens Advisory Board recognizes and commends DOE for wanting to shutdown the river water pumping system at SRS to save the costs of operating and maintaining this system which is no longer needed to provide cooling water for the SRS reactors. However, there are some additional factors related to this system which need to be considered. The SRS Citizens Advisory Board recommends that DOE:

1. Place the river water system in a minimum cost standby condition as soon as possible (see items 2, 3 and 6). Keep the system available to provide cooling water for the possible future missions that may require large amounts of cooling water with repairs and restart costs borne by the new missions.

L15-01

2. Before making a decision to place the system on standby, investigate the legal requirements and the Savannah River water rights withdrawal restrictions that might be required prior to reactivating a river water pump house.

L15-02

3. Consider as sufficient the National Environmental Policy Act (NEPA) data developed to evaluate the environmental impacts of different alternative actions on L-Lake for the Federal Facility Agreement (FFA) Remedial Investigation/Feasibility Study (RI/FS) process at L-Lake. Consider the potential Remedial Actions section of the Draft Environmental Impact Statement (DEIS) as the basis for those remedial actions in the FFA RI/FS process. Move the FFA RI/FS process forward on an expedited schedule to be completed before the Record of Decision (ROD) on the NEPA process. Should environmental remediation of L-Lake be required, consider the decision on it as part of the RI/FS process. Coordinate both decisions and move expeditiously to minimize unnecessary costs.

L15-03

4. Include the ecological effects of possible remediation actions in the RI/FS process for L-Lake.

L15-04

5. Consider only the onsite worker regarding human health risk scenarios in the decision process for L-Lake remedial actions under the FFA. It is not DOE-SR policy nor is it part of the SRS Future Use Plan to allow residents to live onsite SRS. This has been supported by the CAB and input from stakeholders. In addition, the DEIS evaluations indicate a greater risk to offsite residents from Cesium-137 fallout from prior atmospheric testing, than to hypothetical onsite residents who might have a risk from the Cesium-137 in L-Lake outside of the Steel Creek channel and its floodplain.

L15-05

6. Complete consultations with the Natural Resource Trustees before issuing the Record of Decision on the Shutdown of the River Water System because endangered species (eagles and wood storks) reside in the L-Lake area.

L15-06

SRS CAB Recommendation #31  
Adopted January 28, 1997

PK64-38PC

# Savannah River Site CITIZENS ADVISORY BOARD

A U.S. Department of Energy Site-Specific Advisory Board

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 Ann Ragan  
 Myra Helms

January 30, 1997

Dr. Mario Fiori, Manager  
U.S. Department of Energy  
Savannah River Operations Office  
P.O. Box A  
Aiken, S.C. 29808

Dear Dr. Fiori:

On behalf of the Savannah River Site Citizens Advisory Board, I am pleased to forward you two recommendations adopted at our January 28, 1997, meeting in Hilton Head Island, S.C.

The Board's Recommendation No. 31 regards the Shutdown of the River Water System at SRS and No. 32 addresses the Waste Isolation Pilot Plant (WIPP) Disposal Phase Draft SEIS-II. Comments on the WIPP document will be provided to the DOE-Carlsbad Office as well.

Both enclosures are also being forwarded to John Hankinson of the Environmental Protection Agency and Lewis Shaw of the South Carolina Department of Health and Environmental Control.

We would appreciate your written response prior to our next meeting on March 25 at the Savannah River Site. Where appropriate, we trust DOE, EPA and SCDHEC will carefully consider these recommendations and work together to develop a response for implementation.

Sincerely,

Bob Slay  
Chairman

cc: Don Beck, EM22  
Tom Heenan

PK64-38PC

**Response to Comment L15-01**

DOE agrees with the recommendation by the Citizens Advisory Board (CAB) to place the River Water System in standby; it is the DOE preferred alternative. In response to the recommendation by the CAB, DOE has expanded Section 3.3.2, *Layup Options*, to provide a standby condition that would be responsive to the potential future mission of an accelerator for the production of tritium (APT) at SRS. The wide variety of layup options presented for the decisionmaker depend on the time required to restart the River Water System (from 1 month to 30 months) and the layup scheme (keep portions of the piping system pressurized by operating the small pump or a still smaller jockey pump, or maintain those portions in a dry pipe condition). The minimum cost standby condition is the dry pipe scheme, which would require 30 months to restart the system. This option would cost about \$650,000 per year of standby; the additional cost to include surveillance and maintenance of the portion of pipe that the APT would use is approximately \$10,000 per year (dry pipe layup) or \$35,000 per year (wet pipe layup). The decisionmaker will review the "minimum cost with system available for possible future missions" option in light of the recommendation by the CAB and the knowledge that repair and restart costs would be borne by the new mission.

**Response to Comment L15-02**

DOE has investigated the legal requirements and Savannah River water withdrawal restrictions that might be associated with reactivating the River Water System. In consultation with SCDHEC, DOE determined that these Savannah River water withdrawals are not subject to allocations or permit constraints. DOE will continue to report on a quarterly basis to SCDHEC the surface water usage, including any changes in Savannah River water withdrawals associated with the alternatives considered in this EIS. These reports, which are voluntary, were submitted to the South Carolina

Water Resources Commission prior to consolidation of that agency with SCDHEC.

Possibility exists that further environmental review (e.g., a Section 316(b) entrainment and impingement study) may be required in conjunction with a future decision to restart the River Water System. Historically, the River Water System has withdrawn as much as 586,000 gallons per minute (37 cubic meters per second) from the Savannah River. As indicated in Section 3.3.2, the projected pumping rates associated with maintaining the system for potential restart of this system are significantly less; therefore, DOE believes that the cost and time of a Section 316(b) study, if any, would be minimal. DOE does not anticipate that such review, if necessary, would result in the imposition of constraints on SRS river water usage.

DOE acknowledges, however, that it would interact and negotiate with EPA and SCDHEC concerning the use of existing river water intakes. If new intakes or other mitigation requirements were needed, the cost would be substantial and proportional to the number of pumps to be restarted.

**Response to Comment L15-03**

DOE intends to coordinate NEPA and CERCLA activities regarding L-Lake as appropriate to minimize costs and ensure protection of human health and the environment. This coordination, including the extent to which remedial activities for L-Lake should be expedited, will be discussed with EPA and SCDHEC in the context of ongoing discussions being conducted under the FFA, which provides the agreed-upon framework for remediation planning, including consideration of such important factors as risk to human health and the environment, budgeting, and scheduling. (See responses to EPA comments, letter L10.)

**Response to Comment L15-04**

The remedial action process for L-Lake might be included within the Steel Creek Integrator Operable Unit. The FFA process includes detailed RCRA Facility Investigation/Remedial Investigation and a baseline risk assessment, which as a matter of procedure, considers potential risks to ecological receptors as well as human ones.

DOE prepared a revised and expanded ecological risk assessment in Appendix B. This analysis focuses on the proposed action in this EIS rather than remediation alternatives but might assist the preparation of the ecological effects portion of the baseline risk assessment in the FFA process.

**Response to Comment L15-05**

As stated in Section 1.4, this EIS analyzes realistic exposure conditions for the current facility worker, the collocated worker, the hypothetical maximally exposed offsite individual, the offsite population, and reasonably foreseeable future conditions, which are consistent with the *SRS Future Use Report* and include a future facility worker and public access for recreation, but do not include a future resident. Section 4.1.8 describes these risks for L-Lake.

Although the decision process for L-Lake remedial actions under the FFA is not in the scope of this EIS, DOE believes the future land

use recommended by the Citizens Advisory Board and other stakeholders is a primary consideration in all cleanup decisions under the FFA. This is consistent with CERCLA, the FFA Implementation Plan, and DOE responses to earlier CAB recommendations on land use. Baseline Risk Assessment protocols include estimates of risk at a site, as is, to hypothetical receptors including a future resident, but risk management (cleanup) decisions must be consistent with the reasonably expected future use – in this case, the use recommended by the CAB and the *SRS Future Use Project Report*.

**Response to Comment L15-06**

The response to comment L16-05 provides details of the relationship of the Natural Resources Trustees and this EIS. Section 4.8 has been expanded to provide a more explicit comparison of irreversible or irretrievable commitments of resources under the alternatives in this EIS.

NEPA requires separate consultation with the U.S. Fish and Wildlife Service relative to threatened and endangered species under Section 7 of the Endangered Species Act. Formal consultation is in progress, and if DOE decides to shut down the River Water System, the Section 7 process would be accomplished prior to shutdown of the system. The Section 7 consultation process is described in greater detail in Section 5.10 and in responses to the Department of Interior comments (L-16).



## United States Department of the Interior

OFFICE OF THE SECRETARY  
Washington, D.C. 20240

JAN 31 1997

In Reply Refer To:  
ER 96/742

Mr. Andrew R. Grainger  
SR NEPA Compliance Officer  
U. S. Department of Energy  
Savannah River Operations Office  
Post Office Box 5031  
Aiken, South Carolina 29804-5031

*Re: Draft Environmental Impact Statement, Shutdown of the River Water System at the Savannah River Site, Aiken, South Carolina (DOE/ETS-0268D)*

Dear Mr Grainger:

The U. S. Department of the Interior (Department) has reviewed the above-referenced document and provides the following comments for your consideration. We are extremely concerned about the Proposed Action, its environmental consequences, and the inadequacy of the Draft Environmental Impact Statement (DEIS) as now written. The Proposed Action may have very significant effects on the Department's trust resources under the management jurisdiction of the Department's Fish and Wildlife Service (FWS), including endangered and threatened species.

Background The River Water System (RWS) at the Department of Energy's (DOE's) Savannah River Site (SRS) includes three pumphouses, two on the Savannah River and one on Par Pond. When the reactors were operating, the two pumps on the Savannah River delivered 179,000 gallons per minute (gpm) to each reactor area plus makeup water for a total of about 380,000 gpm (23.9 cubic meters per second). Water bodies receiving effluents from the reactors included L-Lake and Steel Creek, Par Pond and Lower Three Runs, Fourmile Branch, and Pen Branch. Due to shutdown of the reactors, DOE placed one of the Savannah River pumphouses in lay up in 1993 and deactivated and abandoned the Par Pond pumphouse in 1995. At that time, DOE decided to discharge a minimum flow of 10 cubic feet per second (cfs) to Lower Three Runs and to allow the water level in Par Pond to fluctuate naturally between its normal operating level of 200 feet above mean sea level (msl) and 195 feet above msl. In addition, DOE decided to reduce the flow to L-Lake as long as the lake was maintained at its normal operating level of 190 feet above msl and flow in Steel Creek below L-Lake did not fall below 10 cfs. These and other minor system requirements are currently satisfied by operating one of the 10 available pumps in the remaining Savannah River pumphouse which pumps approximately 28,000 gpm.

L16-01

PK64-39PC

According to the DEIS, current operation of one pump provides approximately 23,000 gpm more water than is needed. DOE has thus decided to replace this pump with a 5,000 gpm pump which will keep L-Lake at its normal operating level and provide a minimum of 10 cfs to Steel Creek. Current discharges to Fourmile Branch via Castor Creek (approximately 0.5 cfs) and to the headwaters of Steel Creek (6.5 cfs) would be eliminated and flow to Pen Branch would be reduced from around 12.7 cfs to no more than 0.68 cfs. DOE has determined that the action of installing the small pump is categorically excluded from requiring either an Environmental Assessment or an EIS under the National Environmental Policy Act (NEPA). It is the operation of the small pump, to be operational by Spring 1997, and not the currently used pump, which DOE uses as the basis of its No Action alternative in this DEIS.

Environmental contamination at SRS and ongoing investigations and actions complicate DOE's proposed shutdown of the SRS RWS. L-Lake is currently undergoing a site evaluation in accordance with the Federal Facility Agreement (FFA) among DOE, the U. S. Environmental Protection Agency (EPA), and the South Carolina Department of Health and Environmental Control (SCDHEC). This agreement integrates DOE's responsibilities under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, Superfund Act) and the Resource Conservation and Recovery Act (RCRA) for investigation of the nature and extent of contamination at SRS and for identification and implementation of necessary remedial, or cleanup, actions. If the L-Lake site evaluation recommends further investigation, L-Lake will be placed on the CERCLA/RCRA Units List and will be subject to the remedial action process defined by CERCLA/RCRA. As stated in this DEIS, that process would be "long and involved" under the current FFA.

Par Pond has already been placed on the Superfund list. While it has the fourth highest hazard score at SRS, the FFA calls for DOE to begin investigations in 2004 and to begin remedial actions, if required, in 2008. Fourmile Branch, Pen Branch, and Lower Three Runs are also on the CERCLA/RCRA list and are to receive future evaluation and potential remedial actions.

**Proposed Action** DOE's Proposed Action and Preferred Alternative is to shut down the RWS and to place all or portions of the system in standby. The cessation of river water input to L-Lake would result in the gradual disappearance of the 1000-acre lake, exposure of contaminated sediments, and potential downstream transport of contaminated sediments (Steel Creek and the Savannah River). DOE has apparently already ceased pumping river water to Par Pond and is allowing "natural fluctuation" of water levels over its contaminated sediments. Maintenance flows to Lower Three Runs below Par Pond would cease under the Proposed Action.

Comments:

1. **Effects on Fish and Wildlife Resources:** The DEIS adequately identifies the habitat losses that would occur under the Proposed Action and the positive environmental impacts associated with reduced entrainment and impingement of fish eggs, larvae, juveniles, and adult fishes of the Savannah River. Still, the DEIS fails to adequately evaluate the effects of the Proposed Action on fish and wildlife resources. The underlying basis of this failure is the conclusion contained in Appendix B: "Ecological effects from contaminants in Par

L16-02

PK64-39PC

Pond, L-Lake, Steel Creek, and Lower Three Runs are unlikely regardless of the status of the River Water System."

We strongly disagree with this statement. As noted in a June 2, 1992, letter to DOE from the FWS in which it did not concur with the DOE's assessment of no effect on the wood stork and the bald eagle relative to the 1991 emergency drawdown of Par Pond, the documented levels of mercury in fish in Par Pond far exceed levels known to cause adverse effects on sensitive avian species. Limited data presented at a wood stork meeting at SRS in 1996 indicate mercury levels in fishes in L-Lake are higher than those in Par Pond. Contrary to the conclusions presented in Appendix B, available data indicate sediments in L-Lake, Par Pond, Steel Creek, and Lower Three Runs likely present significant risk to exposed fish and wildlife populations, particularly avian species including the endangered wood stork and threatened bald eagle. Further investigations into the nature and extent of contamination associated with these water bodies and appropriate site specific ecological risk assessments are necessary to fully assess the ecological effects associated with contaminants in these water bodies. *These data are needed before the environmental impacts of the Proposed Action can be adequately evaluated and considered in the decisionmaking process.*

L16-02  
(cont.)

While not a part of this DEIS, the planned reduction in current pumping from 28,000 gpm to 5,000 gpm may also have a significant effect on trust resources associated with the receiving water bodies. Under the planned reduction which DOE has determined to be categorically excluded from requiring either an Environmental Assessment or an EIS under NEPA, current discharges to Fourmile Branch via Castor Creek (approximately 0.5 cfs) and to the headwaters of Steel Creek (6.5 cfs) would be eliminated and flow to Pen Branch would be reduced from around 12.7 cfs to no more than 0.68 cfs. Streamflow reductions result in stream and riparian habitat losses with potential adverse impacts on fish and wildlife populations. In addition, at SRS reductions in streamflow may also result in the exposure of contaminant sediments and additional exposure pathways for avian and terrestrial wildlife. The DEIS should contain some discussion of the impacts of the planned streamflow reductions; at a minimum, there should be some explanation of DOE's determination that this action is categorically excluded from review under NEPA.

L16-03

2. *Endangered Species:* While the DEIS states that DOE directed the preparation of a biological assessment to evaluate the effects of the proposed action on endangered and threatened species, the FWS has not been provided a copy of that assessment. The DEIS further states that DOE "plans to initiate formal consultation;" formal consultation under Section 7 of the Endangered Species Act is required if the biological assessment concludes the proposed action may affect endangered or threatened species. Under formal consultation, the FWS must prepare a Biological Opinion regarding the project and its impacts on endangered and threatened species. The evaluation of Proposed Action impacts cannot be completed until Section 7 consultation is completed; thus affecting the Final EIS completion.
3. *Natural Resource Damages:* The DEIS contains a discussion of natural resource damages

L16-04

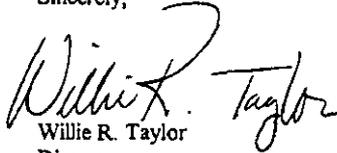
L16-05

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(Section 5.5.2.4 and Section 4.8), and in particular the effect of a determination in an EIS that certain resources are irreversibly and irretrievably committed. The discussion in these sections is not clear, however, it implies that DOE's identification in the DEIS of any resource as irreversibly and irretrievably committed will preclude natural resource damages liability arising from the proposed action. Section 107(f) of CERCLA requires that damages to natural resources be specifically identified, that a permit or license be issued and the decision granting the permit or license authorize the commitment of resources, and that operations be conducted within the terms of the permit or license. It is not apparent from the DEIS that all of the conditions of the Section 107(f) exclusion would be met. Further, even if these conditions were met, it is not clear that the Section 107(f) exclusion would apply to a situation involving releases or contamination occurring prior to the preparation of the EIS. Accordingly, based on the information contained in the DEIS, it is our view that the Section 107(f) exclusion from liability would not apply.

The Department appreciates the opportunity to provide these comments. Any questions or comments should be directed to Ms. Diane Duncan, Environmental Contaminants Specialist, U. S. Fish and Wildlife Service, P. O. Box 69, Wadmalaw Island, South Carolina 29487, (803) 559-7909.

Sincerely,



Willie R. Taylor  
Director  
Office of Environmental Policy  
and Compliance

L16-  
(cont.)

PK64-40PC

### Response to Comment L16-01

Section 4.3.5.3, as revised, presents a thorough evaluation of the affected environment and environmental consequence on threatened and endangered species due to implementation of the proposed action or an alternative. This evaluation is supported by a Biological Assessment and an Ecological Risk Assessment (Appendix B).

DOE appreciates the advice and cooperation of the Fish and Wildlife Service that is leading to the successful completion of the consultation process as required by Section 7 of the Endangered Species Act.

### Response to Comment L16-02

DOE acknowledges that documented concentrations of mercury in fish in Par Pond and L-Lake in some cases have exceeded 0.1 mg/kg (ppm). However, it should be noted that the 0.1 mg/kg concentration of total mercury in prey items (fish) that is generally cited as protective of fish-eating birds (from Eisler's oft-cited 1987 monograph *Mercury Hazards to Fish, Wildlife, and Invertebrates*) is very conservative, and has been the subject of some debate in scientific circles. Moreover, this 0.1 mg/kg (ppm) standard is within the range of normal background mercury levels in fish in many streams, lakes, and reservoirs in the U.S.

For example, freshwater fish (bottom-dwelling species and predators) were sampled at more than 100 stations across the U.S. in the 1970s and 1980s as part of the National Contaminant Biomonitoring Program managed by the U.S. Fish and Wildlife Service. Mean concentrations of mercury in these fish samples were 0.11 ppm in both 1978-1979 and 1980-1981. The EPA *National Study of Chemical Residues in Fish* (EPA 823-R-92-008a) presents data on mercury concentrations in fish collected from 1986-1989 at 374 locations (a mix of contaminated and background sites). Generally speaking, concentrations were highest in the northeast and southeast and lowest in the midwest, southwest,

and intermountain west. More than 60 percent of the water bodies contained fish with mercury concentrations greater than 0.1 mg/kg (ppm). The concentration of mercury in fish tissue from 21 background sites ranged from not detected to 1.77 mg/kg (ppm) with a mean of 0.34 mg/kg. This mean value is three times the Eisler standard of 0.1 ppm.

Mercury concentrations in fish in Par Pond have on occasion been higher than the 0.1 ppm concentration, but are not an imminent threat to fish and wildlife. Any effects would be subtle to imperceptible; there is no evidence to date of reduced survival or reproductive success in any of the sensitive species known to forage or nest in the area (such as the bald eagle and wood stork).

The "limited data presented at the 1996 wood stork meeting" do not indicate that mercury levels in fish in L-Lake are higher than those in Par Pond, nor are these data indicative of "significant risk to exposed fish and wildlife populations." These limited Savannah River Ecology Laboratory data show that mercury concentrations are roughly twice as high in Par Pond fish than L-Lake fish. Mercury concentrations appear to be slightly elevated in largemouth bass and four sunfish species in Par Pond. Mercury concentrations in L-Lake fish are indistinguishable from background levels, with the exception of one species, the redbreast, which appears to contain elevated concentrations of mercury. It should be noted that sunfish from isolated SRS wetlands unaffected by facility operations often contain mercury levels as high or higher than L-Lake and Par Pond, depending on the particular wetland's soils and water quality (pH, hardness/alkalinity, and total organic carbon).

The value presented in Eisler (1987) of 0.1 ppm should be viewed as an initial indicator of potential risk to sensitive bird species. This value is not species specific, and does not take into account site-specific physico-chemical parameters or the ecology of the avian receptors that use a given site (e.g., Par Pond and

L-Lake). The Eisler value, therefore, should be viewed as a starting point or screening level to investigate potential risks when fish have body burdens of greater than 0.1 ppm total mercury. The FEIS contains an expanded ecological risk assessment that evaluates potential risks to the wood stork and bald eagle (among other species) that is based on site-specific and species-specific parameters.

### **Response to Comment L16-03**

The FEIS contains an expanded discussion of possible impacts to fish and wildlife from reductions in streamflow (Section 4.2.5), as well as an explanation for DOE's position that this action is categorically excluded from review under NEPA (Section 1.1).

### **Response to Comment L16-04**

On December 23, 1996, the DOE NEPA Compliance Officer at the Savannah River Site, Mr. Drew Grainger, sent a copy of the Biological Assessment to Mr. Roger L. Banks of the Charleston, S.C., field office of the U.S. Fish and Wildlife Service. The cover letter that accompanied the Biological Assessment noted that:

The biological assessment concludes that the proposed action may affect the bald eagle, which nests on the SRS, and the wood stork, which occasionally forages on the SRS. As a result,...DOE would like to begin the process of consultation pursuant to Section 7 of the Endangered Species Act...

DOE believes that it has fulfilled its obligations with respect to the consultation requirements of the Endangered Species Act.

### **Response to Comment L16-05**

USFWS states that the discussion of the irreversible and irretrievably committed resources and the effect that such a determination in an EIS has on natural resources

damage liability is not clear. USFWS further asserts that all the conditions of the CERCLA Section 107(f) exclusion would not be met by the DEIS as it is currently written. Under Section 107(f) of CERCLA there is exclusion of liability for an injury to, destruction of, or loss of natural resources if

...the damages to natural commitments of resources complained of were specifically identified as irreversible and irretrievable commitments of resources in an environmental impact statement, or other comparable environmental analysis, and the decision to grant a permit or license authorizes such commitment of natural resources, and the facility or project was otherwise operating within the terms of its permit or license, so long as, in the case of damages to an Indian tribe occurring pursuant to a Federal permit or license, the issuance of that permit or license was not inconsistent with the fiduciary duty of the United States with respect to such Indian tribe.

In Section 4.8 of RWEIS, the discussion of the resources that would be irreversibly and irretrievably committed has been clarified so as to satisfy the requirements of both NEPA and CERCLA. A discussion of the potential natural resource damages liability resulting from this action as addressed in Section 107(f) of CERCLA is not appropriate at this time and has been eliminated. It is premature to pursue a decision on a Section 107(f) exclusion on natural resource damages liability for the current action at this time.

In the USFWS comment, it is not clear, but seems to be implied that a permit or license must be issued in order to fulfill the requirements of Section 107(f) of CERCLA with regard to obtaining an exclusion for natural resource damage liability. In the case of the actions under consideration, a permit is not relevant to the activities involved and would not be necessary. Alternative remedial actions

under CERCLA are not ready for decision at this time and are not included in this Final EIS.

Finally, USFWS raises the question of applicability of the Section 107(f) exclusion as it applies to releases and contamination occurring prior to the preparation of RWEIS. It

cannot be implied that invocation of the Section 107(f) exclusion covers the prior releases and contamination. These prior releases are currently being addressed through the CERCLA remediation process with input from the Savannah River Site's Natural Resource Trustees.

## E.6 References

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- DOE (U.S. Department of Energy), 1996, *Savannah River Operations Office, U.S. Department of Energy Ten-Year Plan*, QC-96-0005, Aiken, South Carolina, July.
- Eisler, R., 1987, *Mercury Hazards to Fish, Wildlife, and Invertebrates: A Synoptic Review*, Biological Report 85 (1.10), Fish and Wildlife Service.
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- Kennamer, R. A., I. L. Brisbin, Jr., C. D. McCreedy, and J. Burger, 1997, *Radiocesium in Mourning Doves: Effects of a Contaminated Reservoir Drawdown and Risk to Human Consumers*, Manuscript, Savannah River Ecology Laboratory, Aiken, South Carolina.