Department of Energy

Oak Ridge Operations Office
P.O. Box 2001
Oak Ridge, Tennessee 37831—

received
3-16-04 CB

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(18)

February 27, 2004

Dear Stakeholder:

NATIONAL ENVIRONMENTAL POLICY ACT FINDING OF NO SIGNIFICANT IMPACT AND ENVIRONMENTAL ASSESSMENT ADDENDUM FOR WASTE DISPOSITION ACTIVITIES AT THE PADUCAH SITE, PADUCAH, KENTUCKY

A-00005-2963

The United States Department of Energy (DOE) has completed the Environmental Assessment Addendum (EA) for Waste Disposition Activities at the Paducah Site, Paducah, Kentucky. DOE has determined that the proposed waste disposition action is not a major federal action that would significantly affect the quality of the human environment within the context of the National Environmental Policy Act of 1969 (NEPA). Therefore, preparation of an environmental impact statement is not necessary, and DOE is issuing this Finding of No Significant Impact (FONSI).

In accordance with DOE NEPA Implementing Procedures, 10 CFR 1021.301 (61 FR 64603, December 6, 1996) DOE is providing affected states, as well as the general public, with a copy of the final EA as well as the FONSI.

If you have any comments, questions, or concerns about this EA, please forward them to:

Gary S. Hartman
United States Department of Energy
Oak Ridge Operations Office
200 Administration Road
Oak Ridge, Tennessee 37830
Fax: (865) 576-0273

For further information about the NEPA process, please contact me at (865) 576-0273.

Sincerely,

Gary S. Hartman

Gary S. Hartman
Acting, ORO NEPA Compliance Officer

Enclosure

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Distribution:

Tracy L. Copeland
Manager, Arkansas State Clearinghouse
Office of Intergovernmental Services
Department of Finance and Administration
1515 W. 7th Street, Room 412
Little Rock, AR 72203

The Honorable Bill Owens
Governor of Colorado
136 State Capitol Building
Denver, CO 80203-1792

Kathleen Trever
Coordinator-Manager
INEEL Oversight Program
1410 North Hilton
Boise, ID 83706

The Honorable Rod Blagojevich
Governor of Illinois
207 State Capitol Building
Springfield, IL 62706

Ronald Hammerschmidt
Director, Division of Environment
Kansas Department of Health and Environment
1000 Southwest Jackson Street
Curtis Building, Suite 400
Topeka, KS 66612-1367

Alex Barber
KY Department for Environmental Protection
14 Reilly Road, Frankfort Office Park
Frankfort, KY 40601

Charles Chisolm
Executive Director
Mississippi Department of Environmental Quality
P.O. Box 20305
Jackson, MS 39289-1305

Tom Lange
NEPA Coordinator
Missouri Department of Natural Resources
205 Jefferson Street
Jefferson City, MO 65101

Jay Ingenberg
Deputy Director, Programs
Department of Environmental Quality
P.O. Box 98922
Lincoln, NE 68509-8922

Heather K. Elliott
Clearinghouse Coordinator
Department of Administration
Nevada State Clearinghouse
209 East Musser Street, Room 200
Carson City, NV 89701-4298

The Honorable John A. Kitzhaber, M.D.
Governor of Oregon
900 Court Street, NE, Room 254
Salem, OR 97310-4047

The Honorable Phil Bredesen
Governor of Tennessee
Tennessee State Capitol
Nashville, TN 37243-0001

Denise S. Francis
State Single Point of Contact
Texas Governor's Office of Budget and Planning
State Insurance Building
1100 San Jacinto, Room 2.114
P.O. Box 12428
Austin, TX 78711

Carolyn Wright
Department of Natural Resources
Center for Policy and Planning
1594 West North Temple, Suite 3710
PO Box 145610
Salt Lake City, UT 84114-5610

Distribution: Continued

Barbara Ritchie
SEPA Unit Supervisor
Washington Department of Ecology
P.O. Box 47703
Olympia, WA 98504-7703

Julie Hamilton
State Clearinghouse Coordinator,
Wyoming Federal Land Policy Office
Herschler Building
First Floor, West Wing
Cheyenne, WY 82002

Camille Mittleholtz
Environmental Team Leader
Office of Transportation Policy
U.S. Department of Transportation
Room 10309
400 7th Street, SW Room 10309
Washington DC 20590-0001

Bill Paxton
Mayor of Paducah
PO Box 2267
Paducah, KY 42002

Danny Orazine
McCracken County Judge Executive
301 South 6th
Paducah, KY 42003

Wayne L. Davis
Kentucky Department of Fish and Wildlife Resources
#1 Game Farm Road
Frankfort, KY 40601

Tim Kreher
West KY Wildlife Management Area
10535 Ogden Landing Road
Kevil, KY 42053

Steve Alexander
United States Department of Interior
Fish and Wildlife Service
446 Neal Street
Cookeville, TN 38501

Virgil Lee Andrews, Jr.
United States Department of Interior
Fish and Wildlife Service
3761 Georgetown Road
Frankfort, KY 40601

Phil Foley
PACE International Union Local 50550
315 Palisades Circle
Paducah KY 42001

David Williams, Remedial Project Manager
U.S. Environmental Protection Agency,
Region 4
61 Forsythe Street
Atlanta, GA 30303

Paducah Public Library
555 Washington Street
Paducah, KY 42001

Tuss Taylor
KY Division for Waste Management
14 Reilly Road, Frankfort Office Park
Frankfort, KY 40601

Ms. Kaylin Loveland
Envirocare of Utah, Inc.
605 North 5600 West
Salt Lake City, Utah 84116

Mr. Scott Schneider
Hanford Nuclear Services, Inc.
28 Court Square
West Plains Missouri 65775

Distribution: Continued

Christopher S. Pugsley, Esq.
Law Offices of Anthony J. Thompson, P.C.
1225 19th Street, NW
2nd Floor
Washington D.C. 20036

Kenneth P. Brooks
7255 State Route 13
Erin, Tennessee 37061

Eric Scott
Radiation Health and Toxics Agents Branch
Cabinet for Health Services
MS HS2E-D
275 East Main Street
Frankfort, Kentucky 40621

Budd Haemer
Shaw Pittman LLP
2300 N Street Northwest
Washington DC 20037

Daniel Horner
McGraw-Hill Nuclear Publications
1200 G Street Suite 1100
Washington DC 20005

Jay Coghlan
Director
Nuclear Watch of New Mexico
551 West Cordova Road, Number 808
Santa Fe, New Mexico 87505-4100

Douglas S. Huston
Oregon Office of Energy
625 Marion Street, Northeast, Suite 1
Salem, Oregon 97301-3742

Susan K. Krenzien
NNSA/NV
Mailstop 505
Post Office Box 98518
Las Vegas, Nevada 89193-8518

Bill Tanner
Paducah Citizens Advisory Board
111 Memorial Drive
Paducah, Kentucky 42001

Lynn Link *(6 copies)*
Paducah Citizens Advisory Board
761 Veterans Ave.
Kevil, Kentucky 42053

Ruby English
6715 Metropolis Lake Road
West Paducah, Kentucky 42086

Charles and Vicki Jurka
Rt 3, Box 265A
Golconda, Illinois 62938

Mark Donham
Rt#1, Box 308
Brookport, IL 62910

DOE/EA-1339-A

Environmental Assessment Addendum
Disposition of Additional Waste at the Paducah Site

December 2003

U. S. Department of Energy
Oak Ridge Operations
Oak Ridge, Tennessee

REVIEWED FOR
CLASSIFICATION
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5

FINDING OF NO SIGNIFICANT IMPACT
DISPOSITION OF ADDITIONAL WASTE AT THE PADUCAH SITE
PADUCAH, KENTUCKY

AGENCY: U.S. DEPARTMENT OF ENERGY

ACTION: FINDING OF NO SIGNIFICANT IMPACT

SUMMARY: The U.S. Department of Energy (DOE) has completed an environmental assessment addendum (DOE/EA-1339-A) (EA Addendum), which is incorporated herein by reference, for proposed disposition of 17,600 m^3 of waste from the Paducah Site in Paducah, Kentucky. It is anticipated that most of the waste would be transported for disposal at various locations in the United States. Based on the results of the impact analysis reported in the EA Addendum, DOE has determined that the proposed action is not a major federal action that would significantly affect the quality of the human environment within the context of the National Environmental Policy Act of 1969 (NEPA). Therefore, preparation of an environmental impact statement is not necessary, and DOE is issuing this Finding of No Significant Impact (FONSI).

PUBLIC AVAILABILITY OF EA ADDENDUM AND FONSI: The EA Addendum and FONSI may be reviewed at and copies of the document obtained from:

Gary Bodenstein, NEPA Document Manager
U.S. Department of Energy
5600 Hobbs Road
West Paducah, KY 42001
(270) 441-6831

Paducah Public Library
555 Washington Street
Paducah, KY 42001

FURTHER INFORMATION ON THE NEPA PROCESS: For further information on the NEPA process, contact

Gary Hartman, Acting NEPA Compliance Officer
U.S. Department of Energy
200 Administration Road
Oak Ridge, TN 37831
(865) 576-0273

BACKGROUND: DOE completed the *Environmental Assessment for Waste Disposition Activities at the Paducah Site, Paducah Kentucky* DOE/EA-1339 and issued a Finding of No Significant Impact on November 5, 2002. Since that time, DOE has identified an additional 17,600 m^3 of material currently stored at the Paducah Site that should be dispositioned. DOE must continue to manage and control its material and wastes safely, efficiently, and cost effectively in compliance with applicable federal and state laws while protecting public health and the environment. The wastes considered in the assessment are limited to DOE's ongoing and legacy non-CERCLA waste management operations at the Paducah Site. This additional material is primarily stored in DOE Material Storage Area (DMSAs). Material not

covered in this EA Addendum are those associated with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) activities, including decontamination and decommissioning activities, and disposition of wastes associated with USEC operational activities. The cumulative impacts section of the EA Addendum does take these wastes into consideration. The assessment is intended to supplement and update the previous *Environmental Assessment for Waste Disposition Activities at the Paducah Site, Paducah, Kentucky* (DOE/EA-1339) completed November 2002. This assessment expands the scope of previous analyses to include the additional material.

The material will be characterized before it is dispositioned. DOE anticipates most of the material is non-hazardous waste but a portion of the material may contain residual radionuclide contamination at high enough concentrations to be classified as low-level waste. Low-level waste would be disposed off-site at the DOE Nevada Test Site, the DOE Hanford Site, or a commercial facility.

If the characterization shows the residual radioactivity is low enough to meet the waste acceptance criteria, then it may be disposed in the on-site landfill. On-site disposal of waste, which may include residual radioactive material, is evaluated in the *Environmental Assessment for the Construction, Operation, and Closure of the Solid Waste Landfill at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (DOE/EA-1046) and *The Environmental Assessment on the Implementation of the Authorized Limits Process for Waste Acceptance at the C-746-U Landfill Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (DOE/EA-1414) and is not further evaluated in this EA Addendum.

The impact analysis in the EA Addendum addressed the potential effects of storing, packaging, and transporting the additional material that is waste from Paducah to destinations representative of other DOE sites and licensed commercial treatment/disposal facilities. The potential effects of transport over both highway and rail routes were evaluated.

ALTERNATIVES: In addition to the proposed action, impacts were also evaluated for two alternatives 1) no action alternative and 2) enhanced storage.

1) *No Action Alternative* - In the No Action alternative (i.e., long-term storage), DOE would not perform disposition activities for the additional material, except for those needed for waste management and maintenance. The material would be stored until the facilities enter the Decontamination and & Decommissioning Program.

2) *Enhanced Storage Alternative* – The Enhanced Storage alternative is identical to the No Action alternative with the exception that storage facilities for the additional material would be constructed for resistance to disasters (such as earthquakes and fires). No disposal of the existing additional waste would occur. Because existing storage space does not meet enhanced storage definitions, new facilities would have to be constructed on-site to store material.

PROPOSED ACTION

1) Land Use

Removal of the additional material could result in modification of the existing lease to the United States Enrichment Corporation to include some of the emptied areas.

2) Socioeconomics and Environmental Justice

The proposed action employment increase of less than a 3% change from 1997 employment in McCracken County does not represent a notable impact. Minority and Low-Income Populations would not be disproportionately exposed to transportation impacts. These groups would be subject to the same negligible impacts as the general population.

3) **Transportation Impacts**

a) **Air Quality**

Air emissions from transport through non-attainment areas along shipment routes are well below the Environmental Protection Agency threshold emission levels. Therefore no formal conformity analysis is required.

b) **Risk Associated with Truck Transport**

Radiological Impacts from normal Truck Transportation - The potential effects of transporting waste by highway from Paducah to each of the potential final destination sites were evaluated. Truck shipments to receiving facilities were evaluated for the probability of a latent cancer fatality (LCF) to the truck crew, the general population, and the maximum exposed individual (MEI). The worst-case results for the truck crew, general population, and MEI all occur during the shipment to Mercury, Nevada. However, all values were calculated to be less than 1 (largest value being 2.4×10^{-2} for the crew), so risks to these receptors are considered negligible. The population dose resulting from the proposed action is estimated to be 5.5 person-rem, resulting in estimated 0.0028 latent cancer fatalities. This would result in no anticipated latent cancer fatalities from the proposed action.

Vehicle-Related Impacts – Potential vehicle-related impacts, including expected accidents, expected fatalities from accidents, and impacts from vehicle emissions were evaluated. All accident fatalities are less than one; therefore no fatalities resulting from the proposed action are anticipated.

c) **Risk Associated with Rail Transport**

Radiological Impacts from normal Rail Transportation – The potential radiological effects of routinely transporting LLW, MLLW, and TRU waste by rail from Paducah to each of the potential final destination sites were evaluated. Rail shipments were evaluated for the probability of an LCF to the train crew, the general population, and the MEI. All values were calculated to be less than 1 (largest value being 0.046 for the population), so risks to these receptors are considered negligible. The population dose resulting from the proposed action is estimated to be 6.2 person-rem, resulting in estimated 0.0032 latent cancer fatalities. This would result in no anticipated latent cancer fatalities from the proposed action.

Rail-Related Impacts – Potential rail-related impacts, including expected accidents and expected fatalities from accidents were evaluated. All fatalities are less than one; therefore no fatalities resulting from the proposed action are anticipated.

Ecological Resources

Impacts to ecological resources were compared to the analysis in the Waste Disposition EA (DOE/EA-1339. A biological assessment of impacts to threatened and endangered species was completed for the proposed action. The biological assessment concludes that the proposed action would be unlikely to adversely affect the Indiana Bat or any mussel species of concern. No significant impacts would be expected to ecological resources.

Cumulative Effects

Potential environmental cumulative impacts that could result from the proposed disposition of waste were compared with the impacts identified in the Waste Disposition EA. The disposition of all of the waste was included in the Waste Disposition EA analysis of cumulative impacts and found not to be significant. Therefore the cumulative impacts have not changed from those described in the Waste Disposition EA and were not addressed any further.

NO ACTION ALTERNATIVE

If DOE decides to take no action on the 17,600 m^3 of additional material, then it would remain on-site until disposition during D&D of each area that contains the material. These activities were analyzed as the Proposed Action in the Waste Disposition EA. Since the impacts have not changed it is not analyzed further.

ENHANCED STORAGE ALTERNATIVE

Under the Enhanced Storage Alternative, the additional material would remain on-site, be characterized to determine what portion is waste, and the waste would be stored in new or upgraded buildings designed to withstand earthquakes or other disasters. Storage of up to 28,600 m^3 of waste was included in the Enhanced Storage Alternative analysis in the Waste Disposition EA. Since the impacts have not changed it is not analyzed further

DETERMINATION: Based on the findings of this EA Addendum, DOE has determined that the proposed action does not constitute a major federal action that would significantly affect the quality of the human environment within the context of the National Environmental Policy Act. Therefore, preparation of an environmental impact statement is not required.

Issued at Oak Ridge, Tennessee, this 11th day of December 2003.

for Gerald G. Boyd
Manager, Oak Ridge Operations
U.S. Department of Energy
Oak Ridge Operations
Oak Ridge, Tennessee

DOE/EA-1339-A

Disposition of Additional Waste at the Paducah Site Environmental Assessment Addendum

December 2003

U. S. Department of Energy
Oak Ridge Operations

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Acronyms

CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CFR	Code of Federal Regulations
D&D	Decontamination and Decommissioning
DMSA	DOE Material Storage Area
DOE	U.S. Department of Energy
EA	Environmental Assessment
g	Grams
HDDV	Heavy Duty Diesel-Powered Vehicle
LCF	Latent Cancer Fatality
m^3	Cubic Meters
MEI	Maximally Exposed Individual
NCS	Nuclear Criticality Safety
NEPA	National Environmental Policy Act of 1969
PM_{10}	Particulate Matter Smaller than 10 Micrometers
ROD	Record of Decision

1.0 Introduction

The U.S. Department of Energy (DOE) proposes disposition activities for waste from the Paducah Site in Paducah, Kentucky. As a federal agency, DOE must comply with the National Environmental Policy Act of 1969 (NEPA) by considering, in the decision-making process, potential environmental impacts associated with its proposed action. The Council on Environmental Quality promulgated regulations to implement NEPA [40 *Code of Federal Regulations* (*CFR*) 1500 et seq.] and directed federal agencies to develop their own implementing regulations. DOE regulations (10 *CFR* 1021) provide additional direction for conducting NEPA reviews of proposed DOE activities. This environmental assessment (EA) addendum for the disposition of DOE waste stored and/or generated at the Paducah Site has been prepared in accordance with both Council on Environmental Quality and DOE regulations and with DOE orders and guidance regarding these waste types.

1.1 Purpose and Need for Agency Action

DOE must continue to manage (i.e., treat, store, and dispose) its waste and material safely, efficiently, and cost effectively in compliance with applicable federal and state laws and in a manner protective of human health and the environment.

DOE is required by the Atomic Energy Act (42 United States Code 2011 et seq.) and DOE Order 435.1A to manage the radioactive wastes that it generates. DOE has determined that it will dispose low-level radioactive waste at the DOE Hanford Site in Washington and at the DOE Nevada Test Site, as documented in the *Record of Decision (ROD) for the Department of Energy's Waste Management Program: Treatment and Disposal of Low-Level Waste and Mixed Low-Level Waste* (January 1998, 63 *Federal Register* 3629). This decision does not preclude treatment or disposal of low-level waste at commercial facilities in accordance with DOE policy.

DOE completed an *Environmental Assessment for Waste Disposition Activities at the Paducah Site Paducah Kentucky* (DOE/EA-1339 - Waste Disposition EA) and issued a Finding of No Significant Impact on November 4, 2002. The Waste Disposition EA analyzed disposition of approximately 11,000 m^3 of various wastes. At the time of issuance of the Waste Disposition EA, DOE anticipated that the removal of remaining waste stored on-site (estimated at 20,000 m^3 in that EA) would be conducted as part of decontamination and decommissioning (D&D) activities under the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA). Consequently, the Waste Disposition EA included the characterization of these wastes but did not include these additional wastes in the evaluation of off-site disposition activities.

DOE has subsequently decided to propose proceeding with disposition of additional materials and wastes as part of its recently funded accelerated cleanup plan rather than waiting until facility D&D. Much of the additional material and waste is stored outdoors where there is a risk of spread of contamination to the environment. Also, DOE would experience a long-term cost savings through reduction of surveillance and maintenance costs that would be necessary for continued on-site storage.

1.2 Scope of this Assessment

DOE proposes to disposition approximately 17,600 m^3 of material in addition to the 11,000 m^3 of waste analyzed in the Waste Disposition EA for a total of 28,600 m^3 of waste and material. The majority of these materials are currently stored in approximately 160 DOE Material Storage Areas (DMSAs) at the Paducah Site. All of these materials will be characterized to determine if they are wastes and, if so, how they are to be dispositioned (i.e., categorized, managed, and treated or disposed).

DOE anticipates that a substantial portion of the material will be characterized as waste. DOE further anticipates that approximately 45% (7,900 m^3) of the material will be waste that meets the permit conditions and Waste Acceptance Criteria for on-site disposal in the C-746-U Landfill. No low-level radioactive or hazardous waste would be put in the landfill. On-site disposal of waste, which may include authorized limits material, is evaluated in the *Environmental Assessment for the Construction, Operation, and Closure of the Solid Waste Landfill at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (DOE/EA-1046) and *The Environmental Assessment on the Implementation of the Authorized Limits Process for Waste Acceptance at the C-746-U Landfill Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (DOE/EA-1414) and is not further evaluated in this EA Addendum.

Low-level Waste – Radioactive waste that is not high-level radioactive waste, spent nuclear fuel, transuranic waste, byproduct material (as defined in section 11e.(2) of the *Atomic Energy Act of 1954*, as amended), or naturally occurring radioactive material (DOE G 435.1-1).). Low-level waste can be evaluated to determine if the material meets the requirements of the approved authorized limits.

Authorized Limits Material – Residual radioactive material that meets the requirements of the approved authorized limits developed in accordance with DOE Standard 5506-99 (Guide to Good Practice for Establishing Authorized Limits for the Release of Waste Containing Residual Radioactivity) and DOE Order 5400.5 (Radiation Protection of the Public and the Environment).

This EA Addendum evaluates the potential impacts to human health and the environment that would result from the Proposed Action and alternatives and it is intended as a supplement to the Waste Disposition EA. Evaluation of impacts from the operation of off-site waste treatment and disposal facilities is discussed in the Waste Disposition EA (p. 6) and, consequently, is not further evaluated in this EA Addendum.

2.0 Proposed Action

DOE proposes to disposition 11,000 m^3 of waste as described in the Waste Disposition EA and approximately 17,600 m^3 of additional material currently stored at the Paducah Site for a total of 28,600 m^3 of waste and material. Disposition activities for the additional material include characterization, storage, packaging, loading, and shipping wastes to disposal locations.

For purposes of impact evaluation, DOE has established a "worst-case scenario" for the Proposed Action whereas all 28,600 m^3 is considered low-level radioactive waste requiring transportation off-site for treatment or disposal. The additional waste would be transported in the same timeframe, same manner, same representative locations, and same representative routes as described in the Waste Disposition EA. DOE currently anticipates that the waste would be disposed primarily at the DOE Nevada Test Site although disposition at the Hanford Site and commercial facilities, such as Envirocare of Utah, Inc. and Waste Control Specialists, LLC in Texas, are also analyzed as possible locations.

Most of the additional material is currently stored in approximately 160 DMSAs at the Paducah Site. Due to the undetermined nature of a majority of the DMSA wastes, Nuclear Criticality Safety (NCS) characterization must first be performed. NCS characterization provides the information necessary to move or manage materials safely without the threat of uncontrolled nuclear criticality. The material must also be examined to determine if any Resource Conservation and Recovery Act or Toxic Substances Control Act regulated wastes are present. Material would not be available for disposition until DMSA characterization activities are completed. DOE anticipates this characterization could occur over a 10-year period. Material would be disposed throughout the 10 years as portions of the characterization are completed.

2.1 No Action Alternative

Under this alternative, the additional low-level waste would be stored on-site until removed during D&D activities. The activities associated with the continued storage of the low-level waste are the same as those described in the Proposed Action in the Waste Disposition EA.

2.2 Enhanced Storage Alternative

The activities associated with enhanced storage would be similar to those described in Enhanced Storage Alternative in the Waste Disposition EA.

2.3 Alternatives Considered but Dismissed

2.3.1 Onsite Disposal of all Waste

DOE considered the option to dispose all wastes on-site. This action would result in the need to build a new landfill or landfill cells for disposal of low-level waste. This alternative was not considered reasonable. Based on the *Record of Decision for the Department of Energy's Waste Management Program: Treatment and Disposal of Low-Level Waste and Mixed Waste* (January 1998, 63 *Federal Register* 3629), DOE has determined that low-level waste should be disposed either at the Nevada Test Site or the Hanford Site rather than constructing new landfills or landfill cells. (The Record of Decision did not preclude disposal at commercial facilities.)

3.0 Affected Environment

The affected environment description in the Waste Disposition EA is still valid and has not changed. The additional 17,600 m^3 of low-level waste are currently stored both outdoors and indoors at the Paducah Site. The only on-site activities planned for the additional low-level waste would be storage, surveillance, characterization, packaging, repackaging, and loading onto transport carriers. All of these activities are

analyzed in the Waste Disposition EA. Therefore, the affected environment is the same for this EA Addendum as for the Waste Disposition EA.

4.0 Environmental Consequences

4.1 Proposed Action Impacts

Potential environmental impacts that could result from the Proposed Action (using the worst-case scenario described above) were evaluated for the following: land use, geology and seismicity, soils and prime farmland, water resources and water quality, groundwater, floodplains, wetlands, ecological resources, threatened and endangered species, noise, cultural resources, archaeological resources, Native American resources, air quality, socioeconomics and environmental justice, on-site accidents, transportation, and transportation accidents.

Potential impacts identified were compared with the impacts identified in the Waste Disposition EA. There would be no change for impacts to: geology and seismicity, soils and prime farmland, water resources and water quality, groundwater, floodplains, wetlands, noise, cultural resources, archaeological resources, Native American resources, air quality, and on-site accidents. These impacts were not analyzed further in this EA Addendum.

Impacts of land use, socioeconomics, environmental justice, transportation, and ecological resources may change from the Waste Disposition EA as a result of disposition of the additional material, and are evaluated further in this EA Addendum. The biological assessment prepared for the Waste Disposition EA to evaluate potential impacts on federally listed species was revised to fully incorporate the Proposed Action. The revised biological assessment concludes that there will be no adverse affect on federally listed species or critical habitat of these species (Appendix C).

4.1.1 Land Use

Potential impacts identified were compared with the impacts identified in the Waste Disposition EA. The additional low-level waste is currently stored on property that is owned by DOE. Most of the land would continue to be used by DOE for storage or other undetermined uses. A portion of the waste is stored in DMSAs located in buildings leased to the U.S. Enrichment Corporation. DOE anticipates that when the material is removed from these DMSAs the areas may be used for other purposes by the U.S. Enrichment Corporation.

4.1.2 Socioeconomics and Environmental Justice

The Waste Disposition EA (November 2002) estimated a total employment increase of 45 jobs resulting from disposition of 11, 000 m^3 of waste. The disposition of 28,600 m^3 of waste and material is estimated to increase employment by 117 full-time-equivalent jobs per year. This would represent less than a 3% change from 1997 employment in McCracken County, which does not constitute a notable impact.

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations," requires agencies to identify and address disproportionately high and adverse human health or environmental effects that their activities may have on minority and low-income populations. For the on-site activities considered in this EA Addendum, populations considered are those

that live within 80 km (50 miles) of the Paducah Site. For transportation alternatives, populations considered are those that live along the highways or rail lines where transport of packaged waste would occur and people using the highways and/or stopping at rest stops. Individual access and use of public highways or rest stops that would be used by trucks shipping waste are not limited or restricted to any particular population group, economically disadvantaged or advantaged. Because it is expected that the percentage of minority or low-income households within the potentially exposed population would vary along the highway routes used for the Proposed Action, no disproportionate effects to those minority or low-income households located along the routes can be identified. These groups would be subject to the same negligible impacts as the general population.

4.1.3 Transportation Impacts

For purposes of impact evaluation, DOE has established a "worst-case scenario" for the Proposed Action whereas all 28,600 m^3 is considered low-level radioactive waste requiring transportation off-site for treatment or disposal.

4.1.3.1 Highway Transport

Air Quality Impacts from Truck Transport

The Waste Disposition EA identified impacts based on the rate trucks pass through major metropolitan areas. The shipment rate used for the analysis was 762 shipments per year. The Proposed Action would have a higher shipment rate per year. The 17,600 m^3 of additional waste would be transported in shipments of 18.2 m^3 each, or a total of 967 shipments. If the removal of additional waste takes place uniformly over 10 years this would result in a shipment rate of 97 additional shipments per year. Therefore the annual shipment rate for all waste shipments would be 762 shipments originally proposed and 97 additional shipments resulting in 859 shipments per year. (Note that this is a worst-case scenario as the actual shipment rate would be less than 859 shipments per year because of the waste anticipated to be disposed on-site and the conservative rate used for analysis in the Waste Disposition EA.)

Analysis was undertaken to determine the impact of the proposed shipments relative to the threshold emission levels in nonattainment areas described by EPA in its air conformity regulations [40 *CFR* 93.153(b)(1)]. The EPA general conformity rule (58 *Federal Register* 63214, November 30, 1993) requires federal agencies to prepare a written conformity analysis and determination for proposed activities only in those cases where total emissions of an activity exceed the threshold emission levels. Where it can be demonstrated that emissions from a proposed new activity fall below the thresholds, these emissions are considered to be de minimus and require no formal analysis.

The Waste Disposition EA proposed routes were evaluated for the road miles proposed to be traveled for each criteria pollutant. Carbon monoxide, ozone, and particulate matter smaller than 10 micrometers (PM_{10}) were the criteria pollutants used. The maximum road miles traveled through a nonattainment area would be approximately 150 miles (includes return trip) through the Dallas-Fort Worth, Texas, area (Atlanta and St. Louis areas are nearly as large). This distance conservatively includes a return truck trip even though the return trip is not part of the Proposed Action (no waste on the truck), and it is likely that commercial vehicles would not return by the same route if they were able to contract a load for the return trip.

The EPA threshold for carbon monoxide for all nonattainment and maintenance areas is 200,000 lb (100 tons)/year for any new proposed activity. The EPA threshold for ozone (measured by its precursor, NO_x for "ozone attainment areas outside an ozone transport region" such as Dallas-Fort Worth) is 200,000 lb (100 tons)/year. The EPA threshold for PM_{10} for all moderate nonattainment areas is 200,000 lb (100 tons)/year for any new proposed activity. Emission factors for carbon monoxide and ozone for various motor vehicle types have been modeled for the year 1990. Emission factors for PM_{10} have been calculated using EPA's February 1995 model for that criteria pollutant. Heavy duty diesel-powered vehicles (HDDVs) are defined as any diesel-powered motor vehicle designated primarily for the transportation of property and rated at more than 8500 lb of gross vehicle weight. For HDDVs, including the standard commercial semi-tractor vehicles that would be used for pulling waste shipments, the average emission for carbon monoxide is estimated as 11.03 g/mile, while the NO_x (an ozone precursor) emission rate is 22.91 g/mile. Finally, the emission factor for PM_{10} is 14.87 g/mile.

Using a maximum of 859 shipments (truck round trips)/year, the carbon monoxide emission rate was estimated for the maximum distance traveled through a nonattainment area (Dallas-Fort Worth). This emission rate was approximately 3140 lb of carbon monoxide/year. This amount of emissions is below the threshold standard of 100 tons/year and is clearly a de minimus amount. Therefore, the deduction is made that the Proposed Action of 859 shipments per year would also be de minimus.

Using a maximum of 859 shipments/year (truck round trips), an ozone emission rate was established for the maximum distance traveled within a nonattainment area (Dallas-Fort Worth area). This emission rate was approximately 6503 lbs of NO_x/year (NO_x is a precursor to ozone). This amount of emissions is below the threshold standard of 100 tons/year and clearly a de minimus amount. Therefore, the deduction is made that the Proposed Action of 859 shipments per year would also be de minimus.

Finally, using a rate of 859 shipments/year, a PM_{10} rule was established for the maximum distance within a nonattainment area (Dallas-Fort Worth). The emission rate was 4225 lb of PM_{10}/year. This amount is below the threshold standard of 100 tons/year and is clearly a de minimus amount. Therefore, the deduction is made that the Proposed Action of 859 shipments per year would also be de minimus.

Because the Dallas-Fort Worth area example maximizes road miles traveled through a nonattainment area and also conservatively estimates emission factors, it is assumed that this example "bounds" the impacts within other nonattainment areas for the Proposed Action. Therefore, air emissions within all nonattainment areas along shipment routes are well below the EPA threshold emission levels, and thus require no formal conformity analysis.

Human Risk Associated with Truck Transport

The Waste Disposition EA estimated human risk impacts from truck transport on the basis of 762 shipments per year. The impacts with the additional waste are based on 859 total shipments per year. The impacts would be proportional to the ratio of the increase in shipments or 859 shipments (EA Addendum) / 762 shipments (Waste Disposition EA) = 1.13. Therefore the Waste Disposition EA quantified transportation impacts were multiplied by 1.13.

The radiological effects of the shipments are estimated by the potential latent cancer fatalities. Table 4.1 lists Waste Disposition EA impacts and the proportional cumulative impacts.

Table 4.1 Worst Case Radiological Impacts for Truck Shipments

Risk Group	Annual Impacts		Total for 10-year life cycle	
	Waste Disposition EA	EA Addendum	Waste Disposition EA	EA Addendum
	LCF	LCF	LCF	LCF
Crew	2.4×10^{-3}	2.7×10^{-3}	2.4×10^{-2}	2.7×10^{-2}
Population	1.2×10^{-3}	1.4×10^{-3}	1.2×10^{-2}	1.4×10^{-2}
MEI[a] (rem)	1.7×10^{-3}	1.9×10^{-3}	1.7×10^{-7}	1.9×10^{-7}

[a] MEI latent cancer fatality represents the probability of a latent cancer fatality occurrence
LCF = latent cancer fatality
MEI = maximally exposed individual

All latent cancer fatalities are less than one, therefore no fatalities would be anticipated.

Cargo-Related Radiological Impacts during a Highway Accident

The probability of a highway accident occurring during waste transportation by truck was evaluated for each of the receiving locations evaluated in the Waste Disposition EA. In addition, the radiological dose resulting from these accidents was calculated and the risk of latent cancer fatalities to the general public was also calculated. These results are summarized in Table 4.2.

Table 4.2 Cargo-Related Radiological Impacts from Truck Transportation Accident

	Waste Disposition EA	EA Addendum
Population Dose (person-rem)	4.9	5.5
Latent Cancer Fatalities	2.5×10^{-3}	2.8×10^{-3}

All latent cancer fatalities are less than one, therefore no fatalities would be anticipated.

Vehicle-Related Impacts

Potential vehicle-related impacts, including expected accidents, expected fatalities from accidents, and impacts from vehicle emissions were evaluated. The results of the evaluation are summarized in Table 4.3.

Table 4.3 Estimated Fatalities from Truck Emissions and Accidents (Vehicle-Related Impacts)

	Waste Disposition EA	EA Addendum
Total Accidents	1.89	2.14
Total Fatalities	0.08	0.09
Latent fatalities from emissions	0.43	0.49

All latent fatalities and accident fatalities are less than one, therefore no fatalities would be anticipated.

4.1.3.2 Rail Transport

Potential rail-related impacts, including expected accidents, expected fatalities from accidents, and impacts from vehicle emissions were evaluated. The results of the evaluation are summarized in Table 4.4

Table 4.4 Radiological Impacts from Rail Shipments

Risk Group	Annual Impacts		Total for 10-year life cycle	
	Waste Disposition EA	EA Addendum	Waste Disposition EA	EA Addendum
	LCF	LCF	LCF	LCF
Crew	1.1×10^{-3}	1.2×10^{-3}	1.1×10^{-2}	1.2×10^{-2}
Population	4.1×10^{-3}	4.6×10^{-3}	4.1×10^{-2}	4.6×10^{-2}
MEI[a] (rem)	3.7×10^{-8}	4.2×10^{-8}	3.7×10^{-7}	4.2×10^{-7}

[a] MEI latent cancer fatality represents the probability of a latent cancer fatality occurrence
LCF = latent cancer fatality
MEI = maximally exposed individual

All latent cancer fatalities are less than one, therefore no fatalities would be anticipated.

Cargo-Related Radiological Impacts during a Rail Accident

The probability of a railroad accident occurring during waste transportation was evaluated for each of the receiving locations evaluated in the Waste Disposition EA. In addition, the radiological dose resulting from these accidents was calculated and the risk of latent cancer fatalities to the general public was also calculated. These results are summarized in Table 4.5.

Table 4.5 Cargo-Related Radiological Impacts from Rail Transportation Accidents

	Waste Disposition EA	EA Addendum
Total Population Dose (person-rem)	5.51	6.2
Latent Cancer Fatalities	2.8×10^{-3}	3.2×10^{-3}

All latent cancer fatalities are less than one, therefore no fatalities would be anticipated.

Rail-Related Impacts

Potential rail-related impacts, including expected accidents and expected fatalities from accidents were evaluated. The results of the evaluation are summarized in Table 4.6.

Table 4.6 Estimated Fatalities from Accidents (Rail Related Impacts)

	Waste Disposition EA	EA Addendum
Total Accidents	0.08	0.09
Total Fatalities	0.02	0.02

All fatalities are less than one, therefore no fatalities would be anticipated.

4.1.3 Ecological Resources Impacts

Impacts to ecological resources were compared to the analysis in the Waste Disposition EA (DOE/EA-1339). The only potential change in impacts identified was for threatened and endangered species.

A Biological Assessment of impacts to threatened and endangered species prepared for the original Waste Disposition EA proposed action was revised for the proposed action of this environmental assessment addendum. The revised assessment is attached in Appendix C. The revised biological assessment concluded that the proposed action would be unlikely to adversely affect the Indiana bat or any mussel species of concern because:

- A potential for exposure of the bat and mussel species to waste as a result of an accident during implementation of the revised proposed action would be small and impacts would be negligible or nonexistent;
- Waste disposition activities are currently being performed at the Paducah Site with no known detriment to the local Indiana bat or mussel populations;

- No bat foraging or roosting habitat is present where waste handling activities would occur or along any proposed transportation routes. Therefore, no bat foraging or roosting habitat would be affected by routine waste disposition operations;
- The majority of mussel habitat in the area has been identified upstream from the Paducah site; no mussel habitat exists inside the site fence therefore no habitats would be affected by the revised proposed action;
- Bat foraging habitat (riparian vegetation along intermittent tributaries) present near the site of the revised proposed action is unlikely to become contaminated;
- Routine waste management operating procedures would provide minimal opportunity for direct exposure of local biota, including Indiana bats and their prey, to wastes. Procedure implementation would also decrease the probability of accidents; and
- No critical bat or mussel habitats are present at the Paducah Site. Therefore, no habitat alteration or destruction would occur as a result of the revised proposed action.

4.2 No Action Impacts

If DOE decides to take no action on the 17,600 m^3 of additional material, then it would remain on-site until disposition during D&D of each area that contains the material. These activities were analyzed as the Proposed Action in the Waste Disposition EA. Since the impacts have not changed it is not analyzed further.

4.3 Enhanced Storage Impacts

Under the Enhanced Storage Alternative, the additional material would remain on-site, be characterized to determine what portion is waste, and the waste would be stored in new or upgraded buildings designed to withstand earthquakes or other disasters. Storage of up to 28,600 m^3 of waste was included in the Enhanced Storage Alternative analysis in the Waste Disposition EA. Since the impacts have not changed it is not analyzed further.

5.0 Cumulative Impacts

Potential environmental cumulative impacts that could result from the proposed disposition of waste were compared with the impacts identified in the Waste Disposition EA. The disposition of all of the material as waste was included in the original analysis of cumulative impacts. Therefore, the cumulative impacts have not changed from those described in the Waste Disposition EA and are not addressed any further.

6.0 References

Final Environmental Assessment of Waste Disposition Activities at the Paducah Site Paducah Kentucky, DOE/EA-1339, November 2002.

Record of Decision (ROD) for the Department of Energy's Waste Management Program: Treatment and Disposal of Low-Level Waste and Mixed Low-Level Waste, January 1998, 63 *Federal Register* 3629.

Environmental Assessment for the Construction, Operation, and Closure of the Solid Waste Landfill at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky, DOE/EA-1046, March 1995.

The Environmental Assessment on the Implementation of the Authorized Limits Process for Waste Acceptance at the C-746-U landfill Paducah Gaseous Diffusion Plant, Paducah, Kentucky, DOE/EA-1414, August 2002.

DOE G 435.1-1, Implementation Guide for use with DOE M 435.1-1, Chapter IV Low-Level Waste Requirements, July 9, 1999.

Appendix A

Persons and Agencies Contacted

Federal Agencies

U.S. Fish and Wildlife Service
Dr. Lee A. Barclay
Field Supervisor
Fish and Wildlife Service
United States Department of the Interior
446 Neal Street
Cookeville, Tennessee 38501

U.S. Department of Transportation
Camille Mittleholtz
Environmental Team Leader
Office of Transportation Policy
U.S. Department of Transportation
Room 10309
400 7th Street, SW Room 10309
Washington DC 20590-0001

Potentially Affected States

Arkansas
Tracy L. Copeland
Manager, Arkansas State Clearinghouse
Office of Intergovernmental Services
Department of Finance and Administration
1515 W. 7th Street, Room 412
Little Rock, AR 72203

Colorado
The Honorable Bill Owens
Governor of Colorado
136 State Capitol Building
Denver, CO 80203-1792

Idaho
Kathleen Trever
Coordinator-Manager
INEEL Oversight Program
1410 North Hilton
Boise, ID 83706

Illinois
The Honorable Rod Blagojevich
Governor of Illinois
207 State Capitol Building
Springfield, IL 62706

Kansas
Ronald Hammerschmidt
Director, Division of Environment
Kansas Department of Health and Environment
1000 Southwest Jackson Street
Curtis Building, Suite 400
Topeka, KS 66612-1367

Kentucky
Alex Barber
KY Division for Environmental Protection
14 Reilly Road, Frankfort Office Park
Frankfort, KY 40601

Mississippi
Charles Chisolm
Executive Director
Mississippi Department of Environmental Quality
P.O. Box 20305
Jackson, MS 39289-1305

Missouri
Tom Lange
NEPA Coordinator
Missouri Department of Natural Resources
205 Jefferson Street
Jefferson City, MO 65101

Nebraska
Jay Ingenberg
Deputy Director, Programs
Department of Environmental Quality
P.O. Box 98922
Lincoln, NE 68509-8922

Nevada
Heather K. Elliott
Clearinghouse Coordinator
Department of Administration
Nevada State Clearinghouse
209 East Musser Street, Room 200
Carson City, NV 89701-4298

Oregon
The Honorable John A. Kitzhaber, M.D.
Governor of Oregon
900 Court Street, NE, Room 254
Salem, OR 97310-4047

Tennessee
The Honorable Phil Bredesen
Governor of Tennessee
Tennessee State Capital
Nashville, TN 37243-0001

Texas
Denise S. Francis
State Single Point of Contact
Texas Governor's Office of Budget and Planning
State Insurance Building
1100 San Jacinto, Room 2.114
P.O. Box 12428
Austin, TX 78711

Utah
Carolyn Wright
Department of Natural Resources
Center for Policy and Planning
1594 West North Temple, Suite 3710
PO Box 145610
Salt Lake City, UT 84114-5610

Washington
Barbara Ritchie
SEPA Unit Supervisor
Washington Department of Ecology
P.O. Box 47703
Olympia, WA 98504-7703

Wyoming
Julie Hamilton
State Clearinghouse Coordinator,
Wyoming Federal Land Policy Office
Herschler Building
First Floor, West Wing
Cheyenne, WY 82002

Paducah Area Public
Bill Paxton
Mayor of Paducah
PO Box 2267
Paducah, KY 42002

Danny Orazine
McCracken County Judge Executive
301 South 6th
Paducah, KY 42003

Wayne L. Davis
Kentucky Department of Fish and Wildlife Resources
#1 Game Farm Road
Frankfort, KY 40601

Tim Kreher
West KY Wildlife Management Area
10535 Ogden Landing Road
Kevil, KY 42053

Leon Owens
PACE International Union Local 50550
315 Palisades Circle
Paducah KY 42001

Carl Froede Jr., Remedial Project Manager
U.S. Environmental Protection Agency, Region 4
61 Forsythe Street
Atlanta, GA 30303

Paducah Public Library
555 Washington Street
Paducah, KY 42001

Tuss Taylor
KY Division for Waste Management
14 Reilly Road, Frankfort Office Park
Frankfort, KY 40601

Ms. Amanda Hawes
Envirocare of Utah, Inc.
46 West Broadway, Suite 116
Salt Lake City, Utah 84101

Mr. Scott Schneider
Hanford Nuclear Services, Inc.
28 Court Square
West Plains Missouri 65775

Mr. Christopher S. Pugsley, Esq.
Law Offices of Anthony J. Thompson, P.C.
1225 19th Street, NW
2nd Floor
Washington D.C. 20036

Mr. Kenneth P. Brooks
7255 State Route 13
Erin, Tennessee 37061

Mr. Andrew Smith
1755 Garland Road
Knoxville Tennessee 37922

Mr. Eric Scott
Radiation Health and Toxics Agents Branch
Cabinet for Health Services
MS HS2E-D
275 East Main Street
Frankfort, Kentucky 40621

Mr. Budd Haemer
Shaw Pittman LLP
2300 N Street Northwest
Washington DC 20037

Mr. Daniel Horner
McGraw-Hill Nuclear Publications
1200 G Street Suite 1100
Washington DC 20005

Mr. Jay Coghlan
Director
Nuclear Watch of New Mexico
551 West Cordova Road, Number 808
Santa Fe, New Mexico 87505-4100

Mr. Douglas S. Huston
Oregon Office of Energy
625 Marion Street, Northeast, Suite 1
Salem, Oregon 97301-3742

Ms. Susan K. Krenzien
NNSA/NV
Mailstop 505
Post Office Box 98518
Las Vegas, Nevada 89193-8518

Merryman Kemp
Paducah Citizens Advisory Board
309 N. 8th St.
Paducah, Kentucky 42001

Appendix B

Consultation Letters and Responses

Department of Energy

Oak Ridge Operations Office
P.O. Box 2001
Oak Ridge, Tennessee 37831—

May 1, 2003

Dr. Lee Barclay
Fish and Wildlife Service
United States Department of Interior
446 Neal Street
Cookeville, Tennessee 38501

Dear Dr. Barclay;

INFORMAL CONSULTATION UNDER SECTION 7 OF THE ENDANGERED SPECIES ACT FOR THE PROPOSED DISPOSITION OF ADDITIONAL WASTES AT THE PADUCAH SITE, PADUCAH, KENTUCKY

The United States Department of Energy (DOE) proposes to disposition several thousand cubic meters of additional waste at the Paducah Site. The additional waste proposed for disposition is non-hazardous waste currently stored on-site, primarily in DOE material storage areas.

DOE originally planned to continue storage of the additional waste until future decontamination and decommissioning activities in the analysis of the Environmental Assessment for Waste Disposition Activities at the Paducah Site, Paducah, Kentucky, DOE/EA-1339 approved in November, 2002. However, DOE would like to expedite disposition of this additional non-hazardous waste. DOE is currently characterizing the additional waste. Based on the results of characterization, DOE proposes to dispose of any waste on-site in the C-746-U Landfill that meets the waste acceptance criteria for the landfill. DOE anticipates waste that is not disposed onsite would be transported as low-level waste to commercial and DOE disposal facilities in a similar manner as analyzed in DOE/EA-1339.

DOE does not anticipate onsite treatment of the additional waste or any construction activities as a result of the proposed disposition activities. Removal of low-level waste currently stored outdoors would reduce the potential for spread of radionuclide contamination. On-site activities anticipated are packaging and loading of waste onto transport vehicles. Therefore, we feel that the biological assessment completed for the previous waste disposition activities is still appropriate and does not require revision for the proposed action.

This letter is intended to serve as informal consultation under the Endangered Species Act. In this regard, DOE requests an updated list of protected species or habitat on or near the project site and solicits your recommendations and comments about the potential

effects of this proposed action. Your input will be used in the preparation of an environmental assessment addendum for the action pursuant to the National Environmental Policy Act of 1969.

If you need further information on this request please do not hesitate to call me at (865) 576-0938

Sincerely,

James L. Elmore

James L. Elmore, Ph.D.
Alternate NEPA Compliance Officer

cc:
Gary Bodenstein, EM-98/PAD
David Tidwell, EM-98/PAD
Stan Knaus, LAN-CON, PAD

United States Department of the Interior

FISH AND WILDLIFE SERVICE
446 Neal Street
Cookeville, TN 38501

June 17, 2003

OFFICIAL FILE COPY
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Date Received JUN 19 2003
File Code

Mr. James L. Elmore, Ph.D.
U.S. Department of Energy
Oak Ridge Operations Office
P.O. Box 2001
Oak Ridge, Tennessee 37831

Post-it™ brand fax transmittal memo 7671	# of pages ▸ 2
To Gary Bodenstein	From Jim Elmore
Co. PAD-50	Co.
Dept.	Phone # 865-576-0938
Fax # 270-441-6801	Fax #

Dear Dr. Elmore:

Thank you for your letter of May 1, 2003, regarding the disposition of additional waste in the C-746-U landfill at the Paducah Gaseous Diffusion Plant (PGDP) in McCracken County, Kentucky. We previously submitted comments on the Environmental Assessment (EA) for the Proposed Disposition of Wastes at the Paducah Site (DOE/EA-1339). Under that proposed action, several thousand cubic meters of low-level, mixed low-level, and hazardous (PCB) waste, as well as 12 m^3 of transuranic waste, would be transported from the PGDP to eight Department of Energy (DOE) and commercial treatment and disposal facilities. Resource Conservation and Recovery Act waste would be shipped to the Toxic Substances Control Act incinerator at Oak Ridge, Tennessee. Annually, DOE would discharge 52 m^3 of low-level wastewater after on-site treatment at the PGDP to meet Kentucky Pollutant Discharge Elimination System permit requirements. Approximately 1800 m^3 of soil and debris containing some residual radioactivity, but meeting the waste acceptance criteria (WAC) for the on-site C-746-U landfill, would be disposed at the PGDP without treatment.

A conference call regarding that proposal was held between representatives of the Department of Energy (DOE) and U.S. Fish and Wildlife Service on August 16, 2002. In our September 20, 2002, conditional concurrence for the original EA and supplemental Biological Assessment, we requested that the following recommendations be implemented at the PGDP: (1) best available control technologies for inorganic and organic priority pollutants should be utilized for the on-site treatment and discharge(s) of project wastewater to Bayou Creek and Little Bayou Creek; (2) the proposed discharge(s) should be in compliance with existing warmwater aquatic habitat water quality criteria in Bayou Creek and Little Bayou Creek; and (3) the proposed discharge(s) should be included in the modeling procedures utilized by the Kentucky Division of Water for the development of the Total Maximum Daily Load for Little Bayou Creek.

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Since we have not received any communication from DOE regarding our previous comments, we are not aware that our recommendations were evaluated or considered for implementation. Additionally, we have not been afforded the opportunity to review the recently completed EA Addendum (DOE/EA-1339A) for this modification to the original project. U.S. Fish and Wildlife Service (Service) personnel have, however, reviewed the information submitted and offer the following comments for consideration.

According to our records, the following federally listed endangered species are known to occur near the PGDP:

Indiana bat	*Myotis sodalis*
orangefoot pimpleback	*Plethobasus cooperianus*
pink mucket	*Lampsilis abrupta*
ring pink	*Obovaria retusa*
fat pocketbook	*Potamilus capax*

Qualified biologists should assess potential impacts and determine if the proposed project modification may affect the species. We recommend that you submit a copy of your assessment and finding to this office for review and concurrence. A finding of "may affect" could require the initiation of formal consultation procedures.

These constitute the comments of the U.S. Department of the Interior in accordance with provisions of the Endangered Species Act (87 Stat. 884, as amended: 16 U.S.C. 1531 et seq.), the Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.), and the National Environmental Policy Act (42 U.S.C. 4321-4347; 83 Stat. 852). We appreciate the opportunity to comment. Should you have any questions or need further assistance, please contact Steve Alexander of my staff at 931/528-6481, ext. 210, or via e-mail at *steven_alexander@fws.gov*.

Sincerely,

Lee A. Barclay, Ph.D.
Field Supervisor

xc: Don Seaborg, DOE, Paducah
Wayne Davis, KDFWR, Frankfort
Tuss Taylor, KDEP, Frankfort
Jeff Pratt, KDOW, Frankfort

Department of Energy
Oak Ridge Operations
Paducah Site Office
P.O. Box 1410
Paducah, KY 42001

August 7, 2003

Dr. Lee A. Barclay
Field Supervisor
Fish and Wildlife Service
United States Department of Interior
446 Neal Street
Cookeville, Tennessee 38501

Dear Mr. Barclay:

RESPONSE TO INFORMAL CONSULTATION COMMENTS ON THE PROPOSED DISPOSITION OF ADDITIONAL WASTE AT THE PADUCAH SITE, MCCRACKEN COUNTY, KENTUCKY

This letter responds to points made in your correspondence dated June 17, 2003. Please be advised that the comments you referred to from your conditional concurrence of September 20, 2002, were addressed as appropriate in the *Environmental Assessment for Waste Disposition Activities at the Paducah Site, Paducah, Kentucky* (DOE/EA-1339). Specifically, please note that, as required by our Kentucky Pollutant Discharge Elimination System wastewater discharge permit, best available control technologies are used for treatment and discharges will continue to meet existing warm water aquatic habitat criteria. Your third point was that "the proposed discharges should be included in the modeling procedures utilized by the Kentucky Division of Water for the development of the Total Maximum Daily Load for Little Bayou Creek". The U.S. Department of Energy (DOE) has no control over modeling procedures used by the Division of Water.

Thank you for the information regarding federally listed endangered species known to occur near the Paducah Site. The enclosed Biological Assessment was prepared by qualified biologists to supplement the biological assessment prepared for DOE/EA-1339. The Biological Assessment encompasses the scope of activities proposed in the *Draft Environmental Assessment Addendum Disposition of Additional Waste at the Paducah Site* (DOE/EA-1339-A). The Biological Assessment concludes that there will be no adverse effect on these species or critical habitat of these species. Please review the Biological Assessment and provide to DOE as soon as possible a letter of concurrence regarding our no adverse affect determination.

If you have any questions or require additional information, please call me at (865) 576-0938.

Sincerely,

James L. Elmore

James L. Elmore, Ph.D.
Alternate NEPA Compliance Officer

Enclosure

cc w/o enclosure:
G. W. Bodenstein, EM-98
B. A. Bowers, LAN-CON/Kevil
S. E. Knauss, LAN-CON/Kevil
W. D. Tidwell, EM-98

United States Department of the Interior

FISH AND WILDLIFE SERVICE
3761 GEORGETOWN ROAD
FRANKFORT, KY 40601

September 8, 2003

Mr. James L. Elmore, Ph.D.
U.S. Department of Energy
Oak Ridge Operations Office
P.O. Box 2001
Oak Ridge, Tennessee 37831

Subject: FWS 03-1625; Biological Assessment for the Proposed Disposition of Additional Waste at the Paducah Site, McCracken County, Kentucky

Dear Dr. Elmore:

Thank you for your letter and enclosure of August 7, 2003, transmitting the Biological Assessment (BA) for the Proposed Disposition of Additional Waste at the Paducah Site. We have also reviewed the Environmental Assessment (EA) Addendum, Disposition of Additional Waste at the Paducah Site (DOE/EA-1339-A). Under the revised action, DOE proposes disposition of approximately 17,600 m^3 of low-level waste in addition to the 11,000 m^3 of various waste types analyzed in the original Waste Disposition EA (DOE/EA-1339). Under the original EA, several thousand cubic meters of low-level, mixed low-level, and hazardous (PCB) waste, as well as 10 m^3 of transuranic waste, would be transported from the Paducah Gaseous Diffusion Plant (PGDP) in McCracken County, Kentucky, to eight Department of Energy (DOE) and commercial treatment and disposal facilities. Annually, DOE would discharge approximately 52 m^3 of low-level wastewater after on-site treatment at the PGDP to meet Kentucky Pollutant Discharge Elimination System (KPDES) permit requirements.

The additional waste covered under this EA addendum would be transported in the same time frame, same manner, same representative locations, and same representative transportation routes described in the original EA. However, DOE anticipates that approximately 45% of the additional waste, approximately 7,600 m^3, would meet the Waste Acceptance Criteria (WAC) and could be disposed of in the on-site C-746-U landfill. In your March 8, 2002, transmittal of the pre-decisional draft EA, it is stated that "no waste streams proposed for disposition in this document are anticipated to be eligible for disposal at the C-746-U landfill."

Until characterization of the waste is complete, the amount that could be disposed on-site is not known. Therefore, the EA addendum analyzed the off-site transport of all of the additional 17,600 m^3 of low-level waste to approved disposal facilities. However, the EA addendum leaves open the possibility of ultimate disposal of a portion of the waste at the Paducah site. There remains considerable uncertainty as to exactly what is proposed under all of the

documentation for this project submitted to the Service since January 23, 2002, as well as additional waste disposal activities that could occur at the C-746-U landfill in the future. We believe that the public and agency stakeholders have no clear idea on what exactly constitutes the Federal action proposed by DOE and analyzed pursuant to the National Environmental Policy Act (42 U.S.C. 4321-4347; 83 Stat. 852) (NEPA) and Endangered Species Act (87 Stat. 884, as amended: 16 U.S.C. 1531 et seq.) (ESA). If 45% of the additional waste proposed for disposition under the EA addendum (~ 7,600 m^3) is ultimately disposed of on-site in the C-746-U landfill, this constitutes a substantial modification to the original proposal and associated BA with which we conditionally concurred with your finding of not likely to adversely affect.

Provided that the 17,600 m^3 of additional low-level waste covered under the EA addendum is transported off of the Paducah site for disposal in approved facilities, this BA and supporting information are adequate and support the conclusion of not likely to adversely affect, with which we concur. In view of this, we believe that the requirements of Section 7 of the Endangered Species Act (Act) have been fulfilled and that no further consultation is needed at this time. However, obligations under Section 7 of the Act must be reconsidered if: (1) new information reveals that the proposed action may affect listed species in a manner or to an extent not previously considered, (2) the proposed action is subsequently modified to include activities which were not considered in this biological assessment, or (3) new species are listed or critical habitat designated that might be affected by the proposed action. If this low-level waste is to be disposed of at the Paducah site, consultation pursuant to the Act must be reinitiated.

As characterization activities for the referenced wastes are completed, we would appreciate additional project information regarding the results of the waste analyses, methods utilized, and the location of the ultimate disposition of the wastes. If on-site disposal of the referenced wastes in the C-746-U landfill is proposed at some point in the future, then we believe that DOE will need to complete additional assessments pursuant to NEPA and ESA. That information should include a detailed description of the potential expansion or structural modifications to the C-746-U landfill, including the specific WAC, proposed leachate collection and treatment systems, and all proposed wastewater and stormwater discharges. We recommend that DOE provide a concise description of all waste disposal activities covered under the original C-746-U landfill EA, Authorized Limits EA, Waste Disposition EA, and this Waste Disposition EA Addendum, and that a logical, sequential linkage between the NEPA documents be established.

Since our concurrence with the findings in the original BA that was prepared in support of for the EA for the Proposed Disposition of Wastes at the Paducah Site (DOE/EA-1339) was also conditional, we must emphasize that your response outlined in this BA transmittal for the EA addendum did not contain specific detailed technical information regarding the best available control technologies (BACT) that would be utilized in the proposed on-site treatment of low-level wastewater. We are concerned that if additional wastes are permanently disposed in the C-746-U landfill, then there may be a need to treat additional on-site wastewater and that additional point source and stormwater discharges would likely be expected.

In our August 16, 2002, conference call regarding this project, DOE personnel stated that the 13,000 gallons of wastewater generated on a yearly basis was not low-level waste because the

wastewater did not include a radiological component. The EA addendum clearly states in Section 1.5, Waste Disposal, that "only the LLW water waste stream consisting of 52 m^3 (1836 ft^3) of waste would be treated and disposed on-site. The wastewater, which has some uranium contamination, would be treated until the KPDES limits had been met; this waste would then be discharged at a permitted on-site outfall." We also believe that this wastewater has the potential to contain PCB and other heavy metal components.

In your August 21, 2002, correspondence detailing routine activities carried out for KPDES permit compliance and DOE Order 5400.1, no discussion of BACT for additional discharges anticipated under the proposed waste disposition activities was included. Since there is a long history of documented exceedances of KPDES permit limits for routine discharges at the Paducah site and since toxicity to aquatic organisms has been demonstrated on numerous occasions, your statement that "discharges will continue to meet existing warm water aquatic habitat criteria" appears factually incorrect and not supported by a technical analysis of current and proposed additional wastewater discharges at the Paducah site.

As was the case with the original BA, an accidental spill of the waste during handling and transport activities was the only exposure scenario evaluated. We would appreciate technical information regarding any modifications to the existing KPDES permit for the Paducah site and the Total Maximum Daily Load (TMDL) for Little Bayou Creek. We are not aware that the KDOW has placed specific numeric criteria for metals, included uranium, in DOE's KPDES permit for the Paducah site.

These constitute the comments of the U.S. Department of the Interior in accordance with provisions of the Endangered Species Act (87 Stat. 884, as amended: 16 U.S.C. 1531 *et seq.*), the Migratory Bird Treaty Act (16 U.S.C. 703-711), the Fish and Wildlife Coordination Act (16 U.S.C. 661 *et seq.*), and the National Environmental Policy Act (42 U.S.C. 4321-4347; 83 Stat. 852). We appreciate the opportunity to comment. Should you have any questions or need further assistance, please contact Steve Alexander at 931/528-6481, ext. 210.

Sincerely,

Virgil Lee Andrews, Jr.

Virgil Lee Andrews, Jr.
Field Supervisor

xc: Carl Froede, EPA, Atlanta
Jeff Crane, EPA, Atlanta
Bill Starkel, FWS, Atlanta
Jeff Pratt, KDOW, Frankfort
Tuss Taylor, KDWM, Frankfort
Mike Guffy, KDWM, Frankfort
Tim Kreher, KDFWR, WKWMA
Wayne Davis, KDFWR, Frankfort

Department of Energy

Oak Ridge Operations Office
P.O. Box 2001
Oak Ridge, Tennessee 37831—

October 23, 2003

Mr. Virgil Lee Andrews, Jr., Field Supervisor
United States Department of Interior
Fish and Wildlife Service
3761 Georgetown Road
Frankfort, Kentucky 40601

Dear Mr. Andrews:

RESPONSE TO INFORMAL CONSULTATION COMMENTS (FWS 03-1625) ON THE PROPOSED DISPOSITION OF ADDITIONAL WASTE AT THE PADUCAH SITE, MCCRACKEN COUNTY, KENTUCKY

This correspondence is in response to your September 8, 2003, letter concerning the Biological Assessment for the Proposed Disposition of Additional Waste at the Paducah Gaseous Diffusion Plant (PGDP), in Paducah Kentucky. This letter expressed considerable uncertainty as to exactly what has been proposed under the various documents submitted to the Fish and Wildlife Service since January 23, 2002. In order to address this uncertainty the Department of Energy (DOE) prepared the enclosed crosswalk (Enclosure 1). In addition, enclosed please find a copy of each document prepared under the National Environmental Policy Act (NEPA) concerning waste disposition activities at the C-746-U Landfill, as well as off-site shipments of waste, from the PGDP.

Another expressed concern was the proposed disposition of 7,900 m^3 of waste into the C-746-U Landfill as described in the Environmental Assessment (EA) Addendum for Disposition of Additional Waste at the Paducah Site (DOE/EA-1339-A). In order for this 7,900 m^3 of waste to be disposed in the C-746-U Landfill it must meet the Waste Acceptance Criteria for on-site disposal in this landfill. As stated in the March 1995 Environmental Assessment for the Construction, Operation, and Closure of the C-746-U Landfill (DOE/EA-1046), this landfill was constructed to accept nonhazardous, nonradioactive solid waste. "Residential type" waste containing cardboard, paper, canteen (cafeteria) waste, plastic, and glass is accepted, as well as "construction/demolition debris" which consists of small quantities of wood, metal materials, and construction debris (building materials, asbestos-containing material, concrete, bituminous concrete (asphalt), masonry, wood scrape, and fly ash). Neither off-site waste, free liquids nor hazardous waste is or will be accepted for disposal. This EA did not specifically discuss the acceptance of materials containing residual radioactivity, although it did correctly specify that radioactive waste would not be accepted at the C-746-U Landfill.

In August of 2002, DOE developed the Final Environmental Assessment on the Implementation of the Authorized Limits Process for Waste Acceptance at the C-746-U Landfill (DOE/EA-1414). At this time, DOE proposed to implement the authorized limits process for determining the acceptability of waste containing low levels of residual radioactive material for disposal in this landfill. In essence, the authorized limits are selected and approved by DOE on the basis of an assessment under the ALARA (As Low As Reasonably Achievable) process to optimize the balance between risks and benefits including costs and collective doses and to ensure that the dose equivalent to individual members of the public is less than 25 millirem in a year. The authorized limits are evaluated to ensure that groundwater will be protected in a manner consistent with applicable State regulations and guidelines, and to ensure that the release of the disposal facility property would not be expected to require remediation under applicable requirements, including Resource Conservation and Recovery Act (RCRA), and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). In addition, waste containing residual radioactive materials below approved authorized limits would not require radiological control under the Atomic Energy Act of 1954, as amended (AEA) and would not be considered low-level radioactive waste.

In November of 2002, DOE issued a Finding of No Significant Impact for Waste Disposition Activities at the PGDP (EA DOE/EA-1339). The wastes considered in this EA were limited to DOE's on-going and legacy non-CERCLA waste management operations at the PGDP. These wastes included Low Level Waste, Mixed Low Level Waste, and Transuranic Waste, as well as materials stored in DOE Material Storage Areas (DMSAs). Also included is storage of United States Enrichment Corporation (USEC) program wastes, which are characterized as one or more of the waste types. Wastes not covered are those associated with the CERCLA activities, including decontamination and decommissioning, activities and disposition of wastes associated with the USEC operational activities. This action included waste disposition activities such as storage, on-site treatment, waste transport to off-site treatment and disposal facilities, waste management supporting activities, and DMSA waste characterization.

In July of 2003, DOE Public Noticed an EA Addendum for Disposition of Additional Waste at the PGDP (DOE/EA-1339-A). This EA proposed to dispose of approximately 17,600 m^3 of material in addition to the 11,000 m^3 of waste analyzed in the November 2002 Waste Disposition EA (DOE/EA-1339). Disposition activities for this additional waste include characterization, storage, packaging, loading, and shipping waste to disposal locations. The majority of this material is currently stored in the 160 DMSAs. It is anticipated that approximately 7,900 m^3 of this material could be disposed of in the C-746-U landfill if it meets the waste acceptance criteria as establish in the Authorized Limits EA (DOE/EA-1414) and the Construction, Operations and Closure EA (DOE/EA-1046). The waste which does not meet the waste acceptance criteria will be transported off-site for final disposition. Again, no restricted waste (i.e. low-level radioactive or hazardous waste) will be placed in the C-746-U Landfill.

Your correspondence expressed concern whether appropriate NEPA review had been conducted for acceptance of the waste from DMSAs and any modification and expansion of the C-746-U Landfill. The construction, operations and closure of the C-746-U Landfill is covered in the March 1995 EA (Environmental Assessment for the Construction, Operation, and Closure of the Solid Waste Landfill at the Paducah Gaseous Diffusion Plant, DOE/EA-1046). This landfill will have a final capacity of 1.5 million yd^3 that will cover approximately 25 acres of the 60-acre site. In addition, sedimentation basins and other supporting areas were developed on another 25 acres. At this time, no modifications or expansion are anticipated beyond those described in the construction EA. Even if the entire 17,600 m^3 of waste met the waste acceptance criteria, inclusion of this amount in the landfill would not exceed the final capacity. Therefore the analysis in that EA (DOE/EA-1046) is still valid and additional NEPA review is not required.

You asked for specific detailed technical information regarding best available control technologies (BACT) for wastewater discharge because additional waste disposed in the on-site landfill will generate additional wastewater and additional point source and storm water discharges may occur. DOE previously responded that the BACT for the Paducah Site discharges were analyzed by the Kentucky Division of Water (KDOW) during the issuance of the current Kentucky Pollutant Discharge Elimination System (KPDES) wastewater discharge permit. Discharge of wastewater from operation of the landfill was analyzed in the EA for construction, operation and closure of the C-746-U Landfill (DOE/EA-1046). DOE does not anticipate any additional wastewater discharges other than those described in the EA. DOE suggests you contact KDOW for further information on BACT utilized in preparation of the existing wastewater discharge permit.

You expressed concern that wastewater treated may contain polychlorinated biphenyl (PCB), uranium, and heavy metals. In accordance to the KPDES Permit (KY0004049), the PGDP is required to monitor and report PCBs (monthly), uranium (quarterly) and total recoverable metals (quarterly). Monitoring results obtained each month must be reported on a preprinted Discharge Monitoring Report to the KDOW. In addition this Permit contains provisions for chronic/acute biomonitoring. For chronic biomonitoring, PGDP performs once per quarter a short term fathead minnow (*Pimephales promelas*) growth test and one short-term daphnid (*Ceriodaphnia sp.*) life-cycle test for Outfall 001. For acute biomonitoring PGDP performs once a quarter a 48 hour static toxicity test with *Ceriodaphnia sp.* and a 48-hour static toxicity test with fathead minnow (*Pimephales promelas*) for Outfalls 015, 017 and 019. The current KPDES permit expired in April of 2003, however, the operating conditions set forth in this permit are valid until the KDOW issues a new Permit. DOE forwarded a permit application to the KDOW on September 19, 2002, and amended this application on May 23, 2003. The monitoring requirements did not change in the application.

If you have any questions or desire further information, please call me at (865) 576-0938. Otherwise, please provide us with a response indicating whether this additional information, along with the Biological Assessment and supporting information are adequate and support the conclusion that Section 7 of the Endangered Species Act has been fulfilled and no further consultation is needed.

Sincerely,

James L. Elmore, Ph.D.
Alternate NEPA Compliance Officer

Enclosures

cc w/o enclosures:
G. W. Bodenstein, EM-98
W. David Tidwell, EM-98
S. E. Knaus, LAN-CON/Paducah

Enclosure 1 NEPA Document Summary Of Waste Disposition Activities.

NEPA document	Waste Activity	Waste Type	Why prepared
Environmental Assessment for the Construction, Operation, and Closure of the Solid Waste Landfill at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky, DOE/EA-1046, March, 1995	The landfill is used for disposal of on-site wastes only.	Residential, Construction/demolition debris, Non-hazardous, Non-radioactive	The original landfill EA covered the construction, operation, and closure of the C-746-U landfill. DOE prepared the EA because the old landfill was full and was being closed.
Environmental Assessment on the Implementation of the Authorized Limits Process for Waste Acceptance at the C-746-U Landfill, Paducah Gaseous Diffusion Plant, Paducah, Kentucky, DOE/EA-1414, August, 2002	Waste with radioactive content up to the authorized limits for on-site disposal.	Waste with residual radiation (not low level).	All wastes contain some level of radioactivity. This EA covers the change in the method used to determine the waste acceptance criteria used to decide which wastes can be disposed of in the C-746-U landfill.
Environmental Assessment for Waste Disposition Activities at the Paducah Site, Paducah, Kentucky, DOE/EA-1339, November 2002	This EA covered review of ongoing routine waste operations and off site disposal of hazardous waste. This included characterization of waste in DOE Material Storage Areas.	RCRA hazardous, TSCA regulated, Low-Level (LLW), Mixed Low Level (MLLW), Transuranic	NEPA review of ongoing routine waste operations and off site disposal of waste that does not meet the waste acceptance criteria for the on-site landfill. The EA does not cover waste from CERCLA actions or large new projects.
Environmental Assessment Addendum for Disposition of Additional Waste at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky DOE/EA-1339-A	Waste disposition analyzed is non-hazardous, low-level waste currently stored in DOE Material Storage Areas. The waste would be shipped off-site. (*Non-hazardous, non radioactive waste disposed on-site is covered by DOE/EA-1046 and DOE/EA-1414*)	Additional Low-Level Non-hazardous	The original EA (DOE/EA-1339) did not include the substantial volume of waste from DOE Material Storage Areas. Disposal of this waste was a D&D CERCLA action, but DOE decided to expedite removal rather than wait for D&D under CERCLA.

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
3761 GEORGETOWN ROAD
FRANKFORT, KY 40601

November 24, 2003

Mr. James L. Elmore, Ph.D.
U.S. Department of Energy
Oak Ridge Operations Office
P.O. Box 2001
Oak Ridge, Tennessee 37831

Subject: FWS 04-0245; Clarification of Informal Consultation Comments for the Proposed Disposition of Additional Waste at the Paducah Site, McCracken County, Kentucky

Dear Dr. Elmore:

This correspondence is in response to your October 23, 2003, letter questioning the need for further consultation for the Proposed Disposition of Additional Waste at the Paducah Site, McCracken County, Kentucky. Your letter was in response to our letter of September 8, 2003, which expressed our concerns for the proposed use of, and potential impacts of, (a) the onsite C-746-U landfill; (b) onsite wastewater generation and proposed on-site treatment of low-level wastewater, and additional point source and stormwater discharges likely generated from the landfill; and (c) issues related to the KPDES permit, including adequacy of toxicity monitoring and analytical criteria. Thank you for the additional information provided in your letter. We will consider this information in our future involvement on this site.

Based on the additional information submitted and our subsequent discussions with you, we reiterate our concurrence as stated in our September 8, 2003, letter:

> Provided that the 17,600 m^3 of additional low-level waste (LLW) (as is currently characterized) is transported off-site for disposal at approved facilities, we concur with the not likely to adversely affect determination.

Otherwise, if the 17,600 m^3 of additional LLW is characterized and separated, only non-LLW/non-hazardous waste may be disposed of in the C-746-U landfill and LLW/hazardous waste transported off-site for disposal at approved facilities without further consultation with the Fish and Wildlife Service (Service). Onsite treatment and/or onsite disposal of additional LLW and/or any hazardous waste (i.e., any non-LLW hazardous waste) will require additional consultation to fulfill the requirements of Section 7 of the Endangered Species Act (Act). Additionally, obligations under Section 7 of the Act must be reconsidered if: (1) new information indicates that the proposed action may affect listed species in a manner or to an extent not previously considered, (2) the proposed action is subsequently modified to include activities

which were not considered in the Biological Assessment, or (3) new species are listed or critical habitat designated that might be affected by the proposed action.

These constitute the comments of the U.S. Department of the Interior in accordance with the provisions of the Endangered Species Act (87 Stat. 884, as amended: 16 U.S.C. 1531 *et seq.*), the Migratory Bird Treaty Act (16 U.S.C. 703-711), the Fish and Wildlife Coordination Act (16 U.S.C. 661 *et seq.*), and the National Environmental Policy Act (42 U.S.C. 4321-4347; 83 Stat. 852). We appreciate the opportunity to comment. Should you have any questions or need further assistance, please contact Anthony Velasco at 502/695-0468 x.225.

Sincerely,

Virgil Lee Andrews, Jr.

Virgil Lee Andrews, Jr.
Field Supervisor

xc: Carl Froede, EPA, Atlanta
Jeff Crane, EPA, Atlanta
Bill Starkel, EPA, Atlanta
Jeff Pratt, KDOW, Frankfort
Tuss Taylor, KDWM, Frankfort
Mike Guffy, KDWM, Frankfort
Tim Kreher, KDWM, Frankfort
Wayne Davis, KDFWR, Frankfort

Appendix C

Biological Assessment

Endangered Species Act

BIOLOGICAL ASSESSMENT
For
Waste Disposition Activities at the Paducah Site
McCracken County, Kentucky

August 1, 2003

U.S. Department of Energy
Oak Ridge Operations Office
Oak Ridge, TN

SUMMARY

The U.S. Department of Energy (DOE) completed an *Environmental Assessment for Waste Disposition Activities at the Paducah Site, Paducah, Kentucky,* (DOE 2002) (Waste Disposition EA), including a Biological Assessment for Waste Disposition Activities in Appendix F of the document, and issued a Finding of No Significant Impact on November 4, 2002. The Waste Disposition EA analyzed disposition of approximately 11,000 m^3 of various wastes. At the time of issuance of the Waste Disposition EA, DOE anticipated that the removal of remaining waste and materials stored on-site would be conducted as decontamination and decommissioning (D&D) activities under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980.

DOE subsequently decided to proceed with disposition of additional waste and materials in a timelier manner under the authority of the Atomic Energy Act, rather than waiting until D&D occurs. To support this decision, DOE has prepared an *Environmental Assessment Addendum for Disposition of Additional Waste at the Paducah Site* (DOE 2003) (Waste Disposition EA Addendum) to supplement the previously prepared Waste Disposition EA. This Biological Assessment for Waste Disposition Activities at the Paducah Site (Waste Disposition BA) has been prepared to assess impacts to federally listed species from activities in the EA and EA addendum.

The Waste Disposition BA evaluates potential impacts on federally listed animal species that could result from the implementation of the revised proposed action. The species considered in this Waste Disposition BA are the endangered Indiana bat and the following mussel species: orangefoot pimpleback, pink mucket, ring pink, and fat pocketbook as identified in a letter from the U.S. Fish and Wildlife Service (FWS) to the DOE, dated June 17, 2003 (FWS 2003).

DOE concludes, for the reasons described in the main text of this Waste Disposition BA, that the revised proposed action is not likely to affect these species adversely. In addition, since no proposed or designated critical habitats are present on, or near, the locations where activities would occur, none would be affected.

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ACRONYMS

BA	Biological Assessment
BJC	Bechtel Jacobs Company LLC
DMSA	DOE Material Storage Area
DOE	U.S. Department of Energy
EA	Environmental Assessment
FWS	U.S. Fish and Wildlife Service
KDFWR	Kentucky Department of Fish and Wildlife Resources
KPDES	Kentucky Pollutant Discharge Elimination System
KSNPC	Kentucky State Nature Preserves Commission
LLW	low-level waste
MLLW	mixed low-level waste
NFA	no further action
PCB	polychlorinated biphenyl
RCRA	Resource Conservation and Recovery Act of 1976
TRU	transuranic
WKWMA	West Kentucky Wildlife Management Area

1. INTRODUCTION AND PROJECT DESCRIPTION

The U.S. Department of Energy (DOE)-Oak Ridge Operations has various waste types located at the Paducah Site that must undergo disposition activities. Disposition activities evaluated in the Waste Disposition EA include waste storage, sampling, characterization, packaging, surveillance, on-site and/or off-site treatment, transportation, and disposal, as well as other activities performed to support these tasks. Examples of supporting activities include vehicle fueling, facility maintenance, and storage container inspections.

The Waste Disposition EA Addendum describes and evaluates potential impacts associated with the revised proposed action. The revised proposed action description states that DOE proposes to disposition 17,600 m^3 of additional waste. This volume is in addition to the 11,000 m^3 of various waste types analyzed in the Waste Disposition EA and results in a total of 28,600 m^3 of waste and material. Disposition activities for the additional waste and material are identical to the disposition activities defined and analyzed in the Waste Disposition EA and include characterization, storage, packaging, handling, and shipping wastes to disposal locations. No new on-site activities are anticipated for the revised proposed action. All waste would be transported in the same timeframe, same manner, same representative locations, and same representative routes as described in the Waste Disposition EA.

Most of the additional waste and material described in the revised proposed action is currently stored in approximately 160 DOE Material Storage Areas (DMSAs) at the Paducah Site. DOE anticipates that characterization of the waste and material would occur over a 10-year period. Upon completion of characterization, wastes would be dispositioned intermittently throughout the 10 years.

1.1 WASTE STORAGE

Under the revised proposed action, all waste and material would be stored at the Paducah Site until scheduled for treatment, disposal, or transport. Existing facilities will be used for waste storage.

1.2 WASTE TREATMENT – ONSITE

On-site treatment applies to approximately 200 m^3 (7060 ft^3) of the total waste volume. Onsite treatment includes up to 120 m^3 (4238 ft^3) of mixed low-level waste (MLLW) solids, 12 m^3 (424 ft^2) of ^{99}Tc-contaminated MLLW, and 10 m^3 (353 ft^2) of TRU waste. On-site treatment technologies are limited by the Paducah Site Resource Conservation and Recovery Act of 1976 (RCRA) Part B permit. RCRA-permitted on-site treatment technologies include sedimentation, precipitation, oxidation, reduction, neutralization, cementation/solidification, carbon adsorption, photocatalytic conversion, and lime precipitation. Currently, only neutralization, stabilization, carbon adsorption, and photocatalytic conversion are planned on-site. These are the only technologies discussed in subsequent sections because they are the ones applicable to the waste types presented. Building C-752-A has been proposed as the site for processing any on-site

waste that needs to be treated indoors. Building C-746A is the proposed location for light bulb crushing.

Approximately 52 m^3 (1836 ft^3)/year of low-level waste (LLW) wastewater would also be treated on-site. Wastewater would be treated on-site by carbon adsorption, photocatylic conversion, and/or lime precipitation. These treatment activities would be compliant with the applicable Kentucky Pollutant Discharge Elimination System (KPDES) permit(s).

1.3 WASTE TREATMENT – OFFSITE

DOE's revised proposed action for off-site treatment varies by waste type. The characteristics of the waste govern where and how each waste type may be treated. The preferred treatment scenario for each type of currently known waste is listed below.

Fifty metric tons of capacitors containing polychlorinated biphenyls (PCBs) are proposed for shipment to Deer Park, Texas, for treatment and disposal. The capacitors would be shipped in 23 7A, Type A containers. Thirteen empty transformers weighing 78 metric tons would be shipped for off-site treatment and disposal as well. These transformers contain some residual PCB contamination.

The 5355 m^3 (189,110 ft^3) of MLLW addressed in the revised proposed action represents a very heterogeneous grouping of wastes; most of this waste will be treated and disposed at off-site, permitted facilities. A small portion contains PCBs, metals, and organics, and it is proposed that they be treated at the DOE Toxic Substances Control Act of 1976 Incinerator in Oak Ridge, Tennessee.

1.4 WASTE TRANSPORTATION

The representative truck and rail routes previously identified in the Waste Disposition EA are applicable to the revised proposed action. However, the projected number of waste shipments has changed from the previously analyzed shipment rate of 762 shipments per year. The 17,600 m^3 of additional waste and materials would be transported in shipments of 18.2m^3 each. Assuming the disposition of additional waste takes place over 10 years, which is consistent with the Waste Disposition EA analysis assumptions, a resulting additional shipment rate of 97 shipments per year is projected. Therefore, the revised annual shipment rate for waste shipments would include the original 762 shipments analyzed in the Waste Disposition EA, and the 97 additional shipments included in the Waste Disposition EA Addendum, resulting in 859 waste shipments per year for 10 years.

Waste will generally be transported by truck but may also be transported by rail or intermodal carrier when advantageous. DOE currently anticipates that the waste would be disposed primarily at the DOE Nevada Test Site although disposition at the Hanford Site and commercial facilities, such as Envirocare of Utah, Inc. and Waste Control Specialists, LLC in Texas, are also analyzed as possible locations.

1.5 WASTE DISPOSAL

DOE's revised proposed action for waste disposal varies by waste type. The characteristics of the waste govern where and how each waste type may be disposed. The volume of wastes to be transported from the Paducah Site to each proposed receiving facility represents only a small portion of the total waste each facility receives annually. For example, it has been proposed that approximately 3750 m^3 (132,430 ft^3) of radiological PCB wastes be shipped to the Envirocare facility in Utah over the 10-year evaluation period resulting in an average of 375 m^3 (13,243 ft^3) per year. The Envirocare facility annually receives 9061 m^3 (320,000 ft^3) of waste; therefore, the annual Paducah Site shipment will represent less than 5 percent of the facility's capacity in any given year. The preferred alternative for each waste type is listed below.

Capacitors containing PCBs are proposed for shipment to Deer Park, Texas, for treatment and disposal. Thirteen empty transformers would be shipped for off-site treatment and disposal as well. These transformers contain some residual PCB contamination.

Approximately 4600 m^3 (60,166 yd^3) of LLW would be disposed, primarily at the Nevada Test Site. Only the LLW water waste stream consisting of 52 m^3 (1836 ft^3) of waste would be treated and disposed on-site. The wastewater, which has some uranium contamination, would be treated until the KPDES limits had been met; this waste would then be discharged at a permitted on-site outfall. In addition to these wastes, there are 22 T-Hoppers (5-ton containers) of UF4 stored at the site. If it is determined that this material is a waste, it would likely be shipped as a LLW to the Nevada Test Site.

Some MLLW would be shipped to Envirocare for treatment and disposal. Approximately 160 m^3 (5650 ft^3) would be shipped to one or more of the Broad Spectrum Contractors (i.e., Waste Control Specialists LLC, Andrews, Texas; Allied Technology Group, Richland, Washington; Materials and Energy/Waste Control Specialists, Oak Ridge, Tennessee).

Approximately 10 m^3 of transuranic (TRU) liquids and solids are proposed for treatment on-site and shipment to the TRU Waste Program at Oak Ridge National Laboratory for ultimate disposition. Impacts associated with further processing and shipment to the Waste Isolation Pilot Plant near Carlsbad, New Mexico, are addressed in the final environmental impact statement for treating TRU and alpha LLW (DOE 2001a).

1.6 SUPPORTING ACTIVITIES

The revised proposed action for supporting waste disposition activities is to perform these activities in accordance with DOE orders, federal and state regulations, and approved Bechtel Jacobs Company LLC (BJC) or BJC subcontractor procedures. These activities are performed mainly during waste management and maintenance at the Paducah Site. Applicable procedures are implemented to ensure that activities are performed in a safe and accountable manner. Examples of supporting activities include, but are not limited to, the following:

- waste staging,
- on-site waste movement,
- packaging/repackaging,
- sorting,
- waste container decontamination,
- inspection,
- marking/labeling,
- characterization, and
- facility modifications or upgrades.

2. STATUS AND BIOLOGY OF THE LISTED SPECIES

As reported in the Biological Assessment (BA) for the *Paducah C-746-U Landfill Implementation of the Authorized Limits Process* (DOE 2001), informal consultations regarding the Indiana bat (*Myotis sodalis*) were conducted in May 2001 with the U.S. Fish and Wildlife Service (FWS), Kentucky Department of Fish and Wildlife Resources (KDFWR), and the Kentucky State Nature Preserves Commission (KSNPC) to ascertain the potential presence of any listed species. The FWS identified the Indiana bat as a Federally endangered species that could potentially occur near the site (FWS 2001). The Indiana bat is also listed as an endangered species by the Commonwealth of Kentucky. The KSNPC reported an occurrence of the Indiana bat in McCracken County (2000), but not at the Paducah site (DOE 2001a). This reported occurrence in McCracken County, a result of mist netting, was made in June 1991 and was on West Kentucky Wildlife Management Area (WKWMA) land in the Joppa Quadrangle near the Shawnee Steam Plant (Hines 2001). More recently, five individuals of the Indiana bat, *Myotis sodalis*, were captured in riparian hardwood habitat of the lower downstream reaches of Bayou Creek in the WKWMA during mist netting surveys in 1999 (KDFWR 2000). These locations were to the north of the Paducah Site. No mist net surveys have been conducted within the Paducah Site fence.

The KSNPC also reported the presence of the orange-footed pimpleback (*Plethobasus cooperianus*), pink mucket pearly mussel (*Lampsilis arbrupta)*, ring pink (*Obovaria retusa*), fat pocketbook (*Potamilis capax*) in the vicinity of Ohio River miles 945 through 949. Most recent observations of these species in the area occurred between 1992 and 1999 (KSNPC 2000).

As a result of these sightings, DOE has prepared this BA considering potential impacts of the revised proposed action to the Indiana bat, orange-footed pimpleback, pink mucket pearly mussel, ring pink, and fat pocketbook.

2.1 INDIANA BAT (MYOTIS SODALIS)

The general ecology of the Indiana bat is summarized as follows. Unless otherwise noted or referenced, general biological information on the species is derived from Harvey (1992 and 1999) and Webb (2000).

The range of the endangered Indiana bat is the eastern United States from Oklahoma, Iowa, and Wisconsin east to Vermont and south to northwestern Florida. Distribution is associated with major cave regions and areas north of cave regions. The present total population is estimated at ca. 352,000 with more than 85 percent hibernating at only nine locations - two caves and a mine in Missouri, three caves in Indiana, and three caves in Kentucky.

Indiana bats forage in and around tree canopies of floodplain, riparian, and upland forest. In riparian areas, Indiana bats primarily forage around and near riparian and floodplain trees (e.g., sycamore, cottonwood, black walnut, black willow, and oaks), and solitary trees and the forest edge on the floodplain. Streams, associated floodplain forests, and impounded bodies of water (e.g., ponds, wetlands, and reservoirs) are the preferred foraging habitat for pregnant and lactating Indiana bats, some of which may fly up to 1.5 miles from upland roosts. Indiana bats also forage within the canopy of upland forests, over clearings with early successional vegetation (e.g., old fields), along the borders of croplands, along wooded fencerows, and over farm ponds in pastures. Indiana bats return nightly to their foraging areas. Indiana bats feed strictly on flying insects and their selection of prey items reflects the environment in which they forage. Both aquatic and terrestrial insects are consumed. Moths, caddisflies, flies, mosquitoes, and midges are major prey items. Other prey include bees, wasps, flying ants, beetles, leafhoppers, and treehoppers.

Indiana bats hibernate in limestone caves from October to April, depending upon climatic conditions. Indiana bats usually hibernate in large, dense clusters of up to several thousand individuals in sections of the hibernation cave where temperatures average 38 to 43°F and with relative humidities of 66 to 95 percent. Bat clusters may contain 300 to 384 bats per square foot. The bats leave the caves and migrate to summer roosts in mid-spring.

Summer roosting-habitat criteria for Indiana bats are frequently revised as more is discovered about this species' habits. The most recent information applicable for the region is available from the FWS Cookeville Office (Components of Suitable Habitat for the Endangered Indiana Bat). In general, Indiana bats establish summer maternity and sometimes male night roosts or bachelor colonies under the loose bark of large, usually hardwood trees (> 20 cm diameter). Indiana bats have been observed to return to the same roosting and foraging habitat year after year. Indiana bats forage at night and feed on insects.

Female Indiana bats depart the caves before the males and arrive at summer maternity roosts in mid-May. A single offspring, born in June, is raised by the mother under loose tree bark, primarily in wooded streamside habitat. Mothers and babies reside

in maternity colonies that use multiple, primary roost trees throughout most of the summer. Secondary roosts are used intermittently by some of the bats, particularly during periods of extreme precipitation or extreme temperatures. Thus, there may be more than a dozen roosts used by some Indiana bat colonies. Kurta et al. (1996) found that female Indiana bats may change roosts about every three days, and a group of these bats may use more than 17 different trees in a single maternity season. They depart the summer roosts for hibernation caves in September. The summer roost of the adult males is often near the maternity roost, although a few males do stay in caves over the summer.

In 1974 the first maternity colony was discovered under the loose bark of a dead butternut hickory tree in east-central Indiana. The colony numbered about 50 individuals and also used an alternate roost under the bark of a living shagbark hickory tree. The total foraging range of the colony consisted of a linear strip along approximately 0.5 miles of creek. Foraging habitat was confined to air space from 6 ft to ca. 95 ft high near the foliage of streamside and floodplain trees. Two additional colonies were discovered during subsequent summers, also in east-central Indiana. These had estimated populations of 100 and 91 respectively, including females and pups. Habitat and foraging areas were similar to the first colony discovered. Evidence gathered during recent years indicates that, during summer, Indiana bats are widely dispersed in suitable habitat throughout a large portion of their range. Additional maternity colonies have been discovered using radiotelemetry techniques in more recent years. Data thus far reinforce the belief that floodplain forest is an important habitat for Indiana bat summer populations. However, colonies have been located in upland and in coniferous habitats as well.

A longevity record of 13 years and 10 months has been recorded for the Indiana bat. Hibernating bats leave little evidence of their past numbers; thus, it is difficult to calculate a realistic estimate of the population decline for this species. However, population estimates at major hibernacula indicated a 34 percent decline in the total Indiana bat population from 1983 to 1989.

2.2 PINK MUCKET PEARLY MUSSEL (*LAMPSILIS ARBRUPTA* SAY-1831; ALSO CALLED *L. ORBICULATA* HILDRETH-1828) (Conservation Management Institute 2001, EPA 2001)

The Federally endangered pink mucket pearly mussel (41 FR 24062; June 14, 1976) is a bivalve aquatic mollusk in the Unionidae family with an elliptical-shaped shell. The species is generally about 10.2 cm (4 inches) long, 6.1 cm (2.4 inches) wide, and 7.6 cm (3 inches) high. The valves are heavy and thick. The species is sexually dimorphic, with both males and females having rounded anterior margins, but males having a pointed posterior margin and females a truncated, expanded posterior to accommodate the gravid condition. Young mussels have a yellow to brown shell that is smooth and glossy with green rays, while older specimens are dull brown. The nacre color varies from white to pink, with the posterior margin being iridescent.

The early life stage of the mussel, glochidium, is an obligate parasite on the gills or fins of fish, but the required fish host species are unknown. The adult mussels are filter feeders and consume particulate matter that is suspended in the water column.

Identifiable stomach contents from mussels invariably include mud, desmids, diatoms, protozoa, and zooplankton. However, studies on the food habits for this species have not been conducted, so its specific food requirements are not known. The species has no known commercial value. The reproductive cycle of the pink mucket is presumed to be similar to that of other freshwater mussels. Males release sperm into the water column, which is then taken up by the females during siphoning and results in the eggs being fertilized. The embryos develop into the glochidia inside the female and are then released into the water column. The glochidia must then attach to suitable fish hosts for metamorphosis to the free-living juvenile stage. There is no information on the population biology of this species.

The pink mucket is found in medium to large rivers. It seems to prefer larger rivers with moderate- to fast-flowing water, at depths from 0.5 to 8.0 m (1.6 to 26.2 ft). The species has been found in substrates including gravel, cobble, sand, or boulders. Silt clogs the species' siphon, so silty substrates and water columns are not conducive to the species being present. Habitat of the glochidia is initially within the gills of the female, then in the water column, and finally attached to a suitable fish host. Habitat requirements for the juvenile stage are unknown. Any alteration of the life-stage-specific habitats during the pink mucket's lifecycle would likely affect the long-term success of a population. In addition, impoundments and surface water contaminants are known to adversely affect this species and contribute to its decline in numbers.

Currently, the pink mucket is known in 16 rivers and tributaries from seven states, with the greatest concentrations in the Tennessee (Tennessee, Alabama) and Cumberland (Tennessee, Kentucky) rivers and in the Osage and Meramec rivers in Missouri. Smaller populations have been found in the Clinch River (Tennessee); Green River (Kentucky); Ohio River (Illinois); Kwanawha River (West Virginia); Big Black, Little Black, and Gasconde rivers (Missouri); and Current and Spring rivers (Arkansas).

2.3 ORANGEFOOT PIMPLEBACK (*PLETHOBASUS COOPERIANUS*) (IDNR 2001)

The Federally endangered orangefoot pimpleback mussel (a.k.a orangefoot pearly mussel) is a bivalve aquatic mussel in the Unionidae family with a round-shaped shell. The shell is thick, moderately inflated to compressed, and contains pustules on the posterior three-fourths of the shell. The anterior end of the shell is rounded whereas the posterior end is rounded to bluntly pointed. The mussel is light brown in color in small specimens, becoming chestnut or dark brown in color in larger individuals. The beak cavity is very deep. The nacre is white, usually with pink or salmon tinge near the beak cavity. Length ranges up to 4 inches (10.2 cm). The foot of living specimens is orange in color.

Specific reproductive or other life history information for this species was not found in the literature. However, the reproductive cycle is presumed to be similar to that of other freshwater Unionidae mussels, as previously described for the pink mucket pearly mussel.

The orangefoot pimpleback mussel prefers large rivers with gravel or mixed sand and gravel substrates. This species does not tolerate silty conditions.

Information on this species' historical range was not found in the literature by searching the Internet using the keywords "orangefoot pimpleback." Current range of this species includes the Ohio River in reaches adjacent to Ohio, Indiana, Illinois, and Kentucky.

2.4 RING PINK (OBOVARIA RETUSA)

The ring pink mussel was listed as an endangered species without critical habitat on September 29, 1989 (54 FR 40109). The FWS (FWS 1991) formerly referred to this mussel as the golf stick pearly mussel. The ring pink mussel is one of the most endangered mussels because all of the known populations are apparently too old to reproduce. The ring pink has a medium to large shell that is ovate to subquadrate in outline. The exterior of the shell lacks rays and is yellow-green to brown in color, while older specimens are usually darker brown or black. The nacre of the shell is usually salmon to deep purple in color surrounded by a white border.

The food habits of this species are unknown, but it likely feeds on detritus, diatoms, phytoplankton, and zooplankton. These food items are common for most freshwater mussels (FWS 1991).

The reproductive biology for the ring pink is essentially unknown, but it likely reproduces similarly to other freshwater Unionidae mussels as described above for the pink mucket pearly mussel. The fish host(s) for the ring pink and habitat utilized by the juvenile mussels are unknown.

This mussel is characterized as a large-river species (FWS 1991). The mussel inhabits the sandy and gravelly but silt-free bottoms of large rivers and prefers rather shallow water depths (2 ft deep).

Historically, this mussel was widely distributed and found in several major tributaries of the Ohio River, including those that stretched into Alabama, Kentucky, Illinois, Indiana, Ohio, Pennsylvania, and West Virginia. However, the species was last taken in Pennsylvania in 1908, and in Ohio in 1938 (FWS 1991). According to records, this species has not been collected in Indiana in decades, and has not been collected from Illinois in over 30 years (FWS 1991). Most of the historically known ring pink mussel populations were apparently lost due to conversion of many sections of the large rivers to a series of large impoundments. The ring pink mussel does not survive in impounded water habitats.

The ring pink mussel is presently known from only five river reaches, including two in Kentucky, two in Tennessee, and one in West Virginia. In Kentucky, the ring pink mussel in recent years has only been taken from the Tennessee River in McCracken, Livingston, and Marshall Counties, and from the Green River in Hart and Edmonson Counties. Only two live specimens have been collected from the Tennessee River

population in recent years; one in 1985 and one in 1986. The last live specimen from the Green River was collected in the mid-1960s. Two fresh-dead specimens were collected in the Green River (one in 1987, the other in 1989) in the reach between Munfordville and Mammoth Cave National Park.

According to the Recovery Plan for Ring Pink Mussel (FWS 1991), total recovery of this species is considered unlikely because none of the five extant populations are known to be reproducing. Therefore, unless reproducing populations can be found or methods can be developed to maintain or create new populations, the species will be lost in the foreseeable future.

2.5 FAT POCKETBOOK (*POTAMILIS CAPAX*) (Earth's Endangered Creatures 2001, IDNR 2001)

The fat pocketbook mussel was listed as a Federally endangered species in 1976 (41 FR 24064). Green first described the mussel in 1832 under the name *Unio capax*. The genus was changed to *Lampsilis* by Smith (1899), then moved to the genus *Proptera* Ortman (1914). In 1969, Morrison noted that Rafinesque (1818) has named this genus *Potamilus*. Since 1988, the genus name for this species has been *Potamilus*.

The fat pocketbook mussel has a quite rounded and inflated shell that is thin to moderately thick. The shell is shiny and smooth, yellow to brown in color, and lacks any distinctive markings. It has an S-shaped hinge line that distinguishes it from similar species. The beak cavity is very deep. The nacre is white, sometimes tinged with pink or salmon color. Shell length is up to 5 inches (12.7 cm).

The reproductive biology for the fat pocketbook is essentially unknown, but it is likely similar to that of other members of the Unionidae as described above for the pink mucket pearly mussel. The fat pocketbook mussel is probably a long-term breeder and is reported gravid in June, July, August, and October (FWS 1989). The fish host species are not known but are likely large river species. Fish hosts known for other mussels of this genus include freshwater drum (*Aplodinotus grunniens*), white crappie (*Pomoxis annularis*), and blackstripe topminnow (*Fundulus notatus*).

The fat pocketbook mussel inhabits rivers and streams with sand, mud, or gravel substrates. It prefers slow-flowing water where depths range from a few inches to 8 ft. The mussel buries itself in these substrates with only the edge of its shell and its feeding siphons exposed.

There are few published records on the historical distribution of this species for the period prior to 1970. Museum records indicated that most fat pocketbook occurrences were from three areas; the upper Mississippi River (above St. Louis, Missouri), the Wabash River in Indiana, and the St. Francis River in Arkansas. There are a few historic records of this species occurring in the Illinois River, but is has not been found in recent years (FWS 1989).

Currently, the fat pocketbook in the mid-west is found only in the lower Wabash River in Indiana, the Ohio River adjacent to Kentucky, Indiana, and Illinois, and in the lower Cumberland River in Kentucky. Farther south, this species is known to exist in the St. Francis floodway (west of the flood control levee) from the confluence with the St. Francis River upstream to the confluence of Iron Mines Creek, and numerous drainage ditches associated with these streams in Arkansas (FWS 1989).

3. ECOLOGICAL DESCRIPTION OF THE SITE

The Paducah Site consists of existing industrialized areas of the Paducah Gaseous Diffusion Plant and is near the WKWMA on the site's western side. The majority of the fenced site has been cleared and, where vegetative cover is present, is maintained by mowing. Vegetation on the site consists of grasses and other herbaceous ground cover, which provides no foraging or roosting habitat for the Indiana bat.

The Paducah Site is located in the western part of the Ohio River Basin. The confluence of the Ohio and Tennessee rivers is approximately 16 km (10 miles) upstream of the site. The confluence of the Ohio River with the Mississippi River is approximately 32 km (20 miles) downstream of the site. All mussel species listed in the FWS letter are present in the Ohio River, upstream of the Paducah Site.

The Paducah Site is located on a local drainage divide; surface flow is to the east and northeast toward Little Bayou Creek and to the west and northwest toward Bayou Creek. The confluence of the creeks is approximately 5 km (3 miles) north of the site. Little Bayou Creek originates in the WKWMA and flows north toward the Ohio River along a 10.5-km (6.5-mile) course through the eastern portion of the DOE reservation. These tributaries are partially bordered by a thin riparian zone of plants. Trees, when present in close proximity to the site, mainly occur along the two tributaries, and are generally less than 20 cm in diameter at breast height and do not have loose bark as required by roosting Indiana bats. The riparian area could provide foraging habitat but no roosting habitat for the Indiana bat. No mussel species of concern have been identified in the tributaries.

Although the site has no hibernating, roosting, or foraging habitat as described above, the creeks within an expanded area around the site do provide Indiana bat summer foraging habitat. No maternity roosts have been located on the WKWMA, but five individuals, including three juveniles, were captured in the WKWMA during mist netting surveys in 1999 (KDFWS 2000) and a single specimen was reported in 1991 (KSNPC 2000).

The nearby WKWMA consists primarily of stands of bottomland hardwoods interspersed with upland hardwoods and old fields. Potential summer roosting and foraging habitats for the Indiana bat are present in the WKWMA, although most trees are less than 20 cm in diameter (see reported identifications below). The Bayou Creek (formerly known as Big Bayou Creek) is the nearest blue-line stream in the area; the nearest of its tributaries to the site are on the western side of the WKWMA.

4. POTENTIAL IMPACTS TO INDIANA BAT

The revised proposed action would not entail alteration or loss of bat habitat because it would take place at an existing site using existing buildings. Opportunities for bats to come into contact with the waste, either directly or indirectly, are virtually nonexistent since the wastes are contained within storage facilities. During waste disposition activities that would occur outside, such as transport, waste handling procedures would be followed and the waste would be properly packaged and covered; thus, not providing access to bats or insects on which the bats may feed.

The only scenario that could result in exposure of bats to the wastes would be an accidental release of wastes into the environment. Risks to terrestrial biota resulting from site accidents are addressed in the Waste Disposition EA and are summarized as follows.

The scenario for chronic radionuclide exposure as a result of the modeled worst-case spill indicated that the sum of chronic terrestrial exposures would be about 7×10^{-10} of the tolerable daily radiation dose as indicated by no-further-action (NFA) levels; therefore, in even this worst-case accident scenario, long-term radiation effects to soil biota would be negligible.

Two organics (PCB and 1,2,4-trichlorobenzene) and two inorganics (cadmium and chromium) have modeled concentrations that exceed the NFA benchmarks. This indicates that these constituents would likely pose adverse impacts to soil biota if the worst-case spill accident occurred. However, any insects that the bats may eat could only ingest or come into contact with the waste if they were present on the exact location where the accident occurred. These insects would then need to be available as prey for the bats, or as prey for other insects that the bats forage on, in order for radioactivity from waste to be ingested by an Indiana bat.

With the increase in traffic associated with the revised proposed action there is an increase in the potential risk of bat exposure to emissions and vehicle accidents resulting in animal fatalities. However, these potential impacts are estimated to be *de minimus* given that bat foraging habitat (around tree canopies of riparian and upland forest) and roosting-habitat (under the loose bark of large hardwood trees) occur in wooded areas not likely to be present near proposed transportation routes.

5. POTENTIAL IMPACTS TO MUSSELS

Potential impacts of the revised proposed action were evaluated for the orangefoot pearly mussel, as well as for aquatic biota, and presented in the Waste Disposition EA. The Waste Disposition EA concluded that none of the seven radionuclide or nine chemical contaminants exceeded radiological or toxicological benchmarks for aquatic biota as a result of any waste storage, water treatment, waste disposal, or supporting activities associated with the revised proposed action. The Waste Disposition EA stated that during a worst-case accident scenario (earthquake), sufficient PCBs potentially could reach the Ohio River and slightly exceed the toxicological benchmark for aquatic biota.

However, the modeled PCB concentration for the earthquake accident scenario was very conservative because it assumed that all of the PCB released during the accident made its way from the Paducah site into the Ohio River, which is nearly 5 miles downstream along Bayou Creek. In addition, the contaminants would be diluted and represent a negligible addition to those already in the Ohio River. The Waste Disposition EA concluded that the addition of contaminants from the worst-case accident would result in sediment concentrations within the measured variability reported for Ohio River sediments. As a result, the Waste Disposition EA concluded that the contaminants reaching the Ohio River from the Revised proposed action and the worst-case accident scenario would cause negligible adverse impacts to the orangefoot pearly mussel as well as other aquatic biota.

Additional evidence indicates that the four endangered mussels addressed in this BA are at a negligible risk of adverse impact from the revised proposed action. None of the four endangered mussels are known to occur on the Paducah Site where the revised proposed action activities would take place. In addition, none of the endangered mussels occur in Bayou Creek or Little Bayou Creek because these creeks are too small to provide the necessary habitat requirements for the mussels. The only water body that potentially could harbor the four endangered mussels and potentially be impacted from the revised proposed action is the Ohio River. As previously stated, the Waste Disposition EA (DOE 2002) indicated that potential adverse impacts to the orangefoot pearly mussel in the Ohio River downstream of the confluence of Bayou Creek should be negligible to non-existent. Thus, the similarity of the known life history and habitat requirements for the four Unionidae endangered mussels makes it reasonable to conclude that the pink mucket, ring pink, and fat pocketbook mussels are also not at risk of adverse impacts from the revised proposed action.

The revised proposed action may raise the potential risk of mussel exposure to waste resulting from increased vehicle traffic and a corresponding potential increase in vehicular accidents. This potential increase in accidents could result in a release of the waste volume being transported on the truck. However, when compared to the potential-impacts evaluated in the worse case accident scenario, in which the release was based on the entire volume of wastes stored on the site, these impacts are deemed negligible.

6. CONCLUSIONS

The revised proposed action would be unlikely to adversely affect the Indiana bat or any mussel species of concern because:

- A potential for exposure of the bat and mussel species to waste as a result of an accident during implementation of the revised proposed action would be small and impacts would be negligible or nonexistent;
- Waste disposition activities are currently being performed at the Paducah Site with no known detriment to the local Indiana bat or mussel populations;
- No bat foraging or roosting habitat is present where waste handling activities would occur or along any proposed transportation routes. Therefore, no bat foraging or roosting habitat would be affected by routine waste disposition operations;

- The majority of mussel habitat in the area has been identified upstream from the Paducah site; no mussel habitat exists inside the site fence therefore no habitats would be affected by the revised proposed action;
- Bat foraging habitat (riparian vegetation along intermittent tributaries) present near the site of the revised proposed action is unlikely to become contaminated;
- Routine waste management operating procedures would provide minimal opportunity for direct exposure of local biota, including Indiana bats and their prey, to wastes. Procedure implementation would also decrease the probability of accidents; and
- No critical bat or mussel habitats are present at the Paducah Site. Therefore, no habitat alteration or destruction would occur as a result of the revised proposed action.

7. REFERENCES

Conservation Management Institute 2001.
http://fwie.fw.vt.edu/WWW/esis/lists/e404009.htm

DOE 2001. *Environmental Assessment on the Implementation of the Authorized limits Process for Waste Acceptance at the C-746-U Landfill, Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, March.

DOE 2002. *Environmental Assessment for Waste Disposition Activities at the Paducah Site Paducah, Kentucky*, DOE/EA-1339, Office of Environmental Management, Oak Ridge, TN.

DOE 2003. *Environmental Assessment Addendum for Disposition of Additional Wastes at the Paducah Site Paducah, Kentucky*, DOE/EA-1339-A, Office of Environmental Management, Oak Ridge, TN.

Earth's Endangered Creatures 2001.
wysiwyg://65/http://www.geocites.com/endangeredsp/NAmericaFSO10.html

EPA (U.S. Environmental Protection Agency) 2000.
http://www/epa/gov/espp/arkansas/seviert.htm

FWS (U.S. Fish and Wildlife Service) 1989. *Recovery Plan for the Fat Pocketbook Pearly Mussel Pink Mussel (Potamilus capax) (Green 1832)*, Atlanta, GA, 22 pp.

FWS 1991. *Ring Pink Mussel Recovery Plan*, Atlanta, GA, 24 pp.

FWS 2003. Letter from Dr. Lee A. Barclay, FWS, to Dr. James L. Elmore, DOE, June 17.

Harvey, M. J., J. S. Altenbach, and T. L. Best 1999. *Bats of the United States*, Arkansas Game and Fish Commission and U.S. Fish and Wildlife Service, 64 pp.

Harvey, Michael J. 1992. *Bats of the Eastern United States*. Arkansas Game and Fish Commission and U.S. Fish and Wildlife Service, 46 pp, February.

Hines, Sarah 2001. Personal communication regarding a reported sighting of *Myotis sodalis* between Sarah Hines, Data Specialist, Kentucky State Nature Preserves Commission and Anne Dickie, Scientist, Tetra Tech, Inc., July 9.

IDNR (Illinois Department of Natural Resources) 2001.
http://www.inhs.uiuc.edu/cbd/musselmanual/page54_5.html

KDFWR (Kentucky Department of Fish and Wildlife Resources) 2000. James S. Lane, Jr., Author. *Mist Net Surveys for the Indiana Bat (Myotis sodalis) at West Kentucky Wildlife Management Area Paducah, Kentucky*, February.

KSNPC (Kentucky State Nature Preserves Commission) 2000. *Monitored Species of McCracken County Kentucky*. Online reports at http://www.kynaturepreserves.org accessed June 25, 2001.

KSNPC 2000, Kentucky State Nature Preserves Commission. Response to Data Services Request from SAIC. Request number 01-078. November, 14, 2000.

Kurta et al. 1996. *Ecological, Behavioral, and Thermal Observations of a Peripheral Population of Indiana Bats (Myotis sodalis)*. Pages 102-117 in R. M. R. Barclay and R. M. Brigham, editors, *Bats and Forests Symposium*, Research Branch, Ministry of Forests, Province of British Columbia, Victoria, British Columbia.

Webb, Warren 2000. *Biological Assessment NABIR Project, Selection and Operation of the Proposed Field Research Center on the Oak Ridge Reservation*

Appendix D

Draft EA Comments Received and Responses

Stakeholder Comments and DOE Responses for the Draft Environmental Assessment Addendum
Disposition of Additional Waste at the Paducah Site (DOE/EA-1339-A)

Comment No.	Page/ Section	Comment	DOE Response
		Robert A. Carson, Illinois Environmental Protection Agency	
1.	General	The Department of Energy should contact the Illinois Department of Nuclear Safety at least five working days prior to initiating any radioactive waste shipping campaign that will involve transport through the State of Illinois. This notification should include waste description, container type, vehicle type, route and expected dates of shipment. The notification should be provided to: Gary N Wright, Director Illinois Department of Nuclear Safety 1035 Outer Park Drive Springfield, Illinois 62704 217-785-9868 Illinois DNS requests this information so that their duty officers and potential responders will have essential information in the case of a shipment problem.	DOE will provide the notification.
2.		The Waste Disposition EA identified one of the roads to be utilized for waste transport through Illinois as I-65. This should be corrected to "I-64".	Transportation documents will be revised to reflect this correction. This notation was not used in the Waste Disposition EA Addendum, therefore this document was not modified.

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Ruby English, Neighbor and ACT Chairman (Active Citizens for Truth)			
3.	General	With the decision to proceed with disposition of additional low-level waste now rather than waiting until D&D occurs, I would like to know more about the 17,600 m3 of low-level waste and the 11,000 m3 of various waste types in the Waste Disposition DOE/EA-1339.	The 17,600 m3 of material is primarily stored in DOE Material Storage Areas (DMSAs) throughout the site. This material consists of process and non-process equipment (e.g., converters, scrap metal, discarded furniture, and assorted rubble); mixed, polychlorinated biphenyl (PCB), and low-level radioactive waste (LLW); and other miscellaneous items. The text of the Environmental Assessment (EA) Addendum will be revised to clarify that the 17,600 m3 of additional materials is not all low-level radioactive waste. These materials will be characterized and dispositioned appropriately. No low-level radioactive waste will be disposed in the C-746-U Landfill.

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4.	General	When you talk about on-site disposal, I am concerned about the C-746-U Landfill for the additional 7,900 m3 to be put in this landfill. As a neighbor, what guarantee do I have that no hazardous waste of any kind will go in this landfill. The contamination from previous dumping has not been cleaned up and this only makes me think that the Paducah Gaseous Plant will only become a dumping ground for more locations in the near future.	The process for waste acceptance at the C-746-U Landfill, as well as the environmental effects of disposal, are evaluated in two environmental assessments – *Environmental Assessment for the Construction, Operation, and Closure of the Solid Waste Landfill at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (DOE/EA-1046) issued in March 1995 and *The Environmental Assessment on the Implementation of the Authorized Limits Process for Waste Acceptance at the C-746-U Landfill Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (DOE/EA-1414) issued in August 2002. Materials designated for disposal in the C-746-U Landfill will meet the conditions discussed in these EAs as well as the requirements of the landfill permit and the landfill waste acceptance criteria, with the Kentucky Division of Waste Management (KDWM) having primary oversight responsibilities. No RCRA, low-level radioactive, or mixed wastes will be disposed in this landfill.
5.	General	Would you furnish more information as to the types of waste the 45% (7,900 m3) would be put into the C-746-U Landfill. Since, this is a Subtitle D Landfill and not a Subtitle C Landfill, I am concerned about what the 45% waste would consist of that would be stored in this landfill.	As the materials are characterized the appropriate disposition will be determined. Waste that meets landfill permit and waste acceptance criteria will be disposed in the C-746-U Landfill. No RCRA, low-level radioactive, or mixed wastes will be disposed in this landfill.
6.	General	In reference to the 7,900 m3 going into the C-746-U Landfill I am really concerned that more hazardous waste will be put in this landfill. Two cells already contain hazardous waste, supposedly put there by error. Notice of Violations issued to Bechtel Jacobs for this hazardous waste being put there has not remedied the problem I have with more waste going to this landfill by mistake. Maybe, people who do not reside in this area of the plant think that everything is okay and there is no harm to the neighbors or community, but, I disagree with these assumptions that are put out to the public.	See response to Comment 4.

7.	General	This additional waste should be figured in and included in the original scope instead of being overlooked. Since, the Environmental Assessment (DOE/EA-1339) has already been finalized, there should not be an addendum to this assessment. Let the 17,600 m3 stay where it is until the D&D is started.	DOE recently funded an accelerated cleanup plan affecting the Paducah Site. Disposition of DMSA materials is part of that plan. This EA Addendum analyzes the environmental effects of proposed activities involving these materials.
8.	General	In the Final Environmental Assessment DOE/EA-1414, (Waste Acceptance at the C-746-U Landfill) of July, 2002, it states that the determination of whether to place CERCLA-derived materials in the landfill is beyond the scope of the proposed action, potential impacts associated with the potential disposition of CERCLA-derived materials are properly considered within the scope of this cumulative impacts analysis since such disposition may in fact occur. My opinion is that no CERCLA-derived materials should be allowed in the C-746-U Landfill. Will this Subtitle D Landfill permit be adhered to or will this addendum open the way for such materials to be put in this landfill?	The EA Addendum does not address CERCLA-derived wastes. DOE will adhere to all landfill permit and waste acceptance criteria for waste to be disposed in the C-746-U Landfill.
9.	General	Thank you for taking the time to read these comments and questions. I do expect a copy of the final assessment DOE/EA-1339-A when it is completed.	Comment noted. Your name will be placed on the distribution list for the final EA Addendum.
		Charles Jurka and Vicki Jurka	
10.	General	This document, the Draft Environmental Assessment Addendum (for) Disposition of Additional Waste at the Paducah Site, May 2003 (DOE/EA-1339-A) clearly states DOE's intention to dispose low-level waste on-site in the C-746-U landfill. The Final Environmental Assessment for Waste Disposition Activities at the Paducah Site Paducah, Kentucky November 2002 (DOE/EA-1339-Final), which this addendum amends, clearly states (pg. 15) that "... *on-site disposal of all wastes* ... was not considered reasonable." Even though the draft version contained the same language regarding on-site disposal, we requested as part of the public comment process, that "particular attention ... be given the future impact of long-term on-site disposal (i.e. landfills)." The response in the Final EA stated "no on-site disposal is considered within the proposed action of this document." (K,pg. 10-#1) However, this addendum (pg 2-1.2) says even though 45% (4,900 m3) of the additional waste may be sent to the C-746-U landfill for disposal, now the <u>only</u> issue a reviewer can consider is the "potential transportation of all 28,600 m3 of low-level waste offsite for disposal" because on-site disposal is considered elsewhere and "not within the scope of this EA Addendum". The Final EA (pg. 15) clearly shows transportation was not the <u>only</u> issue causing the DOE to find on-site disposal an unreasonable alternative. "The need for new landfill cells" as well as opposition "by	DOE completed DOE/EA-1414 and DOE/EA-1046 to evaluate what waste would be appropriate for disposal in the C-746-U Landfill. The EA Addendum (DOE/EA-1339A) states that only waste that meets the criteria for disposal in that landfill will be placed there. RCRA and low-level waste do not meet the criteria. Text of the EA Addendum will be revised for clarification. DOE recently funded an accelerated cleanup plan affecting the Paducah Site. Disposition of DMSA materials is part of that plan. This EA Addendum analyzes the environmental effects of proposed activities involving these materials. The environmental impacts of placing waste in the C-746-U Landfill were evaluated in DOE/EA-1414 and DOE/EA-1046, and are not within the scope of the EA Addendum.

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		local residents" were important components of DOE's decision not to further evaluate on-site disposal. (EA Final, Pg. 12-2.1.7) Under the proposed action 20,000 m3 of DOE Material Storage Area (DMSA) waste required Nuclear Criticality Safety (NCS) characterization. "DOE's proposed action includes (d) this type of characterization" (NCS) but did not include the environmental impact of the additional 20,000 m3 of DMSA waste. Now, approximately six months later, this addendum attempts to incorporate 17,600 m3 of the 20,000 m3 of DMSA waste even though the NCS characterization is still incomplete (EA Addendum pg.2-1.2: "until characterization of the waste is complete"). In the final EA the figures used to determine risk should be adjusted upward by approximately 200% because only approximately 1/3 of the waste identified as "disposition waste" was included in all types of analysis. Additionally it is our concern that much of the waste will ultimately be improperly characterized; as happened with past shipments of waste to NTS and Envirocare.	The 17,600 m3 is a revised estimate for the 20,000 m3 reported in DOE/EA-1339. Your concerns regarding improper characterization and shipment of wastes to off-site facilities are noted. Additional actions have been taken including the modification of site procedures to improve the characterization process as an attempt to prevent improper waste disposal.
11.		It is our opinion that in the Final EA DOE misleads stakeholders as to the actual disposition of large quantities of LLW and MLLW. This is demonstrated in table 1.1 (pg. 1) where under the proposed disposal option LLW and MLLW are cited ~~X~~ (LLW) and ~~X~~ (MLLW) for on-site disposal and X (LLW) and X (MLLW) for off-site disposal; leaving only the reader to discern what ~~X~~ signifies as that symbol is not otherwise in the table. Stakeholders are also mislead (EA Final pg. 9-2.1.1) when under the proposed action they are assured "DMSA wastes that are not characterized as RCRA/TSCA waste would remain in storage until analyzed during D & D CERCLA actions." Then, approximately six months later DOE decides (EA Addendum, pg.1-last para.) "to proceed with disposition of additional low-level waste in a timelier manner under the authority of the Atomic Energy Act, rather than waiting until D & D occurs." It is our opinion that at the time of issuance of the Final EA, DOE knew the Atomic Energy Act allowed them to dispose DMSA waste, generally characterized as RCRA waste contaminated with low-level material in the C-746-U Landfill as well as send it to other approved sites. Lengthy and contentious litigation between DOE and the State of Kentucky had established what DOE could and could not do in that regard (United States v Kentucky-NO.00-5247, 6th Cir., June 5, 2001). Yet, DOE chose to misrepresent on-site disposal and disposition of DMSA	The character ~~X~~ is an editorial symbol for strike-out. The character should have been deleted from the document but was inadvertently left in place. However, the table correctly shows that LLW and MLLW are to be disposed off-site. At this time, 58% of the total volume of materials in DMSAs has been characterized. Of that total, less than 0.1% has been determined to be RCRA hazardous. No RCRA, low-level radioactive, or mixed wastes will be disposed in the C-746-U landfill.

		waste in the EA Final where the proposed action and alternatives were considered in the total scheme rather that under the single issue of transportation as in the EA Addendum.	
12.		(EA Final, Pg. 5-Aquatic Biota) Further, the determination that "long-term impacts to aquatic biota would be beneficial after implementation of the proposed action, because much of the on-site waste would be removed reducing the amount stored on-site" becomes a very false premise when (EA Addendum, pg.5-4.1.3.1, 1st para.) "a large portion of the additional (DMSA) waste may be disposed on site." To move stored and monitored waste to a leaky landfill in a wet environment would have anegative rather than positive affect. Additionally it is a false premise (EA Addendum, pg. 1-1.1, last para.) that DOE would "experience cost savings through reduction of surveillance and maintenance costs" if the waste is dispositioned to the on-site C-746-U landfill. The expense would still be Paducah Site expense shifted to leachate control, landfill monitoring and surveillance, etc. It is also false that (EA Final, pg.49-4.1.1.1, WD) "no (land use) impacts are anticipated at the Paducah site "because all of the wastes are proposed to be disposed off-site…" (EA Addendum, Pg. 1-1.0) "DOE must comply with ..NEPA by considering …. potential environmental impacts." It is obviously the intent of Kentucky regulators to limit the amount of radioactively contaminated waste entering the C-746-U landfill as a means of protecting public health and the environment. By deferring to the AEA and not attempting to endorse or include more stringent environmental and health protective measures, DOE demonstrates a callous disregard for the protective measures provided under NEPA. Further, if DOE was indeed concerned about the "risk of spread of contamination to the environment" they would not transport approximately 7,900 m3 of low-level waste to the on-site C-746-U Landfill where, within the 10 year timeframe for waste disposition activities, that risk will become a reality. And finally, (EA final, pg. 30-3.9.2, 2nd. Para.) "because any adverse health or environmental impacts are likely to fall most heavily on the individuals nearest the Paducah facility" we oppose the proposed action and tentatively support the 2.2 Enhanced Storage Alternative for the 17,600 m3 of lo-level waste added to disposition activities via this addendum.	DOE checked the statement on page 1.1 of the EA Addendum, that "DOE would experience a cost savings through reduction of surveillance and maintenance costs" and verified that it is an accurate statement. Section 4.1.1 of the EA Addendum considers land use impacts from the proposed action and alternatives. Comment noted regarding your support of the Enhanced Storage Alternative.

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13.	4.1.1	"Land use may change from analysis." Please clarify what is meant by this sentence.	Text has been revised to clarify that land use may change from that analyzed in DOE/EA-1339 in that some of the DMSAs would likely be turned over to the U.S. Enrichment Corporation upon removal of materials from the DMSAs.
14.	1.2 (pg.2)	Paragraph one states 17,600 m3 is low-level waste and 11,000 m3 is various types of waste. Paragraph two states all of the 28,600 m3 of waste is low-level.	Text has been revised to indicate that the 17,600 m3 is material being characterized and dispositioned and is not all low-level waste.
15.	General	Because the addendum introduces the shipment of low-level waste the EA should include a "definition" of what constitutes low-level waste. This definition should include a limit for alpha-emitters.	Low-level waste is defined in Section 2.0 Proposed Action, paragraph 2.
16.	General	How was the risk of low-level beta-gamma activity incorporated into the handling, packing, and shipping of low-level waste?	All radiological exposure impacts were analyzed in Section 4.1.3.
17.	General	The on-site C-746-U landfill is in a humid region in a wet location. It should not be considered an acceptable site for low-level waste disposal.	The EA Addendum (DOE/EA-1339A) states that only waste that meets the criteria for disposal in the C-746-U Landfill will be placed there. RCRA and low-level waste do not meet the criteria. Text of the EA Addendum will be revised for clarification.
18.	General	If the 17,600 m3 of DMSA waste is no longer classified or considered CERCLA regulated waste does DOE order 5820.2A still apply to that waste?	DOE Order 5820.2A was replaced. DOE Order 435.1 applies to the portion of material determined to be radioactive waste.
19.	General	The manifesting of all waste shipments should include data on "waste physical and chemical characteristics, quantity of each major radionuclide present, weight of the waste, volume of the waste, other data for compliance with waste acceptance criteria." (DOE order 5820.2A)	Waste shipments will be properly manifested in accordance with U.S. Department of Transportation regulations and DOE Order 435.1.

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20.	General	We did not receive a copy of the Final EA until May 28, 2003 even though we submitted written comments on the Draft version. Beginning in November 2002, Ruby English of Active Citizens for Truth (ACT) made numerous attempts to obtain copies of this document for review by ACT members and other local residents. On May 15, 2003 during a brief presentation on the EA Addendum at the Site Specific Advisory Board meeting, Vicki Jurka requested a copy of the final EA. Twelve days later, on May 27, Ruby English and Vicki Jurka visited the DOE Information Center and the SSAB office still seeking a copy of the Final EA (as well as other documents previously requested). On the evening of May 27, 2003, two copies of the Final EA were delivered to the English home allowing us one week to read the document and prepare comments.	Comment noted.
21.	General	The date and time of the public hearing for the EA Addendum was held exactly on the date and time of a previously announced community health seminar cosponsored by ACT and the University of Kentucky as well as on the same date and time of the local Audubon meeting. Consequently, community members who were involved in the Draft EA process and environmentalist who are interested in protecting the environment were unable to attend the public hearing.	Comment noted. For this reason, DOE also held a briefing on the EA Addendum at the Citizens Advisory Board meeting that you attended.
22.	General	Copies of the Addendum did not include the date the comment period closed or the address for submittal of comments.	The stakeholder letter accompanying the EA Addendum clearly states that comments were to be submitted to David Allen (address provided) prior to June 4, 2003.
23.	General	Review of several C-746-U landfill documents already show more waste slated for disposal there than the permitted capacity of the landfill.	DOE and Kentucky Oversight Regulators will monitor permitted capacity to insure permit compliance.
Michael V. Welch, Manager Hazardous Waste Branch, Kentucky Department for Environmental Protection			
24.	General	The Division strongly opposes use of the C-746-U Landfill for the disposal of low-level radioactive waste.	Text has been revised to indicate that the 17,600 m3 is material to be characterized and dispositioned and is not all low-level waste. Only waste that meets the criteria for disposal in the C-746-U Landfill will be placed there. RCRA and low-level waste do not meet the criteria. Text of the EA Addendum will be revised for clarification.

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25.	General	DOE's primary exposure scenario envisions a rural resident drilling a groundwater well at the DOE property boundary near the landfill and subsequently being exposed to contaminated groundwater sourced from the landfill. DOE should also consider the possibility that a resident might construct a home and drinking water well directly on top of the landfill. While perhaps a remote possibility, the likelihood of this occurring at sometime in the future is not out of the question, especially when one considers the geologic timeframes associated with the decay of U-238 and other radionuclides of concern. What provisions will DOE make to insure that the landfill is not compromised in this way?	Text has been revised to indicate that the 17,600 m3 is material to be characterized and dispositioned and is not all low-level waste. Only waste that meets the criteria for disposal in the C-746-U Landfill will be placed there. RCRA and low-level waste do not meet the criteria. Text of the EA Addendum will be revised for clarification.
26.	General	DOE's addendum is deficient in that it fails to incorporate any land use control language. It would appear that DOE is preparing to place low-level radioactive waste into the C-746-U Landfill without first spelling out the controls that will insure that the landfill remains protective of human health and the environment. With regards to potential direct exposure to these wastes in the future, how does the DOE intend to insure that such exposures do not occur? At present the DOE has not committed to long-term stewardship of this facility. DOE must implement and maintain controls to insure that direct contact exposure is prevented.	Text has been revised to indicate that the 17,600 m3 is material to be characterized and dispositioned and is not all low-level waste. Only waste that meets the criteria for disposal in the C-746-U Landfill will be placed there. RCRA and low-level waste do not meet the criteria. Text of the EA Addendum will be revised for clarification.
27.	General	If low-level waste is eventually deposited in the landfill, the typical thirty (30) year postclosure groundwater-monitoring period required for a solid waste facility is no longer appropriate. In order to insure that the landfill remains protective of human health and the environment, monitoring should continue until such time as the radioactive materials stored in the landfill no longer pose a significant threat if released into the groundwater. Given the nature of these contaminants, groundwater monitoring may be required in perpetuity.	Text has been revised to indicate that the 17,600 m3 is material to be characterized and dispositioned and is not all low-level waste. Only waste that meets the criteria for disposal in the C-746-U Landfill will be placed there. RCRA and low-level waste do not meet the criteria. Text of the EA Addendum will be revised for clarification.
28.	General	The document is confusing in regards to the term "low-level waste". The document proposes that an additional 17,600 m3 of low-level waste be disposed in the C-746-U Landfill. However in Section 2.3.1 the following statement is made: "Based on the Record of Decision for the Department of Energy's Waste management program: Treatment and Disposal of Low-Level Waste and Mixed Waste, (January 1998, 63 Federal Register 3629), DOE has determined that low-level waste should be disposed at the Nevada Test Site or the Hanford Site rather than constructing new landfills or landfill cells." DOE should clearly differentiate between the low-level waste proposed for disposition in the C-746-U Landfill and the low-level wastes proposed for disposition at the Nevada Test Site or the Hanford Site.	Text has been revised to indicate that the 17,600 m3 is material to be characterized and dispositioned and is not all low-level waste. Only waste that meets the criteria for disposal in the C-746-U Landfill will be placed there. RCRA and low-level waste do not meet the criteria. Text of the EA Addendum will be revised for clarification. The EA Addendum analyzes the impacts of transportation of low-level waste to the Hanford Site, Nevada Test Site, and commercial facilities.

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29.	General	Finally, the long term stewardship costs associated with the disposition of low-level wastes in the C-746-U Landfill have not been assessed. Additionally, DOE did not consider the alternative of dispositioning all low level wastes in existing low-level repositories at Hanford and the Nevada Test Site. The long-term stewardship costs and the alternative of off-site disposition of low-level wastes need to be rigorously evaluated within an Environmental Impact Statement and should include full public participation. The Environmental Impact Statement should also clearly differentiate between the low-level waste proposed for disposition in the C-746-U Landfill and the low-level wastes proposed for disposition at the Nevada Test Site or the Hanford Site.	Text has been revised to indicate that the 17,600 m3 is material to be characterized and dispositioned and is not all low-level waste. Only waste that meets the criteria for disposal in the C-746-U Landfill will be placed there. RCRA and low-level waste do not meet the criteria. Text of the EA Addendum will be revised for clarification.
Mark Donham, Verbal Comments Received at Citizens Advisory Board meeting			
28.	General	When you're determining whether or not an action is significant, the CEQ regulations guide you to the ten significance criteria in 1508.27, one of those is cumulative impacts. There has never been a sitewide EIS looking at the cumulative impacts involved with cleanup activities at one time, done for the Paducah Site.	The cumulative impacts of DOE/EA-1339 are still valid for the EA Addendum. DOE's position is that the impacts analysis is in compliance with National Environmental Policy Act (NEPA) requirements.
29.	General	I don't believe this EA looks at the impacts on the environment of waste disposal itself and the transportation.	The EA Addendum Sections 4.0 and 5.0 address the impacts associated with the proposed action and alternatives.

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