Comment number	Comments	Responses

TESTIMONY OF
JAMES E. BEARD,
NATIONAL COORDINATOR,
FISSILE MATERIAL CUTOFF CAMPAIGN

FOR

GREENPEACE

REGARDING THE
DRAFT ENVIRONMENTAL IMPACT STATEMENT

Waste Management Activities for
Groundwater Protection,
Savannah River Plant

June 4, 1987
Aiken, South Carolina

Good morning. My name is James E. Beard, and I am here representing Greenpeace. Greenpeace is an international environmental activist organization, with members in 17 countries. We are engaged in a peaceful, worldwide effort to protect life and preserve the environment. Our work ranges from a campaign to stop the slaughter of whales and seals to an international effort to end the production of plutonium for use in nuclear weapons.

Greenpeace is very concerned with the grave ENVIRONMENTAL problems associated with the reprocessing of spent nuclear fuel for the production of plutonium. Time and again, at Sellafield in Great Britain, at Cap de LaHague in France, and at the Hanford Reservation in Washington state, these terrible risks to the environment have been demonstrated. The Savannah River Plant, operation of which has caused

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	extensive contamination of soils, surface water and groundwater, is no exception, as indicated by the information contained in the Draft Environmental Impact Statement under discussion today. In the Draft Environmental Impact Statement (DEIS), the Department of Energy identifies four alternative strategies. 1. No Action - continuation of current waste disposal practices.	
D-1	2. Dedication - selection of several current waste disposal sites, and "dedicating" them (i.e., dumping waste at these sites and contaminating surface and groundwater in perpetuity).	Under the Dedication strategy, all existing waste sites would be closed in accordance with applicable regulations. Wastes would no longer be placed in these sites but would be disposed of in approved facilities.
D-2	3. Elimination - "elimination of existing waste sites, followed by storage of wastes. It should be noted here that to "eliminate" disassembly basin purge water, DOE plans to dump the contaminated water directly into tributaries of the Savannah River.	Direct discharge or evaporation of the purge water could lead to eliminating the reactor seepage basins, not the purge water.
	4. Combination - a combination of dedication and elimination of existing waste sties, and both storage and disposal of wastes. This is the DOE's preferred alternative. Except for the "no action" alternative, which is required by the National Environmental Policy Act, and which has fortunately been dismissed by the DOE, Greenpeace is concerned not only with the options and their implication but also with the manner in which the options were formulated and selected.	

Table L-2. DOE Responses to Comments on Draft EIS
(Page 53 of 210)

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D-3	First, all three of the substantive options are, according to the DOE, intended to address the issue of compliance with the Resource Conservation and Recovery Act and all other applicable state and Federal regulations. However, nowhere in the document is the issue of compliance with these laws seriously discussed. The Department of Energy's compliance record with these and other statutes at facilities all over the United States has been abysmal. There is nothing in the Draft EIS that gives any indication the DOE intends to improve this record.	DOE has emphasized its commitment to comply with RCRA, or any other applicable regulations, specifically at pages S-7 and S-8, and elsewhere in the EIS. DOE has not ignored public concerns with regulatory compliance, but states that this EIS is not intended to preempt the regulatory or permitting processes which will be carried out following the EIS Record of Decision.
	The DEIS does not adequately address the issue of securing permits for waste management operations, and it also does not use established standards and terminology for groundwater assessment, necessary for effective review and implementation of the waste management alternatives.	See the response to comments C-5 and D-3 relative to groundwater assessment standards.
	As a result, the DOE has wasted a considerable portion of the time, effort, and money used to prepare this document. More than anything else, the DEIS is a smokescreen, intended by DOE to mask their plans for "business as usual" at the Savannah River Plant.	
D-4	The Department of Energy is a Federal agency, and, as such, they must be held in compliance with the letter and intent of all applicable state and Federal standards.	See the response to comment D-3.
	The second, and most important, concern that Greenpeace has with the Draft EIS is the identification and formulation of alternatives.	

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	The obvious first step when dealing with any waste disposal problem is to end the generation of the waste under consideration. It does no good to make plans for cleaning up a waste disposal site, if the continued dumping of waste is planned, there or anywhere else. However, by DOE's own admission, this option was not considered. The DOE states: "Discontinuing SRP operations...was not considered, because such a strategy would not allow DOE to meet established requirements for production of defense nuclear materials."	
D-5	Greenpeace questions these established requirements, and asks that the Final EIS for Waste Management Activities for Groundwater Protection at the Savannah River Plant consider the alternative of ending the production of 'defense nuclear materials' at SRP. Such a defense materials production cutoff would free large amounts of money for cleanup of the Savannah River Plant, the Hanford Reservation, and other DOE facilities. With little information available on the needs, production and uses of tritium in the United States' nuclear arsenal, it is obviously difficult to discuss the possibilities for a tritium production cutoff. However, there is enough information available in the public domain regarding plutonium that the subject of a plutonium production cutoff can be addressed.	Under the Atomic Energy Act of 1954, the Department of Energy is responsible for developing and maintaining the capability to produce all nuclear materials required for the U.S. weapons program. In accordance with the Atomic Energy Act, approval of proposals for defense nuclear materials by the President and subsequent authorization and appropriation by Congress constitute the legal authority and mandate for the Department of Energy to provide the required defense nuclear materials. The national policy on nuclear weapons, their deployment, and the need for weapons is beyond the scope of this EIS.

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	A plutonium production cutoff would in no way threaten the current United States arsenal of nuclear weapons, due to the slow rate of decay of the plutonium. In fact, there is some indication that, even with such a cutoff, the nuclear arsenal could be expanded by some 3,000-5,000 weapons, through the improved utilization of "scrap" and stockpiled plutonium. The United States currently has approximately 100 metric tons of weapon-grade plutonium available for the manufacture of nuclear weapons. With a stockpile of over 27,000 nuclear warheads, even the Department of Energy and the Department of Defense have trouble justifying continued plutonium production. In 1983, Secretary of Defense Caspar Weinberger could provide no rationale for continued plutonium production. He stated before the House Armed Services Committee that the number of warheads in the United States' nuclear arsenal had "dropped 40 percent" since the 1960's, thus freeing "large amounts" of plutonium for use in new weapons. In December, 1986, in response to a question on the need for continued plutonium production, the person in charge of nuclear weapons materials production for the DOE, Admiral Sylvester Foley, responded as follows: "It would have a measurable impact, measurable being, you can take the amount of nuclear materials required to produce the weapons to meet the President's Stockpile Memorandum and *you can decrement it by the amount* that the N-Reactor puts on out and you are going to be	

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short that much. Now can you meet the needs? Do you have a reserve you can eat on into or that you can go through? What you are doing is you are building yourself, you are increasing the risk."

(DOE Transcript, NW Citizens' Defense Waste Forum, Seattle, Dec. 17, 1986.)

This tortured double talk in no way provides a justification or rationale for continued plutonium production. The DOE refuses to elaborate on the needs and risks mentioned by Admiral Foley, yet they continue to ask the American citizen to accept all the costs and risks associated with continued plutonium production. Similarly, the DOE has refused to provide a justification for continued production of tritium, stating that all information on tritium use and need is "classified." The American public is entitled to know whether or not the U.S. has enough tritium and plutonium, if not, when enough will be produced. Again, it is the defense or our country, we are paying for it, and we are facing the risks.

Comment number	Comments	Responses

TESTIMONY OF W. F. LAWLESS

R. L. Morgan, Manager
Department of Energy
Savannah River Plant
P. O. Box A
Aiken, S.C. 29802

June 4, 1987

Dear Mr. Morgan:

Re: Draft DOE Environmental Impact Statement, Waste Management Activities for Groundwater Protection at the Savannah River Plant, Aiken, South Carolina, DOE/EIS-0120D (1987).

With the publication of the draft EIS (DEIS), my two goals in leaving the Savannah River Plant have been accomplished. First, I left DOE and SRP because I did not trust the DOE Inspector General to expose and to resolve a cover up of significant environmental problems at each DOE waste site (1). I had turned to the Inspector General because no DOE scientist or engineer could stop DOE from issuing a replacement regulation for radioactive waste management (DOE Order 5820.2, issued 1984). This new regulation, still the governing regulation for radioactive wastes (DEIS, p. 6-3), allows the continuation of antiquated practices by DOE contractors, such as seepage basins and cardboard boxes used by Du Pont to dispose of radioactive wastes at SRP. This DEIS validates that concern. The conclusion drawn from this DEIS, that partial environmental protection for SRP groundwaters after 35 years of Du Pont operations may cost up to $12.7 billion, would never have become public had it been left up to the DOE Inspector General, DOE, or to Du Pont.

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	Du Pont may not accept its responsibility in causing the damage to SRP. Two examples. In January 1981, when DOE transmitted my report to Du Pont highly critical of Du Pont waste management operations, Du Pont management refused to accept the report and requested that your office recall and convert the report to a draft, inaccessible to Freedom of Information requests (2). DOE did. Next, in August 1982, I asked Du Pont scientists investigating the M-Area groundwater contamination whether contamination had reached the Tuscaloosa aquifer and been found in the drinking water pumped from the Tuscaloosa. Although Du Pont had known since 1981 that drinking water from the Tuscaloosa was contaminated (DEIS, p. 1-1; ref. 3; but compare to ref. 4, pp. 5-10, 11), Du Pont management suppressed that information and requested that your office remove me from the investigation. DOE did. Although I am grateful to the individual Du Pont scientists and engineers who taught me radioactive waste management principles, and showed me the problems that existed at SRP, in my experience, Du Pont management has been wasteful, resistant to oversight, negligent, and a threat to the environment. If Du Pont leaves SRP without fully rectifying the damage caused by its own actions, then Du Pont will not have served in the best interests of our nation. My second goal was to make DOE self-regulation a public issue. Self-regulation and the lack of independent peer review have lead to waste, poor engineering practices, significant environmental damage, and a DOE regulation to cover up that	

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	damage. Whether or not there is justification for nuclear weapons, there is no justification to bury nuclear wastes in cardboard boxes inside leaking trenches, no justification to contaminate the earth and groundwater for future generations, no justification to spew millions of curies of radioactivity and contamination into the air, no justification to contaminate wildlife and to threaten human welfare, and no justification to cover up the evidence. Having failed to carry out its waste management responsibilities under the Atomic Energy Act, DOE has demonstrated that nuclear weapons cannot be produced safely without jeopardy to our environment and to human welfare. Legislation to strip DOE of its right to self-regulate nuclear materials and wastes has been proposed by Sen. Glenn, Rep. Wyden, Rep. Markey, and others. The broad support for legislation probably encouraged DOE recently to relinquish to EPA and the States regulation of mixed hazardous and radioactive wastes, but to retain regulation for nuclear materials and transuranic and high-level radioactive wastes.	
E-1	This draft EIS is gratifying. I applaud the renewed effort by DOE to meet its responsibilities. Although there is much to like in this draft, until such time that it is subjected to independent peer review, with full authority to resolve issues discovered in peer review, followed by public comment, then this DEIS will remain unacceptable.	The CEQ regulations (40 CFR 1503) require agencies that have legal jurisdiction or special expertise on the environmental impacts involved in an EIS and those agencies that develop and enforce environmental standards to review and comment on an EIS. The EIS is also distributed for public comment. Public hearings are also held to encourage full participation by the public, peer groups,

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		Federal, state, and local governments, environmental interest groups, and the news media. In addition to the review of the EIS indicated above, public reading rooms containing all of the available support and background documents are provided and are clearly identified in public notices, newspaper advertisements and articles, and in radio and television announcements.
E-2	DOE states in the draft that it has conducted waste management activities to protect public health and the environment (DEIS, p. 1-1). Little support exists for such a DOE statement, but regardless, the Congress and the public do not believe DOE. However, by its respect for the scientific method, independent peer review will provide DOE with checks and balances to protect the public and the environment and to increase the public trust in DOE. If DOE is committed to a rigorous application of environmental protection principles in the national interest, submit this draft EIS, and all supporting documentation, to independent peer review. Thank you for this opportunity to comment. Sincerely, W. F. Lawless, Professional Engineer, Assistant Professor of Mathematics Paine College 1235 15th Street Augusta, GA 30910 (404) 722-4471 ext. 205 Additional testimony submitted by Mr. Lawless follows.	Examples of DOE conduct of waste management activities to protect human health and the environment, including groundwater, are the M-Area groundwater remedial action; design and construction of liquid effluent treatment facilities; and removal of waste and soil at the CMP pits. See page 1-1. See the response to comment E-1 on peer review.

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ADDITIONAL TESTIMONY OF

MR. W. F. LAWLESS

R. L. Morgan, Manager
Department of Energy
Savannah River Plant
P.O. Box A
Aiken, S.C. 29802

Dear Mr. Morgan June 4, 1987

Re: Draft DOE Environmental Impact Statement, Waste Management Activities for Groundwater Protection at the Savannah River Plant, Aiken, South Carolina, DOE/EIS-0120D (1987).

With the publication of this draft EIS (DEIS), my two goals in leaving the Savannah River Plant have been accomplished. First, I left DOE and SRP because I did not trust the DOE Inspector General to expose and to resolve a cover up of significant environmental problems at each DOE waste site (compare 1 and 19). I had turned to the Inspector General because no DOE scientist or engineer could stop DOE from issuing a replacement regulation for radioactive waste management (DOE Order 5820.2, issued 1984). This new regulation, still the governing regulation for radioactive wastes (DEIS, p.6-3), allows the continuation of antiquated practices by DOE contractors, such as seepage basins and cardboard boxes used by Du Pont to

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	dispose of radioactive wastes at SRP. This DEIS validates that concern. The conclusion drawn from this DEIS, that partial environmental protection for SRP groundwater after 35 years of Du Pont operations may cost up to $12.7 billion, would never have become public had it been left up to the DOE Inspector General, DOE, or to Du Pont. Du Pont may not accept its responsibility in causing the damage to SRP. Two examples. In January 1981, when DOE transmitted my report to Du Pont highly critical of Du Pont waste management operations, Du Pont management refused to accept the report and requested that your office recall and convert the report to a draft, inaccessible to Freedom of Information requests (2). DOE did. Next, in August 1982, I asked Du Pont scientists investigating the M-Area groundwater contamination whether contamination had reached the Tuscaloosa aquifer and been found in the drinking water pumped from the Tuscaloosa. Although Du Pont had known since 1981 that drinking water from the Tuscaloosa was contaminated (DEIS, p. 1-1; ref. 3; but compare to ref. 4, p. 5-10, 11), Du Pont management suppressed that information and requested that your office remove me from the investigation. DOE did. Although I am grateful to the individual Du Pont scientists and engineers who taught me radioactive waste management principles, and showed me the problems that existed at SRP, in my experience, Du Pont management has been wasteful, resistant to oversight, negligent, and a threat to the environment. If Du Pont leaves SRP without fully rectifying the damage caused by its own actions, then Du Pont will not have served in the best interests of our nation.	

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	My second goal was to make DOE self-regulation a public issue. Self-regulation and the lack of independent peer review have led to waste, poor engineering practices, significant environmental damage, and a DOE regulation to cover up that damage. Whether or not there is justification for nuclear weapons, there is no justification to bury nuclear wastes in cardboard boxes inside leaking trenches, no justification to contaminate the earth and groundwater for future generations, no justification to spew millions of curies of radioactivity and contamination into the air, no justification to contaminate wildlife and to threaten human welfare, and no justification to cover up the evidence. Having failed to carry out its waste management responsibilities under the Atomic Energy Act, DOE has demonstrated that nuclear weapons cannot be produced safely without jeopardy to our environment and to human welfare. Legislation to strip DOE of its right to self-regulate nuclear materials and wastes has been proposed by Sen. Glenn, Rep. Wyden, Rep. Markey, and others. The broad support for legislation probably encouraged DOE recently to relinquish to EPA and the States regulation of mixed hazardous and radioactive wastes, but to retain regulation for nuclear materials and transuranic and high-level radioactive wastes.	

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	This draft EIS is gratifying. I applaud the renewed effort by DOE to meet its responsibilities. Although there is much to like in this draft, until such time that it is subjected to independent peer review, with full authority to resolve issues discovered in peer review, followed by public comment, then this DEIS will remain unacceptable. DOE states in the draft that it has conducted waste management activities to protect public health and the environment (DEIS, p. 1-1). Little support exists for such a DOE statement, but regardless, the Congress and the public do not believe DOE. However, by its respect for the scientific method, independent peer review will provide DOE with checks and balances to protect the public and the environment and to increase the public's trust in DOE. If DOE is committed to a rigorous application of environmental protection principles in the national interest, submit this draft EIS, and all supporting documentation, to independent peer review. Thank you for this opportunity to comment. Sincerely, W.F. Lawless, Professional Engineer, Assistant Professor of Mathematics Paine College 1235 15th Street Augusta GA 30910 (404)722-4471ext205	

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	Draft DOE Environmental Impact Statement, Waste Management Activities for Groundwater Protection at the Savannah River Plant, Aiken, South Carolina, DOE/EIS-0120D (1987).	
	Summary	
E-3	1. The DEIS was not independently peer reviewed by a peer review group with the authority to resolve issues discovered in peer review. Until such time that it is so reviewed, the DEIS is unacceptable.	See the response to comment E-1 regarding peer review.
E-4	2. The DEIS addresses only a partial cleanup of SRP. There are no actions discussed for TRU, HLW, and saltcrete; or for removal of any HLW tanks, reactors, or other SRP facilities. The DEIS does not discuss the total cleanup cost for SRP, nor provide a schedule for total cleanup, nor commit to a schedule for when the total cleanup will be addressed.	Buried TRU waste and TRU contaminated soil is discussed in the EIS in Section B.3.3.1. The impacts of the closure of the old radioactive waste burial ground are discussed in Chapter 4. The impacts of stored and newly generated TRU waste are being evaluated in a separate environmental assessment. The impacts of the management of HLW were discussed in DOE/EIS-0023 and DOE/EIS-0062. Total cleanup costs are given for existing waste sites assumed or believed to contain hazardous, low-level, or mixed wastes. Information relative to schedule is given on page vi.
E-5	3. The DEIS does not clearly state whether regulatory agencies approve of current SRP operations, current remedial actions, and planned SRP cleanup activities.	Ongoing interactions with regulatory agencies and the permitting process will be used to assure regulatory compliance.

Table L-2. DOE Responses to Comments on Draft EIS
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Comment number	Comments	Responses
E-6	4. The DEIS demonstrates that DOE was unable to meet the criteria of commercial regulations, that DOE finds many of its radioactive waste activities no longer acceptable (p. 2-1), and that DOE failed to lead the way in research and in applying technology to defense radioactive waste management.	The legal requirements applicable to DOE differ from commercial regulations. Past waste management activites are no longer acceptable because of changes in waste management regulations.
E-7	5. The City of Jackson, SC, has experienced an unexplained, significant increase in radionuclide pollutant concentrations.	Tritium concentrations measured in a Jackson drinking water well averaged 0.55 pCi/ml in 1986. Since 1983, the measured tritium concentration has ranged from 0.18-0.57 pCi/ml. These levels are about 1.0 to 3.0 percent of the drinking water standard.
E-8	6. The DEIS did not provide a summary of total radionuclide and hazardous chemical releases by liquid, airborne, and solid releases from beginning of SRP operations to present. Data presented in DEIS is generally deficient: by not providing references; by not consistently providing standard deviations, ranges, means, number of observations or samples; by not providing comparative occupational health data; and by not providing on and offplant releases into the downstream swamp system.	Summary data on releases from SRP facilities are provided to the public in the "Annual Reports" (e.g., DPSPU-87-30-1). The inclusion of this material was not necessary to develop the EIS alternatives or provide pertinent information on the alternatives to the public. The data and information presented is in keeping with NEPA/CEQ guidelines to provide the public an EIS that is analytical in nature, not encyclopedic. References are provided, as appropriate, at the end of chapters and appendixes.
E-9	7. The DOE Order 5820.2, Radioactive Waste Management, is inadequate and unacceptable, and the use of this order by DOE has not been justified. DOE has not stated whether the objective of this order has been met (p. 6-3, para 4). The DEIS demonstrates that DOE has failed to minimize releases to the environment and to protect public health.	The purpose of this EIS is to evaluate alternative waste management activities at the SRP. The adequacy of DOE Order 5820.2 is not evaluated in the EIS. The data available in the "Annual Reports" (see the response to comment E-8) and epidemiological studies have shown that the intent of DOE Order 5820.2 (to protect the public health) has been met. The intent of Chapter 6 is to discuss applicable waste management statutes, regulations, and orders, generally and specifically (see the response to comment E-20).

Table L-2. DOE Responses to Comments on Draft EIS
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	General Comments	
E-10	1. High-level and transuranic wastes. High-level and transuranic wastes have not been included in this EIS. However, high-level wastes (HLW), HLW spills, HLW tank cooling waters, saltcrete, and transuranic wastes that have been released into the environment should be included in this EIS. This DEIS has proclaimed that part of its purpose is to express the DOE commitments to the "...need for a more comprehensive framework to evaluate its future waste management and groundwater protection projects..." (DEIS, p. 1-3); to "...the protection of groundwater, human health, and the environment." (p. 1-3); and to "...identify and select ... activities [that] have the greatest potential for affecting groundwater resources." (p. 1-3). However, HLW and TRU wastes and their residues may have the largest impact on the environment and the cleanup of SRP. Although HLW has already been addressed, much has changed since the DWPF EIS was written. HLW and TRU wastes and residues should be included in this EIS. If not included, then this EIS should state when the HLW, HLW tank, HLW cooling water, and TRU waste residue cleanup NEPA actions will be published. State whether saltcrete disposal will meet SCDHEC standards at the point of release.	See the response to comment E-8.
E-11		A permit has been issued by SCDHEC for the construction and operation of Z-Area, the saltstone facility.

Comment number	Comments	Responses
E-12	In the DEIS (p. K-95), a copy of Performance Audit Questions from a planned audit of high-level waste management that was prevented from taking place in 1982 by Du Pont and DOE management were provided to DOE. No response to the questions was made by DOE in the DEIS. These questions deal with long-term performance of the high-level waste tank system in its interactions with the groundwater and the environment. Provide dates and results of completed DOE audits of the prime contractor's operations with HLW and TRU wastes. Specify whether high-level waste performance questions, at the level of detail in the audit that was prevented irom taking place in 1982, have subsequently been part of a completed DOE audit of Du Pont.	See the response to comment E-8.
E-13	2. Peer Review. In the past, DOE has used the National Academy of Sciences (NAS) as an independent peer review of DOE programs as requested by DOE. It is interesting to compare three examples of waste management reviews of Du Pont, the prime contractor at SRP. Two of the reviews were by outside organizations independent of DOE. This information was presented to the NAS panel public presentation held in Aiken, SC, January 22, 1987 (5). In its 1981 report (6), the National Academy of Sciences recommended that current management practices of low level waste at SRP should continue. The Academy judged that aqueous releases contained acceptably low concentrations of	See the responses to comments C-153 and E-1.

Comment number	Comments	Responses
	radionuclides released to SRP soil basins, concentrations that would decay to insignificant levels before reaching surface streams at the plant boundary. The Academy noted the SRP was monitoring the movements of radionuclides in the soil, air, and groundwater to detect unexpected migration of buried radionuclides. NAS reported that the measured rate of groundwater flow was low, and sorption by sediments retarded radionuclide migration. The Academy found no fault with the SRP high level radioactive waste program, finding that the construction and use of the high level waste storage tanks was a well-controlled practice; the Academy considered that the high level wastes could be safely disposed at the SRP plant site by pumping a fluid, grout-radioactive waste mixture beneath the plant and the Tuscaloosa aquifer. The National Academy of Sciences concluded that extensive investigations revealed no adverse effects on the Savannah River Plant environment from radioactive waste. In its 1982 field test of SRP radioactive operations (7), including reactor operations, one EPA official stated that the SRP site was "...clean as a hound's tooth..." The EPA field test validated SRP release models, calculations, and releases for airborne and liquid releases. *Offplant, milk was tested for strontium-90* concentrations and found to be the exact average concentration published by EPA for strontium-90 concentrations in milk for the southeast. EPA concluded that airborne releases from the reactors and reprocessing plants do not significantly increase the radiation exposure to people living around the plant. However, EPA ignored published Du Pont data on strontium-90 milk concentrations seven times greater than published EPA findings	

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	(8), EPA did not report on the contamination of the Tuscaloosa aquifer by SRP operations (9), the closure of 4 drinking water wells (10), turtles contaminated by strontium-90 to 1000 times background (11), and other problems known to investigators before the EPA report was published (4,12). These omissions by EPA suggest a lack of rigor in EPA reporting and in its field test. The third report (2,12), the result of an internal DOE investigation, was published before either the NAS or EPA study was completed, yet the report was available to NAS or EPA should it have been requested. [The author was the DOE point-of-contact for the Academy during its investigation, and worked with DOE project specialists working with the EPA investigation.] This [DOE] report appraised the operations of the SRP radioactive waste burial grounds. Significant levels of radionuclides were found to be migrating from the SRP burial grounds, reaching streams in concentrations far in excess of the benchmark EPA drinking water standards. The report documented Du Pont's use of cardboard boxes as their primary container for radioactive waste; found that plutonium-239, strontium-90, and cesium-137 were migrating and exceeding benchmark drinking water standards; documented that Du Pont regularly pumped monitoring wells in an effort to reduce concentrations of radionuclides; documented that Du Pont regularly underreported to the public, including NAS and EPA, data from its monitoring wells; and documented that Du Pont operational methods at the SRP radioactive waste grounds were unnecessarily leading to costly future remedial actions. This appraisal concluded that SRP radioactive waste disposal operations were antiquated, not technically sound, were the cause	

Comment number	Comments	Responses
	of observed radionuclide migration, and were unacceptable (12). Other sources have documented extensive corrosion pitting in the high level waste tanks found in 1980 at the end of tank construction but also after 4 tanks were radioactively hot and in service (4,19). Although ignored by the Academy in its report, the corrosion pitting in the high level waste tanks was discovered during the investigation by the Academy. Comparing these three reviews, the most rigorous was performed by the DOE, although it was subsequently covered up (1,2). DOE and NRC generally depend on public reviews as the official peer review (13), and on the Academy and EPA for ad hoc reviews. Although NAS has the expertise and is independent in its assessments, no organization that has independently assessed DOE has had the authority to resolve issues discovered in peer review. In the past, if DOE wanted to act on an outside review recommendation, it was the prerogative of DOE whether to do so or not.	
E-14	Independent peer review (IPR) will not be a panacea, but it will add an important check and balance to impacts on the environment. IPR may not have stopped some abuses that have occurred, but IPR will lend a more objective analysis to waste management impacts and may prevent abuses, especially if IPR is provided authority to resolve issues discovered in review, to prevent documents from being published (e.g., EIS and SAR type documents) or research from being funded or a new facility from being built. IPR should add rigor to the analysis of waste management activities, should reduce costs and wasteful spending (especially by ending the practice of incomplete or partial funding of programs), and should direct research toward purposeful and valid goals (instead of funding researchers in busy work to keep them	See the response to comment E-13.

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	active. IPR should make research more accessible to the research community and more cost effective, should prevent coverups of data, remove politics from funding considerations, and should make programs more justifiable and pragmatic. Not only is the public unprepared to peer review EIS and SAR type documents, or their supporting documents, but also the public does not have the time to adequately review these documents. IPR review will then provide the public with an important and timely sense of the adequacy and acceptability of EIS type documents. For example, the supplemental EIS written in 1980 was directed by federal court to review high-level waste tank construction (14). This supplemental EIS stated that corrosion pitting was no longer a problem at SRP because of the extensive experience of the SRP prime contractor, Du Pont, in building these tanks and the improved quality assurance program developed by Du Pont (14). Although public review of the supplemental EIS found no fault with the EIS, six months after the EIS was delivered to the federal court, and after 4 of the 18 new tanks went into radioactive service, extensive corrosion pitting was discovered (1,4). Not only was the pitting a threat to the HLW program, and required remedial actions and new procedures to protect the tanks, but the incident was not made public and a second federal court inquiry was not told of the existence of reports or of the incident (4). Independent peer review will be a public safeguard in similar investigations, and will scrutinize DOE claims in future EIS documents.	
E-15	The State of South Carolina has subsumed responsibility for regulation of hazardous chemical, low level radionuclide, and mixed waste releases. This step should be more fully explained	

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	in the EIS. By ending DOE self-regulation in these areas, this joint action by the State and DOE is a positive action, but in the long term, one bureaucracy has replaced another. IPR will relieve the responsibility that the State has assumed, and will make the State a more effective regulator.	
E-16	3. Previously Acceptable Waste Management Practices. This DEIS has made the point that seepage basins and solid waste burial grounds for radioactive waste were previously acceptable waste management practices (p. S-1). However, the DEIS does not state who these practices were acceptable to, and whether or not they were in any way controversial. A report issued to Du Pont in 1981 took specific issue with the operation of the solid waste burial grounds (2), a report recalled by DOE and converted into a draft report (12). Similarly, seepage basins have been increasingly the center of controversy. Because of this controversy, an investigation into the problems from the long-term use of seepage basins at SRP was prevented from taking place in 1982 by Du Pont and DOE management (DEIS, p. K-95). On page 1-1, the DEIS claims that the 1977 ERDA EIS resulted in the adoption of a program to make improvements in existing waste management practices. However, some of these improvements were specifically questioned in the 1981 assessment where Du Pont waste management operations were described as antiquated and the cause of the observed radionuclide migration (2,12).	Previous SRP operations were in compliance with applicable Federal and State standards and/or DOE (and predecessor) agency standards issued pursuant to the Atomic Energy Act.
E-17	One of the missions of DOE is to develop the technology for long-term management of radioactive wastes, to ensure that defense nuclear activities are compatible with public health and safety and national security, and to transfer the developed technology to the commercial nuclear industry and regulators (15). However, the DEIS demonstrates	DOE is committed to compliance with all applicable regulations, orders and statutes to assure human health and environmental protection.

Comment number	Comments	Responses
E-18	that DOE was unable to meet the criteria of commercial regulations, that DOE finds many of its radioactive waste activities no longer acceptable (p. 2-1), and that DOE failed to lead the way in research and in applying technology to defense radioactive waste management.	
E-19	4. Cost of EIS. The cost and person-hours spent in preparation of the DEIS should be specified. Compare the amount spent and work-hours compiled: a) by DOE, b) by Du Pont in preparing supporting reports, c) by NUS, d) by contractors, subcontractors, outside organizations, DOE headquarters, for reviews of the DEIS before release to the public, e) and the total, summary cost for the final EIS.	NEPA or CEQ guidelines do not require that cost for preparing the EIS be included as a part of the EIS. The costs of EIS preparation did not affect the selection of the proposed action or alternatives.
E-20	5. DOE Order 5820.2. Radioactive Waste Management. The EIS should specify whether this order is a regulation or a set of guidelines. If this order has objective performance criteria, specify this criteria. State whether Du Pont or any DOE contractor has been cited for failure to meet the criteria of this order. State whether Du Pont currently meets the requirements of the order. State whether this order has been reviewed in an EIS document.	DOE Order 5820.2 was issued pursuant to the DOE Organization Act, Section 644, and DOE Order 1321.18. Compliance with this or other DOE Orders is not in the scope of this EIS.
E-21	State whether this order forbids the use of cardboard boxes to contain disposed radioactive wastes. State whether compliance with this order assures that the Atomic Energy Act requirement to minimize releases to the environment and to protect human health (offplant public and onplant employees) will be met.	See the response to comment E-20.
E-22	6. City of Jackson, SC. The DEIS does not clearly spell out the levels of contamination in the City of Jackson's drinking water. State where the chlorocarbon contamination plume in the groundwater	Information related to City of Jackson drinking water quality is given in DOE Annual Environmental Monitoring Reports DPSPU 85-30-1, DPSPU 86-30-1 and DPSPU

Comment number	Comments	Responses
	is in its approach to this city. Report on the progress of the chlorocarbon migration to Jackson	87-30-1.
E-23	and provide the predicted travel time to the city. Compare H-3 concentrations for drinking water, rainwater, air moisture, and dry air. State whether all chemical contamination in the drinking water for the city is increasing or not.	There is no evidence that SRP operations have affected offsite drinking water supplies for Jackson, S.C. See the responses to comments E-7 and E-126. Groundwater flow to Jackson in the Cretaceous aquifer is from offsite (see Figure A-15). Shallower aquifers outcrop into onsite streams before leaving the plant boundary. DPSPU 85-30-1, DPSPU 86-30-1, and DPSPU 87-30-1 do not show a trend toward increasing or decreasing contamination in the city's drinking water.
E-24	Also, note that the 1985 annual report shows a substantial difference for data reported between D-Area, West Jackson, and Jackson (16). This difference holds true back to 1977, but because of the proximity of the locations, does not appear to be easily explained. Provide an explanation.	This appendix responds to comments on the EIS and is not a forum for responding to comments on the annual monitoring reports.
E-25	Provide an explanation for the reported significant increases in radionuclide concentrations for Jackson. Although below EPA drinking water standards through 1985, the average rainwater deposition of tritium between 1980 and 1985 significantly increased ($t(34)=1.61$, $p<.05$ for Jackson; and $t(34)=1.81$; $p<.05$ for West Jackson; see Annual Environmental Reports, esp. ref. 16). However, the 1985 rainwater data for tritium is a difference of 1.9 times greater than the EPA drinking water standard for West Jackson. Reported background gamma has increased 74% since 1972. Discuss and explain these and other trends in the radionuclide and hazardous chemical data.	See the response to comment E-24.
E-26	7. Chapter 2. The method of writing Chapter 2 is choppy and confusing, and it is not entirely clear after reading Chapter 2 exactly what is intended with any option. There is insufficient detail and too many iterations of the 4 strategies and of the dual purposes of the EIS.	See the response to comment C-19.

Comment number	Comments	Responses
E-27	8. Chapter 4. Sources of information and data are often not cited in the text or at the tables and should be included, e.g., Table 4-1, p. 4-6.	The text has been revised.
E-28	9. Chapter 5. All studies, analyses, modeling activities, monitoring well and sampling designs and locations should receive independent peer review and SCDHEC regulatory agency review. The NRC should review all aspects of radioactive materials production and hazardous and radioactive waste management. The NRC should certify that SRP is safely operated and satisfies all NRC commercial regulations for the environment, and for public health and safety.	See the response to comment E-1. Monitoring wells and their designs and locations are permitted by SCDHEC. Sampling designs are prescribed by EPA groundwater monitoring protocols. DOE operations are governed by the requirements of the Atomic Energy Act.
E-29	10. Chapter 6. DOE should review the historical changes that have affected mixed wastes. Include the 1984 federal court decision regarding the application of RCRA at DOE Oak Ridge (17), The DOE aborted rule for byproducts (11), and the recent decision of DOE to be regulated by EPA and the State of SC.	A statement has been added to Section 6.2.1.1 reflecting the recent DOE interpretive rule on byproduct materials. LEAF vs. Hodel is cited in Chapter 1 (p. 1-1) of the EIS.
E-30	11. Deminimus. Has DHEC approved deminimus releases at SRP? Review the effects of burying radioactive waste below the new deminimus levels in the landfills. Discuss the probability of radioactive waste with concentrations greater than deminimus reaching the landfill. State whether the deminimus levels have been reviewed in an EIS. State whether radioactive contamination levels in groundwater have been affected and to what degree by burying deminimus levels of radioactive waste. Are cardboard boxes used to package deminimus waste releases? Are deminimus wastes dumped into soil trenches?	Ongoing and future regulatory interactions with SCDHEC will address these issues. SCDHEC does not regulate SRP radioactive wastes.
E-31	12. Total Releases. Provide the total releases of radionuclides and hazardous chemicals at SRP by all years and summate for all years. Provide the maximum levels of contamination that have been found on and off SRP for the reported year and for all years.	See the response to comment E-8.

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Comment number	Comments	Responses
E-32	13. Measurement Techniques. Provide a discussion of the SRP method of data collection offsite SRP, i.e., at the time of collection, are tritium data collected up or downwind? Are tritium and other radionucides collected when airborne effluents are being releases or not? If not collected during radioactive and hazardous chemical waste releases, why not? Are airborne effluent samples collected during reprocessing runs and normalized against release data? Are ambient condictions recorded when samples are collected? Why aren't collateral ambient and operational data simultaneously published with pollution data?	See the response to comment E-8.
E-33	The collection data presented in the annual monitoring reports for SRP are presented without supporting collection data and this omission can render the data meaningless in some respects. For example, a sample of tritium oxide concentrations without ambient relative humidity and temperature is difficult to interpret. Samples should be correlated to times of actual stack releases of effluents, collected from the release plumes, collected at times when plumes are not being released, collected at standard times of the month, during rain and dry conditions, when wind is and is not a factor, and reported (see DEIS, p. K-86,87).	See the responses to comments E-8 and E-32.
E-34	14. Operational Performance. Compare DOE Concentration Guidelines and EPA drinking water and other standards with SRP collected release and pollutant data. Note where the CG's are not met.	Comparisons to standards and guidelines are made in the EIS.
E-35	15. 1986 Environmental Monitoring Report. The latest environmental monitoring data should be used in the Final EIS. Include the 1986 reported data.	The 1986 monitoring data from DPSPU-87-30-1 have been included in the FEIS, especially in Chapter 3.

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Comment number	Comments	Responses
E-36	16. Pollutant Releases. DOE should adopt the policy that all waste releases must not exceed EPA drinking water standards at the point of release into the groundwater; that airborne releases must not exceed EPA airborne release standards at the stack; that releases must not lead to unacceptable occupational exposures; that releases must not become a future source for biointrusion; and that groundwaters must not be a source of contaminating surface waters at the point of outcrop.	As discussed in the EIS, DOE will conduct SRP waste management activities in accordance with applicable regulatory requirements.
E-37	17. Miscellaneous. Provide a summary of the Beta-Gamma Incinerator (BGI) operations to date: radionuclides, chemicals, etc. Has SCDHEC approved BGI operations? What are the air releases from the BGI at the stack?	The BGI has been operated as a demonstration program to develop processes to burn beta-gamma contaminated wastes. SCDHEC approved this demonstration. See Appendix J and reference documents.
E-38	Do the planned dedicated areas in the DEIS include the current and predicted aerial extent of the contamination plumes in the groundwater?	Under the Dedication strategy, DOE would dedicate for waste management purposes those waste sites and contaminated areas that could not be returned to public use after a 100-year institutional control period.
E-39	Provide an organization chart with current positions of the EPA, SCDHEC and DOE organizations.	
E-40	The DEIS did not resolve the issue of the significantly greater concentrations of strontium-90 in milk around SRP compared to the EPA average concentration for the southeast (p. K-80).	Information on radiological doses from the alternative waste management strategies are given in Tables 4-12, 4-27, and 4-37. Health risks from these doses are given in Tables 4-13, 4-28, and 4-38.

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Comment number	Comments	Responses
	Specific Comments	
E-41	1. P. v, para 1: P. S-1, para 2. Add that SRP also generates TRU and HLW wastes.	This recommended change has been made.
E-42	2. P.vii. Add hours of operation for the library.	The University of South Carolina - Aiken Library is open from 8 a.m. to 5 p.m.
E-43	3. Summary. P. S-1. The statement "Previously acceptable waste disposal practices have included the use of seepage basins..." is misleading. AEC Manual Chapter described the dangers of the use of natural soil columns, including seepage basins. The danger and contamination potential of seepage basins was early recognized by Du Pont (18). But Du Pont also said that it planned to continue using seepage basins (18, 19).	The statement has been revised.
E-44	4. P. S-11, para 3. The first use of the term 'cubic meters' should be accompanied with a conversion to gallons.	
E-45	5. P. S-13, 2nd bullet. Change to, "Elevated concentrations of tritium, strontium-90, and nitrate in Four Mile Creek." See DEIS, p. B-41.	The conversion has been incorporated in the FEIS.
E-46	6. Chapter 1. P. 1-1, 2nd Para. The statement that SRP adopted improved waste management practices in accordance with ERDA policies and standards is inaccurate. The policies followed at that time were AEC Manual Chapter 0511, Radioactive Waste Management (20), AEC 5480, and the Concentration Guidelines. AEC 0511 warned of the	The text has been revised.

Comment number	Comments	Responses
	dangers of using seepage basins and other natural soil columns, and although Du Pont regularly and knowingly exceeded the Concentration Guidelines in releases at the seepage basins (18), the practice was allowed to continue. Consequently, because practices did not adhere to AEC 0511, the AEC guidelines were changed to fit the radioactive waste management practices of Du Pont and other DOE contractors. That led to the publication of DOE Order 5820.2, Radioactive Waste Management (21). In this replacement (and current) regulation, seepage basins, cardboard boxes, and effectively all current airborne, liquid and solid waste releases became acceptable. That is, all waste management practices, including those that had led to significant contamination of the environment at each DOE site, became acceptable.	
E-47	7. P.1-1, 3rd para. The statement that SRP waste management practices led only to localized contamination is inaccurate. Contamination off the SRP in unacceptable amounts, viz., cesium-137 strewn approximately 7 km downstream offsite SRP, was well-known and studied and reported at that time (10, 22). Further, as a second example, Du Pont's use of the M-Area seepage basin has led to extensive, widespread contamination, contamination that may impact the city of Jackson, SC.	There is no indication that waste management activities at the SRP have affected offsite groundwater water resources. The SRP M-Area remedial action program has stopped the spread of chlorocarbon constituents toward Jackson, S.C. See the response to comment E-23.
E-48	8. P. 1-2, para 3. Define, characterize, and describe the solvents, tritiated waste oil, and liquid scintillation solvents.	These materials are described in Chapter 3
E-49	9. P. 1-2, para 5. Include SARA and SDWA in the List of Acronyms.	SARA and SDWA have been included.

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Comment number	Comments	Responses
E-50	0 P. 1-4, last sentence. Make 'decision' plural.	The text has been revised.
E-51	11. Chapter 2. P. 2-1, para 1. The statement that DOE is modifying its waste management activities solely because of changed environmental concerns and regulations is unacceptable.	DOE is considering changes to SRP waste management activities to assure continued protection of environmental resources and human health.
E-52	As well, the DOE waste management activities should be changed in light of collected scientific data that finds these DOE waste management activities as causal agents in the significant contamination of SRP, wildlife, and groundwater, contamination that potentially may affect human welfare.	
E-53	One of the missions of DOE is to develop the technology for long-term management of radioactive wastes, to ensure that defense nuclear activities are compatible with public health and safety and national security, and to transfer the developed technology to the commercial nuclear industry and regulators (15).	
E-54	However, the DEIS demonstrates that DOE was unable to meet the criteria of commercial regulations, that DOE finds many of its radioactive waste activities no longer acceptable (p. 2-1), and that DOE failed to lead the way in research and in applying technology to defense radioactive waste management.	
E-55	12. Pp. 2-1,2, last and cont. para. The use of the terms 'lower' and 'upper tiers' is confusing and not clear.	The text is clarified in the FEIS, Figures 5-1 and 2-1.
E-56	13. Pp. 2-3,5. Discriminate between upper and lower tiers in Figure 2-1.	See the response to the previous comment.
E-57	14. P. 2-7, cont. para. The examples of incompatible actions are sophomoric. It should suffice to state that the final selected strategy to be published in a Record of Decision must resolve incompatible project-specific actions.	FEIS is revised in the suggested manner.

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Comment number	Comments	Responses
E-58	15. P. 2-7, para 1. Synergistic and overlapping effects from waste management activities and regulations should be considered when appropriate.	Environmental effects, including cumulative impacts, are considered in Chapter 4 of the EIS.
E-59	16. P. 2-7. The 'no-action' strategy would also require action taken when the radioactive low-level waste burial ground closes in 2 years (cf. p. 1-3). If a new burial ground is not allowed to open, no action may not allow the continuation of current activities.	No action, as defined in the EIS, assumes the continuation of current (waste) management activites. Since the proposed action strategies provide for waste management with new storage and/or disposal facilities, the No-Action strategy is briefly defined as waste management with no new facilities. Thus, no action refers only to the construction of new facilities to meet future needs. The future management of waste under no action would require substantial effort and funds (i.e., action). Note that under NEPA, the No-Action strategy does not preclude the unpermitted use of existing facilities. However, as stated in Table 4-46 of the DEIS, a major disadvantage of no action would be DOE's noncompliance with environmental laws and regulations.
E-60	17. P. 2-11, para 2. The L-Reactor seepage basin is not analyzed in this EIS. However, as this EIS stated in the opening paragraph of Chapter 2, the use of seepage basins and other activities are becoming increasingly controversial. The L-Reactor seepage basin should become a part of this EIS. Any decision to discontinue or limit the use of reactor seepage basins should retroactively apply to the L-Reactor.	The L-Reactor seepage basin is fully discussed in the L-Reactor FEIS (DOE/EIS-0108) and referenced in this EIS. The statement in Chapter 2 relates to the acceptability of past waste management activities and the need for modifications in light of current regulations.
E-61	18. P. 2-12. Label the Savannah River at the lower left side of the figure.	The figure has been revised.

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Comment number	Comments	Responses
E-62	19. P. 2-13, 16. For the waste sites that are closed, add the date of closure.	This information is given in Appendix B and new Table 2-2.
E-63	20. P. 2-14. The closed R-Area seepage basins received the remains from a fuel rod failure and may be considered high-level waste (23).	DOE considers these basins to contain low-level radioactive waste.
E-64	21. P. 2-14, 16. C,K,P, and L reactor seepage basins are shown as not receiving wastes. This should be changed to either yes or to periodic. Cumulative volumes, chemicals and radionuclides released should also be included.	The K-Area reactor seepage basin is inactive. Periodic discharges of filtered, deionized disassembly basin purge water from K-Reactor are discharged to the K-Reactor containment basin. The C-, P- and L-Reactor seepage basins are not listed in Table 2-2. The reasons for their exclusion are presented in Section B.1.1. The primary radionuclide released to the active reactor seepage basins is tritium. Tritium releases and associated doses are presented in Sections 4.4 - 4.4.6.
E-65	22. P. 2-17, cont para. Under no action, DOE states that it will continue its ongoing program to remove volatile organics from the Tertiary groundwater through recovery wells and an air stripper. Whether this continuing program continues should be added as a subject to this EIS. The air stripper program should receive independent peer review and be permitted by the State of SC.	See the response to comment E-59. The M-Area Air Stripper is permitted by SCDHEC.
E-66	23. P. 2-17, para 1, sent. 5. "would have decayed or dispersed" should be changed to "may have decayed or dispersed".	Changes have been made to text.
E-67	24. P. 2-17. The dedication of offsite property contaminated by cesium-137 should be included.	There is no offsite property dedicated or requiring dedication due to cesium-137 contamination. See the response to comment E-47.

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Comment number	Comments	Responses
-68	25. P. 2-17. The dedication strategy should include "Hazardous Wastes" warning devices for future generations for closed basins containing hazardous and radioactive wastes. Warning devices should be used for the offsite cesium-137 in the swamp and alongside the cesium spill on the Savannah River.	If the Dedication strategy is implemented, appropriate exclusion areas and warnings will be established.
E-69	26. P. 2-18, Table 2-3. The no action strategy should consider what will happen when the present burial ground fills up and closes by default (cf. comment 16 above). DOE says that LLW would be stored on surface pads or other safe areas after the LLW burial ground is closed. This implies a site preparation cost.	See the response to comment E-59.
E-70	27. P. 2-33, Figure 2-3. The schematic diagram of two double-liner designs for landfills is unclear. An isometric overview of the design, followed by a top-front-side view and locating leachate collection, in addition to Figure 2-3, may clarify the design.	Figure 2-3 was provided to illustrate the general sequence of protective layers (i.e., low-permeability liners and leachate collection systems) which are applicable to the design of RCRA disposal facilities. They are not intended nor represented as designs which will be based on site-specific details at a later stage of planning in conjunction with regulatory interaction and the RCRA permitting process.
E-71	28. P. 2-34. The CFM vault should not be disposed in containment without liners and leachate collection without long term proof (minimum of ten years operational experience) that such containment leads to zero or acceptable releases into the groundwater immediately below each vault.	If implemented, the CFM vault technology will comply with all regulatory and permit requirements imposed by regulatory agencies. See the response to comment J-7.
E-72	29. P. 2-34. Saltcrete is conspicuously absent from this draft EIS. Since the issues affecting CFM should affect saltcrete, saltcrete should be included in this EIS. Saltcrete disposal has not been reviewed by independent peer review, nor has saltcrete disposal been proved to be safe and noncontaminating to the groundwater immediately below disposed saltcrete.	Saltcrete is discussed in Section 4.7. See the response to comment E-1 on peer review.

Comment number	Comments	Responses
-73	30. P. 2-35, Figure 2-4. The schematic diagram of liner systems for below ground vaults is unclear. An isometric view of the design, followed by a top-front-side view and locating leachate collection, in addition to Figure 2-4, may clarify the design.	See the response to comment E-70.
E-74	31. P. 2-36, ELLT and LLWV. Past experience at SRP indicates the likely possibility that greater than 300 mrem/hr activity can slip by detection devices in the large scale SRP operation. Describe the radioactive and hazardous chemical detection and quality assurance measures that will be employed to verify that waste disposal limits are observed. Before bypassing leachate collection or liners, DOE should have long term proof of the safety and protection to groundwaters immediately below these facilities (cf. item 28 above).	
E-75	32. P. 2-37. Describe the final disposition of AGO waste. It may not be acceptable to leave waste in AGO disposal after the end of institutional control.	Section 2.3.1.7 (p. 2-37 of the DEIS) describes the Abovegrade Operation (AGO) as a disposal technology which implies final disposition. Under DOE Orders governing the disposal of low-level radioactive waste, AGOs are an acceptable disposal technology. Final disposition of the AGO waste would be determined (if such a facility were constructed) based on studies and applicable permit requirements.
E-76	33. P. 2-38. Volumes of liquid waste releases have not been identified. The cumulative volumes of liquid effluents released to seepage or natural soil columns should be specified by basin.	See the response to comment E-8 and Appendix B and its references.
E-77	34. P. 2-40, Table 2-8. The data in the table are confusing. Explain the difference between minimum and maximum volumes. Explain why the maximum volumes do not equal the volume generated.	New Table 2-9 has been revised in the FEIS to represent the most recently available data and to clarify their meaning. The footnotes to Table 2-9 explain the terminology and bases for the table.

Comment number	Comments	Responses
E-78	35. P. 2-41, para 5. The waste management operations and life cycle costs were left out of the strategy tables (cf. p. 2-18,26). Footnote those tables to see Table 2-10 for total costs.	New Tables 2-4 through 2-7 have been revised in the FEIS and are consistent with revised new Table 2-11. The cost estimates given are considered to be a reasonable forecast of relative life-cycle costs. Uncertainties which could not be reasonably included in the cost estimates are discussed in the narrative.
E-79	36. P. 2-41, para 5. Life cycle costs should be defined, included in Glossary, and differentiated from other costs (cf. P. 2-45).	"Life-cycle cost" has been defined in the Glossary of the FEIS.
E-80	37. P. 2-45, cont para. This paragraph is confusing. How can life cycle costs of $1.7 billion be less than the 20 year costs of $1.9 billion?	These costs have been revised in the FEIS and now show life-cycle costs to be slightly higher than 20-year costs.
E-81	38. P. 2-45, para 3. Explain what the other nuclides are and their source (e.g., fuel or target rod leaks, etc.).	See Section 4.4.1 and Table 4-48.
E-82	39. P. 2-45, bullets. DOE should consider improved radionuclide removal in the reactor basin through filtration, sieves, entrapment, adsorption, removal columns, etc. Tritium could be adsorbed instead of released to the atmosphere by evaporation techniques. (See also pp. 2-46, 47.)	Current treatment processes include filtration and ion exchange columns to remove radionuclides other than tritium. Evaporation and detritiation are discussed in this EIS as project-specific actions.
E-83	40. P. 2-45, Purge water. Volumes released from all SRP reactors to each basin, including L-Reactor basin, should be included.	See Appendix B and its reference documents. Also, see the reference documents cited in response to comment E-8.
E-84	41. P. 2-47, para 1. The direct discharge of radionuclides from reactors should not be allowed, nor considered, with or without dilution. There is already more than enough contamination in the SRP environment, both on and off the plant, without adding to the existing burdens.	The direct discharge of tritium to onsite streams does not cause offsite doses to exceed standards.

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Comment number	Comments	Responses
E-85	42. P. 2-48, Table 2-10. This table should include the $160-$290 million 20-year waste management costs (p. 2-41) for the no action strategy; the $143 million to $1.3 billion 20-year costs and life cycle costs of $275 million to $1.7 billion for the dedication strategy (p. 2-43); and $1.2-$1.5 billion plus for the elimination strategy for operations (p. 2-44); and $143 million to $1.9 billion for 20-year costs and $275 million to $1.7 billion life cycle costs for the combination strategy (p. 2-45).	New Table 2-11 has been revised in this FEIS.
E-86	43. P. 2-48, Table 2-10. This table should summate the range of costs for each option.	A new row in new Table 2-11 of the FEIS provides the total cost ranges.
E-87	44. P. 2-48, Table 2-10. NDF for the no action strategy was not explained in the text. See also p. 2-55, para 3, "The No-Action alternative would involve no new facilities..."	Explanation has been added to the FEIS. With respect to the need for new disposal/storage facilities, the No-Action strategy proposal to continue waste management with no new facilities is described in Section 2.3.3.1 and summarized in Section 2.5.1.1.
E-88	45. P. 2-49, EWS, Groundwater. Hazardous and radionuclide constituents currently exceed applicable standards and guidelines at certain sites. Provide this comparative data.	Exceedances of standards are discussed in Chapter 4 and Appendix F.
E-89	46. P. 2-51, Aquatic Ecology, EWS. The offsite ecosystem of the Savannah River and swamp up to 7 km below SRP has already been and is still significantly affected.	
E-90	Terrestrial Ecology, EWS. Onsite flora and fauna have already sustained and will continue to sustain significant impact.	See the response to comment E-8.

Comment number	Comments	Responses
E-91	47. Table 2-10. Inadvertent biointrusion impacts should be quantified and included.	These impacts are discussed in Chapter 4 and Appendix F.
E-92	48. P. 2-59. The cost estimate of $125 million for moderator detritiation seems excessive and should be reviewed by independent peer review. See also p. 2-64.	This cost is estimated for study purposes only.
E-93	49. P. 2-63, para 5. EIS states that NDF for the combination strategy is about $1.6 billion. However, p. 2-48 lists it at $1.9 billion.	The FEIS costs have been revised.
E-94	50. P. 2-66, para 4. The EIS suggests that the only aquatic impacts from no-action would continue to be minimal. Past DOE experience includes the significant pond-slider turtle uptake incident of strontium-90 at up to 1000 times background, with some of the turtles found in an offsite commercial hogfarm. DOE attempted to coverup the incident because of what DOE considered to be its extreme sensitivity (11,19). DOE should define exactly what is meant by minimal impact.	Five hundred turtles were trapped offsite in 1986; none showed detectable levels of radioactivity (Zeigler et al., 1987). Environmental impacts are discussed in the reports cited in the response to comment E-90.

Comment number	Comments	Responses
E-95	51. Chapter 3. P. 3-3, Figure 3-2. Locate DWPF and FMF.	Figure 3-2 has been revised accordingly.
E-96	52. P. 3-5, Table 3-1. Include increases in population for year 2000 and by location.	Section 3.1.3.2 presents population estimates for the year 2000 for the total study area. Estimates of the population for each of the locations in Table 3-1 would be inaccurate and unnecessary.
E-97	53. P. 3-9. Include the highest recorded wind speed for a tornado at SRP and in the CSRA.	Section 3.2.3 discusses severe weather events.
E-98	54. P. 3-11, Table 3-5. Change title to "Total Reported Tornado Occurrences."	Title changed in FEIS.
E-99	55. P. 3-12, Air Quality. The stack emission concentration of pollutants should be listed and compared to acceptable emission standards at the stack, not at the SRP plant boundary.	Stack emissions are not in the scope of this EIS.
E-100	56. P. 3-13, Figure 3-3. Improve the lower sketch by explaining the shear arrows and by changing the coded representation of the Ellenton Unit.	This figure has been improved in the FEIS.
E-101	57. P. 3-15, Figure 3-4. Change the confined aquifer to the Principle Confined Aquifer.	This requested change is inconsistent with the EIS source documentation.
E-102	58. P. 3-16, Seismology. Similar to the Tornado Occurrence Table 3-2, present the occurrence of earthquakes and their intensities since seismic recording began at SRP.	See Appendix A support documentation.

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Comment number	Comments	Responses
E-103	59. P. 3-16, Seismology. Define MMI and compare different levels of intensities.	See the response to comment E-102.
E-104	60. P. 3-16, Seismology. Provide a causal explanation of the June 8, 1985, minor earthquake.	See the response to comment E-102.
E-105	61. P. 3-17, cont para. In addition to Figure 3-4, refer to Figure 3-3.	
E-106	62. P. 3-17, para. 1. Reflect that the green clay is only reported to be continuous, or is only thought to be continuous. Also, note where green clay and other aquitards have been breached by man made objects such as wells, etc. Discuss and list the SRP abandoned wells and closure techniques; list the wells that have penetrated into the Tuscaloosa aquifer. Provide information on plans to improve the integrity of breached clay barriers from abandoned or improperly constructed wells, etc.	Discontinuities of the green clay have been reported. Details on wells, their abandonment and other items in the comment are beyond the scope of the EIS as discussed in the response to comment E-8.
E-107	63. P. 3-18, cont para. Include the minimum reported thickness of the lower clay.	The text in the FEIS has been revised.
E-108	64. P. 3-20, para. 2. The discussion of impacts on Black Creek aquifer, and implications for other aquifers, is unclear. Provide references and define the remediation efforts. In the upper aquifers, M-Area contamination has been previously reported headed to the City of Jackson, SC (4, 24). Provide and reference data that was "analyzed to date." Describe historical and current levels of contamination in drinking water of the cities surrounding SRP, but especially include Jackson, Barnwell, and Snelling, SC.	See the responses to comments E-23 and E-47.

Comment number	Comments	Responses
E-109	65. P. 3-21, Figure 3-5. Locate U Area. Clarify the location and depiction of obscured facilities in the figure, such as P Reactor.	Figure 3-5 is revised in the FEIS.
E-110	66. P. 3-23, Table 3-7. Report the range and standard deviations of the chemical analysis of groundwater in addition to the mean. Include the range, mean, and standard deviation for rainwater quality analysis at SRP.	See the response to comment E-8. Information on statistics and other data handling is given in referenced documents.
E-111	67. P. 3-24, 25, Table 3-8. Improve Table 3-8 by including the mean of the values reported, standard deviations, number of measurements, the monitoring well numbers and locations reporting maximum values, a map of SRP monitoring wells exceeding or approaching S/C; and for the reported wells: TDS, hardness, toxic chemical and solution densities, pathogens (anaerobic and aerobic), BOD, COD, color, turbidity, and odor; also, normalization distances for each pollutant from each source (25, p. 422), SRP water contamination normalized against other major DOE radioactive waste generators/disposers, groundwater attenuation and sigmoid breakthrough rates (25, p. 398-401) for each pollutant, and an analysis of cores from each monitoring well and plant area (specific and random location samples).	Table 3-5 is intended to provide a brief summary of groundwater monitoring data in describing the affected environment. Detailed discussions and tabulations are found in Chapter 4 and Appendix F. See also the response to comment E-8.
E-112	68. P. 3-26. Qualify the discussion by stating whether the SRP groundwater well monitoring design has been approved by an independent peer review of qualified hydrogeologists and by the State of SC. State whether all contamination release sources are monitored 360 degrees within the zone of influence	SCDHEC approves by review and permitting all monitoring well installations and operations. Drillers are licensed by the State of South Carolina. Sample collection efficiencies are specified at 90 percent in work plans or sampling and analysis plans.

Comment number	Comments	Responses
	of release sources with well screens positioned to monitor all pollutant densities less than and greater than water. State sample collection efficiencies (25). State whether all monitoring wells have published and approved well profiles and by state authorities.	
E-113	69. P. 3-27, Table 3-9. Include S/C, number of measurements, mean, standard deviations, and locate wells approaching or exceeding S/C on an SRP map. Add plutonium 238 and 239. Include historical data. Normalize pollutants by distance and against other DOE sites. The published data in Table 3-9 appears low for cesium 137 and strontium 90 (maximum at outcrop was 340,000 pCi/l in 1984: see p. B-41). All units should be in pCi/l, not in pCi/ml.	See the response to comment E-8.
E-114	70. State whether well closings, openings, designs, and usage facilitate contamination transfer. State what percent of wells are certified by State of SC.	See the response to comment E-8.
E-115	71. P. 3-34, Table 3-10. Provide number of measurements, mean, and standard deviation. Add table for Savannah River up and downstream of SRP. Add table for water treatment facilities, and for other outfalls. State whether the State of SC has permitted all outfalls.	See the response to comment E-8.
E-116	72. P. 3-49, Table 3-18. Provide stack emissions, means, standard deviations, and number of releases and measurements. Summate number of curies into subtotals and a total. Calculate maximum concentration at plant perimeter assuming coherent	See the response to comment E-8.

Comment number	Comments	Responses
	plumes without dispersion or deposition. Compare releases calculated to be at plant boundary with NOAA and other validating measurements (26). Describe the affected occupational population to stack emissions, and discuss mitigation measures for this population, e.g., warnings, notices of releases, precautionary measures, results of health studies, etc.	
E-117	73. P. 3-50. EIS should explain the significant elevated concentration of Strontium-90 found in milk around SRP compared to average EPA concentrations for the southeastern United States (see p. K-80, 81).	See the response to comment E-40.
E-118	74. P. 3-51, para 1. Discuss breakthrough after chemical and radionuclide saturation, and migration with the assistance of enhancers to migration, such as organics.	Chapter 3 is a discussion of the affected environment. Physico-chemical phenomena related to chemical and radionuclide transport are discussed in supporting documents referenced in the FEIS.
E-119	75. P. 3-52. A table of tritium concentration in shallow drinking water wells drawn from around SRP should be included. Tritium concentration data from flora and fauna around SRP should be included. The tritium normalization distance from SRP sources should be provided (25).	See the response to comment E-8.
E-120	76. P. 3-55, Table 3-22. Include mean, standard deviation, maximum concentrations, and add the radionuclides from Table 3-23 that were missing in Table 3-22.	See the response to comment E-8.

Comment number	Comments	Responses
E-121	77. P. 3-56, Table 3-23. Include number of measurements, standard deviations, and downstream concentrations for Savannah River.	See the response to comment E-8.
E-122	78. P. 3-57, cont para. State whether the United Nations values are corrected for decay. State whether the UN values are more appropriate than the 160 km radius values. State what the normalization distance is for each pollutant (25).	See the response to comment E-8.
E-123	79. P. 3-35, Table 3-24. Provide one standard deviation and the number of measurements N. The table suggests that Sr-90 contributes to offsite soil radioactivity.	See the response to comment E-8.
E-124	80. P. 3-58, Provide stack emissions, number of measurements, and standard deviation.	See the response to comment E-8.
E-125	81. P. 3-58, Discuss sewage distribution fields at SRP.	Sanitary waste discussions are beyond the scope of this EIS as described in Chapter 1.
E-126	82. P. 3-59, M-Area organic contamination. Provide an aerial depiction of plume movement today and compare to 1983.	The latest Annual Environmental Report (DPSPU-87-30-1) indicates that the M-Area plume has been contained.
E-127	83. P. 3-59, M-Area organic contamination. State whether groundwater treatment and cleanup has been reviewed by independent peer review (IPR) and permitted by State of SC.	See the response to comment E-1 on peer review. SCDHEC permitted the M-Area remedial action program.

Comment number	Comments	Responses
E-128	84. P. 3-59, M-Area organic contamination. Provide table of groundwater contamination found at various listed sites: include the max, mean, number of measurements (N), and standard deviation (SD).	See the response to comment E-8.
E-129	85. P. 3-60, Include specific soil sites and random soil sample analysis for hazardous chemicals and radionuclides. Also, odor and air quality should be analyzed for hazardous chemicals and radioactivity at specific sites and random locations. Specific site analysis should include occupational uptake and health studies and sampling at cardinal points around all facilities that generate and dispose wastes.	See the response to comment E-8.
E-130	86. P. 3-61, Security. Include a map of controlled access roads.	A map of controlled access roads is beyond the scope of this EIS.
E-131	87. P. 3-62, Table 3-25. Table should include those sites that have animal drift fences and where biointrusion devices are deployed. The results of biointrusion studies should be referenced and provided.	Results of studies are discussed in Chapter 5. See the response to comment E-8.
E-132	88. P. 3-63, para 1. Compare the management of each SRP waste site to NRC 10 CFR Part 61. State what current and future facilities meet and which do not meet the NRC regulation for management of radioactive wastes. Provide NRC comments at this point.	DOE is not required by law to have waste management practices which are in compliance with 10 CFR 61 or other NRC regulations. DOE waste management actions for radioactive waste are taken in accordance with the Atomic Energy Act. NRC did not comment on the DEIS.

Comment number	Comments	Responses
E-133	89. P. 3-63, para 2. DOE should commit to zero maintenance after the end of institutional control.	DOE commitments will be developed following the Record of Decision on this EIS.
E-134	90. Chapter 4. P. 4-1. The interaction with regulatory agencies in and of itself will not assure that the optimum specific action has been chosen; however, independent peer review (IPR) in conjunction with public review and regulatory agency review may lead to the best possible solution.	See the responses to comments C-1 and E-1.
E-135	91. P. 4-3, last para. The pathway analysis method may not be the most conservative under actual conditions. It is not conservative until shown to be so. It would be acceptable to say that it attempts to establish a conservative upper bound.	DOE considers the PATHRAE model to be adequate for the relative comparison of the alternative waste management strategies.
E-136	92. P. 4-4, para 1. The 1-meter well may not represent the actual peak concentration for bound nuclides prior to breakthrough. Soil samples and predictions based on them would be more valid for certain nuclides.	See Appendix H for a discussion of the transport models.
E-137	93. P. 4-5. Add a table of common risks for comparison purposes.	A table has been added to the FEIS to provide a perspective on risk values.
E-138	94. P. 4-6, cont para. Include IPR and public review in the decision making process for closure or remedial actions.	Public hearings are required by SCDHEC for all waste site closure actions. See the response to comment E-1 on peer review.
E-139	95. P. 4-6, Table 4-1. Add a 'total number of wells' column by sites and provide source documents with well designs and approvals by SCDHEC.	See the response to comment E-8.

Comment number	Comments	Responses
E-140	96. P. 4-6, last para. Change animals to land and aquatic animals.	The change has been made.
E-141	97. P. 4-10, Table 4-3. The peak concentrations at the 100 meter well is low. The 1984 peak tritium concentration for the radioactive waste burial grounds reading was 4.3 E9 and 10,633 pCi/l for non-volatile beta, primarily strontium-90 (10), both greater than Table 4-3 predictions. Pu-239 has been left off the table and should be included or explained why left out. The strontium-90 reading for F/H seepage basins is unacceptable in that the 1984 published 340,000 pCi/l exceeds that predicted in Table 4-3 (see p. B-41). Np data misprinted in the published table.	Table 4-3 has been corrected.
E-142	98. P. 4-16, Summary. The summary of groundwater impacts under the No-Action strategy should be revised to include the effects of maximum releases that have already occurred at SRP.	The impacts discussed under no action in Chapter 4 are related to the evaluation of the alternative strategies and project-specific actions.
E-143	99. P. 4-18, Table 4-9. Include citations.	Citations have been included.
E-144	100. P. 4-19, Table 4-10. Steel Creek swamp at SRP and Creek Plantation Swamp off SRP have been left out and should be added (10). The cesium-137 and strontium-90 contamination of the swamps at and off SRP should be a principle focus of this EIS. Cleanup of the cesium spills should be reviewed. Strontium-90 has been left off as a contaminant to Four Mile Creek. Add to the table the concentrations of contaminants at the source point of their release. Include contamination of surface waters by contaminated groundwater outcropping into the surface waters.	Cs-137 concentrations in onsite streams at the SRP swamp are available in the annual environmental reports (e.g., DPSPU-87-30-1). See the response to comment E-40. Sr-90 has been added to the table. See the response to comment E-45. Concentration of surface water due to groundwater outcrop is shown in Table 4-10

Comment number	Comments	Responses
E-145	101. P. 4-21, Table 4-11. The maximum doses shown in this table do not agree with previous Dupont reports (p. 19, ref. 18: predicted whole body dose commitments for consumption of fruits and vegetables for one year ranged from 0.95 to 4300 rem, and would require 30 to 390 years to decay to levels that would result in doses less than 500 mrem). Including prior Dupont data will necessitate updating Table 4-12. Include citations.	Tables 4-12 and 4-13 (old tables 4-11 and 4-12) have been revised in the FEIS. Doses are based on the values presented in the EIDs which reflect the doses calculated from each of the waste sites. The results are based on the modeling performed using the input parameters documented in the EIDs.
E-146	102. P. 4-27, Atmospheric releases. Include occupationally exposed individuals in calculating the maximally exposed individual.	Doses to these individuals were calculated separately because of inherent differences in type and length of exposures.
E-147	103. P. 4-29, Table 4-15. Include stack release concentrations. Include occupational exposures from stack releases.	See the response to comment E-8.
E-148	104. P. 4-30. Include a table of maximum uptakes for animals at SRP.	See the response to comment E-8.
E-149	105. P. 4-99. In Table 4-48, include the cumulative releases to date of all radionuclides.	See the response to comment E-8.
E-150	106. P. 105, Combination Strategy. Reduction of radionuclides to the environment should consider detritiation followed by evaporation. Strategies to prevent and protect against accidental liquid releases from the reactors should be incorporated to prevent future unacceptably large releases similar to past releases.	See the response to comment J-11.

Table L-2. DOE Responses to Comments on Draft EIS
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Comment number	Comments	Responses
E-151	107. P. 106, Accidents. A historical accounting of environmental accidents should be included.	See the response to comment E-8.
E-152	108. P. 4-109. D&D. Include D&D costs for all existing and planned facilities at SRP.	Decontamination and decommissioning costs (D&D) will be available as actions are permitted and increased design and planning details are determined.
E-153	109. P. 4-116, Cumulative Effects. Cumulative effects to date should be included.	See the response to comment E-8.
E-154	110. P. 4-116, Existing and Planned facilities. Approval and permitting by regulatory agencies should be obtained before constructing and operating planned facilities and for the continued operation of existing facilities (e.g., incinerators, DWPF, FMF, saltcrete disposal, demonstration facilities, etc.).	Approvals and permits where required have been or will be obtained.
E-155	111. P. 4-123, Health Effects. Include occupational exposures in calculating health effects. Include cumulative health effects to date from all operations.	See the response to comments E-8 and E-146.
E-156	112. Chapter 5. P. 5-1. Although the SRP environmental monitoring program is large and comprehensive in nature, it has been controversial in its effectiveness. In the past, data has been suppressed, not reported, and distorted. In the past, sampling has been less than rigorous, haphazard, and often poorly designed. The collection of 465,000 samples in and of itself, if poorly done, may be of little assurance to the value of SRP monitoring of releases into the environment (2,12,19). State whether SRP environmental monitoring program has been reviewed by IPR and approved by SCDHEC.	See the response to comment E-1. Independent reviews of the monitoring program were conducted in 1985 and 1986 for radiological and chemical constituents in the environment. SCDHEC approves or regulates environmental monitoring where applicable under appropriate regulations.

Comment number	Comments	Responses
E-157	113. P. 5-11. The discussion of tritium contamination of the Congaree is inadequate. A map locating well no. 84 and a more detailed conceptualization of the problem and study should be provided.	A discussion of the Congaree formation is provided in Appendix A. Chapter 5 discusses studies and monitoring.
E-158	114. P. 5-11. SRP should also include occupational exposures in the EIR's submitted to regulatory agencies.	This is not a regulatory requirement.
E-159	115. P. 5-12. The proposed new wells must meet regulatory approval for design and for profiles. Overall design should be reviewed by an IPR group.	SCDHEC reviews and approves all new monitoring or production well designs and permit applications for construction and operation. See the response to comment E-1 on peer review.
E-160	116. Appendices. P. LP-1. Include all individuals who reviewed the draft EIS for DOE. Include draft review comments from outside reviewers.	Appendix L (this appendix) of the FEIS contains comments from all DEIS reviewers and DOE responses.
E-161	117. P. LP-19. Include the organizations that the preparers belonged to. On pp. DL-1, 2, Sen. Glenn and Rep. Wyden were not sent copies of the DEIS and should be.	See pages LP-1 through LP-19. Neither Sen. Glenn nor Rep. Wyden requested copies of the DEIS.
E-162	118. P. A-18. Define KH and KV. Explain dashes.	Kh = horizontal hydraulic conductivity, Kv = vertical hydraulic conductivity in m/day. Dashes indicate missing data.
E-163	119. P. B-7, Table B-2. List waste volumes cumulatively received for each site and annually received. List chemicals and radionuclides received by each site cumulatively and annually.	See the response to comment E-8.

Comment number	Comments	Responses
E-164	120. P. B-19, Mixed Waste Sites. Discuss the historical and current effects of dry basins in the migration of radionuclides and chemicals by physical processes (dust, etc.) and biota (turtles, etc.) (2,12,18,19).	See the response to E-8.
E-165	121. P. B-20. Seepage basin sediments do not compare directly to NRC land disposal because the former is in a mobile environment and in intimate contact with the soil whereas the latter is not.	This comparison has been deleted in the FEIS.
E-166	122. P. B-22, M-Area Basin. Add the historical account of production water well contamination, e.g., Well 53A, etc.	
E-167	123. P. B-38, Burial Ground. Add the concentrations of radionuclides in the groundwater. Discuss the status of plutonium movement, strontium-90 movement, and cesium-137 movement. Provide the number of monitoring wells with concentrations exceeding the EPA drinking water standard (greater than 95%; see 10). The small number of nuclides calculated to be in the groundwater, exceeding the drinking water standard, and migrated from trenches underlies the concern for removal of all radionuclides from trenches in the burial grounds. For example, theoretically, 1 curie of strontium-90 evenly spread into all of the drinking water consumed by the population of the U.S. would exceed the EPA drinking water standard for about 1 year. The SRP burial grounds contain over 12,000 curies of strontium-90.	Appendix F gives groundwater radionuclide concentrations.
E-168	124. Index. The index is missing. A standard subject index should be provided. As well, an index of authors would be helpful.	An index is included in this FEIS.

Table L-2. DOE Responses to Comments on Draft EIS
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Comment number	Comments	Responses
E-169	125. P. H-11, 13. Provide validation data and references for MOD3D and SWIFT II. Provide the 4 differential equations for SWIFT II.	References for MOD3D and SWIFT II have been provided. These references include the detailed mathematical bases and user instructions for these models. Validation data are provided in the EIDs referenced in Appendix H. The four SWIFT II differential equations governing flow and transport are available in the referenced report (Reeves, M. R., et al., 1987, pp. 4-5).
E-170	126. Provide a discussion of results of the airborne validation experiment ACURATE and the 1982 EPA field experiment (7,26). Compare the results of ACURATE with predicted airborne releases.	See the response to comment E-8.

Comment number	Comments	Responses

References

1. Richards, J.R., DOE Inspector General, letter to DOE Secretary Hodell, Summary Report on Allegations Made by Mr. William Lawless, February 14, 1984. The DOE response to the August 13, 1984, letter from Rep. J. Dingell to Secretary D.R. Hodel.

2. Hindman, T.B., Jr., Director DOE Waste Management Project Office, letter to Maher, R., *Manager Dupont Waste Management Programs*, Savannah River Plant Burial Ground Management Appraisal, January 26, 1981.

3. Geraghty & Miller, Inc. Assessment of the Presence of Volatile Organic Compounds in Water-Supply Well 53-A, A-M Area, Savannah River Plant. Prepared for Dupont, Atomic Energy Division, prime contractor Savannah River Plant, Aiken SC (1983).

4. US Department of Energy, Final Environmental Impact Statement, L-Reactor Operation, Savannah River Plant, Aiken, SC. DOE/EIS-0108 (1985).

5. Lawless, W.F. Department of Energy Savannah River Reactor Safety. Presented to the National Research Council, National Academy of Sciences, Aiken, SC, January 22, 1987.

6. Radioactive Waste Management at the Savannah River Plant: A Technical Review. Panel on Savannah River Wastes, National Research Council, National Academy Press: Washington (1981).

7. U.S. EPA. An Airborne Radioactive Effluent Study at the Savannah River Plant, EPA 520/5-84-012 (1984).

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	8. Environmental Monitoring in the Vicinity of the Savannah River Plant for 1982, DPSPU 83-30-1 (1984). 9. Department of Energy Acting to Control Hazardous Waste at its Savannah River Nuclear Facilities, U.S. General Accounting Office report to the Honorable Ernest F. Hollings, United States Senate, GAO/RCED-85-23 (1984). 10. Lawless, W.F. The Savannah River Plant: Hazardous and Radioactive. Public Comment and Meeting Report. A Centers for Disease Control Review Panel's Recommendations on Health Effects and Epidemiological Studies of Operations at the Savannah River Plant, Aiken, S.C. DOE/ER-0225 (1985). 11. Lawless, W.F. Testimony. DOE Regulation of Mixed Wastes. Hearing before the Subcommittee on Energy Conservation and Power and the Subcommittee on Commerce, Transportation, and Tourism of the Committee on Energy and Commerce, House of Representatives, Ninety-Ninth Congress, 2nd Session on H.R. 2009 and H. R. 2593, Serial No. 99-119, April 10, 1986. 12. Lawless, W.F. Savannah River Plant (SRP) Burial Ground, Building 643-G, Management Appraisal Report, Appraised June 2-13, 1980, DOE draft report (1982). 13. U.S. Nuclear Regulatory Commission. Final Environmental Statement related to the operation of Vogtle Electric Generating Plant Units 1 and 2. p. 9-4, NUREG 1087 (1985). 14. U.S. Department of Energy, (Supplement to ERDA-1537). Final Environmental Impact Statement, Waste Management Operations, Savannah River Plant, Aiken, S.C. DOE/EIS-0062 (1980).	

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15. U.S. DOE. FY 1985 Program Summary Document. Office of Defense Waste and Byproducts Management. DOE/DP-0016/1 (1985).

16. Zeigler, C.C., Lawrimore, I.B. Heath, E.M. U.S. Department of Energy Savannah River Plant Environmental Report for 1985. DPSPU-86-30-1 (1986).

17. U.S. District Court for the Eastern District of Tennessee, Legal Environmental Assistance Foundation, Inc., and Natural Resources Defense Council, Inc., Plaintiffs: State of Tennessee, Plaintiff-Intervenor V. Donald Hodel, Secretary, U.S. DOE, et al., CIV. 3-83-562, filed April 13, 1984.

18. Marter, W.L. New Criteria for Seepage Basin Use, DPST-77-444 (1977).

19. Lawless, W.F. Problems with Military Wastes. Bulletin of the Atomic Scientists, 41(10), 38-43 (1985).

20. AEC Manual Chapter 0511, Radioactive Waste Management, 1973.

21. DOE Order 5820.2, Radioactive Waste Management, 1984.

22. U.S. Atomic Energy Commission, Final Environmental Impact Statement, Waste Management Operations, Savannah River Plant, Aiken, S.C. ERDA-1537 (1977).

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25. Bouwer, H. Groundwater Hydrology. McGraw-Hill: NY (1978).

26. Heffter, J.L., Schubert, J.F., Mead, G.A. Atlantic Coast Unique Regional Atmospheric Tracer Experiment (ACURATE), Rockville, MD (1984).