DOE/EIS-0468

Environmental Impact Statement for the Proposed American Centrifuge Plant in Piketon, Ohio

Pike County, Ohio

Final Environmental Impact Statement

U.S. Nuclear Regulatory Commission NUREG-1834, Adopted as DOE/EIS-0468

U.S. Department of Energy

May 2011

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Cover Sheet

Responsible Agency: U.S. Department of Energy

Title: *Final Environmental Impact Statement for the Proposed American Centrifuge Plant in Piketon, Ohio (Adopted as DOE/EIS-0468)*

Contact:

For additional copies or more information on this final environmental impact statement (EIS), please contact:

Mr. Todd Stribley
U.S. Department of Energy, Loan Guarantee Program (LP-10)
1000 Independence Avenue, SW
Washington, DC 20585
Phone: 202-287-6526
Electronic mail: Todd.Stribley@hq.doe.gov

For general information on the DOE National Environmental Policy Act (NEPA) process, contact:

Carol Borgstrom, Director
U.S. Department of Energy, Office of NEPA Policy and Compliance (GC-54)
1000 Independence Avenue, SW
Washington, DC 20585
Phone: 202-586-4600
or leave a message at 1-800-472-2756

Proposed Action: The U.S. Department of Energy (DOE) is proposing to issue a loan guarantee to USEC Inc., to support funding for the American Centrifuge Project (ACP) in Piketon, Ohio. The facility would be located on an existing DOE reservation (Portsmouth Reservation) in Pike County, Ohio. The ACP would be an advanced uranium enrichment facility (utilizing centrifuge technology) for the production of commercial nuclear fuel.

In August 2004, prior to DOE Loan Programs Office (LP) involvement in the ACP project, USEC Inc., submitted a license application for the construction and operation of the ACP to the U.S. Nuclear Regulatory Commission (NRC). As required by Section 193 of the Atomic Energy Act (AEA) (42 USC § 2243), the NRC prepared an EIS which analyzes the potential environmental impacts of the proposed plant. NRC issued a final EIS in April 2006 (see NUREG-1843, at http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1834/index.html). On April 13, 2007, the Atomic Safety and Licensing Board issued its final decision authorizing the issuance of a license to USEC Inc., for the construction and operation of the ACP (LBP-07-6, 65 NRC 429) and issued the license. The issuance of the NRC license constitutes the Record of Decision (ROD) for the NRC EIS. Based on a review of the NRC EIS and related documents, DOE has adopted the 2006 NRC final EIS as a DOE final EIS.

Public Involvement: DOE did not participate as a cooperating agency in the preparation of the 2006 final EIS; therefore, DOE, in accordance with the NEPA regulations, is recirculating the 2006 final EIS for a period of 30 days and filing it with the U.S. Environmental Protection Agency (EPA). DOE's final EIS is available by contacting Todd Stribley at the address above or at the following locations:

- DOE LPO website: https://lpo.energy.gov/?page_id=1506
- DOE NEPA website: http://nepa.energy.gov/
- Portsmouth Public Environmental Information Center (EIC), located at the Ohio State University Endeavor Center, 1862 Shyville Road (Room 220), Piketon, Ohio

DOE will issue a Record of Decision no sooner than 30 days after EPA publishes a Notice of Availability of this final EIS in the *Federal Register*. The following attachment summarizes DOE's independent review of the NRC final EIS pursuant to the NEPA regulations.

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ATTACHMENT

Summary of the U.S. Department of Energy's (DOE's) Independent Review of the U.S. Nuclear Regulatory Commission (NRC) Final Environmental Impact Statement (EIS) for the Proposed American Centrifuge Plant (ACP) in Piketon, Ohio

DOE conducted an independent review of the NRC Final EIS and related documents for the purpose of determining whether DOE could adopt them pursuant to the Council on Environmental Quality (CEQ) regulations at 40 CFR 1506.3 without conducting additional analysis pursuant to the National Environmental Policy Act (NEPA). As part of DOE's independent review, DOE:

(1) Reviewed the action contained in the USEC Inc., loan guarantee application and the proposed action analyzed in the NRC EIS;
(2) Examined activities that have taken place at the ACP facility since NRC issued its ROD in April 2007;
(3) Reviewed additional analysis related to security at the ACP facility;
(4) Compared more recent data on airborne radiological emissions from the existing DOE Portsmouth facility in Piketon, Ohio, with those used in the NRC FEIS; and
(5) Consulted with the Advisory Council on Historic Preservation (ACHP) regarding completion of DOE's responsibilities under Section 106 of the National Historic Preservation Act (NHPA). These independent reviews are discussed below.

(1) Review of the Proposed Action - DOE reviewed the action encompassed in the USEC Inc., loan guarantee application to ensure it is substantially the same as the proposed action analyzed in the NRC Final EIS. This review also included a review of changes issued by USEC Inc., in April 2007 subsequent to the issuance of the NRC license. The changes to the Feed and Withdrawal (F&W) facilities were developed and submitted to the NRC in a License Amendment Request (LAR)[1] to improve safety and operational logistics. Following review of the proposed changes as described in the LAR, the NRC issued its Safety Evaluation Report (SER) for the F&W LAR in July 2009[2]. During its review, NRC considered the potential for environmental impacts. NRC concluded in the SER in Chapter 9, Environmental Protection Review, that the LAR was administrative and procedural in nature and satisfied the criteria in NRC's NEPA regulations at 10 CFR 51.22(c)(11) for a categorical exclusion. Therefore, NRC staff determined that the changes would have insignificant impacts on the human environment and no additional reviews pursuant to NEPA were required. From its review, DOE concluded that the action encompassed by the USEC Inc., loan guarantee application is substantially the same as the proposed action analyzed in the NRC Final EIS.

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[1] USEC letter AET 08-0082 from P.J. Miner (USEC) to M.F. Weber regarding License Amendment Request – Amend Facility License SNM-2011 for Feed and Withdrawal System Design Changes, dated November 17, 2008

[2] NRC letter from Michael D. Tschiltz (NRC) to Peter J. Miner (USEC) regarding NRC Approval of USEC Inc. Request to Amend Facility License SNM-7004 for Feed and Withdrawal System Design Changes, dated July 14, 2009

(2) Activity at the ACP Facility since publication of the NRC FEIS - In May 2007, USEC Inc., started construction of the ACP at the former DOE Gas Centrifuge Enrichment Plant (GCEP) located at the existing DOE Portsmouth Reservation in Piketon, Ohio. Under a lease signed with DOE in 2006, USEC Inc., has rights to the long-term use of facilities at the GCEP through 2043 (and beyond, if certain conditions are met) and these facilities are being refurbished as part of the ACP construction activities.

ACP activities currently underway include: building the balance of the plant, including installing electric, telecommunications, and cooling water distribution systems; preparing the process building floor for centrifuge machine mounts; preparing the recycle and assembly building for installation of centrifuge machine assembly equipment; constructing a new boiler building; and refurbishing the feed and withdrawal facility. In August 2007, USEC Inc., began the lead cascade test program in accordance with USEC's demonstration license (issued by NRC in 2004). Through 2010, USEC Inc., implemented an extensive testing program and initiated its technology demonstration activities. Through the testing program and demonstration activities, USEC Inc., has refined the centrifuge manufacturing processes and its operation, and is currently focused on technology demonstration activities.

(3) Additional Security Analysis - On July 5, 2007, the NRC issued an Order ("Order Modifying Analysis for Additional Security Measures," EA-07-140) that modified the USEC ACP Special Nuclear Material License (No. SNM-2011) to require compliance with specified Additional Security Measures. The NRC concluded that, in light of the current threat environment, additional security measures should be embodied in the Order consistent with the established regulatory framework. The Order did not affect ACP implementation of protective measures specified under "Threat Condition Yellow," in NRC's September 3, 2002, "Regulatory Issue Summary for Category III Fuel Cycle Facilities on the NRC's Threat Advisory and Protective Measures System."

On October 8, 2008, USEC Inc., provided an Integrated Safety Analysis (ISA)[3] documenting the evaluation of the potential consequences as a result of potential terrorist threats identified by NRC as being applicable to the ACP facility. On April 28, 2009, NRC accepted the ISA, which became part of the USEC Inc., licensing documentation, which was based on the NRC FEIS. In June 2009, DOE staff reviewed the classified analyses and independently confirmed that the consequences of potential terrorist threats are adequately analyzed in the existing ISA. DOE also reviewed the NRC FEIS Appendix H, "Accident Analysis for the Proposed ACP,"[4] and concluded that it satisfactorily analyzes the potential environmental consequences of impacts that could be reasonably foreseen as a result of intentional destructive acts as well as accidents.

(4) Updated Portsmouth Emissions Data - DOE examined the most recent published airborne radiological emissions data from the 2009 Portsmouth Annual Site Environmental Report

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[3] As part of the licensing process USEC prepared an Integrated Safety Analysis and the NRC prepared a Safety Evaluation Report which identifies a spectrum of scenarios that could result from process upsets, human error, and accidents/intentional destructive acts. These documents contain export controlled information and classified information, and therefore, are not available for disclosure, except as permitted by applicable DOE or NRC regulations.

[4] This Appendix to the FEIS was withheld from the public pursuant to 10 CFR 2.390.

(ASER) and compared it with data used in the NRC FEIS to determine if the data needed to be updated.

DOE's examination revealed that overall airborne radiological emissions from the Portsmouth site have decreased from what was reported in the NRC FEIS. The NRC FEIS cited 2001 data that was used in DOE's June 2004 FEIS for the *Construction and Operation of a Depleted Uranium Hexafluoride Conversion Facility at the Portsmouth, Ohio Site (DOE/EIS-0360).* The figures given by NRC in the FEIS are: USEC emissions 0.2 curie; DOE-PORTS emissions 0.00063 curie, for a total of 0.20063 curie. The 2009 ASER data are: USEC emissions 0.0305 curie, DOE-PORTS emissions 0.054 curie for a total of 0.0845 curie.

The reduction in airborne radiological emissions from 2001 to 2009 resulted from USEC Inc., ceasing uranium enrichment operations at the gaseous diffusion plant (GDP) in May 2001. Most of the DOE operations at Portsmouth are small and steady state, and therefore, there is little variation in airborne radiological emissions from year to year. In view of the fact that airborne radiological emissions have decreased from the levels addressed in the NRC FEIS, DOE has reevaluated the analysis and determined that there is no need to update the FEIS analysis for this resource area. (DOE's review concluded that the analyses of all other resource areas were current.)

(5) ACHP Consultation - DOE is consulting with ACHP regarding its Section 106 responsibilities under the NHPA. Although DOE would have a different federal action (providing a loan guarantee) than NRC had (issuing a license), DOE's action would not add to or alter the undertaking (per 36 CFR §800.16(y)) that has been subject to the Section 106 review process completed by NRC. Accordingly, DOE's Section 106 compliance requirements for the proposed loan guarantee for the USEC Inc., ACP project have been satisfied.

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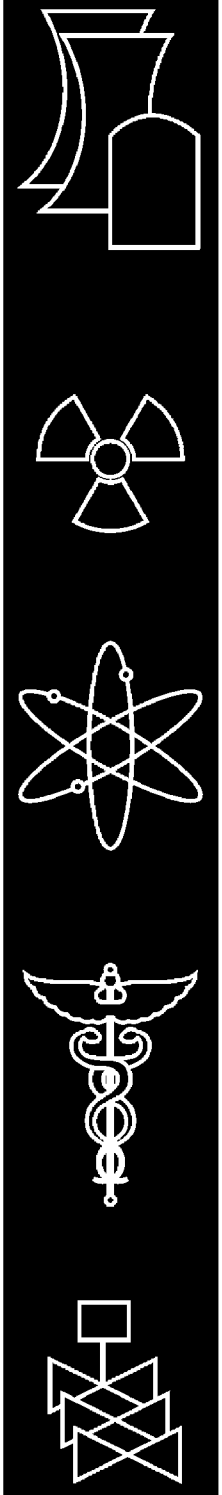

Environmental Impact Statement for the Proposed American Centrifuge Plant in Piketon, Ohio

Final Report

U.S. Nuclear Regulatory Commission
Office of Nuclear Material Safety and Safeguards
Washington, DC 20555-0001

Adopted by the U.S. Department of Energy
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Environmental Impact Statement for the Proposed American Centrifuge Plant in Piketon, Ohio

Final Report

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Division of Waste Management and Environmental Protection
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
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ABSTRACT

USEC Inc. (USEC) has submitted an application to the U.S. Nuclear Regulatory Commission (NRC) for a license to construct, operate, and decommission the American Centrifuge Plant (ACP), a gas centrifuge uranium enrichment facility located on the U.S. Department of Energy (DOE) reservation in Piketon, Ohio. The American Centrifuge Plant, if licensed, would enrich uranium for use in commercial nuclear fuel for power reactors. Feed material would be comprised of non-enriched uranium hexafluoride (UF_6). USEC proposes to enrich uranium up to 10 percent by weight of uranium-235. The initial license application is for a 3.5 million separative work unit[1] (SWU) per year facility. Because USEC indicated the potential for future expansion to 7.0 million SWU per year, the environmental review looks at the impacts from a 7.0 million SWU per year facility. The proposed ACP would be licensed in accordance with the provisions of the *Atomic Energy Act*. Specifically, an NRC license under Title 10, "Energy," of the *U.S. Code of Federal Regulations* (10 CFR) Parts 30, 40, and 70 would be required to authorize USEC to possess and use special nuclear material, source material, and byproduct material at the proposed ACP site.

This Environmental Impact Statement (EIS) was prepared in compliance with the *National Environmental Policy Act* and the NRC regulations for implementing the Act. This EIS evaluates the potential environmental impacts of the proposed action and its reasonable alternatives. This EIS also describes the environment potentially affected by USEC's proposal, presents and compares the potential environmental impacts resulting from the proposed action and its alternatives, and describes USEC's environmental monitoring program and mitigation measures.

[1] SWU relates to a measure of the amount of work used to enrich uranium.

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EXECUTIVE SUMMARY

BACKGROUND

The U.S. Nuclear Regulatory Commission (NRC) is considering whether to issue a license, pursuant to Title 10 of the *U.S. Code of Federal Regulations* (10 CFR) Parts 30, 40, and 70, that would allow USEC Inc. (USEC) to possess and use byproduct material, source material, and special nuclear material at a proposed gas centrifuge uranium enrichment facility near Piketon, Ohio. The scope of activities to be conducted under the license would include the construction, operation, and decommissioning of the proposed plant, which is called the American Centrifuge Plant (ACP). This licensing action would be taken in response to an application filed with the NRC by USEC by letter dated August 23, 2004. To support its licensing decision on the proposed ACP, the NRC determined that an Environmental Impact Statement (EIS) is required by the NRC's implementing regulations in 10 CFR Part 51 for the *National Environmental Policy Act* (NEPA).

The enriched uranium produced at the proposed ACP would be used to manufacture nuclear fuel for commercial nuclear power reactors. Enrichment is the process of increasing the concentration of the naturally occurring and fissionable uranium-235 isotope. Uranium ore usually contains approximately 0.72 weight percent uranium-235. In order to be useful in nuclear power plants as fuel for electricity generation, the uranium must typically be enriched up to 5 weight percent.

THE PROPOSED ACTION

The proposed action considered in this EIS is for the NRC to issue a license that would authorize USEC to possess and use special nuclear material, source material, and byproduct material at the ACP, a gas centrifuge uranium enrichment facility proposed to be located on the U.S. Department of Energy (DOE) reservation near Piketon, Ohio. Piketon is between Chillicothe and Portsmouth, Ohio, approximately 113 kilometers (70 miles) south of Columbus, Ohio. If a license is issued, USEC would construct, operate, and decommission the proposed ACP. The ACP would be located at the same site as DOE's Portsmouth Gaseous Diffusion Plant, which has been shut down since May 2001. The ACP would consist of refurbished existing buildings, newly constructed facilities, and adjacent grounds owned by DOE and leased by USEC.

In its license application, USEC indicated that the proposed ACP would utilize centrifuge technology to enrich uranium-235 up to 10 weight percent, although enrichment would typically be between 2.5 and 5 weight percent uranium-235. The license application is for a 3.5 million separative work units (SWU) per year facility. However, because USEC indicated the potential for future expansion to 7 million SWU per year, this EIS examines the potential impacts of a full 7-million SWU facility. Depending on the timing of the NRC licensing process and other factors, USEC plans to start construction of the proposed ACP in 2007, begin commercial centrifuge operations in 2009, and ramp up to the 3.5 million SWU design capacity by 2011. The NRC license, if granted, would be for a period of 30 years. After the proposed ACP becomes operational, production of enriched uranium would ultimately cease at the gaseous diffusion plant in Paducah, Kentucky and be replaced by the proposed new gas centrifuge process at Piketon.

PURPOSE AND NEED FOR THE PROPOSED ACTION

The purpose of the proposed action would be to allow USEC to construct and operate a plant to enrich uranium up to 10 percent by weight of uranium-235, with an initial production capacity of 3.5 million SWU per year potentially expandable to 7 million SWU per year, using gas centrifuge technology at the DOE reservation in Piketon, Ohio. The proposed action is intended to satisfy the overall need for an additional reliable and economical domestic source of enriched uranium and to replace existing aging and less efficient uranium enrichment facilities.

For the purpose of this EIS, the need for the proposed ACP can be organized more specifically into: (1) the need for enriched uranium to fulfill electricity requirements; (2) the need for domestic supplies of enriched uranium for national energy security; and (3) the need for upgraded uranium enrichment technology in the U.S. The proposed action fulfills each of these needs as explained below.

By 2020, the U.S. is estimated to need about 393 gigawatts or 393,000 megawatts of new generating capacity. To meet this growing demand, installed nuclear-generating capacity in the U.S. is projected to increase from approximately 98 gigawatts (98,000 megawatts) in 2001 to about 103 gigawatts (103,000 megawatts) in 2025, which is the equivalent of about five large nuclear power reactors. While this demand for enriched uranium is going up, the supplies of enriched uranium currently used in the U.S. are on the decline. In particular, the Megatons-to-Megawatts program, which currently supplies approximately 42 percent of the U.S.'s enriched uranium needs by "down blending" uranium from dismantled nuclear warheads from Russia, is only planned to continue until 2013. Enriched uranium will have to come from one or more new sources, such as the proposed ACP, to fulfill the shortfall in supply that may exist after that time.

Foreign sources currently provide as much as 86 percent of U.S. enriched uranium needs. This includes 42 percent from the Megatons-to-Megawatts program with Russia as noted above, along with 44 percent from other countries that produce and export enriched uranium to the U.S., including China, France, Germany, the Netherlands, and the United Kingdom. The only uranium enrichment facility currently operating in the U.S. is the Paducah Gaseous Diffusion Plant. The other gaseous diffusion plant ceased operation in 2001, and is currently in cold stand-by status. A supply disruption with the Paducah plant production could impact national energy security because domestic commercial reactors, which currently supply approximately 20 percent of the nation's electricity requirements, would be fully dependent on foreign sources for enriched uranium. The proposed ACP, therefore, would help decrease this dependence on foreign sources and improve the nation's national energy security.

In addition to advancing national energy security goals, development of the proposed ACP would help accomplish the goals of the June 17, 2002 DOE-USEC Agreement to "facilitate the deployment of new, cost effective advanced enrichment technology in the U.S. on a rapid schedule." It would enable USEC to construct and operate a modern, more efficient, less costly enrichment plant to supplement and replace its more than 50-year old gaseous diffusion plants. Gas centrifuge technology represents a more efficient and less energy intensive uranium enrichment technology than the gaseous diffusion technology currently in use. According to USEC, the energy requirements of a gas centrifuge plant are about five percent of that required by a comparably sized gaseous diffusion plant, resulting in considerably lower operating cost.

ALTERNATIVES

This EIS evaluates the potential environmental impacts of several alternatives, including the no-action alternative. Under the no-action alternative, the proposed ACP would not be constructed, operated, and decommissioned at the DOE reservation in Piketon, Ohio. Enriched uranium needs would continue to be met with existing domestic and foreign uranium enrichment suppliers. Any future uses of facilities and grounds currently proposed for the ACP would be up to USEC and DOE, but would be expected to include similar activities within the nuclear fuel cycle, consistent with USEC's and the reservation's history and mission.

The NRC staff considered several alternatives to fulfill domestic enrichment needs:

(1) Construct and operate the ACP at the Paducah Gaseous Diffusion Plant in Paducah, Kentucky;

(2) Construct and operate the ACP at alternative locations at the DOE reservation in Piketon, Ohio;

(3) Down blend highly enriched uranium instead of constructing a domestic uranium enrichment plant;

(4) Re-activate the Gaseous Diffusion Plant at the DOE reservation in Piketon; and

(5) Purchase low-enriched uranium from foreign sources.

These alternatives were eliminated from further consideration in this EIS because they either did not offer any environmental advantage over the proposed action, or did not meet the need for a reliable, economical source of domestic uranium enrichment.

The NRC staff also considered alternative technologies to the proposed gas centrifuge process. These technologies included the electromagnetic isotope separation process, liquid thermal diffusion, atomic vapor laser isotope separation, and the separation of isotopes by laser excitation. These technologies, however, are not economically viable or remain at the research developmental scale and were thus eliminated from further consideration.

POTENTIAL ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION

Potential environmental impacts of the proposed action are evaluated in Chapter 4 of this EIS and summarized below. The environmental impacts from the proposed action are generally SMALL, although they could be as high as MODERATE in the areas of air quality, socioeconomics, and transportation. Methods for mitigating the potential impacts are described in Chapter 5. Environmental monitoring methods are described in Chapter 6.

Land Use

Small Impact. Site preparation and construction activities would occur on approximately 22 hectares (55 acres) of land, which comprises about one percent of the total 1,497 hectare (3,700 acre) DOE reservation. These changes would convert previously disturbed land (e.g., managed lawns, fields, and forests) on the DOE reservation to developed areas. The land is not considered prime farmland, and changes would be consistent with current land use. It is anticipated that after decommissioning activities

are completed, existing buildings and structures would remain onsite and the site would remain categorized for industrial use.

Historic and Cultural Resources

Small Impact. NRC identified the Portsmouth Gaseous Diffusion Plant historic district, thirteen historic farmsteads, and one prehistoric lithic scatter as being potentially eligible for inclusion on the National Register of Historic Places. In addition, NRC included three properties located around the perimeter in its consideration of potential effects. There would be no adverse indirect or direct effect on these sites. In addition, construction of new buildings and refurbishment of existing buildings would result in buildings of design, size, and function similar to the existing buildings, and therefore would not alter the historic setting of the existing Gaseous Diffusion Plant.

Determination of the Significance of Potential Environmental Impacts

A standard of significance has been established for assessing environmental impacts. Based on the Council of Environmental Quality's regulations, each impact is to be assigned one of the following three significance levels:

- ***Small:*** *The environmental effects are not detectable or are so minor that they would neither destabilize nor noticeably alter any important attribute of the resource.*
- ***Moderate:*** *The environmental effects are sufficient to noticeably alter but not destabilize important attributes of the resource.*
- ***Large:*** *The environmental effects are clearly noticeable and are sufficient to destabilize important attributes of the resource.*

Any additional disturbance of the site during decommissioning is not anticipated to have impacts to historic and cultural resources that exceed those associated with construction of the proposed ACP. Any changes to or demolition of buildings or structures proposed to be conducted during decommissioning would be evaluated for historic and cultural resources impacts prior to any implementation.

Visual and Scenic Resources

Small Impact. Construction of the proposed ACP would not alter the site's Bureau of Land Management Visual Resources Management rating system classification of Class III or IV (moderate to little scenic value). There are no scenic rivers, nature preserves, or unique visual resources in the proposed project area. While not anticipated, any changes to, or demolition of, buildings or structures proposed during decommissioning would be evaluated for visual and scenic resource impacts prior to any implementation.

Air Quality

Small to Moderate Impact. Airborne emissions from site preparation and construction should not result in exceedances of air quality standards, with the possible exception of short-term increases in particulate matter that could exceed the applicable standard up to a distance of 1,000 meters (3,280 feet) beyond the fenceline. Radiological releases from soil disturbances and from activities to refurbish existing buildings that would be used for the ACP would be small and controlled. Emissions from diesel generators would not cause air quality problems, and maximum predicted concentrations of hydrogen fluoride resulting from ACP operations are below safe levels. Based on the maximum radiological emission rates for the ACP, and the comprehensive site monitoring program, the expected impact to air quality from the plant's radiological emissions during operations is also expected to be small. The air quality impacts associated

with decontamination and decommissioning are expected to be less than the air quality impacts associated with site preparation and construction and proposed ACP operations; however, there is the potential for emission of solvents during the decontamination phase if solvent cleaning methods are used. These emissions would be of short duration (i.e., a few weeks) and would probably involve small amounts of solvent.

Geology and Soils

Small Impact. Most of the site is an existing industrial facility with altered natural soils. The soils are cohesive and over-consolidated and have low potential for liquefaction. There is little likelihood of impact from soil compaction or subsidence and there are no unique mineral deposits or geologic resources that stand to be affected. The flat terrain where the ACP buildings would be located, and the dense soil, low moisture content, and vegetative cover in the area of a new 10 hectare (24 acre) cylinder storage yard to be located in another spot on the reservation make landslides unlikely. Construction activities would not alter current drainage and would not disturb any soils that qualify for protection as prime farmland. There would be a potential for increased erosion and siltation of streams near the construction site of the new large cylinder storage yard, but both of these potential impacts should be minimized by the use of standard best management practices. Likewise, the potential for soil contamination resulting from ACP operations would be small. A plan would be in place to address any spills that might occur.

Impacts to geology and soils associated with the decommissioning of the proposed ACP are not anticipated to exceed the geology and soils impacts associated with construction of the ACP. There is potential for additional removal of contaminated surface soils from the site during decontamination and decommissioning; however, any such surface removal is anticipated to be limited in scope and not anticipated to affect the site terrain or the subsurface.

Water Resources

Small Impact. Potential stream sedimentation from construction activities would be minimized by the use of silt fences and other best management practices. Any impacts to stream water quality would be of short duration. None of the proposed site preparation and construction activities would occur within a 100-year floodplain. Groundwater withdrawals would increase by 10 percent over current usage rates, but would still be only 31 percent of the total design capacity of the site's well fields, would not affect groundwater availability, and would not pose an increased risk of subsidence. Wastewater would continue to discharge from permitted National Pollutant Discharge Elimination System outfalls and discharge rates, though increased above current levels, would represent only 75 percent of the existing system's design capacity. USEC does not anticipate any liquid discharges of radioactive materials from the proposed ACP (i.e., from cooling water, storm water runoff, or sanitary water). The potential for leaks or spills that could contaminate water resources would be limited by an approved Spill Prevention Control and Countermeasures Plan.

Ecological Resources

Small Impact. Construction of the new large cylinder storage yard referenced above in the section on geology and soils would result in increased erosion, stormwater runoff, and loss of 10 hectares (24 acres) of vegetation, but with planned best management practices, would result in small impacts to the flora and fauna in and around the tributaries of Little Beaver Creek. That same cylinder storage yard would also be located within 500 meters (1,640 feet) of suitable summer habitat for the endangered Indiana bat,

although studies have not documented the presence of this bat species on the DOE reservation. None of the site construction activities would occur in wetlands. However, some construction would occur adjacent to small wetlands, and standard erosion control measures would be used to limit sedimentation in these areas. Areas of reestablished vegetation may need to be cleared during site decommissioning (e.g., to conduct surface soil removal for site remediation). Any areas cleared of vegetation during decommissioning are anticipated to be small and vegetation could reestablish itself in cleared unpaved areas after decommissioning activities are completed.

Socioeconomics

Small to Moderate Impact. In each year between 2006 and 2010, average annual employment as a result of site preparation, refurbishment, and construction activities is estimated at 3,362 full-time jobs in the region of influence. During the ACP operations phase between 2010 and 2040, 1,500 jobs would be created in the region of influence. These impacts to regional employment are considered moderate, based on existing employment levels in the region. All other socioeconomic impacts from site preparation and construction and ACP operations are estimated to be small. This includes a small increase in regional tax revenues as well as small impacts to population characteristics, housing resources, community and social services, and public utilities.

Cessation of operations at the Paducah enrichment plant (assumed to occur with start-up of operations at the ACP) would result in direct and indirect socioeconomic impacts associated with the termination of the operations workforce at the plant and associated reduction in payroll. The impacts to regional employment around the Paducah site are estimated to be moderate, but all other socioeconomic impacts in the region are expected to be small.

Decontamination and decommissioning of the proposed ACP also would generally have small impacts. As a result of such activities, an average of 841 direct and indirect jobs are expected to be created, of which 407 would be new (the others would be filled by transitioned USEC workers). It is unlikely that State income tax, State sales tax, and county-level tax revenues would significantly increase as a result of the decontamination and decommissioning phase of the proposed action. Likewise, decontamination and decommissioning activities are not expected to lead to a large influx of workers that could cause housing shortages or increases in rental rates in the region. The small influx of workers would also have a small effect on public utilities, fire, law enforcement, healthcare, and administrative levels of service.

Environmental Justice

Small Impact. The environmental justice analysis focused on an area within 80 kilometers (50 miles) around the proposed ACP site. The analysis found that, within this area, there are 18 Census tracts that have populations qualifying as low-income and two Census tracts that have populations qualifying as minority. The closest of these tracts is 28 kilometers (17 miles) from the proposed site. Although the impacts to the general population were small to moderate as summarized elsewhere in this section, an examination of the various environmental pathways by which low-income and minority populations could be affected found no disproportionately high or adverse impacts from construction, operation, or decommissioning on any of these populations.

Noise

Small Impact. Site preparation and construction activities are expected to generate a 53 day-night average noise level, which is below applicable land use compatibility guidelines. No adverse noise impacts from routine ACP operations are expected at the closest residence due to low operational noise, the attenuation provided by the building facade, and distance attenuation of over 900 meters (3,000 feet). Catastrophic failure of a centrifuge could cause a sudden but brief loud noise, due to the high rotational speed of the centrifuge. However, the likelihood of a single centrifuge catastrophically failing is very low. Noise levels during decontamination and decommissioning are also anticipated to be small and similar to those generated during construction of the proposed ACP.

Transportation

Small to Moderate Non-radiological Impacts from Routine Transportation. Increased truck and vehicle traffic associated with proposed ACP operations should result in small changes in current levels of congestion and delays on U.S. Route 23 and Ohio State Road 32. Traffic associated with proposed operations should also result in small increases in the number of traffic accidents resulting in injuries or fatalities.

Substantially greater transportation requirements during the construction phase could result in moderate impacts during the five-year period in which most of the proposed construction activity is projected to occur. The NRC estimates that increased traffic during construction would temporarily decrease the level of service on U.S. Route 23 and, to a lesser extent, on Ohio State Road 32. The changes on U.S Route 23 would temporarily increase traffic density, affect the ability to maneuver within the traffic stream, and reduce travel speeds somewhat. It is also expected that construction traffic accidents would result in about 18 injuries a year involving employees traveling to and from their jobs, and one fatality over the entire construction period. These same injury and fatality rates would be expected if the same employees were driving to different employers.

Small Radiological Impacts from Routine Transportation and Transportation Accidents. The transportation of materials containing radionuclides would result in some increased risk of cancer to both the occupational workers transporting and handling the material and to members of the public driving along the roads or living along the transportation routes. The transport of all materials is estimated to result in approximately 0.014 latent cancer fatalities per year of operation from exposure to direct radiation during “incident-free” transport (i.e., shipping that does not involve the breach of a shipping container and subsequent release of radioactive material), and an additional 0.008 latent cancer fatalities per year from accidents that result in the release of radioactive material into the environment. The total latent cancer fatalities is estimated to be 0.02 per year of operation or less than one cancer fatality over the 30 years of operation.

Moderate Non-Radiological Impacts from Transportation Accidents. Transportation accidents involving the release of uranium hexafluoride (UF_6), which is the form of uranium that would be transported the most to and from the proposed ACP, could also result in chemical impacts to drivers and the surrounding public. When released from a shipping cylinder, UF_6 reacts with the moisture in the atmosphere to form hydrogen fluoride and uranyl fluoride, both of which can cause adverse effects due to chemical toxicity (as opposed to radiation hazards) if exposures are high enough. The analysis in Section 4.2.11.1 of this EIS shows that the probability of a severe transportation accident that releases sufficient quantities of UF_6 that could pose a health risk is low, but that the consequences of such an accident, should it occur, are

high. Based on this analysis, the impacts associated with such an accident as part of the proposed action are considered moderate.

Small Impact During Decontamination and Decommissioning. Traffic associated with material and equipment transportation to the site during this phase would be much lower than that during site preparation and construction. Decontamination and decommissioning activities, including waste generation and handling, would require almost 5,000 truck shipments for offsite disposal over the five-year decommissioning period proposed by USEC. Because this volume of truck traffic is far less than the estimated 17,870 truck trips needed during the five-year proposed ACP construction period, the transportation impacts associated with the decommissioning truck traffic should be far less than that described for site preparation and construction. The number of latent cancer fatalities from the incident-free transportation of all decontamination and decommissioning waste is estimated to be less than one, and there are no projected deaths resulting from the release of radioactive material as a result of accidents during such shipments.

Public and Occupational Health and Safety

Small Impact. The proposed action would result in small increases in the current number of occupational injuries and illnesses at the site, though still less than historical levels. Construction and process areas would be segregated, and personnel monitoring programs would be implemented, to minimize worker exposures to annual radiation doses of less than the 10 CFR § 20.1201 limit of 50 millisieverts (5,000 millirem). The maximum does to members of the public resulting from routine radiation exposures is estimated to be 0.01 millisieverts (1 millirem) per year, for a hypothetical person living on the northern boundary of the DOE reservation. This predicted dose is significantly below the 10 CFR Part 20 regulatory limit of 1 millisievert (100 millirem) and 40 CFR Part 190 regulatory limit of 0.25 millisieverts (25 millirem) for uranium fuel-cycle facilities. Analytical results also indicate that plausible radiological accidents at the proposed ACP pose acceptably low risks. In addition, public and occupational exposures to non-radiological contaminants are projected to be less than applicable limits.

Occupational exposures during onsite decontamination and decommissioning would be bounded by the potential exposures during operation. At the end of plant life, gas centrifuges containing residual uranium would be purged, leaving radioactive material in amounts significantly less than handled during operations. Because systems containing this residual contamination would be opened, decontaminated (with the removed radioactive material processed and packaged for disposal), and dismantled, an active environmental and dosimetry (external and internal) program would be conducted to maintain as low as reasonably achievable doses to workers and doses to individual members of the public as required by 10 CFR Part 20.

Waste Management

Small Impact. Site preparation, construction, and operations would generate varying amounts of low-level radioactive, low-level mixed, hazardous, sanitary/industrial, and recyclable wastes. All of these wastes would be managed in accordance with existing procedures for controlling contaminant releases and exposures. With the exception of the depleted uranium, all of the wastes would also be generated at volumes that are well within existing management capacities. The ACP would generate approximately 41,105 cylinders of depleted UF_6, containing approximately 512,730 metric tons (535,200 tons) of material. Production of depleted UF_6 for the 10 percent enrichment scenario would be less than this amount. All of this depleted UF_6 could be converted to a more stable chemical form at a new conversion

facility that DOE is constructing at Piketon, which would require DOE to significantly extend the life of this facility. The converted material would then be shipped by rail to an acceptable western disposal site, where sufficient capacity exists and where the disposal impacts should be small. The waste management and recycling programs used during operations would also apply to decontamination and decommissioning.

SUMMARY OF THE COSTS AND BENEFITS OF THE PROPOSED ACTION

The proposed action would result in both direct and indirect costs. The direct costs can be categorized by facility life-cycle stages:

- Site preparation and construction is estimated to incur costs of $1.5 billion (nominal dollars, i.e., dollars that are not adjusted for inflation) between calendar years 2006 and 2010;

- Centrifuge manufacturing and assembly is estimated to cost $1.8 billion (nominal dollars) between calendar years 2004 and 2013;

- Operational costs are expected to accrue between 2011 and 2040. Operating costs are considered to be proprietary information and have been withheld here pursuant to 10 CFR 2.390. The ACP operating costs per SWU would be approximately 20 percent of the operating costs per SWU of a gaseous diffusion plant.

- Disposal of tails generated during the 30-year operations phase is estimated to cost $1.8 billion (2004 dollars[1]) in total. Although the precise disposal plan is to be determined, these costs are likely to be incrementally accrued between 2011 and 2045.

- Decontamination and decommissioning is estimated to cost $435 million (2004 real dollars, i.e., dollars stated in year 2005 price levels) over a period of six years, which are expected to begin 30 years after the commencement of ACP operations and are expected to occur from 2040 through 2045.

Indirect costs include the environmental impacts that are expected to be caused by the proposed action. As summarized in the preceding section, these impacts are generally considered small, although they could reach moderate levels in a few resource areas.

The primary benefit of the proposed action is that it would result in the production of 3.5-7 million SWUs of enriched uranium between 2010 and 2040. The ACP operating costs per SWU would be approximately 20 percent of the operating costs per SWU of a gaseous diffusion plant. This level of production would represent an augmentation of the domestic supply of enriched uranium and would meet the following needs:

- The need for enriched uranium to fulfill domestic electricity requirements and replace the shortfall in supply created by the end of the Megatons-to-Megawatts program planned in 2013;

[1] In order to avoid the uncertainties associated with deflating or inflating the value of the dollar, and to simplify references to USEC's cost information, this document expresses costs and benefits in the units (real or nominal dollars) as they were provided in the USEC ER, license application, and responses to requests for additional information. A base year is always identified for real dollar estimates. Nominal dollar estimates are also clearly identified. In Chapter 7, for the purposes of the net present value analysis ,the document presents costs in 2005 real dollars because when performing a net present value analysis it is essential that all costs and benefits be expressed in real dollars referenced to a common base year.

- The need for domestic supplies of enriched uranium for national energy security; and

- The need for upgraded uranium enrichment technology in the United States to replace the existing aging and less efficient gaseous diffusion plants.

At the same time, the proposed action would result in positive socioeconomic impacts in the region around Piketon. During the site preparation and construction phase between 2006 and 2010, these impacts include the creation of 3,362 full-time jobs, an increase of $2.3 million in annual state income tax revenues, and an increase in $3.7 million in annual state sales tax receipts. During the ACP operations phase between 2010 and 2040, 1,500 jobs would be created in the region and the State would benefit from $1.8 million and $2.4 million in additional annual income and sales tax receipts, respectively.

During the centrifuge manufacturing and assembly phase between 2004 and 2013, average annual employment is estimated at 2,130 full-time jobs and the State would benefit from $1.5 million and $2.4 million in additional annual income and sales tax receipts.

Overall, the costs of the proposed action are estimated to be small in comparison to the benefits for the proposed action. Therefore, the benefits of the proposed action are believed to outweigh the costs of the proposed action.

COMPARISON OF ALTERNATIVES

The no-action alternative would consist of USEC not constructing, operating, or decommissioning the proposed ACP at Piketon. The buildings and land proposed to be used for the ACP at the DOE reservation in Piketon would therefore be available for some other use. At the same time, the uranium fuel fabrication facilities in the United States would continue to obtain low-enriched uranium from currently available sources, including the Paducah Gaseous Diffusion Plant and the down blending of highly enriched uranium under the Megatons to Megawatts program. In order to meet growing demands for enriched uranium, additional domestic enrichment facilities utilizing a more efficient technology in the future could be constructed. This could include the gas centrifuge facility proposed by Louisiana Energy Services near Eunice, New Mexico, as well as other possible facilities. The associated impacts associated with the existing uranium fuel cycle activities in the United States would continue as expected today if the proposed ACP is not constructed, operated, or decommissioned.

The no-action alternative would have small local impact on historic and cultural resources; visual and scenic resources; air, water, and ecological resources; geology and soils; environmental justice; transportation; public and occupational health; and waste management. For land use, the facilities currently leased to USEC for the ACP would remain leased to USEC. Some of these facilities would likely continue to be used for the Lead Cascade Demonstration Facility, which is currently scheduled to operate until the middle of 2008 in order to continue to provide a demonstration of the gas centrifuge enrichment process. Any future uses of the facilities currently proposed for the ACP would be up to USEC and DOE, but would be expected to include similar activities within the nuclear fuel cycle, not completely different uses. Nevertheless, the current program for examining and implementing reindustrialization alternatives at the DOE reservation would remain in place under the no-action alternative.

Adverse socioeconomic effects of the no-action alternative to the Piketon region would include a missed opportunity for approximately 1,500 direct and indirect jobs during the 30-year operations phase, 3,362 direct and indirect jobs during the five-year construction phase, and 2,130 direct and indirect jobs during the 10-year manufacturing phase that would have been created by the proposed action. The cessation of enrichment operations at Paducah and the corresponding socioeconomic impacts in that region would be postponed, but would likely occur sometime later when new enrichment facilities are expected to be built to meet the nation's growing demand for enriched uranium. Depending on the construction methods, design of any new facilities, and local demographics, the likely socioeconomic impacts would be similar to the proposed action, but at an alternate location.

In comparison to the no-action alternative, the proposed action would also have small impacts on land use; historical and cultural resources; visual and scenic resources; geology and soils; water resources; ecological resources; environmental justice; noise; public and occupational health; and waste management. Air quality impacts could be small to moderate due to short-term increases in particulate matter emissions from dust during construction. Transportation impacts of the proposed action are expected to be small to moderate, accounting for increased traffic during construction and the possibility of a severe accident releasing significant quantities of UF_6, as described above.

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ACRONYMS AND ABBREVIATIONS

ACP	American Centrifuge Plant
CFR	Code of Federal Regulations
DOE	Department of Energy
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
HF	hydrogen fluoride
NEPA	National Environmental Policy Act
NPDES	National Pollutant Discharge Elimination System
NRC	Nuclear Regulatory Commission
OAC	Ohio Administrative Code
RCRA	Resource Conservation and Recovery Act
SWU	Separative Work Unit
UF_6	uranium hexafluoride
U_3O_8	triuranium octaoxide
UO_2	uranium dioxide
USEC	USEC Inc.

1. INTRODUCTION

1.1 Background

The U.S. Nuclear Regulatory Commission (NRC) prepared this Environmental Impact Statement (EIS) in response to an application submitted by USEC Inc. (USEC) for a license that would allow the construction, operation, and decommissioning of a gas centrifuge uranium enrichment facility in Piketon, Ohio (Figure 1-1). The proposed facility is called the American Centrifuge Plant (ACP).

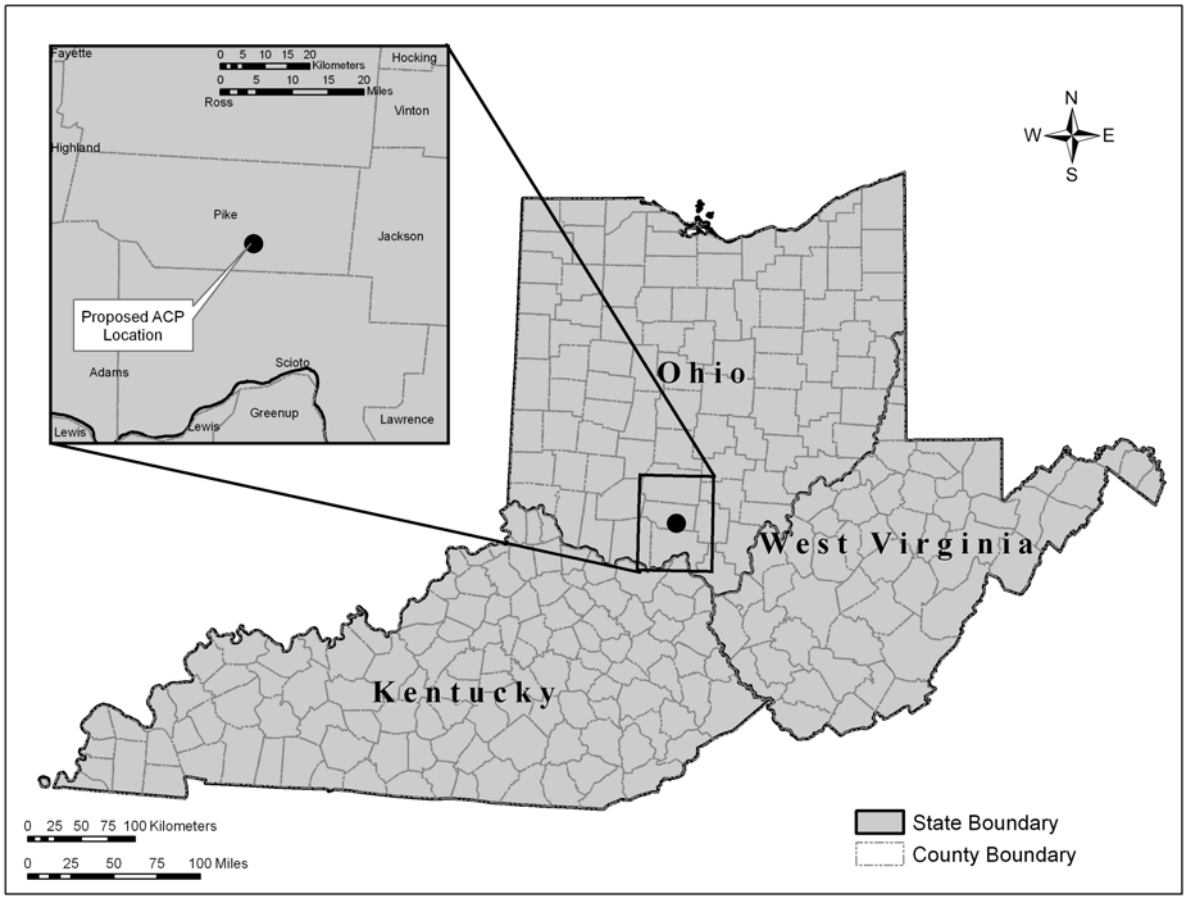

Figure 1-1 Location of the Proposed American Centrifuge Plant

The NRC's Office of Nuclear Material Safety and Safeguards prepared this EIS as required by Title 10, "Energy," of the *U.S. Code of Federal Regulations* (10 CFR) Part 51. These regulations implement the requirements of the *National Environmental Policy Act of 1969* , as amended (Public Law 91-190). The Act requires the Federal Government to assess the potential environmental impacts of its proposed actions.

1.2 The Proposed Action

The proposed action is the issuance of an NRC license for USEC under the provisions of the *Atomic Energy Act*. The license would authorize USEC to possess and use special nuclear material, source material, and byproduct material at the proposed ACP, in accordance with the NRC's regulations in

10 CFR Parts 30, 40, and 70, respectively. The scope of activities to be conducted under the license would include the construction, operation, and decommissioning of the proposed plant.

USEC has proposed that the ACP be located in leased portions of the U.S. Department of Energy (DOE) reservation in Piketon, Ohio. The Portsmouth Gaseous Diffusion Plant, which has been shut down since May 2001, is also located on the DOE reservation in Piketon. The ACP would consist of refurbished existing buildings, newly constructed facilities, and adjacent areas at the Portsmouth plant.

The proposed ACP is intended to help fulfill the terms of a DOE-USEC Agreement signed on June 17, 2002. Among other requirements, this agreement calls for USEC to deploy an advanced technology enrichment plant, meet the need for lower cost production of enriched uranium, and replace the aging gaseous diffusion technology formerly used at the Portsmouth plant and currently used to enrich uranium at the Paducah Gaseous Diffusion Plant in Paducah, Kentucky. Both the Portsmouth and Paducah plants are owned by DOE but operated by USEC's wholly owned subsidiary, the United States Enrichment Corporation. After the proposed ACP becomes operational, production of enriched uranium would ultimately cease at the Paducah plant and be replaced by the proposed new gas centrifuge process at the Portsmouth site. Decontamination and decommissioning of facilities at Paducah currently leased to the United States Enrichment Corporation would begin once the Paducah Gaseous Diffusion Plant ceases operation (USEC, 2005).

Uranium ore usually contains approximately 0.72 weight percent uranium-235, and this percentage is significantly less than the 3 to 5 weight percent uranium-235 required by nuclear power plants as fuel for electricity generation. Therefore, uranium must be enriched in one of the steps of the nuclear fuel cycle (Figure 1-2) so it can be used in commercial nuclear power plants. Enrichment is the process of increasing the percentage of the naturally occurring and fissile uranium-235 isotope and decreasing the percentage of uranium-238.

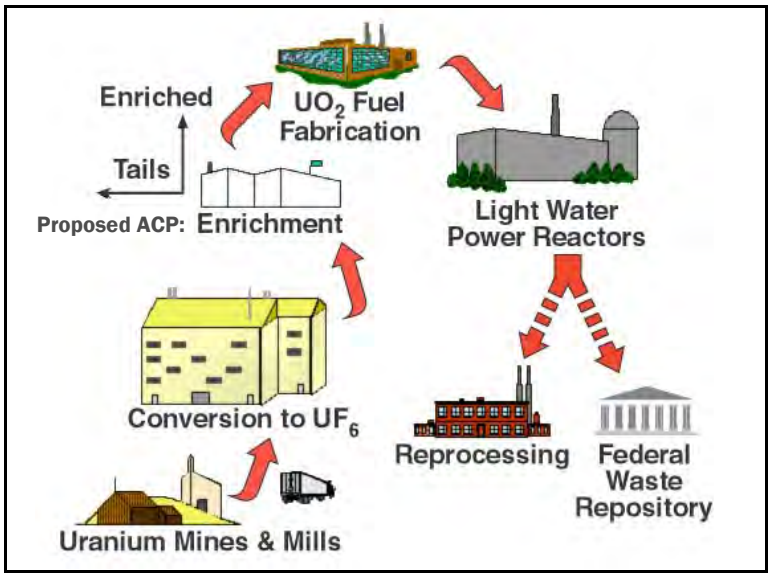

Figure 1-2 Nuclear Fuel Cycle (NRC, 2004a)

USEC's license application seeks authorization to produce enriched uranium up to 10 percent by weight of uranium-235, although enrichment would normally be less than 5.5 percent by weight of uranium-235 to meet the needs of most power plants. Enriched uranium from the proposed ACP would be used in commercial nuclear power plants, and is termed low-enriched uranium in contrast to highly enriched uranium used in military reactors and nuclear weapons. The proposed ACP would not alter the total amount of enriched uranium used in the U.S. nuclear fuel cycle because the amount of enriched uranium produced at the proposed ACP would only substitute for enriched uranium from other sources, as discussed further in this document.

USEC has requested a license for a production capacity of 3.5 million separative work units (SWUs) per year. A SWU is a measure of enrichment in the uranium enrichment industry; it represents the level of effort or energy required to raise the concentration of uranium-235 to a specified level, and is an indicator of the amount of enriched uranium. Because USEC has indicated a potential for future expansion to 7.0

million SWU, this EIS also examines the impacts of the additional construction and operations that would increase the plant's production capacity to approximately 7 million SWUs annually.

1.3 Purpose and Need for the Proposed Action

The purpose of the proposed action would be to allow USEC to construct and operate a plant to enrich uranium up to 10 percent by weight of uranium-235, with an initial production capacity of 3.5 million SWUs potentially expandable to 7 million SWUs, using gas centrifuge technology at the DOE reservation in Piketon, Ohio. The proposed action is intended to satisfy the overall need for an additional reliable and economical domestic source of enriched uranium and to replace existing aging and less efficient production facilities.

For the purpose of this EIS, the need for the proposed ACP is organized by:

- The need for enriched uranium to fulfill electricity requirements;
- The need for domestic supplies of enriched uranium for national energy security; and
- The need for upgraded uranium enrichment technology in the U.S.

The following sections discuss each of these needs and how they are addressed by the proposed action.

1.3.1 The Need for Enriched Uranium to Fulfill Electricity Requirements

Enriched uranium from the proposed ACP would be used in commercial nuclear power plants. Such plants are currently supplying approximately 20 percent of the nation's electricity requirements (EIA, 2005). As the demand for electricity increases in the future, the need for enriched uranium to fuel nuclear power plants is also expected to increase.

How Much Is A Megawatt?

One megawatt roughly provides enough electricity for the demand of 400 to 900 homes. The actual number is based on the season, time of day, region of the country, power plant capacity factors, and other factors.

Source: Bellemare, 2003.

By 2020, the U.S. is estimated to need about 393 gigawatts or 393,000 megawatts of new generating capacity (DOE, 2003). To meet this growing demand, installed nuclear-generating capacity in the U.S. is projected to increase from approximately 98 gigawatts (98,000 megawatts) in 2001 to about 103 gigawatts (103,000 megawatts) in 2025. This amounts to an increase in U.S. nuclear capacity of more than 5 gigawatts (5,000 megawatts), which is the equivalent of adding about five large nuclear power reactors. In actuality, approximately 3.5 gigawatts (3,500 megawatts) of the new capacity is projected to come from the uprating of existing plants, rather than constructing new facilities (EIA, 2005). As of June 2004, the NRC had granted 102 uprates and was reviewing 10 uprate applications (NRC, 2004b). As a further indicator of the growth in nuclear-generating capacity, domestic nuclear facilities reported a record high median three-year design electrical rating capacity factor[1] of 89.7 percent for the period 2001–2003 as compared to 70.8 percent for the period 1989–1991 (Blake, 2004).

[1] This factor reflects the amount of energy a facility generates in one year divided by the total amount it could generate if it ran at full capacity.

These forecasts of nuclear power generating capacity suggest a continuing, if not increasing, demand for enriched uranium. Table 1-1 shows uranium enrichment requirements in the U.S. for the next two decades as forecasted by the Energy Information Administration. The Energy Information Administration forecast shows a growth in demand from 11.5 SWUs in 2002 to 14.2 SWUs in 2025.

Table 1-1 Projected Uranium Enrichment Demand in the U.S. for 2002-2025 in Million SWUs

Year	EIA Forecast [a]
2002	11.5 (actual) [b]
2003	12.0 (actual) [b]
2005	14.6
2010	12.9
2015	15.4
2020	13.5
2025	14.2

Notes:
EIA - Energy Information Administration.
[a] EIA, 2003.
[b] EIA, 2004a.

The demand for enriched uranium in the U.S. is currently being fulfilled by three main categories of supply:

- Domestic production of enriched uranium. The only uranium enrichment facility currently operating in the U.S. is the Paducah Gaseous Diffusion Plant, run by USEC's subsidiary, the United States Enrichment Corporation. One other enrichment facility presently exists in the U.S., the Portsmouth Gaseous Diffusion Plant, but it ceased production in May 2001 and is in cold standby (a condition under which the plant could be returned to a portion of its previous production capacity in approximately 18-24 months).

- The Megatons-to-Megawatts program. Under this program, the United States Enrichment Corporation implements the 1993 government-to-government agreement between the U.S. and Russia that calls for Russia to convert 500 metric tons (550 tons) of highly enriched uranium from dismantled nuclear warheads into low-enriched uranium. This is the equivalent of about 20,000 nuclear warheads. The United States Enrichment Corporation purchases the enriched portion of the "down blended" material, tests it to make sure it meets specifications, adjusts the enrichment level if needed, and then sells it to its electric utility customers for fuel in commercial nuclear power plants. The activities in the United States all now take place at the Paducah plant. (USEC, 2004a)

- Other foreign sources. Other countries that produce and export enriched uranium to the U.S. include China, France, Germany, the Netherlands, and the United Kingdom.

The current U.S. demand for enriched uranium is 12 million SWUs per year (EIA, 2004). Annually, the United States Enrichment Corporation produces approximately 10.5 million SWUs, of which 6.7 million SWUs is sold for use in the U.S. and 3.8 million SWUs is exported (USEC, 2005). That means that the United States Enrichment Corporation currently fulfills approximately 56 percent of the U.S. demand (USEC, 2005). Of the amount sold for use in the U.S., 1.7 million SWUs (14 percent of U.S. demand) comes from the Paducah Gaseous Diffusion Plant (EIA, 2004a) and 5 million SWUs (42 percent of U.S. demand) from the Megatons-to-Megawatts program (USEC, 2005), which is dependent on deliveries from Russia. Therefore, up to 86 percent of the U.S. demand is currently supplied by foreign sources. However, the United States Enrichment Corporation produces approximately 5 million SWUs (which constitutes 42 percent of U.S. demand) at the Paducah Gaseous Diffusion Plant (USEC, 2005). Theoretically, this enrichment capacity could be sold only to the U.S. market, thus reducing the overall foreign dependence to approximately 7 million SWUs (58 percent of U.S. demand).

DOE anticipates "the inevitable cessation of all domestic gaseous diffusion enrichment operations" due to the higher cost of aging diffusion facilities like Paducah relative to new centrifuge technology (DOE, 2001a). Existing U.S. sources will not be able to provide a dependable and economical domestic supply to meet the continuing U.S. demand for enriched uranium in the future. The Megatons-to-Megawatts program is only planned to be available until 2013, after which the nation could have a significant shortfall in supply if the agreement is not renewed. Therefore, new domestic sources of enriched uranium are needed to replace the aging, energy-intensive Paducah gaseous diffusion facility even if the Megatons-to-Megawatts program is extended beyond 2013.

At the initial licensed capacity of 3.5 million SWUs, the proposed ACP would provide roughly 29 percent of the U.S. enrichment needs. Additionally, the NRC is evaluating the Louisiana Energy Services' proposed National Enrichment Facility as part of a separate proposed action (NRC, 2005) with an output of an additional 3 million SWU (25 percent). The combined output from the proposed ACP and National Enrichment Facility (6.5 million SWUs or 54 percent of U.S. demand) could offset the current output from the aging Paducah Gaseous Diffusion Plant and allow the Paducah plant to be retired. In addition, if USEC were to expand to a 7 million SWU capacity, USEC could contribute up to 58 percent of U.S. enrichment needs, in addition to the 25 percent that Louisiana Energy Services could produce.

Although the U.S. is a substantial net importer of enriched uranium, the United States Enrichment Corporation also provides enriched uranium to foreign customers, as noted above, which is indicative of utility customer preferences for multiple suppliers. An exclusive focus on domestic supply and demand projections clearly indicates a need for the ACP facility, but the reality of global trade in enriched uranium also provides another context for assessing the significance of any potential domestic supply shortfall, because global enrichment forecasts indicate that international supply and demand will be in very close balance after 2010 (ERI, 2004; Grigoriev, 2002; NUKEM, 2002; DOE, 2001a; Combs, 2004a). These enrichment demand forecasts reflect global nuclear generation capacity forecasts, but the Energy Information Administration has subsequently increased its forecast for 2020 world nuclear generation capacity by about 5 percent (EIA, 2004b), indicating that earlier enrichment demand forecasts were conservative. Supply forecasts reflect current sources of enriched uranium, the anticipated loss of supply from diffusion technology facilities like Paducah, new supply from the proposed National Enrichment Facility and the proposed ACP, and continuation of current levels of supply from the Russian highly enriched uranium agreement. The current Russian highly enriched uranium agreement actually expires in 2013, and while an extension of that agreement through 2020 is a reasonable assumption, any reduction in Russian highly enriched uranium supply after 2013 could shift the close balance after 2010 to a global supply shortfall. Recent global market forecasts by Cornell (2005), Euratom (2005), and Combs (2004b) agree that there will be a need for the proposed licensed capacity of both the ACP and National Enrichment Facility, and possibly additional capacity at one or both facilities, even if the Russian agreement is renewed. The U.S. market would be especially vulnerable to any unforeseen global supply shortfall if the Paducah facility closes, as expected, without an offsetting increase in supply from the combined output of the ACP and the National Enrichment Facility.

1.3.2 The Need for Domestic Supplies of Enriched Uranium for National Energy Security

With all domestic production now coming from a single plant—the aging gaseous diffusion plant in Paducah—there is some reliability risk of U.S. domestic enrichment capability. A supply disruption associated with the Paducah plant production or the Megatons-to-Megawatts deliveries could impact national energy security because domestic commercial reactors, which supply approximately 20 percent of the nation's electricity requirements (EIA, 2005), would be fully dependent on foreign sources for enrichment services.

In a 2002 letter to the NRC, DOE indicated that domestic uranium enrichment had fallen from a capacity greater than domestic demand to a level that was less than half of domestic requirements (DOE, 2002a). In this letter, DOE:

- Referenced interagency discussions led by the National Security Council where there was a clear determination that the U.S. should maintain a viable and competitive domestic uranium enrichment industry for the foreseeable future;

- Estimated that 80 percent of projected demand for nuclear power in 2020 could be fueled from foreign sources;

- Noted the importance of promoting the development of additional domestic enrichment capacity to maintain a viable and competitive domestic uranium enrichment industry for the foreseeable future;

- Noted that there was sufficient domestic demand to support multiple uranium enrichment facilities and that competition is important to maintain a healthy industry, and encouraged the private sector to invest in new uranium enrichment capacity; and

- Indicated its support for the deployment of the proposed National Enrichment Facility gas centrifuge technology by expressing its support for Urenco to partner with a U.S. company or companies, transferring Urenco's technology to new U.S. commercial uranium enrichment facilities.

DOE's 2002 letter reinforces the Administration's energy policy, which was released in May 2001 (NEP, 2001). This policy called the expansion of nuclear energy dependence "a major component of our national energy policy."

The proposed ACP would contribute to the attainment of these national energy security policy objectives by helping maintain a reliable and economical domestic source of enriched uranium. Beginning production in 2009 and achieving an annual production capacity of 3.5 million SWUs by 2011, the proposed ACP would provide roughly 25 percent of the projected U.S. enrichment services demand (EIA, 2003).

1.3.3 The Need for Upgraded Uranium Enrichment Technology in the U.S.

In addition to advancing national energy security goals, the proposed ACP would help accomplish the goals of the June 17, 2002 DOE-USEC Agreement to "facilitate the deployment of new, cost effective advanced enrichment technology in the U.S. on a rapid schedule." It would enable USEC to operate a modern, more efficient, and less costly enrichment plant to supplement and replace its more than 50-year old gaseous diffusion plants (USEC, 2004b).

Gaseous diffusion technology has relatively large resource requirements that make it less attractive than gas centrifuge technology, from both an economical and environmental perspective. Most importantly, gaseous diffusion plants require large amounts of power. USEC reports that the cost for electricity to run such plants represents approximately 60 percent of the total production cost. Two coal-fired power plants routed through four switchyards provide the electrical supply necessary to operate the gaseous diffusion process at Paducah. In addition to being energy-intensive, a plant using the gaseous diffusion process requires large-scale use of Freon and non-contact cooling water. (USEC, 2005)

The gas centrifuge technology is known to be more efficient and require less energy to operate than the gaseous diffusion technology currently in use. According to USEC, the energy requirements of a gas centrifuge plant are about five percent of that required by a comparably sized gaseous diffusion plant,

resulting in a considerably lower operating cost. At the same time, the gas centrifuge technology does not require such large-scale use of Freon and requires much less use of cooling water. The gas centrifuge technology is also modular, allowing production capacity to be easily geared up or down in response to market demands. (USEC, 2005)

1.4 Scope of the Environmental Analysis

To fulfill its responsibilities under the *National Environmental Policy Act*, the NRC has prepared this EIS to analyze the environmental impacts (i.e., direct, indirect, and cumulative impacts) of the proposed ACP as well as reasonable alternatives to the proposed action. The scope of this EIS includes consideration of both radiological and nonradiological (including chemical) impacts associated with the proposed action and the reasonable alternatives. The EIS also addresses the potential environmental impacts relevant to transportation.

In addition, this EIS identifies resource uses, monitoring, potential mitigation measures, unavoidable adverse environmental impacts, the relationship between short-term uses of the environment and long-term productivity, and irreversible and irretrievable commitments of resources.

The development of this EIS is the result of the NRC staff's review of the USEC license application (USEC, 2004b) and its supporting Environmental Report (USEC, 2005) as well as public and agency comments on the Draft EIS. This review has been closely coordinated with the development of the Safety Evaluation Report being prepared by the NRC to evaluate, among other aspects, the health and safety impacts of the proposed action. The Safety Evaluation Report is the outcome of the NRC safety review of the USEC license application.

The NRC Environmental and Safety Reviews

The focus of an EIS is a public review and presentation of the environmental impacts of a proposed action.

In addition to meeting its responsibilities under the National Environmental Policy Act, *the NRC prepares a Safety Evaluation Report to analyze the safety of the proposed action and assess its compliance with applicable NRC regulations.*

The safety and environmental reviews are conducted in parallel. Although there is some overlap between the content of a Safety Evaluation Report and EIS, the intent of the documents is different.

To aid in the decision process, the EIS summarizes some of the more detailed analyses included in the Safety Evaluation Report. For example, the EIS does not address how accidents are prevented; rather, it addresses the environmental impacts that would result, should an accident occur.

Much of the information describing the affected environment in the EIS also is applicable to the Safety Evaluation Report (e.g., demographics, geology, meteorology).

Source: NRC, 2003; NRC, 2002.

1.4.1 Scoping Process and Public Participation Activities

The NRC regulations in 10 CFR Part 51 contain requirements for conducting a scoping process prior to the preparation of an EIS. Scoping was used to help identify the relevant issues to be discussed in detail and to help identify issues that are beyond the scope of this EIS, that do not warrant a detailed discussion, or that are not directly relevant to the assessment of potential impacts from the proposed action.

On October 15, 2004, the NRC published in the *Federal Register* (69 FR 61268) a Notice of Intent to prepare an EIS for the construction, operation, and decommissioning of the proposed ACP and to conduct the scoping process for the EIS. The Notice of Intent summarized the NRC's plans to prepare the EIS and presented background information on the proposed ACP. For the scoping process, the Notice of Intent invited comments on the proposed action and announced a public scoping meeting to be held concerning the project.

On November 8, 2004, the NRC published a notice in the *Federal Register* (69 FR 64794) postponing the public scoping meeting for the proposed ACP. The NRC took this step in order to allow members of the public adequate access to USEC's license application and Environmental Report before the scoping meeting. These documents had been temporarily unavailable to the public due to a security review, by agency experts, of NRC's Agencywide Documents Access and Management System. After the documents were made publically available, the NRC published another notice in the *Federal Register* (69 FR 78058; December 29, 2004) announcing a new date, January 18, 2005 for the meeting.

On January 18, 2005, the NRC staff toured the proposed ACP site and held the public scoping meeting in Piketon, Ohio. During the scoping meeting, a number of individuals offered oral and written comments and suggestions to the NRC concerning the proposed ACP and the development of the EIS. In addition, the NRC received written comments from various individuals during the public scoping period that ended on February 1, 2005. The NRC carefully reviewed and identified substantive scoping comments (both oral and written). These comments were then consolidated and categorized by topical areas.

After the scoping period, the NRC issued the *Environmental Scoping Summary Report: Proposed USEC Inc. American Centrifuge Plant in Piketon, Ohio* in April 2005 (see Appendix A). The report identifies categories of issues to be analyzed in detail and issues determined to be beyond the scope of the EIS.

1.4.2 Issues Studied in Detail

As stated in the Notice of Intent, the NRC identified issues to be studied in detail as they relate to implementation of the proposed action. The public identified additional issues during the subsequent public scoping process. Issues identified by the NRC and the public that could have short- or long-term impacts from the potential construction and operation of the proposed ACP include:

- Need for the facility;
- Compliance with applicable regulations;
- Alternatives;
- Decommissioning;
- Cumulative impacts;
- Land use;
- Transportation;
- Accidents;
- Geology and soils;
- Water resources;
- Ecological resources;
- Air quality;
- Noise;
- Historic and cultural resources;
- Visual and scenic resources;
- Socioeconomic impacts;
- Public and occupational health;
- Waste management;
- Depleted uranium disposition;
- Environmental justice;
- Costs and benefits; and
- Resource commitments.

1.4.3 Issues Eliminated from Detailed Study

The NRC has determined that detailed analysis for mineral resources is not necessary because there are no known nonpetroleum mineral resources at the proposed site that would be affected by any of the alternatives being considered. In addition, detailed analysis of the impact of the proposed ACP on connected actions that include the overall nuclear fuel cycle activities were not considered. The proposed ACP would not measurably affect the mining and milling operations and the demand for enriched uranium (it would instead provide a replacement supply to meet current and projected demands, as discussed in Section 1.3). The amount of mining and milling is dependent upon the stability of market prices for uranium balanced with the concern of environmental impacts associated with such operations (NRC, 1980). The demand for enriched uranium in the U.S. is primarily driven by the number of commercial nuclear power plants and their operation. The proposed ACP would only result in the creation of new transportation routes within the fuel cycle to and from the enrichment facility. The existing transportation routes between the other facilities are not expected to be altered. Because the environmental impacts of all of the transportation routes other than those to and from the proposed ACP have been previously analyzed, they are eliminated from further study (NRC, 1980; NRC, 1977).

1.4.4 Issues Outside the Scope of the EIS

The following issues raised during the scoping process have been determined to be outside the scope of the EIS:

- Nonproliferation;
- Safety and security;
- Credibility; and
- Terrorism.

As noted in Section 1.4, some of these issues are analyzed in detail in the NRC's Safety Evaluation Report, and are only summarized in the EIS. For example, within the area of safety and security, the Safety Evaluation Report analyzes the probabilities and consequences of various accidents at the ACP, as well as measures to prevent those accidents and mitigate their effects. This EIS does not go into the same level of detail, but summarizes, in Section 4.2.12.3 and Appendix H, the accident analysis from the Safety Evaluation Report for the purpose of assessing the potential environmental impacts of accidents.

1.4.5 Related National Environmental Policy Act and Other Relevant Documents

The following *National Environmental Policy Act* documents were reviewed as part of the development of this EIS.

- *Environmental Impact Statement for the Proposed National Enrichment Facility in Lea County, New Mexico, Final Report, NUREG-1790, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, June, 2005.* This EIS analyzes the potential environmental impacts of the proposed siting, construction, operation, and decommissioning of a gas centrifuge uranium enrichment facility near Eunice, New Mexico. Its description of the purpose and need of the proposed action, as well as its review of alternatives to the proposed action, are highly relevant to the proposed ACP analysis, because the technologies and production capacities being proposed at the ACP and the National Enrichment Facility are similar. The environmental impacts discussed for the proposed National Enrichment Facility are also relevant to the impact analysis for the proposed ACP, especially the analysis of cumulative impacts associated with the management of wastes from the two facilities.

- *Final Environmental Impact Statement for the Construction and Operation of a Depleted Uranium Hexafluoride Conversion Facility at the Portsmouth, Ohio, Site. DOE/EIS-0360, Oak Ridge Operations, Office of Environmental Management, U.S. Department of Energy, June, 2004.* This site-specific EIS analyzes the construction, operation, maintenance, and decommissioning of the proposed depleted uranium hexafluoride (UF_6) conversion facility at three alternative locations within the Portsmouth, Ohio, site; transportation of all cylinders (depleted UF_6, enriched uranium, and empty) currently stored at the East Tennessee Technology Park near Oak Ridge, Tennessee, to Portsmouth; construction of a new cylinder storage yard at Portsmouth (if required) for cylinders from the East Tennessee Technology Park; transportation of depleted UF_6 conversion products and waste materials to a disposal facility; transportation and sale of the hydrogen fluoride produced as a conversion co-product; and neutralization of hydrogen fluoride to calcium fluoride and its sale or disposal in the event that the hydrogen fluoride product is not sold. The affected environment characterized in this EIS is the same as the environment at the proposed ACP, because the two facilities would be near each other on DOE's Portsmouth Reservation. In addition, the results presented in this EIS are relevant to the management, use, and potential impacts associated with the depleted UF_6 that would be generated at the proposed ACP.

- *Final Environmental Impact Statement for the Construction and Operation of a Depleted Uranium Hexafluoride Conversion Facility at the Paducah, Kentucky, Site. DOE/EIS-0359, Oak Ridge Operations, Office of Environmental Management, U.S. Department of Energy, June, 2004.* This site-specific EIS considers the construction, operation, maintenance, and decommissioning of the proposed depleted UF_6 conversion facility at three locations within the Paducah, Kentucky site, which is a DOE facility; transportation of depleted UF_6 conversion products and waste materials to a disposal facility; transportation and sale of the hydrogen fluoride produced as a conversion co-product; and neutralization of hydrogen fluoride to calcium fluoride and its sale or disposal in the event that the hydrogen fluoride product is not sold. The results presented in this EIS are relevant to the management, use, and potential impacts associated with the depleted UF_6 that would be generated at the proposed ACP.

- *Environmental Assessment of the USEC Inc. American Centrifuge Lead Cascade Facility in Piketon, Ohio, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, January, 2004.* This Environmental Assessment supported the NRC's decision to issue Material License No. 70-7003 to authorize USEC to possess and use source and special nuclear material at the Lead Cascade Demonstration Facility. Beginning in late 2005, this facility will provide a real-time demonstration of the basic building block for the commercial-scale gas centrifuge process proposed at the ACP and will provide information on the reliability, performance, and cost of the centrifuge machines and auxiliary systems. The Lead Cascade facility will have up to 240 operable centrifuges for testing, and will recycle tails and product with no product withdrawals except for sampling. It will be located within some of the same buildings proposed to be used by the proposed ACP. Many aspects of this Environmental Assessment relate directly to the commercial-scale plant now being proposed by USEC, assuming the Lead Cascade facility tests prove successful.

- *Environmental Assessment for the Leasing of Facilities and Equipment to USEC Inc. DOE/EA-1451, U.S. Department of Energy, October 2002.* This Environmental Assessment analyzed the environmental impacts of leasing facilities and equipment to USEC that would be used in its Gas Centrifuge Research and Development Project at East Tennessee Technology Park. The purpose of this research and development project was to develop an economically attractive gas centrifuge machine and process using DOE's centrifuge technology. This Environmental Assessment includes an analysis of potential impacts associated with the fabrication, assembly, and testing of centrifuge components, which is relevant to the proposed manufacturing and assembly of centrifuges for the ACP.

- *Environmental Assessment: Disposition of Russian Federation Titled Natural Uranium. DOE/EA-1290, Office of Nuclear Energy, Science and Technology, U.S. Department of Energy, June 1999.* This Environmental Assessment analyzed the environmental impacts of transporting natural UF_6 from the gaseous diffusion plants to the Russian Federation. Transportation by rail and truck were considered. The Environmental Assessment addresses both incident-free transportation and transportation accidents. The results presented in this Environmental Assessment are relevant to the transportation of UF_6 for the proposed ACP.

- *Final Programmatic Environmental Impact Statement for Alternative Strategies for the Long-Term Management and Use of Depleted Uranium Hexafluoride. DOE/EIS-0269, Office of Nuclear Energy, Science and Technology, U.S. Department of Energy, April 1999.* This EIS analyzes strategies for the long-term management of the DUF_6 inventory currently stored at three DOE sites near Paducah, Kentucky; Portsmouth, Ohio; and Oak Ridge, Tennessee. This EIS also analyzes the potential environmental consequences of implementing each alternative strategy for the period from 1999 through 2039. The results presented in this EIS are relevant to the management, use, and potential impacts associated with the depleted UF_6 that would be generated at the proposed ACP.

- *Environmental Assessment for the Reindustrialization Program at the Portsmouth Gaseous Diffusion Plant, Piketon, Ohio. DOE/EA-1346, Oak Ridge Operations Office, U.S. Department of Energy, May 2001.* This environmental assessment evaluated the potential impacts of transferring by lease and/or disposal, land and facilities located on the DOE reservation in Piketon, OH, as part of a reindustrialization program. Under the proposed action DOE would transfer land and facilities to a community reuse organization, the Southern Ohio Diversification Initiative, or other entities, should DOE determine them suitable.

- *Environmental Assessment for the Winterization Activities in Preparation for Cold Standby at the Portsmouth Gaseous Diffusion Plant, Piketon, Ohio. DOE/EA-1392, Oak Ridge Operations Office, U.S. Department of Energy, June 2001.* This environmental assessment evaluated the potential impacts of winterizing activities to include the installation and operation of a hot water heating facility and associated recirculating pipes and gas lines, as well as ongoing cold standby operations.

1.5 Applicable Statutory and Regulatory Requirements

This section provides a summary of major environmental requirements, agreements, Executive Orders, and permits relevant to the construction, operation, and decommissioning of the proposed ACP, in addition to the NRC regulatory requirements previously identified in section 1.2.

1.5.1 Federal Laws and Regulations

1.5.1.1 *National Environmental Policy Act of 1969*, as amended (42 U.S.C. §4321 et seq.)

The *National Environmental Policy Act* establishes national environmental policy and goals for the protection, maintenance, and enhancement of the environment to ensure for all Americans a safe, healthful, productive, and aesthetically and culturally pleasing environment. The Act provides a process for implementing these specific goals within the Federal agencies responsible for the action. This EIS has been prepared in accordance with *National Environmental Policy Act* requirements and NRC regulations (10 CFR Part 51) for implementing the *National Environmental Policy Act*.

1.5.1.2 *Atomic Energy Act of 1954*, as amended (42 U.S.C. §2011 et seq.)

The *Atomic Energy Act*, as amended, and the *Energy Reorganization Act of 1974* (42 U.S.C. §5801 et seq.) give the NRC the licensing and regulatory authority for nuclear energy uses within the commercial sector. If the license application for the proposed ACP is approved, the NRC would license and regulate the possession, use, storage, and transfer of byproduct, source, and special nuclear materials to protect public health and safety as stipulated in 10 CFR Parts 30, 40, and 70.

1.5.1.3 *Clean Air Act*, as amended (42 U.S.C. §7401 et seq.)

The *Clean Air Act* establishes regulations to ensure air quality and authorizes individual States to manage permits. The *Clean Air Act*: (1) requires the U.S. Environmental Protection Agency (U.S. EPA) to establish National Ambient Air Quality Standards as necessary to protect the public health, with an adequate margin of safety, from any known or anticipated adverse effects of a regulated pollutant (42 U.S.C. §7409 et seq.); (2) requires establishment of national standards of performance for new or modified stationary sources of atmospheric pollutants (42 U.S.C. §7411); (3) requires specific emission increases to be evaluated so as to prevent a significant deterioration in air quality (42 U.S.C. §7470 et seq.); and (4) requires specific standards for releases of hazardous air pollutants (including radionuclides) (42 U.S.C. §7412). These standards are implemented through plans developed by each State and approved by the U.S. EPA. The *Clean Air Act* requires sources to meet standards and obtain permits to satisfy those standards. The proposed ACP may be required to comply with the *Clean Air Act* Title V, Sections 501–507, for sources subject to new source performance standards or sources subject to National Emission Standards for Hazardous Air Pollutants.

1.5.1.4 *Clean Water Act*, as amended (33 U.S.C. §1251 et seq.)

The *Clean Water Act* requires the U.S. EPA to set national effluent limitations and water-quality standards, and establishes a regulatory program for enforcement. Specifically, Section 402(a) of the Act establishes water-quality standards for contaminants in surface waters. The *Clean Water Act* requires a National Pollutant Discharge Elimination System permit before discharging any point source pollutant into U.S. waters. The Ohio EPA administers this program in Ohio, with review and support from U.S. EPA Region 5. The National Pollutant Discharge Elimination System General Permit for Industrial Storm Water is required for point source discharge of storm water runoff from industrial or commercial facilities to State waters. Construction of the proposed ACP would require a National Pollutant Discharge Elimination System Construction Storm Water General Permit from the Ohio EPA. Section 401(a)(1) of the *Clean Water Act* requires States to certify that the permitted discharge would comply with all limitations necessary to meet established State water-quality standards, treatment standards, or schedule of compliance.

1.5.1.5 *Resource Conservation and Recovery Act*, as amended (42 U.S.C. §6901 et seq.)

The *Resource Conservation and Recovery Act*, as amended, requires the U.S. EPA to define and identify hazardous waste; establish standards for its transportation, treatment, storage, and disposal; and require permits for persons engaged in hazardous waste activities. Section 3006 (42 U.S.C. §6926) allows States to establish and administer these permit programs with U.S. EPA approval. U.S. EPA Region 5 has delegated regulatory jurisdiction to the Ohio EPA for nearly all aspects of permitting as required by the *Resource Conservation and Recovery Act*. U.S. EPA regulations implementing the *Resource Conservation and Recovery Act* are found in 40 CFR Parts 260 through 283. Regulations imposed on a generator or on a treatment, storage, and/or disposal facility vary according to the type and quantity of material or waste generated, treated, stored, and/or disposed. The method of treatment, storage, and/or disposal also impacts the extent and complexity of the requirements. The proposed ACP would be

classified as a large quantity generator of hazardous waste (meaning it is expected to generate more than 1,000 kilograms (2,200 pounds) of such waste per month) (USEC, 2005). Hazardous wastes would not be treated or disposed onsite; instead, USEC plans to store such wastes onsite for less than 90 days and then transfer them to appropriately permitted treatment, storage, and disposal facilities.

1.5.1.6 *Low-Level Radioactive Waste Policy Act of 1980,* as amended (42 U.S.C. §2021 et seq.)

The *Low-Level Radioactive Waste Policy Act of 1980* amended the *Atomic Energy Act* to specify that the Federal Government is responsible for disposal of low-level radioactive waste generated by its activities and that States are responsible for disposal of other low-level radioactive waste. The *Low-Level Radioactive Waste Policy Act of 1980* provides for and encourages interstate compacts to carry out the State responsibilities. Low-level radioactive waste would be generated from activities conducted from the proposed ACP. The State of Ohio is a member of the Midwest Compact.

1.5.1.7 *Emergency Planning and Community Right-to-Know Act of 1986* (42 U.S.C. §11001 et seq.) (also known as SARA Title III)

The *Emergency Planning and Community Right-to-Know Act of 1986*, which is the major amendment to the *Comprehensive Environmental Response, Compensation, and Liability Act* (42 U.S.C. §9601*)*, establishes the requirements for Federal, State, and local governments; Indian tribes; and industry regarding emergency planning and "Community Right-to-Know" reporting on hazardous and toxic chemicals. The "Community Right-to-Know" provisions increase the public's knowledge and access to information on chemicals at individual facilities, their uses, and releases into the environment. States and communities working with facilities can use the information to improve chemical safety and protect public health and the environment. This Act requires emergency planning and notice to communities and government agencies concerning the presence and release of specific chemicals. The U.S. EPA implements this Act under regulations found in 40 CFR Parts 355, 370, and 372. This Act would require the proposed ACP to report on hazardous and toxic chemicals used and produced at the facility, and to establish emergency planning procedures in coordination with the local communities and government agencies.

1.5.1.8 *Safe Drinking Water Act,* as amended (42 U.S.C. §300f et seq.)

The *Safe Drinking Water Act* was enacted to protect the quality of public water supplies and sources of drinking water. The Ohio EPA, under 42 U.S.C. §300g-2 of the Act, established standards applicable to public water systems. These regulations include maximum contaminant levels (including those for radioactivity) in public water systems. Other programs established by the *Safe Drinking Water Act* include the Sole Source Aquifer Program, the Wellhead Protection Program, and the Underground Injection Control Program. In addition, the Act provides underground sources of drinking water with protection from contaminated releases and spills. The proposed ACP would not use onsite ground-water or surface-water supplies, but rather would obtain potable water from a nearby public water supply system and non-potable cooling water (primarily for tower water cooling and a lesser amount for machine cooling water) from a nearby water treatment facility.

1.5.1.9 *Noise Control Act of 1972,* as amended (42 U.S.C. §4901 et seq.)

The *Noise Control Act* delegates the responsibility of noise control to State and local governments. Commercial facilities are required to comply with Federal, State, interstate, and local requirements regarding noise control. The proposed ACP would be located in Pike County, which does not have a local noise control ordinance.

1.5.1.10 *National Historic Preservation Act of 1966,* as amended (16 U.S.C. §470 et seq.)

The *National Historic Preservation Act* was enacted to create a national historic preservation program, including the National Register of Historic Places and the Advisory Council on Historic Preservation. Section 106 of the Act requires Federal agencies to take into account the effects of their undertakings on historic properties. The Advisory Council on Historic Preservation regulations implementing Section 106 of the Act are found in 36 CFR Part 800. These regulations were revised on July 6, 2004 (69 FR 40544) and became effective on August 5, 2004. The regulations call for public involvement in the Section 106 consultation process, including Indian tribes and other interested members of the public, as applicable. The NRC has initiated the Section 106 consultation process and entered into consultation with the Ohio Historic Preservation Office and interested Indian tribes (see Section 1.5.6 and Appendix B).

1.5.1.11 *Endangered Species Act of 1973,* as amended (16 U.S.C. §1531 et seq.)

The *Endangered Species Act* was enacted to prevent the further decline of endangered and threatened species and to restore those species and their critical habitats. Section 7 of the Act requires consultation with the U.S. Fish and Wildlife Service of the U.S. Department of the Interior or the National Marine Fisheries Service of the U.S. Department of Commerce to determine whether endangered and threatened species or their critical habitats are known to be in the vicinity of the proposed action, and to determine whether the proposed Federal action may affect listed species or critical habitat. The NRC has completed the consultation process with the U.S. Fish and Wildlife Service for the proposed ACP (see Section 1.5.6 and Appendix B).

1.5.1.12 *Occupational Safety and Health Act of 1970,* as amended (29 U.S.C. §651 et seq.)

The *Occupational Safety and Health Act* establishes standards to enhance safe and healthy working conditions in places of employment throughout the U.S. The Act is administered and enforced by the Occupational Safety and Health Administration, a U.S. Department of Labor agency. The identification, classification, and regulation of potential occupational carcinogens are found in 29 CFR §1910.101, while the standards pertaining to hazardous materials are listed in 29 CFR §1910.120. The Occupational Health and Safety Administration regulates mitigation requirements and mandates proper training and equipment for workers. The proposed ACP would be required to comply with the requirements of these regulations.

1.5.1.13 *Hazardous Materials Transportation Act* (49 U.S.C. §1801 et seq.)

The *Hazardous Materials Transportation Act* regulates transportation of hazardous material (including radioactive material) in and between States. According to the Act, States may regulate the transport of hazardous material as long as they are consistent with the Act or the U.S. Department of Transportation regulations provided in 49 CFR Parts 171 through 177. 49 CFR Part 173, Subpart I contains other regulations regarding packaging for transportation of radionuclides. Transportation of the depleted uranium cylinders from the proposed ACP would require compliance with the U.S. Department of Transportation regulations.

1.5.1.14 *Environmental Standards for Uranium Fuel Cycle* (40 CFR Part 190, Subpart B)

These regulations establish maximum doses to the body or organs of members of the public, as a result of operational normal releases from uranium fuel cycle activities, including uranium enrichment. These regulations were promulgated by U.S. EPA under the authority of the *Atomic Energy Act of 1954*, as amended, and have been incorporated by reference in the NRC regulations in 10 CFR §20.1301(e). The proposed ACP would be required to comply with these regulations for its releases from normal operations.

1.5.2 Applicable Executive Orders

- *Executive Order 11988* (Floodplain Management) directs Federal agencies to establish procedures to ensure that the potential effects of flood hazards and floodplain management are considered for any action undertaken in a floodplain and that floodplain impacts be avoided to the extent practicable.

- *Executive Order 12898* (Environmental Justice) calls for Federal agencies to address environmental justice in minority populations and low-income populations (59 FR 7629), and directs Federal agencies to identify and address, as appropriate, disproportionately high and adverse health or environmental effects of their programs, policies, and activities on minority populations and low-income populations. In response to this Executive Order, the NRC has issued a final policy statement on the "Treatment of Environmental Justice Matters in NRC Regulatory and Licensing Actions" (69 FR 52040; August 24, 2004) and environmental justice procedures to be followed in NEPA documents prepared by the NRC's Office of Nuclear Material Safety and Safeguards (NRC, 2003).

1.5.3 Applicable State of Ohio Requirements

Certain environmental requirements, including some discussed earlier, have been delegated to State authorities for implementation, enforcement, or oversight. Table 1-2 provides a list of State environmental requirements.

Table 1-2 State of Ohio Environmental Requirements

Law/Regulation	Citation	Requirements
Air Quality Protection		
Title V Permit Rules	ORC, Title 37, Chapter 3704 "Air Pollution Control," and implementing regulations in OAC, Chapter 3745-77	Establishes the policies and procedures by which the Ohio EPA will administer the Title V permit program under the *Clean Air Act*. Requires Title V sources, as defined by OAC 3745-77-02, to apply for and obtain a Title V permit prior to operation of the source facility.
Permits to Install New Sources of Pollution	ORC, Title 37, Chapter 3704 "Air Pollution Control," and implementing regulations in OAC 3745-31	Requires a permit prior to the installation of a new source of air pollutants, or the modification of an air contaminant source. Discusses exemptions and conditions under which approval will be granted. Also requires an impact analysis to determine if the air contaminant source will cause or contribute to violations of the National Ambient Air Quality Standards.
Air Permits to Operate and Variances	ORC, Title 37, Chapter 3704 "Air Pollution Control," and implementing regulations in OAC 3745-35	Requires a permit prior to the operation or use of any air contaminant source in violation of any applicable air pollution control law, unless a variance has been applied for and obtained from the Director of Environmental Protection.

Table 1-2 State of Ohio Environmental Requirements (continued)

Law/Regulation	Citation	Requirements
Accidental Release Prevention Program	ORC, Title 37, Chapter 3704 "Air Pollution Control," and implementing regulations in OAC 3745-104	Establishes the policies and procedures by which the Ohio EPA will administer the Accidental Release Prevention Program, or Risk Management Plan program under the *Clean Air Act Amendments of 1990*. Requires the owner or operator of a stationary source that has more than a threshold quantity of a regulated substance to comply with all the provisions of the rule, including creating a hazard assessment, risk management plan, a prevention program, and an emergency response program.
General Conformity Rules	ORC, Title 37, Chapter 3704 "Air Pollution Control," and implementing regulations in OAC 3745-102	Establishes Ohio's rules on "general conformity," a process mandated by the *Clean Air Act* to ensure that Federal actions uphold the State Implementation Plan and do not contribute to air quality violations within the State. Discusses which Federal actions are subject to the conformity requirements, the procedures for conformity analysis, public participation/consultation, and the final conformity determination.
Water Resources Protection		
Ohio National Pollutant Discharge Elimination System Permits	ORC Title 61, Chapter 6111,"Water Pollution Control" and implementing regulations in OAC 3745-33 and 3745-38	Initiates plans and programs for the prevention, control, and abatement of new or existing pollution of the waters of the State of Ohio. Requires an Ohio individual or general permit prior to any discharge of sewage, industrial waste, or other waste as defined by divisions (B) to (D) of Section 6111.01 of the Ohio Revised Code. Requires the compliance of each point source with authorized discharge levels, monitoring requirements, and other appropriate requirements.
Permits to Install New Sources of Pollution	ORC Title 61, Chapter 6111,"Water Pollution Control" and implementing regulations in OAC 3745-31	Requires a permit prior to the installation of a new source of water pollutants, or the modification of any pollutant discharge source.
Water Quality Standards	ORC Title 61, Chapter 6111,"Water Pollution Control" and implementing regulations in OAC 3745-1	Establishes water quality standards for surface waters in the State of Ohio, including beneficial use designations, numeric water quality criteria, and the anti-degradation waterbody classification system.
Section 401 Water Quality Certifications	ORC Title 61, Chapter 6111,"Water Pollution Control" and implementing regulations in OAC 3745-32 and 3745-45	Requires a Section 401 water quality certification and payment of applicable fees before the issuance of any Federal permit or license to conduct any activity that may result in any discharge to waters of the State.

Table 1-2 State of Ohio Environmental Requirements (continued)

Law/Regulation	Citation	Requirements
Public Water Systems Licenses to Operate	ORC Title 61, Chapter 6109, "Safe Drinking Water" and implementing regulations in OAC 3745-84	Requires a public water systems license prior to operating or maintaining a public water system.
Design, Construction, Installation, and Upgrading for Underground Storage Tank systems	ORC Title 37, Chapter 3737, "Underground Storage Tanks" and implementing regulations in OAC 1301: 7-9-06	Establishes performance standards and upgrading requirements for USTs containing petroleum or other regulated substances. Requires an installation or upgrading permit for each location where such installation or upgrading is to occur prior to beginning either an installation or upgrading of a tank or piping comprising an underground storage tank system.
Registration of Underground Storage Tank System	ORC Title 37, Chapter 3737, "Underground Storage Tanks" and implementing regulations in OAC 1301: 7-9-04	Establishes annual registration requirements for underground storage tanks containing petroleum or other regulated substances.
Flammable and Combustible Liquids	ORC Title 37, Chapter 3737, "Fire Marshal; Fire Safety" and implementing regulations in OAC 1301: 7-7-28	Requires a permit to install, remove, repair, or alter a stationary tank for the storage of flammable or combustible liquids or modify or replace any line or dispensing device connected thereto.
Waste Management and Pollution Prevention		
Generator Standards	ORC Title 37, Chapter 3734, "Solid and Hazardous Waste" and implementing regulations in OAC 3745-52-11 and 3745-52-12	Requires any person who generates a waste in the State of Ohio, as defined in rule 3745-51-02 of the Administrative Code, to determine if that waste is a hazardous waste. Requires a generator identification number from U.S. EPA or Ohio EPA prior to treatment, storage, disposal, transport, or offer for transport of hazardous waste.
Licensing Requirements for Solid Waste, Construction, and Demolition Debris Facilities	ORC Title 37, Chapter 3734, "Solid and Hazardous Waste" and implementing regulations in OAC 3745-37 and 3745-29	Requires an annual license for any municipal solid waste landfill, industrial solid waste landfill, residual solid waste landfill, compost facility, transfer facility, infectious waste treatment facility, or solid waste incineration facility prior to operation. New facilities must obtain a permit to install prior to construction. Also, requires a license to establish, modify, operate, or maintain a construction and demolition debris facility.
Radiation Generator and Broker Reporting Requirements	OAC 3701: 1-54-02	Requires completion of a low-level radioactive waste generator report within 60 days of beginning to generate low-level waste in Ohio. Additionally, requires each generator to submit an annual report on the state of low-level waste activities in their facility and pay applicable fees.

Table 1-2 State of Ohio Environmental Requirements (continued)

Law/Regulation	Citation	Requirements
Hazardous Waste Management System, Permits	ORC Title 37, Chapter 3734, "Solid and Hazardous Waste" and implementing regulations in OAC 3745-50-40	Requires operation permits for any new or existing hazardous waste facility.
Emergency Planning and Response		
Hazardous Chemical Reporting	ORC Title 37, Chapter 3750, "Emergency Planning" and implementing regulations in OAC 3750-30	Requires the submission of Material Safety Data Sheets and an annual Emergency and Hazardous Chemical Inventory to local emergency response officials for any hazardous chemicals that are produced, used, or stored at the facility in an amount that equals or exceeds the threshold quantity.
Emergency Planning Requirements of Subject Facilities	ORC Title 37, Chapter 3750, "Emergency Planning" and implementing regulations in OAC 3750-20	Requires any facility having an extremely hazardous substance present in an amount equal to or exceeding the threshold planning quantity to notify the emergency response commission and the local emergency planning committee within 60 days after onsite storage begins. Also, requires the designation of a facility representative who will participate in the local emergency planning process as a facility emergency coordinator.
Toxic Chemical Release Reporting	ORC Title 37, Chapter 3751, "Hazardous Substances" and implementing regulations in OAC 3745-100	Establishes reporting requirements and schedule for each toxic chemical known to be manufactured (including imported), processed, or otherwise used in excess of an applicable threshold quantity. Applies only to facilities of a certain classification.
Biotic Resources Protection		
State Endangered Plant Species Protection	ORC Title 15, Chapter 1518, "Endangered Species"	Establishes criteria for identifying threatened or endangered species of native Ohio plants and prohibits injuring or removing endangered species without permission.
State Endangered Fish and Wildlife Species Protection	ORC Title 15, Chapter 1531, "Division of Wildlife," Section 1531.25 and implementing regulations in OAC 1501:31-23-01	Grants the Chief of the Division of Wildlife with the approval of the Wildlife Council, the power to adopt, modify, and repeal rules to restrict the taking or possession of native wildlife, or any eggs or offspring thereof, that he/she finds to be threatened with statewide extinction. Establishes and requires periodic update to a list of endangered fish and wildlife species native to Ohio.
Permits for Impacts to Isolated Wetlands	ORC Title 61, Chapter 6111,"Water Pollution Control"	Requires a general or individual State isolated wetland permit prior to engaging in an activity that involves the filling of an isolated wetland.

Table 1-2 State of Ohio Environmental Requirements (continued)

Law/Regulation	Citation	Requirements
Cultural Resources Protection		
Ohio Historical Society	ORC Title 1, Chapter 149, Section 149.30	Creates the Ohio Historical Society and Advisory Board. Outlines the Society's duties for the preservation of Ohio's designated or potentially designated historic and archaeological objects, sites, and properties.
State Registry of Archaeological Landmarks	ORC Title 1, Chapter 149, Section 149.51	Directs the Ohio Historical Society to maintain a State Registry of Archaeological Landmarks. Prohibits any person from excavating or destroying such land, or from removing skeletal remains or artifacts from any land placed on the registry without first notifying the Director of the Historical Society.
Survey and Salvage; Discoveries; Preservation	ORC Title 1, Chapter 149, Section 149.53	Directs all State departments, agencies, and political subdivisions to cooperate with the Ohio Historical Society in the preservation of archaeological and historic sites and the recovery of scientific information from such sites. Also, requires State agencies and contractors performing work on public improvements to cooperate with archaeological and historic survey and salvage efforts and to notify the Society or the Board about archaeological discoveries.

Sources: http://www.epa.state.oh.us/dapc/regs/regs.html and http://onlinedocs.andersonpublishing.com.

1.5.4 Permit and Approval Status

Several construction and operating permit applications would be prepared and submitted, and regulator approval and/or permits would be received prior to construction or facility operation. Table 1-3 lists the required Federal, State, and local permits and their status.

1.5.5 Cooperating Agencies

During the scoping process, no Federal, State, or local agencies were identified as potential cooperating agencies in the preparation of this EIS.

1.5.6 Consultations

As a Federal agency, the NRC is required to comply with the consultation requirements in the *Endangered Species Act of 1973*, as amended, and the *National Historic Preservation Act of 1966*, as amended. For this proposed action, the NRC conducted these consultations as well as consultations in accordance with the *Fish and Wildlife Coordination Act of 1934* and the *Farmland Protection Policy Act of 1981*. All consultation letters related to each of these laws are presented in Appendix B of this EIS and are summarized below.

Table 1-3 Potentially Applicable Requirements for the Construction and Operation of the American Centrifuge Plant

License, Permit, or Other Required Approval	Responsible Agency	Authority	Relevance and Status
Air Quality Protection			
Title V Operating Permit: Required for sources that are not exempt and are major sources, affected sources subject to the Acid Rain Program, sources subject to new source performance standards, or sources subject to National Emission Standards for Hazardous Air Pollutants.	Ohio EPA; U.S. EPA	*Clean Air Act* (CAA), Title V, Sections 501-507 (*U.S. Code*, Title 42, Sections 7661-7661f [42 USC 7661- 7661f]); *Ohio Administrative Code* (OAC) 3745-77-02	United States Enrichment Corporation is the holder of a final Title V Operating Permit (Facility ID 0666000000) with an issue date of July 31, 2003 and effective date of August 21, 2003. The plant is subject to 40 CFR Part 61, Subpart H (40 CFR Part 61, Subpart H), "National Emissions Standards for Emissions of Radionuclides," which is included in the terms and conditions of the Title V Operating Permit.
Ohio Permit to Install: Required for (1) any source to which one or more of the following CAA programs would apply: prevention of significant deterioration, nonattainment area, New Source Performance Standards, and/or National Emission Standards for Hazardous Pollutants; and (2) any source to which one or more of the following State air quality programs would apply: Gasoline Dispensing Facility Permit, Direct Final Permit, and/or Small Maximum Uncontrolled Emissions Unit Registration.	Ohio EPA	CAA, Title I, Sections 160-169 (42 USC 7470-7479); OAC 3745-31-02	USEC has determined that the prevention of significant deterioration, nonattainment area, and NSPS programs do not apply to the proposed ACP. However, air emission sources at the proposed ACP would require an Ohio Permit to Install and USEC would submit a timely application to the Ohio EPA.

Table 1-3 Potentially Applicable Requirements for the Construction and Operation of the American Centrifuge Plant (continued)

License, Permit, or Other Required Approval	Responsible Agency	Authority	Relevance and Status
Ohio Permit to Operate: Required for (1) any source to which one or more of the following CAA programs would apply: prevention of significant deterioration, nonattainment area, New Source Performance Standards, National Emission Standards for Hazardous Air Pollutants; and (2) any source to which one or more of the following State air quality programs would apply: State Permit to Operate and/or registration of operating unit with potential air emissions of an amount and type considered minimal. This permit is not required, however, for any facility that must obtain a Title V Operating Permit.	Ohio EPA	CAA, Title I, Sections 160-169 (42 USC 7470-7479); OAC 3745-35-02	United States Enrichment Corporation is the holder of a final Title V Operating Permit (Facility ID 0666000000) with an issue date of July 31, 2003 and effective date of August 21, 2003. New sources at the proposed ACP requiring a Permit to Install would be incorporated in the Title V Operating Permit.
Risk Management Plan: Required for any stationary source that has a regulated substance (e.g., chlorine, hydrogen fluoride, nitric acid) in any process (including storage) in a quantity that is over the threshold level.	U.S. EPA; Ohio EPA	CAA, Title 1, Section 112(R)(7) (42 USC 7412); 40 CFR Part 68; OAC 3745-104	USEC has determined that no regulated substances would be stored at the proposed ACP in quantities that exceed the threshold levels. Accordingly, a Risk Management Plan would not be required.
***Clean Air Act* Conformity Determination**: Required for each criteria pollutant (i.e., sulfur dioxide, particulate matter, carbon monoxide, ozone, nitrogen dioxide, and lead) where the total of direct and indirect emissions in a nonattainment or maintenance area caused by a Federal action would equal or exceed threshold rates.	Ohio EPA	CAA, Title 1, Section 176(c) (42 USEC 7506); 40 CFR Part 93; OAC 3745-102	Pike County, Ohio has been designated as "Cannot be Classified or Better Than Standard" for criteria pollutants. Because the county is in attainment with National Ambient Air Quality Standards for criteria pollutants and contains no maintenance areas, no *Clean Air Act* conformity determination is required for any criteria pollutant that would be emitted as a result of the Proposed Action. Existing air quality on the site is in attainment with National Ambient Air Quality Standards for the criteria pollutants.

Table 1-3 Potentially Applicable Requirements for the Construction and Operation of the American Centrifuge Plant (continued)

License, Permit, or Other Required Approval	Responsible Agency	Authority	Relevance and Status
Water Resources Protection			
National Pollutant Discharge Elimination System Permit: Construction Site Storm Water: Required before making point source discharges into waters of the State of storm water from a construction project that disturbs more than 2 hectares (5 acres) of land.	Ohio EPA	*Clean Water Act* (CWA) (33 USC 1251 et seq.); 40 CFR Part 122; OAC-3745-33-02, 3745-38-02, and 3745-38-06	Construction of the proposed ACP and new cylinder storage yards would require a permit for the construction site storm water discharges. United States Enrichment Corporation is the holder of Permit number 0IS00023AD. If requested, a Storm Water Pollution Prevention Plan would be submitted to the Ohio EPA at the appropriate time. Storm water would discharge through existing outfalls covered by a permit.
National Pollutant Discharge Elimination System Permit: Industrial Facility Storm Water: Required before making point source discharges into waters of the State of storm water from an industrial site.	Ohio EPA	CWA (33 USC 1251 et seq.); 40 CFR Part 122; OAC-3745-33-02, 3745-38-02, and 3745-38-06	Storm water would be discharged from the proposed ACP site during operations. Storm water would discharge through existing outfalls covered by a permit.
National Pollutant Discharge Elimination System Permit: Process Water Discharge: Required before making point source discharges into waters of the State of industrial process wastewater.	Ohio EPA	CWA (33 USC 1251 et seq.); 40 CFR Part 122; OAC-3745-33-02, 3745-38-02, and 3745-38-06	The proposed ACP would process industrial wastewater through an existing permitted facility and through existing outfalls covered by the permit.
Ohio Surface Water Permit to Install: Required before constructing sewers or pump stations.	Ohio EPA	OAC-3745-31-02	If required, before construction of sewer lines and pump stations at the proposed ACP, a Permit to Install to modify the existing National Pollutant Discharge Elimination System permit would be submitted to the Ohio EPA at the appropriate time.
Ohio Surface Water Permit to Install: Required before constructing any wastewater treatment or collection system or disposal facility.	Ohio EPA	OAC-3745-31-02	If required, a Permit to Install to modify the existing National Pollutant Discharge Elimination System permit would be submitted to the Ohio EPA at the appropriate time.

Table 1-3 Potentially Applicable Requirements for the Construction and Operation of the American Centrifuge Plant (continued)

License, Permit, or Other Required Approval	Responsible Agency	Authority	Relevance and Status
Spill Prevention Control and Countermeasures Plan: Required for any facility that could discharge oil in harmful quantities into navigable waters or onto adjoining shorelines.	U.S. EPA	CWA (33 USC 1251 et seq.); 40 CFR Part 112	A Spill Prevention Control and Countermeasures plan would be required. The United States Enrichment Corporation's plan is currently being revised to incorporate changes in plant operation and to reflect new requirements mandated in the *Federal Register* on July 17, 2002. The U.S. EPA requires plan approval by August 17, 2005 and implementation by February 18, 2006. USEC would revise the plan to include proposed ACP operations at the appropriate time.
***Clean Water Act* Section 401 Water Quality Certification**: Required to be submitted to the agency responsible for issuing any Federal license or permit to conduct an activity that may result in a discharge of pollutants into waters of a state.	Ohio EPA	CWA, Section 401 (33 USC 1341); ORC Chapters 119 and 6111; OAC Chapters 3745-1, 3745-32, and 3745-47	USEC believes that it would not be required to obtain a *Clean Water Act* Section 401 Water Quality Certification for construction or operation of the proposed ACP or new cylinder storage yards. If USEC determines that a Federal license or permit is required (e.g., a *Clean Water Act* Section 404 Permit), a *Clean Water Act* Section 401 Water Quality Certification would be requested from the Ohio EPA at the appropriate time.
Public Water System: A completed application for an initial public water system license is required prior to the operation of the public water system.	Ohio EPA	OAC-3745-84-01 (B)(b)	USEC would procure water from a qualified vendor, which draws water from groundwater wells sunk near the Scioto River. USEC would not operate a public water system subject to these requirements.

Table 1-3 Potentially Applicable Requirements for the Construction and Operation of the American Centrifuge Plant (continued)

License, Permit, or Other Required Approval	Responsible Agency	Authority	Relevance and Status
Underground Storage Tank Installation Permit: Required before beginning installation of an underground storage tank system (i.e., a tank and/or piping of which 10 percent or more of the volume is underground and that contains petroleum products or substances defined as hazardous by the Comprehensive Environmental Response, Compensation, and Liability Act, except those hazardous substances that are also defined as hazardous waste by the Resource Conservation and Recovery Act).	Ohio Department of Commerce, Ohio Bureau of Underground Storage Tank Regulations	OAC 1301:7-9-06(D)	Two existing UST systems are anticipated to be used by the proposed ACP. Registration number: 66005107-R00010. Tank Numbers: T00007 and T00016.
New Underground Storage Tanks System Registration: Required within 30 days of bringing a new underground storage tank system into service.	U.S. EPA; Ohio Bureau of Underground Storage Tank Regulations	RCRA, as amended, Subtitle I (42 USC 6991a-6991i); 40 CFR §280.22; OAC 1301:7-9-04	If new underground storage tank systems would be installed at the proposed ACP the Registration would be filed at the appropriate time. No new systems are currently planned.
Above Ground Storage Tank: A Permit to Install required to install, remove, repair or alter any stationary tank for the storage of flammable or combustible liquids.	Ohio Department of Commerce, State Fire Marshal	OAC 1301:7-7-28(A)(3) 40 CFR §112.8	New Above ground Storage fuel storage tanks would be required for the proposed ACP. Permits to install would be filed at the appropriate time.
Waste Management and Pollution Prevention			
Submit Determination Results: Required when a person who generates waste in the State of Ohio or a person who generates waste outside the State that is managed inside the State determines that the waste he/she generates is hazardous waste.	Ohio EPA	OAC 3745-52-11	Upon characterization of newly generated waste streams from the proposed ACP, notification would be made to the Ohio EPA.
Registration and Hazardous Waste Generator Identification Number: Required before a person who generates over 100 kg (220 lb) per calendar month of hazardous waste ships the hazardous waste off-reservation.	U.S. EPA; Ohio EPA	RCRA, as amended (42 USC 6901 et seq.), Subtitle C; OAC 3745-52-12	United States Enrichment Corporation has Hazardous Waste Generator Identification Number OHD987054723.

Table 1-3 Potentially Applicable Requirements for the Construction and Operation of the American Centrifuge Plant (continued)

License, Permit, or Other Required Approval	Responsible Agency	Authority	Relevance and Status
Construction and Demolition Debris Facility License: Required before establishing, modifying, operating, or maintaining a facility to dispose of debris from the alteration, construction, destruction, or repair of a man-made physical structure; however, the debris to be disposed of must not qualify as solid or hazardous waste; also, no license is required if debris from site clearing is used as fill material on the same site.	Ohio EPA or Pike County Board of Health	OAC 3745-37-01	Construction debris would not be disposed of onsite at the proposed ACP. Therefore, no Construction and Demolition Debris Facility License would be required.
Low-Level Radioactive Waste Generator Report: Required within 60 days of commencing the generation of low-level waste in Ohio.	Ohio Department of Health	OAC 3701:1-54-02	USEC would file a Low-Level Radioactive Waste Generator Report with the Ohio Department of Health at the appropriate time. ODH ID Number 52-2109255.
Hazardous Waste Facility Permit: Required if hazardous waste will undergo nonexempt treatment by the generator, be stored onsite for longer than 90 days by the generator of 1,000 kg (2,205 lb) or more of hazardous waste per month, be stored onsite for longer than 180 days by the generator of between 100 and 1,000 kg (220 and 2,205 lb) of hazardous waste per month, disposed of onsite, or be received from off-reservation for treatment or disposal.	U.S. EPA; Ohio EPA	RCRA, as amended (42 USC 6901 et seq.), Subtitle C; OAC 3745-50-40	Hazardous waste would not be disposed of onsite at the proposed ACP. Also, USEC does not plan to store any hazardous wastes that are generated onsite for more than 90 days. However, should waste require storage onsite for greater then 90 days for characterization, profiling, or scheduling for treatment or disposal, a Hazardous Waste Facility Permit would be required and submitted at the appropriate time.
Depleted UF_6 Management Measures: Establishes requirements for management, inspection, testing, and maintenance associated with the depleted UF_6 storage yards and cylinders owned by USEC at the DOE reservation as stipulated in the ACP License Application.	Ohio EPA	OAC 3745-266; 40 CFR Part 266, Subpart N	USEC would manage the depleted UF_6 tails cylinders in accordance with 40 CFR Part 266, Subpart N and Ohio Administrative Code Chapter 3745-266 while in storage.

Table 1-3 Potentially Applicable Requirements for the Construction and Operation of the American Centrifuge Plant (continued)

License, Permit, or Other Required Approval	Responsible Agency	Authority	Relevance and Status
Low-Level Mixed Waste: Low-level mixed waste is a waste that contains both low-level radioactive waste and RCRA-regulated hazardous waste.	Ohio EPA	OAC 3745-266; 40 CFR Part 266, Subpart N	USEC would manage low-level mixed waste in compliance with 40 CFR Part 266, Subpart N and Ohio Administrative Code Chapter 3745-266.
Industrial Solid Waste Landfill Permit to Install: Required before constructing or expanding a solid waste landfill facility in Ohio.	Ohio EPA	OAC 3745-29-06	Industrial solid waste would not be disposed of onsite at the proposed ACP. Therefore, no Industrial Solid Waste Landfill Permit to Install would be required.
Emergency Planning and Response			
List of Material Safety Data Sheets: Submission of a list of material Safety Data Sheets is required for hazardous chemicals (as defined in 29 CFR Part 1910) that are stored onsite in excess of their threshold quantities.	Local Emergency Planning Commission; Ohio State Emergency Response Commission	Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA), Section 311 (42 USC 11021); 40 CFR §370.20; OAC 3750-30-15	USEC would prepare and submit a List of Material Safety Data Sheets at the appropriate time.
Annual Hazardous Chemical Inventory Report: Submission of the report is required when hazardous chemicals have been stored at a facility during the preceding year in amounts that exceed threshold quantities.	LEPC; Ohio State Emergency Response Commission; local fire department	EPCRA, Section 312 (42 USC 11022); 40 CFR §370.25; OAC 3750-30-01	United States Enrichment Corporation would prepare and submit an Annual Hazardous Chemical Inventory Report each year. United States Enrichment Corporation Facility ID Number 45661NTDST3930U.
Notification of On-Site Storage of an Extremely Hazardous Substance: Submission of the notification is required within 60 days after on-site storage begins of an extremely hazardous substance in a quantity greater than the threshold planning quantity.	Ohio State Emergency Response Commission	EPCRA, Section 304 (42 USC 11004); 40 CFR §355.30; OAC 3750-20-05	United States Enrichment Corporation would prepare and submit the Notification of On-Site Storage of an Extremely Hazardous Substance at the appropriate time, if such substances are determined to be stored in a quantity greater than the threshold planning quantity at the proposed ACP. Facility ID Number 45661NTDST3930U.
Annual Toxics Release Inventory Report: Required for facilities that have 10 or more full-time employees and are assigned certain Standard Industrial Classification codes.	U.S. EPA; Ohio EPA	EPCRA, Section 313 (42 USC 11023); 40 CFR Part 372; OAC 3745-100-07	United States Enrichment Corporation would prepare and submit a Toxics Release Inventory Report to the U.S. EPA each year. Facility ID Number 45661NTDST3930U.

Table 1-3 Potentially Applicable Requirements for the Construction and Operation of the American Centrifuge Plant (continued)

License, Permit, or Other Required Approval	Responsible Agency	Authority	Relevance and Status
Transportation of Radioactive Wastes and Conversion Products Certificate of Registration: Required to authorize the registrant to transport hazardous material or cause a hazardous material to be transported or shipped.	U.S. Department of Transportation	*Hazardous Materials Transportation Act* (HMTA), as amended by the *Hazardous Materials Transportation Uniform Safety Act* of 1990 and other acts (49 USC 1501 et seq.); 49 CFR §107.608(b)	United States Enrichment Corporation Certificate of Registration Number 052803005022LN.
Transportation of Radioactive Wastes and Conversion Products Packaging, Labeling, and Routing Requirements for Radioactive Materials: Required for packages containing radioactive materials that will be shipped by truck or rail.	U.S. Department of Transportation	HMTA (49 USC 1501 et seq.); Atomic Energy Act (AEA), as amended (42 USC 2011 et seq.); 49 CFR Parts 172, 173, 174, 177, and 397	When shipments of radioactive materials are made, USEC would comply with U.S. Department of Transportation packaging, labeling, and routing requirements.
Land Resource Protection			
Farmland Protection and Policy Act: Prime farmland is land that has the best combination of physical and chemical characteristics for producing crops of statewide or local importance. Prime farmland is protected by the Farmland Protection and Policy Act of 1981 which seeks "… to minimize the extent to which Federal programs contribute to the unnecessary and irreversible conversion of farmlands to nonagricultural uses…"	U.S. Department of Agriculture	Farmland Protection and Policy Act (FPPA) of 1981 Public Law 97-98; 7 USC 4201[b]; 7 CFR Part 7	Consultation letters are included in Appendix B of this EIS and summarized in Section 1.5.6.4. The Natural Resources Conservation Service has concluded that the proposed site does not contain prime soils, so the Farmland Protection and Policy Act does not apply.

Table 1-3 Potentially Applicable Requirements for the Construction and Operation of the American Centrifuge Plant (continued)

License, Permit, or Other Required Approval	Responsible Agency	Authority	Relevance and Status
Biotic Resource Protection			
Threatened and Endangered Species Consultation: Required between the responsible Federal agencies and affected states to ensure that the project is not likely to: (1) jeopardize the continued existence of any species listed at the Federal or State level as endangered or threatened; or (2) result in destruction of critical habitat of such species.	U.S. Fish and Wildlife Service (FWS); Ohio Department of Natural Resources	Endangered Species Act of 1973, as amended (16 USC 1531 et seq.); ORC 1531.25-26 and 1531.99	Consultation letters are included in Appendix B of this EIS and summarized in Section 1.5.6.1. NRC's review and subsequent analysis of the information provided by the FWS and the Ohio Department of Natural Resources has concluded that threatened or endangered species or their critical habitat are not likely to be adversely affected.
***Clean Water Act* Section 404 (Dredge and Fill) Permit**: Required to place dredged or fill material into waters of the U.S., including areas designated as wetlands, unless such placement is exempt or authorized by a nationwide permit or a regional permit; a notice must be filed if a nationwide or regional permit applies.	U.S. Army Corps of Engineers	CWA (33 USC 1251 et seq.); 33 CFR Parts 323 and 330	Construction of the proposed ACP would not result in dredging or placement of fill material into wetlands within the jurisdiction of the U.S. Army Corps of Engineers.
Ohio General Permit for Filling Category 1 and Category 2 Isolated Wetlands: Required where the proposed project involves the filling or discharge of dredged material into Category 1 and Category 2 isolated wetlands, causing impacts that total 0.20 hectares (0.5 acres) or less.	Ohio EPA	*Ohio Revised Code* (ORC) Sections 6111.021-6111.029	Construction of the proposed ACP would not result in dredging or placement of fill material into wetlands within the jurisdiction of the Ohio EPA isolated wetlands program.
Ohio Individual Isolated Wetland Permit: Required where the proposed project involves the filling or discharge of dredged material into Category 1 and Category 2 isolated wetlands, causing impacts that total greater than 0.20 hectares (0.5 acres) for Category 1 isolated wetlands and/or greater than 0.20 hectares (0.5 acree) but not exceeding 1.21 hectares (3 acres) for Category 2 isolated wetlands.	Ohio EPA	ORC Sections 6111.021-6111.029	Construction of the proposed ACP would not result in dredging or placement of fill material into wetlands within the jurisdiction of the Ohio EPA isolated wetlands program.

License, Permit, or Other Required Approval	Responsible Agency	Authority	Relevance and Status
Cultural Resources Protection			
Archaeological and Historical Resources Consultation: Required before a Federal agency approves a project in an area where archaeological or historic resources might be located.	Ohio State Historic Preservation Officer	*National Historic Preservation Act* of 1966, as amended (16 USC 470 et seq.); *Archaeological and Historical Preservation Act* of 1974 (16 USC 469-469c-2); Antiquities Act of 1906 (16 USC 431 et seq.); *Archaeological Resources Protection Act* of 1979, as amended (16 USC 470aa-mm)	NRC has consulted with the Ohio State Historic Preservation Officer and Indian tribes regarding previous archaeological and architectural surveys at the DOE reservation. Consultation letters are included in Appendix B of this EIS and summarized in Section 1.5.6.2. In consultation with the Ohio State Historic Preservation Officer and the Indian tribes, NRC has concluded that the proposed action would have no effect (direct or indirect) on the eligible or potentially eligible properties on or immediately adjacent to the DOE reservation.

Source: USEC, 2005.

1.5.6.1 *Endangered Species Act of 1973* Consultation

The *Endangered Species Act* was enacted to prevent the further decline of endangered and threatened species and to restore those species and their critical habitats. Section 7 of the Act requires consultation with the U.S. Fish and Wildlife Service and/or the National Marine Fisheries Service to ensure that actions they fund, authorize, permit, or otherwise carry out will not jeopardize the continued existence of any listed species or adversely modify designated critical habitats.

NRC initiated consultation with the U.S. Fish and Wildlife Service in September 2004 by reviewing the information that the FWS submitted to USEC on June 21, 2004 regarding the threatened, endangered, proposed, and candidate species, and designated critical habitats that may be present in the project area. In a phone conversation on September 23, 2004 between the NRC and the U.S. Fish and Wildlife Service, the U.S. Fish and Wildlife Service indicated that the information presented in the letter was still current and accurate.

The U.S. Fish and Wildlife Service letter dated June 21, 2004, states that the proposed project lies within the range of the Federally endangered Indiana bat *(Myotis sodalis*), and within the range of timber rattlesnake (*Crotalus horridus*), a species of concern and Ohio-listed endangered species. After publication of the Draft EIS, the NRC provided the FWS, on November 1, 2005, with its finding of "no effect" on listed species and critical habitat. The FWS provided its concurrence on November 16, 2005.

1.5.6.2 *National Historic Preservation Act of 1966* Section 106 Consultation

To comply with Federal historic preservation laws and regulations as well as mandates of the *National Environmental Policy Act*, the NRC is required to identify historic properties in the area potentially affected by its actions and to consider potential effects on those properties. The principal driver for this process is Section 106 of the *National Historic Preservation Act*, as amended (16 U.S.C. 470 et seq.), and implementing regulations at 36 CFR Part 800, as amended through August 2004. Under Section 106, Federal agencies are required to consider the effects of their undertakings on historic properties; 36 CFR Part 800 spells out the process by which this is done in consultation with the State Historic Preservation Officer and other consulting parties. The *National Historic Preservation Act* and 36 CFR Part 800 also specify that consultation in the Section 106 process should provide Indian tribes the opportunity to identify concerns about historic properties on or off Tribal lands, present views about an undertaking's effects on such properties, and participate in the resolution of adverse effects.

This EIS process has offered State agencies, Federally recognized Indian tribes, other organizations, and individuals that may be concerned with the possible effects of the proposed action on historic properties an opportunity to participate in the consultation process required by Section 106. The following subsections summarize the consultations with the various agencies, tribes, organizations, and individuals contacted during the ongoing consultation process.

Advisory Council on Historic Preservation

By letter dated May 20, 2005, the NRC notified the Advisory Council on Historic Preservation, Office of Federal Agency Programs of their proposed licensing activity and intent to use the NRC's *National Environmental Policy Act* review process to satisfy the Section 106 requirements as specified at 36 CFR §800.8. NRC provided the Advisory Council on Historic Preservation a review of the current consultation activities with the Ohio State Historic Preservation Officer and the Indian tribes and indicated that the EIS would be provided to the Advisory Council on Historic Preservation for review.

By letter dated September 6, 2005, the NRC provided a copy of the DEIS to the Advisory Council on Historic Preservation, specifying where information about historic properties and NRC's preliminary findings of effect could be found.

By letter dated January 27, 2006, in fulfillment of 36 CFR 800.8(c)(2)(ii), the NRC referred to the Advisory Council on Historic Preservation the objections of a consulting party (Mr. Geoffrey Sea) to the NRC's compliance with Section 106 through use of its NEPA process and of the NRC's finding of no effect on historic properties that was presented in the DEIS. The NRC included a listing of Section 106 correspondence and provided a link to the NRC website where the correspondence is available. The NRC requested that the Council review the objection of the consulting party and provide its findings.

The NRC received no response to the objection from the Advisory Council within 30 days.

Ohio Historic Preservation Office

By letter dated December 28, 2004, the NRC initiated the Section 106 consultation process with the Ohio State Historic Preservation Officer. This letter requested information on other parties that may be entitled to be consulting parties by the proposed action, as well as notified the office of NRC's intent to use the EIS process for Section 106 purposes as described in 36 CFR §800.8. The letter included portions of the Environmental Report prepared by USEC that indicated that the proposed action would not have adverse effects on historical resources included or eligible for inclusion in the National Register of Historic

Places, should not impact the historical integrity of the Portsmouth reservation, and should not result in any impact to Native American Indian tribal, religious, or cultural sites.

The Ohio State Historic Preservation Officer responded by letter dated February 2, 2005 (see Appendix B) stating that the proposed project would not adversely affect the Portsmouth Gaseous Diffusion Plant historic property; however, it recommended that the NRC provide a more detailed discussion of the previous studies that occurred on the DOE reservation and recommended that the NRC consider notifying Native American Federally Recognized Tribal Authorities that were historically associated with the area. A listing of potentially interested Federally Recognized Tribal Authorities was included to the letter to the NRC, as well as a point of contact at the Pike County Commissioners.

By letter dated September 6, 2005, the NRC provided a copy of the DEIS to the Ohio State Historic Preservation Officer, specifying where information about historic properties and NRC's preliminary findings of effect could be found.

The Ohio State Historic Preservation Officer responded by letter dated October 5, 2005 (see Appendix B) with comments intended to provide clarification regarding the discussions of cultural resources and the statement, "Within the integrated National Environmental Policy Act review process, this reaffirms our interpretation that the proposed American Centrifuge Plant undertaking will not adversely affect historic properties."

Federally Recognized Indian Tribes

Based on information found in the Tribal Leaders Directory issued by the Bureau of Indian Affairs, the information provided by the Ohio State Historic Preservation Officer, and information from the National Park Service, National Center for Cultural Resources, NRC has identified 17 Federally recognized Indian tribes with ties to the region that may be interested in being a consulting party. By letters dated March 14 or March 18, 2005, NRC provided each tribe with a brief description of the proposed actionand initial cultural resource review information, inquiring if the tribe had any information or concerns regarding historic sites or other cultural resources in the area. The letters also notified the Indian tribes of NRC's intent to use the EIS process for Section 106 purposes as described in 36 CFR §800.8. The NRC staff followed up the initial letters with telephone calls to elicit information from the tribes regarding their interest in participating in the Section 106 consultation process. Most tribes indicated that they had no specific information or interest. After the initial letters were sent to the tribes, a follow-up phone call in June 2005 was placed to each tribe that had not responded or electronic communication was continued with some tribes that requested such methods. This process was repeated in August 2005. Through these various phone and electronic communications the NRC was able to determine that 15 of 17 recognized tribes either had no additional information or no interest in participating in the Section 106 process. The NRC designated the Seneca Nation as a consulting party based on their interest in the project. NRC provided a copy of the DEIS to the Seneca Nation on September 6, 2005; and sent a letter providing new information about an earthen embankment at the DOE well field on December 19, 2005. NRC received an email from the Seneca Nation on January 10, 2006 stating no further concerns.

NRC received two letters from tribes independent of the formal consultation process initiated in March 2005. One letter from the Tribal Historic Preservation Officer of the Absentee Shawnee Tribe of Oklahoma was included in a petition filed electronically on February 28, 2005, in an adjudicatory hearing on this licensing, received later in hard copy. The letter explained that the tribe considers that it is descendant from the people of the Hopewell culture who built the many earthwork sites in the region. The letter refers to "the Barnes Works in Scioto Township" (a reference to the Scioto Township Works) as "one of the largest sacred sites in North America" (see Appendix B). The letter indicated that the tribe expected to be included as a consulting party in the Section 106 process. Independent of this request,

NRC had already sent a letter to the Absentee Shawnee on March 14, initiating consultation. Based on the February letter from the Absentee Shawnee, NRC designated the Absentee Shawnee as a consulting party. Subsequently, NRC left telephone messages with the tribe on June 2 and August 24, 2005; sent a copy of the DEIS on September 6, 2005; and sent a letter providing new information about an earthen embankment at the DOE well field on December 19, 2005. NRC received no responses from the tribe.

A second letter, from the chief of the Shawnee Nation, United Remnant Band (a State-recognized tribe in Ohio) was included in a plea in the adjudicatory hearing filed on March 30, 2005 and was submitted electronically on October 27, 2005 as attachments to DEIS comments from another party. The letter states that the tribe has ties to the site in Pike County, near the Scioto River and considers the earth works and other ceremonial and cultural features there to be sacred (see Appendix B). By letter of November 29, 2005 to the tribe, NRC sent a copy of the DEIS and new information about an earthen embankment at the DOE well field. NRC requested the tribe to comment on its inventory and evaluation effort and preliminary determination of effect on the Scioto Township Works site and to provide information about the site's importance to the tribe to be considered in the FEIS. NRC received no response from the tribe.

Other Organizations

By letter dated March 14, 2005, the NRC contacted the Pike County Commissioners and provided the County with a brief description of the proposed action, the initial cultural resource review information, and inquired if the County had any information regarding historic sites or cultural resources in the area. NRC sent copies of the DEIS to the commissioners in a mailing of September 6, 2005. The NRC received no comments from the commissioners. .

Interested Members of the Public

Through the NRC's scoping process, additional information about cultural resources in the area was obtained from interested members of the public. Additionally, information was also received through the adjudicatory hearing that is taking place on this license application. This information was considered in preparation of the EIS.

The NRC received a request on August 9, 2005, from the owner of a neighboring property requesting consulting party status. In consultation with the Ohio State Historic Preservation Officer on August 25, 2005, NRC granted consulting status to the property owner, Mr. Geoffrey Sea. By letter of September 6, 2005, NRC designated Mr. Sea as a consulting party, transmitted the DEIS, and requested comments on the DEIS and NRC's preliminary findings of effect on historic properties. NRC received attachments to DEIS comments from Mr. Sea via email on October 27. On November 23, 2005, NRC received an email from Mr. Sea stating objections to NRC's use of the NEPA process for Section 106 compliance, posing questions about the DEIS findings of effect, and stating that Mr. Sea would forward full comments on the DEIS directly to the Advisory Council on Historic Preservation. By email of December 7, NRC responded to Mr. Sea's questions and requested the text of Mr. Sea's comments. By letter of December 19, 2005, NRC transmitted new information on the origin of the earthen embankment at the DOE well field to Mr. Sea. NRC received no DEIS comments from Mr. Sea other than the attachments sent in October.

1.5.6.3 *Fish and Wildlife Coordination Act of 1934* Consultation

The consultation component of the *Fish and Wildlife Coordination Act*, requires that "whenever the waters of any stream or other body of water are proposed or authorized to be impounded, diverted, the channel deepened, or the stream or other body of water otherwise controlled or modified for any purpose whatever, including navigation and drainage, by any department or agency of the U.S., or by any public

or private agency under Federal permit or license, such department or agency first shall consult with the U.S. Fish and Wildlife Service, Department of the Interior, and with the head of the agency exercising administration over the wildlife resources of the particular State wherein the impoundment, diversion, or other control facility is to be constructed, with a view to the conservation of wildlife resources by preventing loss of and damage to such resources as well as providing for the development and improvement thereof in connection with such water-resource development." Because the proposed action does not involve such modifications to a stream or other body of water, the NRC is not implementing consultations under the *Fish and Wildlife Coordination Act*. The NRC is consulting with the U.S. Fish and Wildlife Service and the State agency that exercises administrative control over the wildlife resources under the *Endangered Species Act*.

1.5.6.4 *Farmland Protection Policy Act of 1981* Consultation

This Act requires consultation with the U.S. Department of Agriculture, Natural Resources Conservation Service, to determine if the proposed action would convert protected farmland to non-agricultural use. For lands protected by the Act, scoring the relative value of the land for preservation is performed by the Natural Resources Conservation Service and the project proponent on a "Form AD-1006." If the Farmland Conversion Impact Rating is below 160, no further analysis is necessary. Scores between 160 and 200 may have potential impacts and require additional review and further consideration of alternatives that would avoid or lessen the conversion and lower the impact rating score.

NRC reviewed the correspondence from the District Conservationist of the Natural Resources Conservation Service in Waverly, Ohio. This letter, dated December 5, 2003, indicates that all of the proposed ACP facilities in the southwest quadrant of the central area would be located on non-prime soils (Borchelt, 2003). For the cylinder storage yard (X-745H) in the northern portion of the reservation, NRC consulted with the Pike Soil and Water Conservation District and the District Conservationist of the U.S. Department of Agriculture and found that the yard would also be located on non-prime soils (Yost, 2005). Because the proposed activities would be conducted on non-prime soils, the Farmland Protection Policy Act would not apply.

1.6 Organizations Involved in the Proposed Action

Two organizations have specific roles in the implementation of the proposed action:

- USEC Inc. (abbreviated as USEC for the purpose of this EIS) is the NRC license applicant. If the license is granted, USEC would be the holder of an NRC license for the possession and use of special nuclear material, source material, and byproduct material at the proposed ACP. USEC would be responsible for constructing, operating, and decommissioning the proposed facility in compliance with that license and applicable NRC regulations. USEC is a global energy company and its wholly owned subsidiary, the United States Enrichment Corporation, is the world's leading supplier of enriched uranium fuel for commercial nuclear power plants. The NRC has issued Certificates of Compliance for that subsidiary to operate the Paducah and Portsmouth Gaseous Diffusion Plants. More recently, the NRC has issued a license to USEC to construct and operate the Lead Cascade Demonstration Facility described above. Consistent with the requirements in 10 CFR §76.22 and in connection with the issuance of these Certificates and the Lead Cascade license, the NRC has determined that USEC is neither owned, controlled, or dominated by an alien, a foreign corporation, or a foreign government. All of the principal officers of USEC are citizens of the U.S. USEC, including its wholly owned subsidiaries, was organized under Delaware law in connection with the privatization of the United States Enrichment Corporation. It is listed on the New York Stock Exchange, and private and institutional investors own the outstanding shares of USEC. USEC's principal office is located in Bethesda, Maryland. (USEC, 2004b)

- The NRC is the licensing agency. The NRC has the responsibility to evaluate the license application for compliance with the NRC regulations associated with uranium enrichment facilities. These include standards for protection against radiation in 10 CFR Part 20 and requirements in 10 CFR Parts 30, 40, and 70 that would authorize USEC to possess and use special nuclear material, source material, and byproduct material, respectively, at the proposed ACP. The NRC is responsible for regulating activities performed within the proposed ACP through its licensing review process and subsequent inspection program. To fulfill the NRC responsibilities under the *National Environmental Policy Act*, the environmental impacts of the proposed action are evaluated in accordance with the requirements of 10 CFR Part 51 and documented in this EIS.

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2. ALTERNATIVES

This chapter describes the proposed action of issuing a U.S. Nuclear Regulatory Commission (NRC) license to USEC Inc. (USEC) to possess and use special nuclear material, source material, and byproduct material at the proposed ACP, and alternatives. Also, alternatives for the disposition of depleted uranium hexafluoride (UF_6) resulting from enrichment operations over the lifetime of the proposed ACP are analyzed. As required by the *National Environmental Policy Act*, this chapter also presents a no-action alternative. Under the no-action alternative USEC would not construct, operate, or decommission the ACP. The no-action alternative provides a basis for comparing and evaluating the potential impacts of the proposed action.

Section 2.1 presents technical details of the proposed action and connected actions, including descriptions of the proposed site, gas centrifuge enrichment technology, and the activities at the proposed ACP: refurbishment and construction; manufacturing and assembly; operation; and decontamination and decommissioning. It also describes the related action of ceasing uranium enrichment operations at the Paducah Gaseous Diffusion Plant. Section 2.2 describes the no-action alternative. Section 2.3 discusses alternatives to the proposed action that were considered but eliminated, including alternative sites, enrichment technologies other than the proposed centrifuge technology, and sources for enriched product. The chapter concludes with a comparison of predicted environmental impacts for each alternative and a preliminary recommendation from NRC staff regarding the proposed action.

2.1 Proposed Action

The proposed action is the issuance of an NRC license for USEC to possess and use special nuclear material, source material, and byproduct material at the proposed ACP in Piketon, Ohio. The NRC license, if granted, would be for a period of 30 years. If an NRC license is issued, USEC plans to start construction of the ACP in 2007, begin commercial centrifuge operations in 2009, and ramp up to the 3.5 million separative work unit (SWU) design capacity by 2011.

Although the proposed action is the issuance of a license to possess and use nuclear material, this Environmental Impact Statement (EIS) analyzes activities that would occur as the result of the license because these activities - construction, operation, and decommissioning of the proposed ACP - may have the potential for environmental impacts. For purposes of this analysis, these activities are organized into four phases:

(1) Refurbishment, site preparation, and construction of new facilities;
(2) Centrifuge manufacture and equipment assembly;
(3) Facility operation; and
(4) Decontamination and decommissioning.

In addition, USEC indicates in its Environmental Report (USEC, 2005b) that subsequent to beginning operations at the ACP, the uranium enrichment operations currently taking place at the Paducah Gaseous Diffusion Plant in Kentucky would cease. Therefore, the impacts of ceasing operations at the Paducah, Kentucky plant are also analyzed in this EIS. For the purpose of this analysis, cessation of uranium enrichment operations at Paducah would include stopping uranium enrichment plant operations, but would not include decommissioning of the Paducah Gaseous Diffusion Plant, changes to any other activities at that site, or any alternate uses of the site in the future. Those other actions at Paducah would be the subject of other decisions and other environmental reviews.

2.1.1 Location and Description of Proposed Site

The U.S. Department of Energy (DOE) reservation, on which the proposed ACP would be sited, is located in Pike County, Ohio, one of the State's less populated counties. The reservation is located in the town of Piketon, between Chillicothe and Portsmouth, Ohio, approximately 113 kilometers (70 miles) south of Columbus, Ohio. Figure 2-1 shows the location of the DOE reservation within the surrounding county.

The DOE reservation consists of approximately 1,497 hectares (3,700 acres), which includes a 526 hectare (1,300 acre) central area surrounded by a perimeter road. Within this central area approximately 304 hectares (750 acres) are located in a controlled access area. The proposed ACP would be located in the southwest quadrant of this central area approximately 2.5 kilometers (1.5 miles) east of U.S. Route 23. The land surrounding the reservation is sparsely populated, with the nearest residential center, Jasper, located approximately 1.9 kilometers (1.2 miles) to the northwest of the proposed site. The nearest major population center is Piketon, located approximately 6.4 kilometers (4 miles) north of the DOE reservation on U.S. Route 23. The land outside the Perimeter Road but still within the reservation is used for a variety of purposes, including a water treatment plant, lagoons for the process wastewater treatment plant, sanitary and inert landfills, and open and forested buffer areas. Most site developments are located within the fenced central area, which is largely devoid of trees, with grass and paved roadways dominating the open space. The proposed ACP would be situated on approximately 81 hectares (200 acres) of the southwest quadrant of the controlled access area. The proposed ACP site boundary would lie along the Perimeter Road on the western edge of the central area, approximately 568 meters (1,865 feet) from the closest DOE reservation boundary. The distance from the ACP to the nearest member of the public (i.e., actual permanent residence) is about 914 m (3,000 ft) (USEC, 2005b). The environmental characteristics of the proposed site and surrounding areas are described in detail in Chapter 3 of this EIS.

2.1.2 Gas Centrifuge Enrichment Process

The proposed ACP would employ a gas centrifuge technology for enriching natural uranium. Figure 2-2 shows the basic components of a gas centrifuge. A centrifuge consists of a large rotating cylinder (rotor) and piping to feed uranium hexafluoride (UF_6) gas into the centrifuge, and then withdraw enriched and depleted UF_6 gas streams. The rotor spins at a high rate of speed inside a protective casing, which maintains a vacuum around the rotor and provides physical containment of the rotor in the event of a major machine failure (USEC, 2004).

The UF_6 gas enters the centrifuge through a fixed pipe. The centrifugal force produced by the spinning rotor creates radial separation, in which the heavier uranium-238 hexafluoride molecules concentrate near the rotor wall and the lighter uranium-235 hexafluoride molecules collect closer to the axis of the rotor (USEC, 2004). In addition to the radial separation of isotopes, separation along the vertical axis (axial) is also induced in response to a thermal gradient along the length of the rotor (Green, 2003). The hotter gas stream rises, while the relatively cooler gas stream flows downward. Figure 2-2 shows the components of a gas centrifuge, including the flow of UF_6 gas. The combination of radial and axial separation results in a relatively large assay change between the top and bottom of the centrifuge. Enriched UF_6 is extracted by a scoop at the top of the centrifuge while depleted material is removed from a scoop at the bottom (USEC, 2004).

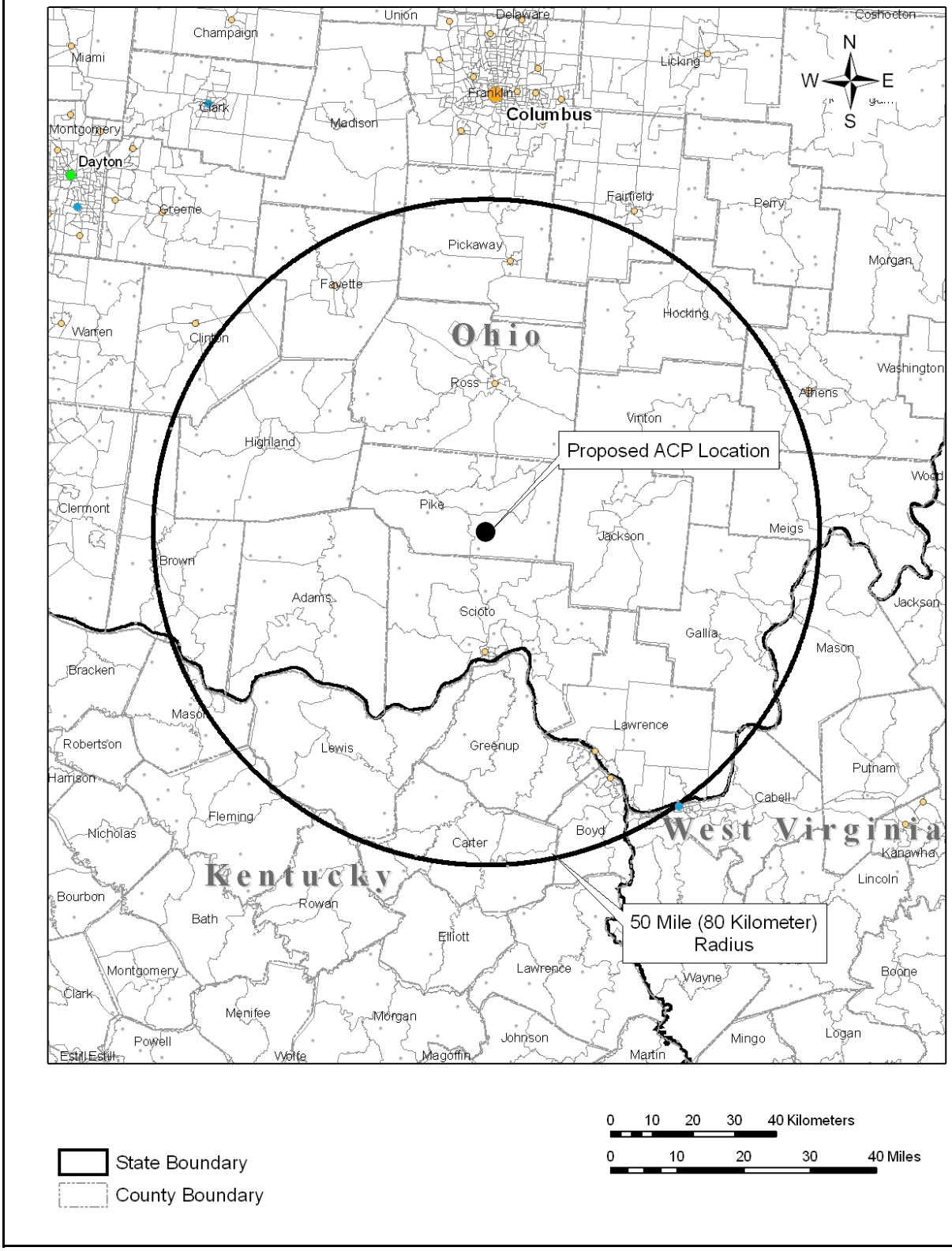

Figure 2-1 Location of the Proposed ACP Site

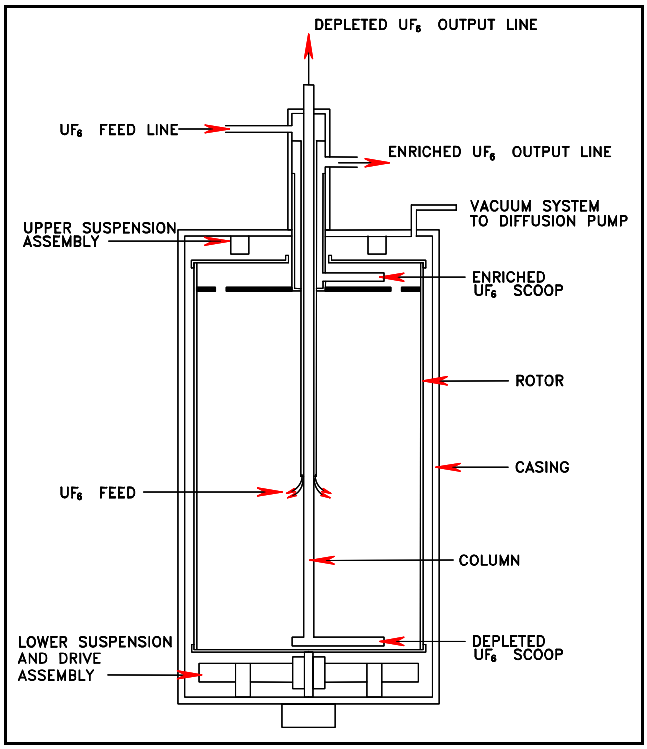

Figure 2-2 Schematic of a Gas Centrifuge (USEC, 2005b)

Enriching Uranium

Uranium is a naturally occurring radioactive element. In its natural state, uranium contains approximately 0.72 percent by weight of the uranium-235 isotope, which is the fissile isotope of uranium. There is a very small (0.0055 percent) quantity of the uranium-234 isotope, and most of the remaining mass (99.27 percent) is the uranium-238 isotope. All three isotopes are chemically identical and only differ slightly in their physical properties. The most important difference between the isotopes is their mass. This small mass difference allows the isotopes to be separated and makes it possible to increase (i.e., "enrich") the percentage of uranium-235 in the uranium to levels suitable for nuclear power plants.

Most civilian nuclear power reactors use low-enriched uranium fuel containing 3 to 5 percent by weight of uranium-235. Uranium for most nuclear weapons is enriched to greater than 90 percent.

To start the enrichment process, the UF_6 is heated, which causes the material to sublime (change directly from a solid to a gas). The UF_6 gas is then fed into the enrichment cascade where it is processed to increase the concentration of the uranium-235 isotope.

Source: WNA, 2003.

The enrichment level achieved by a single centrifuge is not sufficient to obtain the desired concentration of up to 10 percent by weight of uranium-235 in a single step; therefore, a number of centrifuges are connected in series to increase the concentration of the uranium-235 isotope (USEC, 2004). Additionally, a single centrifuge cannot process a sufficient volume for commercial production, which makes it

necessary to connect multiple centrifuges in parallel to increase the volume flow rate. The arrangement of centrifuges connected in series to achieve higher enrichment and in parallel for increased volume is known as a "cascade."

The centrifuge technology to be used at the proposed ACP is modular by design; the basic building block of enrichment capacity is a cascade of centrifuge machines. Once a complete cascade of centrifuge machines has been installed, the equipment would be placed into service producing enriched material. USEC would construct and install centrifuge machines in subsequent phases until it reaches a capacity of 3.5 million separative work units per year by 2011. As needed, enrichment capacity could continue to be increased up to 7 million separative work units per year.

What is a Separative Work Unit?

A separative work unit is a unit of measurement used in the nuclear industry, just as the units of a calorie, watt, decibel, ampere, volt, etc., are used in other industries. A separative work unit pertains to the process of enriching uranium so it can be used as fuel for nuclear power plants.

A separative work unit is a unit of measurement of the effort needed to separate uranium-235 and -238 atoms in natural uranium in order to create a final product that is richer in uranium-235 atoms. It is calculated by a standard formula. For example, if you begin with 100 kilograms (220 pounds) of natural uranium, it takes about 60 separative work units to produce 10 kilograms (22 pounds) of uranium enriched in uranium-235 content to 4.5 percent. It takes on the order of 100,000 separative work units of enriched uranium to fuel a typical 1,000 megawatt commercial nuclear reactor for a year. A 1,000 megawatt plant can supply the electricity needs for a city of about 600,000 people.

Source: USEC, 2001.

2.1.3 Description of the Proposed American Centrifuge Plant

The proposed ACP would be comprised of various buildings and areas that house systems and equipment necessary to support the uranium enrichment process. Table 2-1 shows the existing buildings and new buildings that would be built as part of the proposed action. Figure 2-3 shows the locations of proposed ACP facilities on the DOE reservation. For their analysis, the NRC staff reviewed figures that included the building numbers of the proposed locations of the ACP facilities; however, the figures shown in this EIS have had the building numbers removed pursuant to 10 CFR 2.390.

Primary facilities are those critical to the enrichment process, while secondary facilities provide indirect support to the process. These facilities are described in Sections 2.1.3.1 and 2.1.3.2. These sections are followed by summary descriptions of Proposed Operational Systems (Section 2.1.3.3) and Utilities and Other Services (Section 2.1.3.4).

Table 2-1 American Centrifuge Plant Facilities

Existing Facilities	Approx. Size (m^2)[a]	Primary	Secondary
X-3001 Process Building	28,242	X	
X-3002 Process Building	28,242	X	
X-3012 Process Support Building	4,482	X	
X-3346 Feed and Customer Services	14,307	X	
X-7726 Centrifuge Training and Testing	4,599	X	
X-7725 Recycle/Assembly Facility	41,136	X	
X-7727H Interplant Transfer Corridor	2,090	X	
X-2232C Interconnecting Process Piping	762 m[b]	X	
X-745G-2 Cylinder Storage Yard	12,542	X	
X-7725A Waste Accountability Facility	2,731		X
X-112 Data Processing Building	2,787		X
X-1020 Emergency Operations Center	667		X
X-6000 Pumphouse and Air Plant	1,657		X
X-6002 Boiler System and Oil Storage Facility	16,187		X
X-7721 Maintenance, Stores and Training Building	2,731		X
X-7745R Recycle/Assembly Storage Area	19,992		X
Total Area for Existing Facilities	**182,391[b]**		
New Facilities	**Approx. Size**	**Primary**	**Secondary**
X-3003 Process Building	28,242	X	
X-3004 Process Building	28,242	X	
X-3034 Process Support Building	4,459	X	
X-3346A Feed and Product Shipping and Receiving	2,118	X	
X-3356 Product & Tails Withdrawal Building	3,930	X	
X-3366 Product & Tails Withdrawal Building	3,930	X	
X-7727H Interplant Transfer Corridor Extension	2,415	X	
X-2232C Interconnecting Process Piping Addition	610 m [b]	X	
X-7756S Cylinder Storage Yard	1,301	X	
X-7746W Cylinder Storage Yard	12,263	X	
X-7746E Cylinder Storage Yard	6,968	X	
X-7746S Cylinder Storage Yard	3,066	X	
X-7746N Cylinder Storage Yard	12,634	X	
X-745H Cylinder Storage Yard	98,474	X	
X-7766S Cylinder Storage Yard	1,301	X	
X-2215A Power Ductbank Trench System	1,519		X
X-2220D Communications Ductbank Trench System	922		X
X-7725B Chemical Storage Building	1,394		X
Total Area for New Facilities	**213, 175[b]**		

Notes:
[a] m^2 = square meters; ft^2 = square feet.
To convert from m^2 to ft^2 multiply by 10.76.
[b] Interconnecting Process Piping is linear, not m^2. This piping is also not included in the totals.
Sources: USEC, 2004; USEC, 2005b; USEC 2005c.

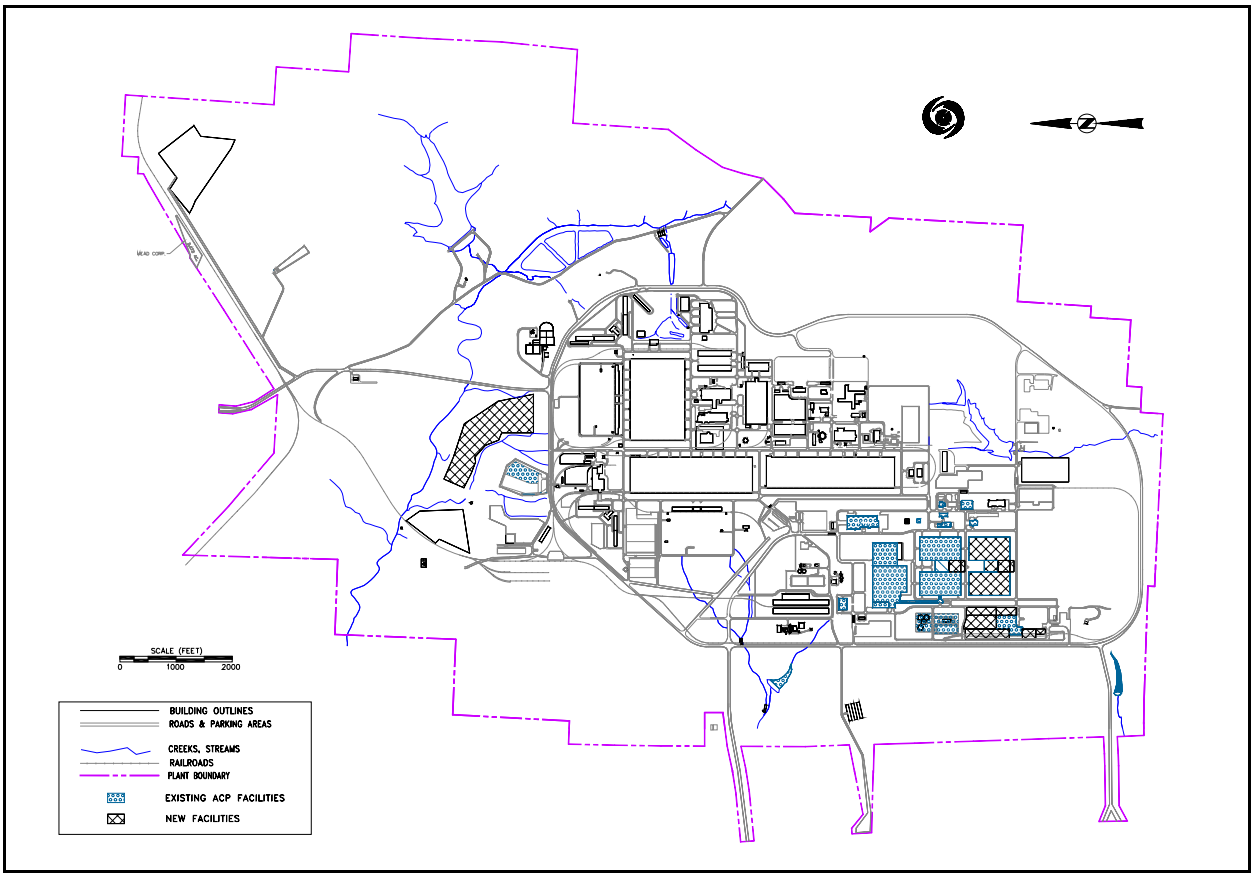

Figure 2-3 Locations of Proposed ACP Facilities (USEC, 2005b)
Building numbers have been withheld pursuant to 10 CFR 2.390.

2.1.3.1 Primary Facilities

Primary facilities are those where licensed material would be found and are considered to be key facilities in support of the uranium enrichment process. The primary facilities are located or would be constructed adjacent to each other in the southwest quadrant of the central area of the DOE reservation, as shown in Figure 2-4. The only exceptions are the X-745G-2 and X-745H cylinder storage yards, which are located in the northeast part of the DOE reservation just north of the Perimeter Road.

Process Buildings

The primary purpose of the process buildings would be to house the centrifuge machines and support systems necessary to perform the actual enrichment process. The X-3001 and X-3002 Process Buildings are existing facilities that are similar in construction, layout, and design. Each building has a large high bay process area and two utility areas. The height of each building is approximately 27 meters (87 feet) in the high bay area and 15 meters (49 feet) in the utility areas. A transfer aisleway provides access between the two buildings. The nearest reservation boundary is 794 meters (2,606 feet) to the west of the X-3001 Process Building. (USEC, 2004)

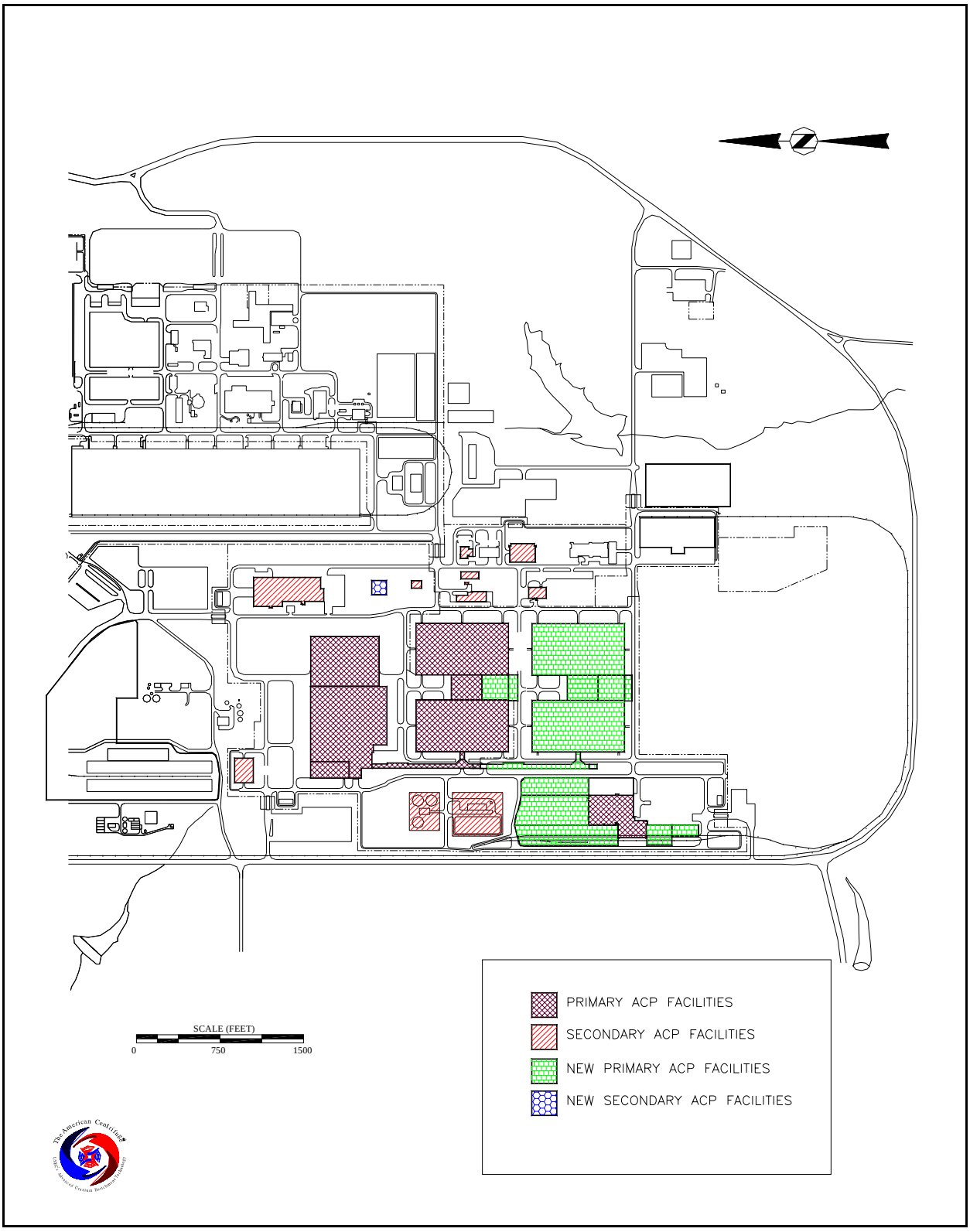

Figure 2-4 Locations of Process Buildings and other Primary Facilities (USEC, 2005d)
Building numbers have been withheld pursuant to 10 CFR 2.390.

At the north and south ends of the X-3001and X-3002 Process Buildings are equipment/utility bays and mezzanines where auxiliary equipment is housed. Items in these areas consist of heating and ventilation equipment, cooling water pumps, vacuum pumps, electrical switchgear, and standby electrical equipment (i.e., diesel generators, battery rooms, and uninterruptible power supply systems). Building vents for the purge and evacuation vacuum systems are also located in the buildings. The vents are monitored and are permitted through the Ohio Environmental Protection Agency (Ohio EPA). (USEC, 2004)

The centrifuge machines would be installed in the high bay area in a cascade arrangement. The cascades would be supplied UF_6 feed via a header from the X-3346 Feed and Customer Services Building. The machines in each cascade would be grouped into stages that are connected in series. The feed, product, and tails lines to and from each centrifuge within a stage would connect into stage headers that convey the UF_6 streams between stages. The depleted material from the bottom stage would be piped to the X-3356 Product and Tails Withdrawal Building to be withdrawn as tails. The enriched material from the top stage would be piped to the X-3356 building to be withdrawn as product. The cascade enrichment would normally be less than 5 percent uranium-235 by weight, but enrichment levels up to 10 percent uranium-235 by weight would be allowed. (USEC, 2004)

Two new process buildings, X-3003 and X-3004, would be constructed as part of the proposed ACP. The layout, design, and purpose of these new facilities would be identical to that of the existing process buildings. The proposed location for the X-3003 and X-3004 Process Buildings is directly south of the X-3001 and X-3002 Process Buildings. (USEC, 2004)

Process Support Buildings

The X-3012 Process Support Building is an existing facility that would house the equipment and personnel in support of operations in the X-3001 and X-3002 Process Buildings. The X-3012 building is located between the X-3001 and X-3002 buildings. The nearest reservation boundary is 922 meters (3,024 feet) to the west of the X-3012 Process Support Building. (USEC, 2004)

The X-3012 Process Support Building is divided into an operational area and a maintenance area by a machine transfer aisleway. The operational area is located in the north section of the building and includes the Area Control Room for the X-3001 and X-3002 Process Buildings. The Area Control Room would provide the central operating functions to monitor and control both the X-3001 and X-3002 Process Building machines and processes. Other features of the operational area include staff offices and amenities, a battery room, a switchgear room, and heating, ventilation, and air conditioning rooms. A mezzanine above the north section contains the mechanical equipment room for the building. The maintenance area, located in the south section of the building, includes maintenance shops, storage areas, a battery charging room, staff offices and amenities, and a mezzanine area with additional office areas, and heating, ventilation, and air conditioning rooms. (USEC, 2004)

A new X-3034 Process Support Building would be constructed as part of the proposed action. This facility would be adjacent to and would serve to support the new X-3003 and X-3004 Process Buildings. (USEC, 2004)

Feed and Customer Services Building

The X-3346 Feed and Customer Services Building is located approximately 305 meters (1,000 feet) south-southwest of the X-3001 Process Building. The X-3346 building is connected to the X-3001 and X-3002 buildings by the X-2232C Interconnecting Process Piping. The nearest reservation boundary is 568 meters (1,865 feet) to the west of the X-3346 building. (USEC, 2004)

The X-3346 building has two distinct areas of operation to meet process feed, sampling, and transfer requirements. The first area, referred to as the Feed Area, would support the front end of the overall enrichment process by housing the equipment necessary to provide UF_6 feed (e.g., electrically heated feed ovens). UF_6 feed would be processed to purify the gas before being fed into the process piping. There are separate manifolds that direct each stream to the X-3001 and X-3002 Process Buildings. The Feed Area has scales for weighing the feed cylinders. The location of the feed oven would provide the crane sufficient room to transport the UF_6 cylinders between rows of ovens. Cylinders would be placed on rail carts that move the cylinders into and out of the feed ovens without lifting them up and moving them over feed ovens, autoclaves, or other cylinders. (USEC, 2005c)

The second area, referred to as the Customer Services Area, would house the sampling equipment necessary to ensure that customer products meet specifications and to transfer enriched UF_6 material to customer product cylinders. The 10-ton source cylinders filled with enriched product would be transferred from the X-3356 Product and Tails Withdrawal Building to the Customer Services Area. Cylinder sampling and transfer of enriched product would be the only operation at the proposed ACP that would require the handling of liquid UF_6 (to ensure a homogenized sample); therefore, the Customer Services Area would be the only location at the proposed ACP where liquid UF_6 may be present. Cylinder sampling and transfer operations involving liquid UF_6 would occur entirely within containment autoclaves, which are pressure vessels designed to contain a UF_6 release should an accident occur during sampling and transfer activities. (USEC, 2004)

The basic approach to sampling and transfer operations would be as follows. The containment autoclaves would be electrically heated to liquefy the UF_6 contained in the 10-ton source cylinders. Any approved UF_6 container may be heated for sampling and transfer purposes. The liquid would then be sampled and transferred to 30B customer product cylinders (typically three to four). The receiving UF_6 cylinder lines and valves would be kept warm during the transfer. The customer product cylinders are then cooled until the UF_6 has re-solidified. The autoclaves are supplied with cooling capability to expedite the cylinder heel cool-down process and shorten the cycle time. (USEC, 2004)

The X-3346 building is equipped with specialized support systems to allow the purge and evacuation of indoor air in the event of liquid UF_6 releases. Local area gulper (vacuum) systems are used to collect any small releases of UF_6 that might occur during operations. The purge and evacuation vents are monitored and permitted through the Ohio EPA. Other major support equipment includes refrigeration units, precision scales, and cranes. (USEC, 2004)

Centrifuge Training and Test Facility

The X-7726 Centrifuge Training and Test Facility is connected and adjacent to the northwest corner of the X-7725 Recycle/Assembly Facility. The nearest reservation boundary is 741 meters (2,431 feet) to the west of the facility. (USEC, 2004)

The X-7726 facility was originally built to support training of plant personnel for centrifuge assembly and testing. Under the proposed action, this facility may initially be used for centrifuge component manufacturing and centrifuge machine assembly. Specific activities that would occur in the X-7726 facility include receiving material and centrifuge components, inspecting and testing components or subassemblies, assembling the components into centrifuge machines, evacuating and leak-checking the final assembly, and repairing any machine or subassemblies as needed. There are various support areas throughout the building to provide the necessary ancillary support for the centrifuge assembly operations and personnel. These areas include mechanical equipment rooms, electrical equipment rooms, freight and personnel elevators, HVAC equipment rooms, maintenance areas, and staff offices and amenities. In

addition, an overhead crane system traverses the length of the X-7726 facility for movement of centrifuge machines and other large components. (USEC, 2004)

After the X-7725 Recycle/Assembly Facility becomes available for use, these activities would be performed there and the X-7726 Centrifuge Training and Test Facility would become a machine component preparation area and a training area for centrifuge subassembly preparation, column assembly, and machine assembly. The X-7726 facility may also be used for select repair of failed centrifuge machines or for disassembly of failed machines for failure analysis. (USEC, 2004)

Recycle/Assembly Facility

The X-7725 Recycle/Assembly Facility is connected to the X-7726 Centrifuge Training and Test Facility and the X-7727H Interplant Transfer Corridor. It is located just to the north of the X-3001 and X-3002 Process Buildings and the nearest reservation boundary is 741 meters (2,431 feet) to the west. (USEC, 2004)

The X-7725 facility provides an area for the manufacture, assembly, testing, and maintenance of centrifuge machines. Two dedicated rooms are located in the southwest corner to support the maintenance and operation of the centrifuge transporters and other mobile equipment. Other support areas include mechanical equipment rooms, electrical equipment rooms, a battery charging room, HVAC equipment rooms, maintenance areas, and staff offices and amenities. An overhead crane system traverses the buffer storage area and assembly area for movement of centrifuge machines and other large components. (USEC, 2004)

The assembly of centrifuge machines would begin with receipt of centrifuge machine components. These components would then be stored and staged for assembly. Centrifuge components and subassemblies would be assembled into a complete centrifuge machine on one of the machine assembly stands. Depending on the speed of assembly, completed centrifuges would either be transported for installation or stored in the buffer storage area for later installation. Some completely assembled centrifuge machines would undergo UF_6 testing in the Gas Test Stands to verify the correct placement of machine components and the proper operation of the centrifuge machine. The Gas Test would be performed prior to moving the centrifuge machines to the process building for installation. (USEC, 2004)

Interplant Transfer Corridor

The X-7727H Interplant Transfer Corridor is an elongated structure that connects the X-7725 Recycle/Assembly Facility and X-3001 Process Building. It provides a protected pathway to transport centrifuge machines between the X-7725 Recycle/Assembly Facility or X-7726 Centrifuge Training and Testing Facility and the Process Buildings. The X-7727H corridor also serves as a shipping and receiving area for equipment and components during construction and operation activities. The nearest reservation boundary is 756 meters (2,480 feet) to the west of the X-7727H corridor. Under the proposed action, the corridor would be extended, involving minor excavation and construction of an additional 2,423 square meters (26,078 square feet) of corridor, extending from the X-3001 Process Building to the X-3003 Process Building. (USEC, 2004)

Interconnecting Process Piping

The X-2232C Interconnecting Process Piping is the piping that connects the X-3346 building to the X-3001 and X-3002 buildings, and connects the X-3001 and X-3002 buildings to the adjacent X-3356 building. The nearest reservation boundary is 678 meters (2,225 feet) to the west of the X-2232C piping. An additional 1,555 meters (5,100 ft) of X-2232C Interconnecting Process piping would be constructed

under the proposed action to provide service to the X-3003 and X-3004 Process Buildings and the X-3366 Product and Tails Withdrawal Building. (USEC, 2004)

This piping is typically located in a series of elevated enclosures or modules that run from the X-3346 building to the X-3001 building valve house (approximately 518 meters [1,700 feet]) and then to the X-3002 valve house (approximately 224 additional meters [800 feet]). The standard X-2232C piping module is approximately 12 meters (40 feet) long, but non-standard pipe lengths and shapes may also be used to give extra clearance across roadways. The X-2232C piping enclosures are insulated to minimize heat loss and heated to prevent the freeze-out of UF_6. (USEC, 2004)

Feed and Product Shipping and Receiving Building

The X-3346A Feed and Product Shipping and Receiving Building would be constructed approximately 91 meters (300 feet) south of the existing X-3346 Feed and Customer Services Building. The proposed facility would contain the operations associated with receiving full UF_6 feed cylinders and returning empty feed cylinders to vendors, as well as the receipt of empty customer product cylinders and shipment of full customer product cylinders to customers. The nearest reservation boundary would be 555 meters (1,820 feet) to the west of the X-3346A building. (USEC, 2004)

The X-3346A building would be connected to the X-3346 Feed and Customer Services Building by a crane rail system that serves both facilities. X-3346A would have doors on the north and south sides for either tractor-trailer trucks, straddle carriers, or cranes utilized for movement of cylinders. The building would also contain a large shipping and receiving area, cylinder staging area, offices, and a trucker's rest area. (USEC, 2004)

Product and Tails Withdrawal Buildings

The X-3356 and X-3366 Product and Tails Withdrawal Buildings would be constructed to house the UF_6 and depleted UF_6 withdrawal equipment. The X-3356 facility would be located between the X-3001 and X-3002 Process Buildings, next to the X-3012 Process Support Building. Similarly, the X-3366 facility would be located between the new X-3003 and X-3004 Process Buildings. The nearest reservation boundary would be 918 meters (3,010 feet) to the west of the X-3356 building. (USEC, 2004)

Both buildings would have two distinct areas of operation to meet process withdrawal requirements, one for product withdrawal and the other for depleted UF_6 tails withdrawal. Product withdrawal would use cold traps to desublime the enriched product from a gas phase directly to a solid phase. The enriched product would then be transferred to 48X source cylinders, which are kept in interim storage until shipped to the X-3346 Feed and Customer Services Building for sampling. The west side of the X-3356 building would house the tails withdrawal equipment. Tails withdrawal would be performed via compression and direct desublimation of the UF_6 gas. The process is designed so that two uranium assays may be simultaneously withdrawn. The solid tails would then be transferred into tails cylinders. (USEC, 2004)

Cylinder Storage Yards

The uranium enrichment process relies on the use of cylinders to allow movement and storage of UF_6 material outside of the enrichment process. The cylinder yards would provide this storage for feed uranium, depleted uranium (tails), and enriched (product) uranium awaiting shipment. The yards are constructed with sealed airport runway-quality concrete. UF_6 cylinders may be stored in any storage yard, although cylinders of a certain type may be routinely stored in a particular yard. All of the cylinder storage yards are designed primarily for storage of 2.5, 10, and 14-ton UF_6 cylinders. (USEC, 2004)

The X-745G-2 Cylinder Storage Yard is located outside the Perimeter Road to the north of the GDP X-344 UF_6 Sampling Facility. The X-745G-2 is the only yard that does not require new construction. Seven new cylinder storage yards, X-7766S, X-7746W, X-7746E, X-7746S, X-7746N, X-745H, and X-7756S would be constructed to support the proposed ACP. The locations of all the cylinder storage yards are provided in Figure 2-5. With the exception of the X-745H Cylinder Storage Yard, all new construction would occur within the proposed ACP site, adjacent to the X-3346 Feed and Customer Services and X-3356 Product and Tails Withdrawal buildings. The X-745H Cylinder Storage Yard would be located to the northeast of the existing X-745G-2 Cylinder Storage Yard, outside the Perimeter Road. The nearest reservation boundary is to the west approximately 604 meters (1,982 feet) from the proposed X-7746N, S, E, and W Cylinder Storage Yards; 918 meters (3,010 feet) from the proposed X-7756S Cylinder Storage Yard; and 862 meters (2,827 feet) from the existing X-745G-2 Cylinder Storage Yard. (USEC, 2004)

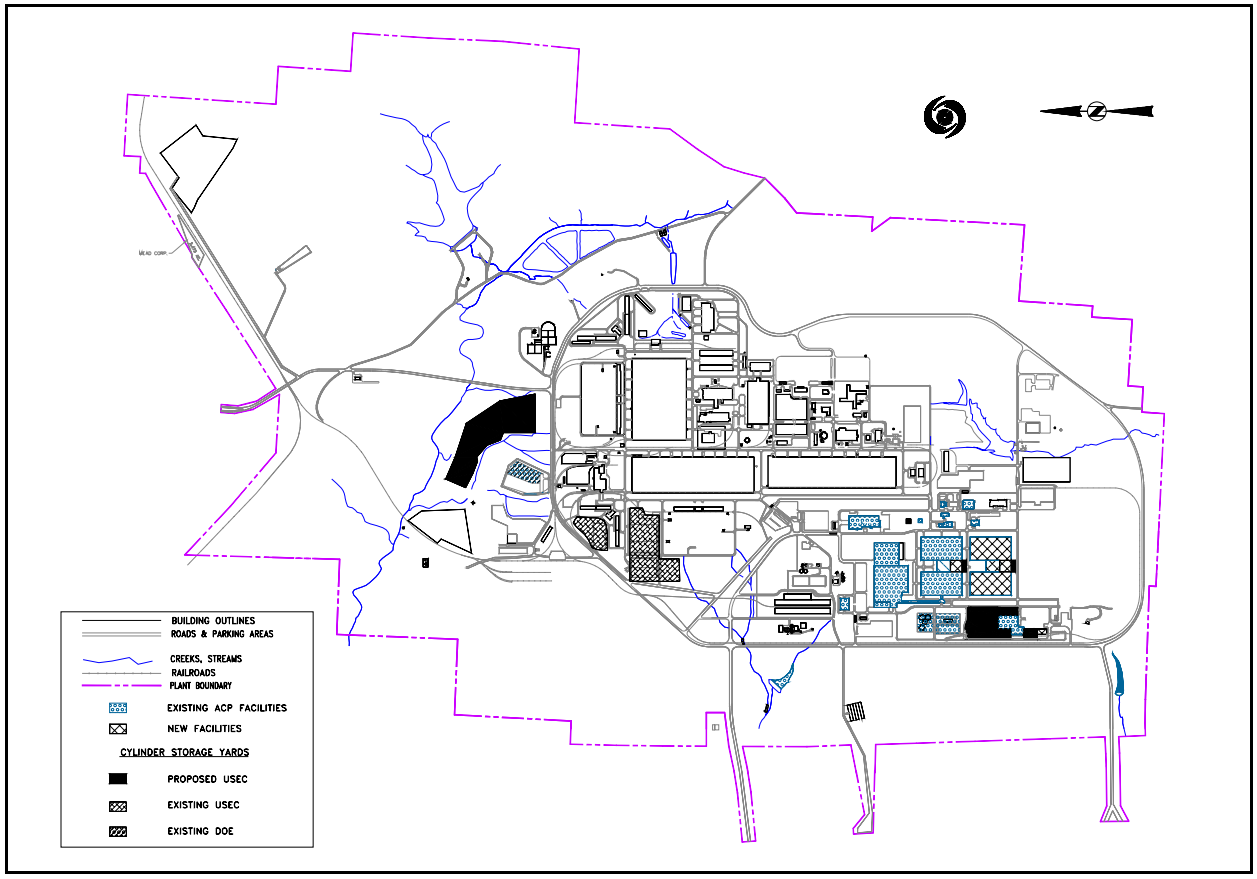

Figure 2-5 Locations of Cylinder Storage Yards (USEC, 2005b)

2.1.3.2 Secondary Facilities

In addition to the primary facilities, there are a number of secondary facilities and areas that would provide indirect support to the ACP enrichment process. No special nuclear material, depleted uranium, or other radiological materials would be found in these facilities and areas (USEC, 2004). The secondary facilities include a waste facility, storage facilities, and various support buildings and infrastructure for utilities and services. Some of these utilities and support services would be procured and others would be provided by USEC. The secondary facilities and areas leased to USEC to support the proposed ACP would include the following:

- *Waste Accountability Facility* - The X-7725A facility is located in the southwest quadrant of the DOE reservation north of the X-7725 facility. This facility serves as a storage area for equipment and parts necessary for the maintenance and repair of the process and process support equipment. (USEC, 2004)

- *Data Processing Building* - The X-112 Data Processing Building, located east of the X-3002 Process Building, provides secure housing for the data systems and personnel required to support ACP data processing. (USEC, 2004)

- *Emergency Operations Center* - The X-1020 EOC, located east of the X-3002 Process Building, serves as a central location to coordinate any emergencies that occur on the DOE reservation. (USEC, 2004)

- *Pumphouse and Air Plant, and Cooling Tower* - The X-6000 Pumphouse and Air Plant, located east of the X-3002 building, contains: the Cooling Tower Pump House and the Air Generation Plant. The building contains the necessary equipment and systems to distribute dry compressed air to the proposed ACP and to provide the requisite water to the X-6001 Cooling Towers for the removal of heat from the process buildings. The X-6001 tower also contains the necessary equipment, systems, fans, piping, and hardware structures to satisfy the necessary cooling requirements for the process buildings. (USEC, 2004)

- *Boiler System and Oil Storage Facility* - The X-6002 system is a gas-fired boiler system located northeast of the X-3002 Process Building. The boiler system provides recirculating hot water for building and process heat. The boiler normally is operated on natural gas, but it can also use fuel oil (USEC, 2004). The X-6002A Oil Storage Facility is located east of the X-3002 building and supplies fuel oil to the X-6002 system when required. It is expected that natural gas would be used approximately 90 percent of the time and fuel oil for approximately 10 percent of the time. (USEC, 2005c)

- *Maintenance, Stores, and Training Building* - The X-7721 building, located northeast of the X-3002 Process Building, provides areas for maintenance shops, stores and receiving activities, and training (USEC, 2004).

- *Recycle/Assembly Storage* - The X-7745R storage area is a concrete pad immediately adjacent to and east of the X-7725 facility. This area is used mainly for clean, non-contaminated, outside, horizontal rack storage of centrifuge casings before they are moved inside the building for machine assembly. Other centrifuge components and miscellaneous items may also be temporarily stored in this area. (USEC, 2004)

- *Power Ductbank Trench System* - This system includes 18 concrete vaults and an underground trench that provides supporting infrastructure to the electrical system. (USEC, 2005c)

- *Communications Ductbank Trench System* - This system includes four concrete vaults and an underground trench that provides supporting infrastructure to the communications system. (USEC, 2005c)

- *Chemical Storage Building* - The X-7725C building, located north of the X-3001 Process Building, provides a clean, non-contaminated, and protected storage area for manufacturing chemicals. (USEC, 2004)

- *Aboveground and Underground Storage Tanks* - Aboveground and underground storage tanks would be installed at various locations within the immediate vicinities of the four process buildings and support facilities. The size, location, and contents type of each aboveground storage tank would vary according to operational needs. Tanks would be constructed of materials compatible with the product to be stored and the conditions of storage (e.g., pressure and temperature), and will meet operational regulatory requirements. A secondary means of containment for tanks storing petroleum products, as required by 40 CFR 112.8, would provide for the entire capacity of the aboveground storage tank and any precipitation that might accumulate. Fuel would be transferred from fuel-bearing aboveground storage tanks to a 100 gallons per day (approximate) tank inside the process buildings to supply standby generators in case of power failures. (USEC, 2004)

  The fuel would be fed via aboveground and underground piping. The piping system would conform to standards for fuel distribution pressure piping, would be designed to minimize abrasion and corrosion, and would allow for expansion and contraction. Fuel lines and tanks would be labeled in accordance with regulatory standards. Spill cleanup materials, such as absorbent pads and/or spill pallets, would be available at hose connections. In accordance with Federal and State laws, proper safety procedures, spill prevention plans, and spill response plans would be used to minimize impacts from accidental discharges. (USEC, 2004)

2.1.3.3 Operational Systems

The DOE reservation has several operational systems in place to ensure security of the facilities and to respond to emergencies. The proposed ACP would utilize these existing systems, which include:

- *Evacuation Public Address System* - The Evacuation Public Address system provides instructions or notification in the event of an incident requiring evacuation or sheltering of reservation or plant personnel. The X-1020 Emergency Operations Center Public Address system control console is continuously manned. During emergencies, the Public Address system is not used for routine traffic. The Public Address system serves most occupied plant facilities. (USEC, 2004)

- *Public Warning Siren System* - The Public Warning Siren System is used to provide notification to the public within a two-mile radius of the DOE reservation in the event of an incident requiring evacuation or sheltering of the public. The system is comprised of sirens on poles/towers around a two-mile radius and an electronic siren controller at the X-1020 Emergency Operations Center and local sheriff's department. (USEC, 2004)

- *Security Access Control and Alarm System* - Due to the classified and proprietary nature of the ACP activities and equipment, access to areas classified as Limited Security Areas, Exclusion Area(s), and Vault-type Room(s) would be controlled utilizing a Security Access Control and Alarm System. The system consists of an Intrusion Detection System to provide interior protection and an Access Control System to provide high-security entry controls. The two subsystems report to a single operator's workstation forming a single security system. (USEC, 2004)

- *Security Fencing and Portals* - The ACP would be within a securely fenced area consisting of approximately three and a half miles of eight foot high chain-linked fence and barbed wire encompassing approximately 81 hectares (200 acres) of the southwest quadrant of the central area described in Section 2.1.1 above. Various gates support normal operation and provide emergency exits. The fence is routinely patrolled and maintained. (USEC, 2004)

  Access to the central area would consist of portals and gates at specific locations. When in use, portals would be staffed and gates (when open) would be under surveillance by Guard Force

personnel with communications equipment. Alternatively, the portals would be equipped with rotogates with an electronic badge reader. Portals would be secured with high security locks when not in use. Signs would be posted at the access portals and gates identifying contraband items that are not permitted without specific approval. Existing lighting at the portals and gates would assist Guard Force personnel and building or plant personnel in detecting unauthorized persons. Standby light would be available in the event of an extended power outage. (USEC, 2004)

2.1.3.4 Procured Utilities and Other Services

Some of the utilities and support services necessary for the operation of the proposed ACP would be procured and provided through existing buildings and services. Utilities procured include high voltage electrical power, water for fire-fighting, sanitary water, sanitary sewer, communications, and non-potable cooling water. Support services procured would include emergency response, training, maintenance, environmental management, and administrative support. Agreements, including performance requirements, have been established for those services not self-performed by USEC to help ensure they are available and reliable. The electrical, water, and sewage systems that would be procured are:

- *Electrical Distribution Systems* - Electrical power is supplied from the external 345 kilovolts power grid at 345 kilovolts through the X-530A Switch yard to the X-5001 Substation. At the X-5001 Substation, the electrical power is stepped down in voltage to 13.8 kilovolts then supplied through the X-5000 Switch House to the various centrifuge process buildings and other centrifuge support buildings. The distribution voltages are further stepped-down as necessary, depending on the facility requirements. (USEC, 2004)

- *Water Systems*– Water used at the reservation is supplied by a vendor from wells sunk into the Scioto River alluvium (see Chapter 3 for more detail). The raw water is pumped from wells at three locations along the Scioto River. There is also a backup system that can draw directly from the Scioto River when the wells are unable to produce sufficient water to meet the reservation demand. No known public or private water is withdrawn from the Scioto river downstream of the ACP. The well fields and pump house are located where flooding is anticipated, so the equipment is designed and installed to operate without adverse effect (i.e., the well pumps can operate under water). (USEC, 2004)

- *Sewage Treatment*– The X-6619 Sewage Treatment Plant services the entire DOE reservation and currently operates under the United States Enrichment Corporation National Pollutant Discharge Elimination System (NPDES) permit. Sewage from the reservation facilities is fed into a series of underground sanitary sewers. The plant's sanitary sewers feed into one of several lift stations located around the DOE reservation. From the lift stations, the sewage is pumped to the X-6619 facility. In accordance with the United States Enrichment Corporation National Pollutant Elimination Discharge System permit, the design capacity of the Sewage Treatment Plant is 2,275,032 liters per day (601,000 gallons per day) and is currently operating at 40 percent of that capacity. (USEC, 2005c)

  The X-6619 is an activated-sludge facility utilizing the plug flow process, aerobic digestion, secondary clarification, and granular-media filtration for effluent polishing (tertiary treatment). Post-chlorination followed by de-chlorination with sulfur dioxide is used to meet National Pollutant Elimination Discharge System effluent standards. The treated effluent is discharged to the Scioto River via an underground pipeline to a permitted outfall. An automated sampler collects a weekly composite sample of the liquid effluent for radiological analysis and other required analyses. This existing monitoring system and resulting data would be available as a means of assuring that no unanticipated discharge of licensed material occurred. (USEC, 2005b)

2.1.3.5 Local Road and Rail Network

Intraplant Roadways

The DOE reservation is accessed by small roads that intersect with the Perimeter Road from four directions. The area of the reservation where the proposed ACP would be located has an extensive roadway system. The buildings/facilities on the reservation are serviced with a system of roads, which as a rule generally follow a north-south grid. The system is in generally good condition due to road repaving projects. Except during shift changes, traffic levels on the site access roads and Perimeter Road are low. Peak traffic flows occur at shift changes and the principal traffic areas during peak morning/afternoon traffic are at locations where parking lot access roads meet the Perimeter Road. The DOE reservation has 12 parking lots varying in capacity from approximately 50 to 800 vehicles. Total parking capacity is approximately 4,400 vehicles. (USEC, 2004) Under the proposed action, approximately 10,033 square meters (108,000 square feet) of new roads and parking areas would be constructed to support the ACP (USEC, 2005b).

Offsite Road Network

The DOE reservation is served by two of southern Ohio's major highway systems: U.S. Route 23 and Ohio SR 32/124. The DOE reservation can be accessed by the Main Access Road, a four-lane interchange with U.S. Route 23. This access route accommodates the plant traffic flow. (USEC, 2005b)

The DOE reservation is 5.6 kilometers (3.5 miles) from the intersection of the U.S. Route 23 and Ohio SR 32/124 interchange. Both routes are four lanes with U.S. Route 23 traversing north-south and Ohio SR 32 traversing east-west. Approximately 113 kilometers (70 miles) north of the plant, U.S. Route 23 intersects I-270, I-70, and I-71. Trucks also may access I-64 approximately 32.2 kilometers (20 miles) southeast of Portsmouth. (USEC, 2005b)

SR 32/124/50 runs 298 kilometers (185 miles) east-west from Cincinnati, and through Piketon to Parkersburg, West Virginia. To the west, SR 32 provides access to Cincinnati's three interstate highways, I-71, I-74, and I-75. To the east, SR 32/50 is linked with I-77. (USEC, 2005b)

Rail

The proposed site has rail access, and several track configurations are possible within the site. The Norfolk Southern rail line is connected to the CSX Transportation Inc. line via a rail spur entering the northern portion of the site. This onsite system is currently used infrequently. Track in the vicinity of Piketon, Ohio allows a maximum speed of 96.6 kilometers per hour (60 miles per hour). The CSX Transportation Inc. line also provides access to other rail carriers. (USEC, 2005b)

2.1.4 Description of the Phases of the Proposed Action

Activities at the proposed ACP would be comprised of four distinctive phases starting with refurbishment, site preparation, and construction, and ending with decontamination and decommissioning. Each of these phases is described in separate sections below, followed by a fifth section that describes the cessation of uranium enrichment operations at the Paducah Gaseous Diffusion Plant, which, while not part of the proposed action, would likely result from start-up of operations at the proposed ACP. (USEC, 2005b)

2.1.4.1 Refurbishment, Site Preparation, and Construction

Prior to operation, a number of activities would be required to refurbish, prepare, and construct facilities necessary for uranium enrichment at the proposed site.

Refurbishment Activities

A number of existing facilities at the proposed ACP have already undergone preliminary refurbishment to build the USEC American Centrifuge Lead Cascade facility. The environmental impacts of the Lead Cascade facility were analyzed in an Environmental Assessment published by NRC in January 2004 (NRC, 2004). Refurbishment of the existing facilities in the proposed ACP would continue as part of the proposed action. Specific refurbishment activities that would be completed are listed in Table 2-2.

Table 2-2 Refurbishment Activities for the Proposed ACP

Refurbishment Activity	Location
Preliminary facility repairs and modifications; maintenance servicing of support equipment	X-7726 Centrifuge Training and Test Facility, X-7727H Interplant Transfer Corridor, X-3012 Process Support Building, X-3346 Feed and Customer Services Building, X-2232C Interconnecting Process Piping, XT-847 Waste Management Staging Facility, and the X-710 Technical Services Facility.
Partial relocation of DOE operations and office space	X-3012 Process Support Building
Partial or complete clean out and disposal of material (e.g., old centrifuges associated with the Gas Centrifuge Enrichments Plant built onsite in the early 1980s, parts, classified material, records, miscellaneous equipment)	X-3001 and X-3002 Process Buildings
Disposal of stored hazardous waste and subsequent modification of the RCRA Part B permit to reflect a new storage area for the proposed ACP	X-7725 Recycle/Assembly Building
Relocation of the X-6002 Heat Plant	From X-3002 building to an area adjacent to X-6002A

Sources: NRC, 2004; USEC, 2005b

The relocation of the X-6002 Heat Plant would consist of the removal and relocation of system components and piping. Construction would take place between the X-6002A Oil Storage Facility and the X-7721 Maintenance, Stores, and Training Building, located northeast of the X-3002 building. Approximately four acres of soil disturbance is anticipated, but appropriate design reviews would be performed prior to construction to identify the detailed scope of the project effort. The DOE air permits would be transferred to USEC and incorporated in the site's *Clean Air Act* Title V air permit. USEC would also utilize applicable erosion control measures and storm water run off controls to minimize these effects during the relocation and removal effort (USEC, 2005b).

Site Preparation and Construction Activities

As part of the proposed ACP, eight primary facilities, three secondary facilities, and seven cylinder storage yards would be constructed. These facilities and their approximate sizes are listed in Table 2-1 and described in Sections 2.1.3.1 and 2.1.3.2.

With the exception of the X-745H Cylinder Storage Yard, the proposed construction areas were previously graded and improved during the construction phase of the former DOE Gas Centrifuge Enrichment Plant in the early 1980's (USEC, 2004). Some additional site preparation would be necessary, however, and an estimated 146,865 cubic meters (192,099 cubic yards) of earth would be excavated, with 37,385 cubic meters (48,899 cubic yards) of that being backfilled. An estimated 109,480 cubic meters (143,200 cubic yards) of earth would be placed in a borrow area on the DOE reservation for future use (USEC, 2005b).

Soil disturbance from project activities would occur in construction lay-down areas, altering the soil profile and leading to a possible temporary increase in erosion because of storm water runoff and wind. Engineering controls and best management and construction practices would be implemented to minimize removal and erosion of soils. Physical barriers, such as silt fences and temporary berms would be utilized to reduce impacts on surface water quality from silt and erosion (USEC, 2005b).

Construction activities would comply with all applicable permits. Best management practices would be followed to minimize solid waste and hazardous material generation during construction. A minimal amount of oils or solvents would be used during construction to decrease potential leakage to groundwater. If a spill occurs, trained, qualified professionals would promptly deploy spill cleanup materials. Affected soils would be sampled, analyzed, and managed according to appropriate procedures that encompass State and Federal requirements.

Dust suppression techniques would be used to mitigate excessive releases of fugitive dust and particulate matter during site preparation activities, although the site is located in a county that is exempt from the restrictions on emissions for fugitive dust specified in Ohio Administrative Code 3745-17-08.

Management of Wastes from Refurbishment, Site Preparations, and Construction

Refurbishment and construction activities would generate solid sanitary/industrial waste, low-level radioactive waste from the former Gas Centrifuge Enrichment Plant, hazardous waste regulated under the *Resource Conservation and Recovery Act*, and recyclables. Sanitary/industrial waste would include normal building construction materials such as steel beams, plywood and concrete, and general building trash such as paper and packing products, wood, and cement. Sanitary/industrial waste from maintenance of support equipment would be non-regulated lubricants, cleaning materials, and general maintenance debris. Incandescent and fluorescent light bulbs, lead acid and non-lead acid batteries, aerosol cans, etc. would be generated throughout the project and would be handled in accordance with established recycling and hazardous waste management programs. Low level radioactive waste, and hazardous and non-hazardous wastes would be handled according to procedures that comply with NRC, State, and Federal requirements. As previously mentioned, reasonable efforts would be taken to minimize the amount of waste generated during this phase using USEC-approved waste minimization and pollution prevention policies. The majority of the wastes generated during the refurbishment phase would occur in the X-3001, X-3002, and X-3346 buildings. Table 2-3 presents a summary of the major sources of waste and projected annual rates of waste generation from this life-cycle phase.

2.1.4.2 Manufacturing and Equipment Assembly

This section summarizes the proposed activities for manufacturing and assembling centrifuges for the proposed ACP. A description of airborne emissions, liquid wastes, and solid wastes expected to be generated from these activities is also provided.

Table 2-3 Waste Generation during Refurbishment and Construction

Material/Activity	Type of Waste	Projected Annual Rate
Centrifuge parts, piping, and excess equipment from the former Gas Centrifuge Enrichment Plant	Low-level radioactive waste	7,793-8,509 m^3[a]
Rags, wipes, and aerosol cans	RCRA-regulated	3-17 m^3
Paper, construction debris, wood, etc.	Sanitary/industrial	1,270 t
Circuit boards, bulbs, lead parts	Recyclables	144-184 m^3

Notes:
[a] This waste will only be generated one-time during refurbishment and construction. It is not a waste generated annually.
m^3 = cubic meters; t = metric tons; RCRA = *Resource Conservation and Recovery Act*.
To convert m^3 to ft^3 multiply by 35.31.
To convert t to tons multiply by 1.1.
Source: USEC, 2005b.

Manufacturing and Assembly Activities

New centrifuges and related components would be manufactured onsite at the proposed ACP or at a commercial manufacturing plant located off the DOE reservation. For offsite manufacturing, USEC is contemplating three different candidate locations in different States across the country. Centrifuge components from an offsite manufacturing plant would be transported by truck to the proposed ACP for assembly and installation.

Centrifuge manufacturing features a filament winding process. This process typically uses materials such as carbon fibers, resin systems (resins, hardeners, and modifiers), prepregs (fibers/resin system), and other chemicals for cleaning parts and for support of the manufacturing process. Final curing of the resulting parts occurs in a curing oven or hood. Solvents are used to clean the produced parts and manufacturing equipment.

Control of combustible materials used in the manufacture of centrifuge components includes storage in National Fire Protection Association 30-approved flammable storage cabinets or areas and the use of local ventilation. The approved storage areas and flammable storage cabinets would be located away from licensed material. Back-up power ensures continued ventilation in the event of loss of power. Inadequate ventilation flow from the hoods and cabinets triggers an alarm.

Onsite centrifuge manufacturing, assembly, testing, and maintenance operations would occur primarily in the X-7725 Recycle/Assembly facility, which would house up to six centrifuge assembly positions and six column assembly stands. The X-7726 Centrifuge Training and Test facility would have two centrifuge assembly positions and one column assembly stand and would be used initially for centrifuge component manufacturing and machine assembly, then for assembly training and machine component preparation only. These locations would also receive and store parts for the centrifuge machine assembly.

The assembly and testing of sub-assemblies and assemblies would be an ongoing activity through the production of approximately 24,000 completed centrifuges and sufficient spares to operate the enrichment plant at the potential capacity of 7 million separative work units annually (USEC, 2005b). Each of the manufacturing and assembly areas would have multiple workstation and equipment sets to allow for the production of up to 16 machines per day (USEC, 2005b). Overhead cranes, fork trucks, and parts elevators would deliver material to the assembly stands. Lifting fixtures and other assembly tooling would be required during the assembly of the centrifuges. Completed machines may be moved via crane

to an adjacent storage location until they can be moved again by crane or moved directly to a transporter for movement to the process buildings.

Gross leak testing of the machines using UF_6 may be performed in the X-7725 Recycle/Assembly facility Gas Test Stands or in the process buildings after installation prior to being placed into service. No process gas (UF_6) testing of the machines would take place in the assembly areas. The Gas Test Stands would be in a separate room within the X-7725 facility, which has its own ventilation and emission control system. UF_6 for the test stands would be supplied from a small cylinder within this room. Testing activities could also include mechanical testing and planned failure testing of smaller parts or sub-assemblies.

Management of Wastes from Manufacturing and Equipment Assembly

The common chemicals that may be used and released are acetone, alcohols, carbon dioxide, ethanol, Freon 134, resin products, solvent vapors, and n-methylpyrrolidone. The airborne emissions generated by the processes would be confined and captured by the use of hoods or local ventilation capture systems that divert emissions to permitted vents. Where required (e.g. for volatile organic vapors), emission control equipment, such as air flow monitored hoods and local exhaust systems, would be used as part of the permitted emission vent system. Airflow from the hoods would be monitored to ensure adequate flow and alarm if a reduced flow is detected so that operations can be curtailed (USEC, 2005b).

Exhaust from the test stands would pass through alumina traps to a continuously monitored vent. The vent would be equipped with continuous gas flow monitoring instrumentation with local readout, as well as the analytical instrumentation required to continuously sample, monitor, and alarm UF_6 breakthrough in the effluent gas stream (USEC, 2005b).

Some hazardous wastes would be generated through the use of solvents and would be in the form of excess spent solvent, rags, wipes and other material that come into contact with the spent solvents. Wastes would be stored in approved storage areas in flammable storage cabinets/areas according to National Fire Protection Association 30 requirements prior to removal for disposal. Excess fibers, reacted resins, and curing agents would be considered sanitary/industrial waste. Solvents for cleaning would be used during assembly of parts (either sub-assembly or final assembly), which would generate some air emissions, a small quantity of sanitary waste (dry wipes, rags, etc.), and hazardous wastes from the solvent cleaning (USEC, 2005b). Table 2-4 provides a summary of solid waste expected to be generated during the manufacturing phase.

2.1.4.3 Facility Operation

This section provides an overview of the production activities that would be carried out to operate the proposed ACP. The overall process of uranium enrichment at the proposed ACP can be divided into six basic operations: (1) receipt of UF_6 feed material; (2) feeding UF_6 into the enrichment process; (3) enrichment, where the UF_6 assay is increased to its desired uranium-235 content; (4) material withdrawal, where enriched UF_6 and depleted UF_6 is removed from the enrichment process; (5) UF_6 sampling and transfer, where enriched UF_6 is sampled to ensure it meets customer specifications and the enriched UF_6 product material is transferred to customer product cylinders; and (6) shipment of UF_6 cylinders to customers.

Each of these operations is briefly described below, followed by a discussion of waste management and the activities associated with conversion and disposal of depleted UF_6.

Table 2-4 Solid Waste Generation during Manufacturing

Material/Activity	Type of Waste	Projected Annual Rate
Spent solvent rags, wipes from parts cleaning operations in support of start-up and testing activities	RCRA-regulated	9-11 m^3
General maintenance and proposed ACP materials in support of start-up and testing activities	Non-regulated[a]	5-6 m^3
Packing material, paper, wood, etc. in support of start-up and testing activities	Sanitary/industrial	392-490 t

Notes:
[a] A Non-Regulated Waste is any discarded material that is excluded under the Ohio Administrative Code - OAC 3745-51-04, does not exhibit a characteristic of a hazardous waste under OAC 3745-51-20 to 3745-51-24, or does not meet any of the listing descriptions in OAC 3745-51-31 to 3745-51-33.
m^3 = cubic meters; t = metric tons; RCRA = *Resource Conservation and Recovery Act*
To convert m^3 to ft^3 multiply by 35.31.
To convert t to tons multiply by 1.1.
Source: USEC, 2005b.

Receipt of UF_6 Feed Material

USEC intends to use natural uranium in the form of UF_6 for the proposed ACP. The intention is to not introduce feedstock contaminated with significant concentrations of other nuclides into the process. Feed material that meets the American Standards for Testing and Materials specification for recycled feed may be used, and may contain radionuclides such as uranium-236 and technetium-99. The UF_6 would be transported to the plant in 48-inch (48X or 48Y), 10-ton or 14-ton cylinders that are designed, fabricated, packaged and shipped in accordance with American National Standards Institute N14.1, Uranium Hexafluoride-Packaging for Transport (ANSI, 1990). Feed cylinders would be typically transported to the site by 18-wheeled tractor-trailer trucks. It is anticipated that approximately 1,100 shipments of feed cylinders per year would arrive at the proposed ACP (USEC, 2005b). Expected feed suppliers include the Cameco Corporation (Ontario, Canada) and Honeywell Specialty Chemical Plant (Metropolis, Illinois), as shown in Figure 2-6.

Feed Operations

UF_6 feed cylinders would be transported to the feed area of the X-3346 Feed and Customer Services building and placed inside feed ovens. Feed ovens are not pressurized, but do restrict air-leakage to provide efficient heating of the cylinders. Each feed oven is equipped with a UF_6 leak detector. The ovens would heat the cylinders utilizing electrically heated air at a constant temperature of approximately 85 degrees Celsius (185 degrees Fahrenheit). (USEC, 2004)

The feed process has several stages. UF_6 is sublimed from the solid phase into the gas phase and monitored for the presence of light gases (e.g., nitrogen oxide, oxygen, hydrogen fluoride, etc.). It is then purified, held, mixed, and pressure-controlled before entering the process buildings. There are two feed headers located in the feed area that direct each stream to the X-3001 and X-3002 Process Buildings via the X-2232C Interconnecting Process Piping. Any solid UF_6 left in the cylinder after the feed rate declines to a predetermined level goes to a freezer-desublimer in a process called "heeling." This process

removes residual UF_6 "heels" from a cylinder when it can no longer be used to feed material into the cascade. The emptied feed cylinder would then be placed into storage. (USEC, 2004)

Figure 2-6 Incoming UF_6 Feed Material

Enrichment Operations

The uranium enrichment process as described in Section 2.1.2 would occur within the X-3001, X-3002, X-3003, and X-3004 Process Buildings. Each building would contain multiple cascades to optimize operating costs and production flexibility. Each cascade would be capable of enriching UF_6 gas to the desired product assay. Enrichment would normally be less than 5.5 percent by weight of uranium-235, although USEC's license application seeks authorization to produce enriched uranium up to 10 percent by weight of uranium-235. (USEC, 2004)

Figure 2-7 shows the proposed flow of feed, enriched, and depleted UF_6 material and cylinders during full operation of the ACP. Incoming UF_6 feed gas would be distributed to the feed control systems for each cascade. The feed flow rates to each cascade would be automatically adjusted to ensure the desired feed is added to the cascade to support the production rate. As the feed enters the cascade, it mixes with material already in the cascade and separates into enriched and depleted material streams. The proportion of feed that becomes enriched product is controlled by the stage control valves, which would be adjusted to provide the desired product and tails assays. This process would continue until the material exits the top of the cascade as enriched product or the bottom of the cascade as depleted tails material, and is sent to the X-3356 Product and Tails Withdrawal building. (USEC, 2004)

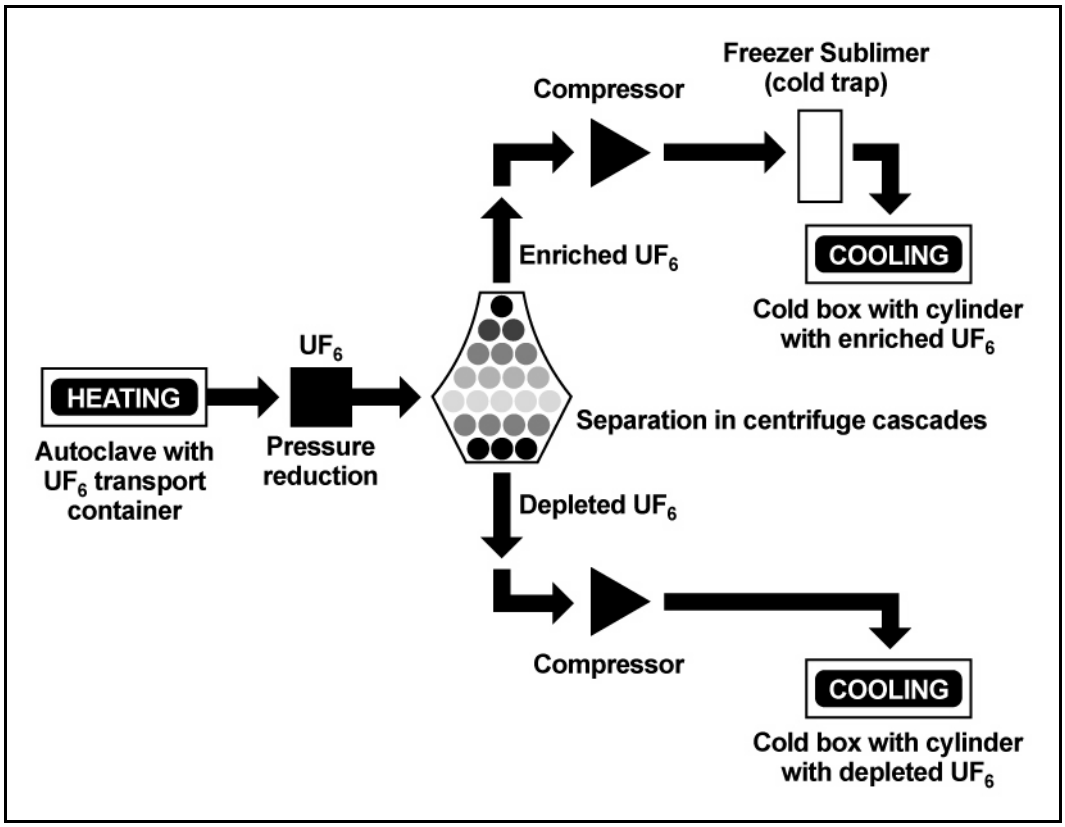

Figure 2-7 Enrichment Operations Flow

Product and Tails Withdrawal

Product withdrawal would occur in the X-3356 and X-3366 Product and Tails Withdrawal buildings. As many as three different product assays can be fed from the process buildings to the X-3356 and X-3366 buildings. Product material first transitions from the gas to the solid phase via cold traps, with the off-gas

passing through backup traps and vented through an evacuation system. From the cold traps, the enriched product is transferred into 48X source cylinders located in cold boxes. The filled 48X source cylinders are then moved to interim storage and subsequently moved to the X-3346 building sampling and transfer area. (USEC, 2004)

Tails withdrawal would occur in the same buildings and would be accomplished through compression and direct deposition of UF_6 material into tails cylinders. This process does not involve UF_6 pressures above atmospheric pressure, which helps to prevent gas leakage. The tails withdrawal design incorporates the capability for simultaneously withdrawing two uranium assays (USEC, 2004). The compression train consists of centrifugal compressors arranged in series with coolers and with recycle capability. Tails withdrawal can also be used for emergency inventory removal.

The major components that would support the withdrawal operations are withdrawal (compression) trains, cold boxes, cold traps, assay spectrometers, and vents. The Area Control Room within the X-3356 and the X-3366 buildings would house the assay spectrometers for monitoring tails and product withdrawal, control equipment, and alarms associated with the withdrawal operation.

Sampling and Transfer Operations

UF_6 sampling and transfer operations for UF_6 product material would be carried out in the product operations area of the X-3346 Feed and Customer Services building. Autoclaves with heating and cooling capability liquefy UF_6 in the source cylinder in order to obtain a homogenized sample, as mandated by the American Society for Testing and Materials sampling standards. Liquid UF_6 would then be transferred into customer product cylinders and the autoclave would cool the remaining UF_6 heels in the source cylinders until they are solid (USEC, 2004). The autoclaves are pressure vessels and are designed to contain a UF_6 release. Electrically heated hot air is the heating medium and cold air is used for cooling.

The major components that comprise the sampling and transfer operations are autoclaves, cold traps, and vents. The Area Control Room within the X-3346 building would house the monitoring, control, and alarm equipment associated with the feed operations and sampling and transfer operations.

Shipment of Enriched Product to Customers

The X-3346A Shipping and Receiving building would be the shipping point for all cylinders leaving the ACP. Filled customer product cylinders (30-inch, 2.5-ton cylinders) would be transported to customers (nuclear fuel fabrication facilities), while emptied feed cylinders would be returned to vendors. All cylinders would be prepared for shipment and shipped in accordance with NRC and U.S. Department of Transportation regulatory requirements (USEC, 2004). Figure 2-8 shows the destinations of outgoing enriched uranium customer product cylinders.

All cylinders from the proposed ACP would be transported by 18-wheeled tractor-trailer trucks. These cylinders would be designed, fabricated, and shipped in accordance with the American National Standards Institute standard for packaging and transporting UF_6 cylinders, ANSI N14.1 (USEC, 2005b). A shipment frequency of 1-20 cylinders per five days is typical, with an annual total of approximately 1,200 cylinders. Table 2-5 shows the expected recipients of product and the average number of customer product cylinders they would receive yearly.

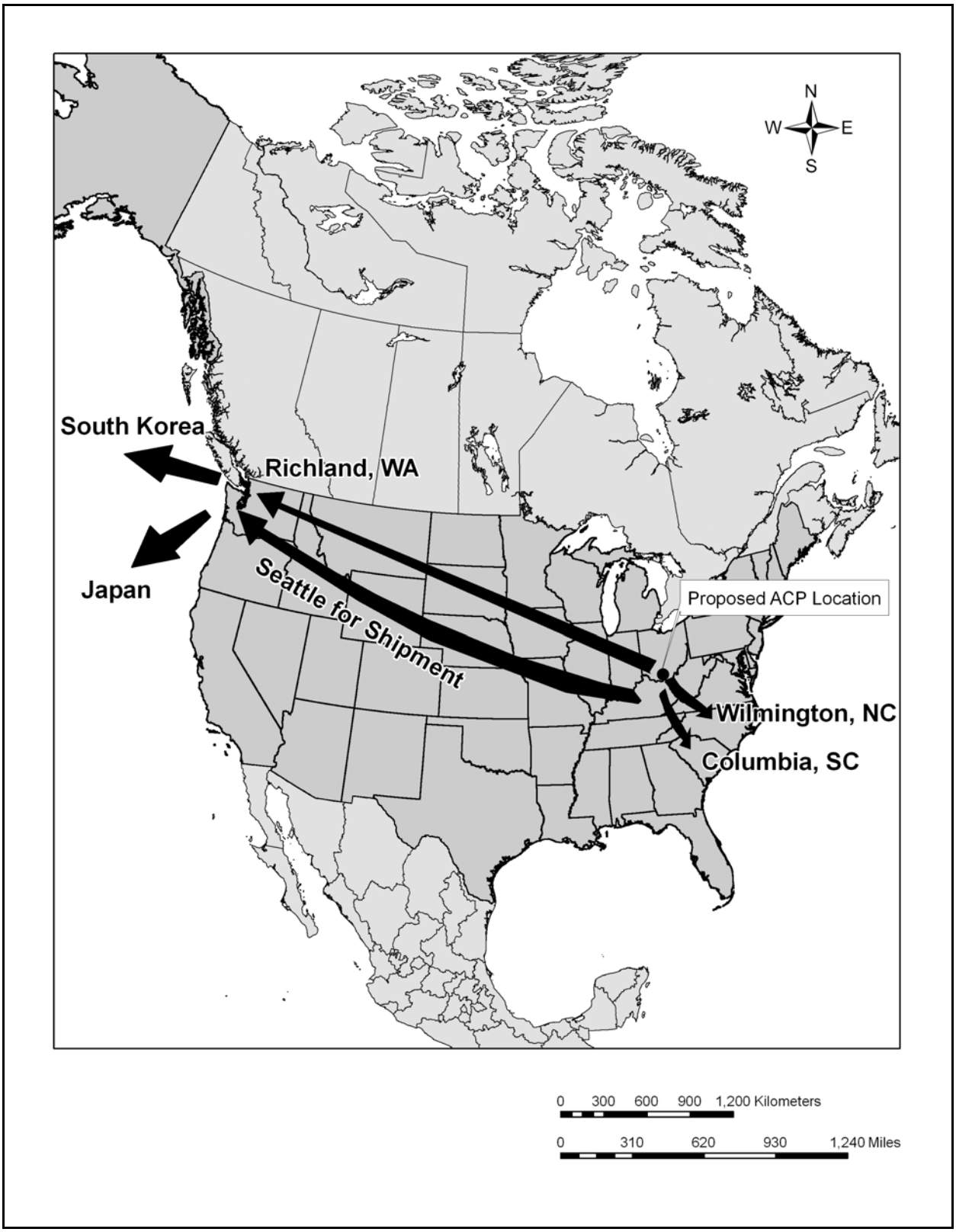

Figure 2-8
Destination of Outgoing Customer Product

Approximately 50 30-inch heel cylinders would be shipped to vendors monthly for cleaning and recertification, or washing only (USEC, 2005b). These cylinders have heel weights of less than 25 pounds. The planned vendors are Westinghouse (Columbia, SC), and Framatome (Richland, Washington).

Table 2-5 Expected Product Recipients

Company	Location	Yearly Average
Framatome ANP Inc.	Richland, Washington	300 cylinders
Global Nuclear Fuel - Americas	Wilmington, North Carolina	400 cylinders
Westinghouse Electric Corporation	Columbia, South Carolina	350 cylinders
Korea Nuclear Fuel Company	Korea	70 cylinders
Mitsubishi Nuclear Fuel Co., Ltd.	Japan	75 cylinders

Source: USEC, 2005b.

Management of Wastes from Facility Operation

Waste generated by the proposed ACP would be collected, handled, packaged, segregated, stored, and shipped for offsite treatment and disposal in accordance with plant procedures and applicable State and Federal regulations. The regulatory requirements associated with waste management are described in Chapter 1, Section 1.5. The proposed ACP would obtain waste management services from a qualified provider licensed by the NRC or an Agreement State. Potential waste streams generated include low level mixed waste, low level radioactive waste, hazardous waste regulated under the *Resource Conservation and Recovery Act*, sanitary/industrial waste, recyclable waste, and classified waste. The proposed ACP is not projected to generate any polychlorinated biphenyls or asbestos-containing waste that would be regulated under the *Toxic Substances Control Act*. Activities would be evaluated for waste minimization opportunities to reduce the volume and toxicity of waste generated to the degree determined to be economically practicable. Waste products would be categorized based upon various factors, which includes laboratory analysis, radiological assessment, process knowledge, material safety data sheets, and non-destructive analysis.

The proposed ACP would also maintain and use gaseous and liquid effluent treatment systems, as appropriate, to maintain releases of radioactive material to unrestricted areas below the limits specified in 10 CFR 20.1301 and 40 CFR Part 190, and in accordance with its "As Low As Reasonably Achievable" principle as defined in 10 CFR 20.1003. These treatment systems are described below.

Air Emissions Monitoring and Treatment Systems

The primary facilities described in Section 2.1.3 would be equipped with various air emissions monitoring and treatment systems. Since there is potential for the release of hydrofluoric acid gas during operation of the ACP, the vent systems in each primary facility would have integral gas flow monitoring instrumentation with local readouts (for total gas flow and accumulated radioactivity in the sample traps). They would also contain analytical instrumentation to continuously sample, monitor, and to alarm if UF_6 should escape in the effluent gas stream. The centrifuge process buildings vent the purge vacuum and evacuation vacuum systems through a shared set of alumina traps. Gases evacuated from process systems in the feed and withdrawal buildings would pass through cold traps to desublime the potentially high concentrations of UF_6 and separate it from the non-UF_6 gases. Residual gases leaving the cold trap would pass through a set of alumina traps to remove any trace quantities of UF_6 prior to the gases being vented

to atmosphere. When an evacuation system cold trap becomes full, it would be valved off from the vent and its contents desublimed to a drum so the material could be fed back into the enrichment plant. The cold traps can be bypassed to allow rapid evacuation of a volume not containing radioactive material. The alumina traps are not bypassed. In compliance with the policies of USEC's Radiation Protection Program, the ventilation air in the primary facilities would be continuously monitored and the data would be verified quarterly to enure that ventilation exhausts are less than 11×10^{-08} becquerel per milliliter (3×10^{-13} microcuries per milliliter) uranium (USEC, 2005b).

A portable gulper (vacuum) system would be used for localized exhaust on applications ranging from pigtail operations to small-scale maintenance tasks. The gulper inlet duct or hose would be placed near the work area. Any escaping airborne contamination would be removed from the source and passed through the duct or hose and into the filter bank, where, depending on the operation, gases are neutralized and the particulates removed. The resultant exhaust would be clean air that would typically be discharged into the work area.

Based on historic experience and operating plans, the radionuclides anticipated to be present in gaseous effluents are uranium-234, -235, and -238. The intention is to not introduce feedstock contaminated with significant concentrations of other nuclides into the process. Feed material that meets the American Standards for Testing and Materials specification for recycled feed may be used, and may contain radionuclides such as uranium-236 and technetium-99. Due to historic contamination of the nuclear feed cycle and of the site, however, technitium-99 may eventually appear in some gaseous effluents. The radionuclides anticipated to be present in liquid effluents are, uranium-234, -235, -238, and technitium-99 due to historic contamination of the site. Consequently, ACP emissions will be analyzed for these four nuclides routinely. The "As Low As reasonably Achievable" goal for airborne radioactive releases from the ACP is 5 percent (5.0×10^{-06} sievert per year [0.5 millirem per year]) of the NRC 10 CFR 20.1101 constraint of 0.0001 sievert per year (10 millirem per year) for the most exposed member of the public. This is less than the 10 millirem per year goal recommended in NRC Regulatory Guide 8.37, Regulatory Position C.1.2 (USEC, 2005b).

Liquid Effluent Collection and Treatment Systems

The proposed ACP would be equipped with various liquid effluent collection and treatment systems. The centrifuges and other support equipment are cooled by a closed-loop Machine Cooling Water system to minimize the amount of water potentially contaminated by uranium. There would be no routine blowdown from the Machine Cooling Water system. Waste heat from the Machine Cooling Water system would be discharged via heat exchangers to the Tower Water Cooling system, which would be cooled by a single cooling tower. Waste heat from the cold trap refrigeration systems in X-3346 Feed and Customer Services and X-3356 Product and Tails Withdrawal buildings would also be discharged to the Tower Water Cooling system. Currently, the Tower Water Cooling system discharges its blowdown to the Portsmouth Gaseous Diffusion Plant Recirculating Cooling Water system under a service agreement, which in turn discharges its blowdown directly to the Scioto River via an underground pipeline (permitted outfall 004). The Recirculating Cooling Water system does not provide any treatment of the Tower Water Cooling system blowdown; it simply provides a convenient pathway to a suitable permitted discharge point. At some point in the future, the Tower Water Cooling system blowdown will likely be modified to bypass the Recirculating Cooling Water system and discharge directly to the Recirculating Cooling Water discharge pipeline. No licensed material is anticipated in the Tower Water Cooling system blowdown (USEC, 2005b).

In the interim, the Portsmouth Gaseous Diffusion Plant Recirculating Cooling Water system has ample capacity to accept the Tower Water Cooling system effluent without either physical modification or adjustment to its discharge limits. Discharges from the Recirculating Cooling Water system are

monitored by an automated sampler, which collects a weekly composite sample of the liquid effluent for radiological analysis as well as sample(s) for other required analyses. Historical data indicate that there is reasonable assurance that no unanticipated discharge of licensed material has occurred (USEC, 2005b).

Leakage from the Machine Cooling Water system and incidental spills of water elsewhere in the ACP would be collected by the Liquid Effluent Collection system. The proposed collection system consists of a set of drains and underground collection tanks for the collection and containment of leaks and spills of chemically treated water. The drains are located throughout the DOE reservation. The tanks have a capacity of 550 gallons (gal) each and would be monitored by liquid level gauges mounted above grade on pipe stands. Water accumulated in the tanks would be sampled and analyzed prior to disposal. If the contents meet the requirements of 10 CFR 20.2003, they may be pumped to the reservation sanitary sewer system. Otherwise the tank contents would be containerized for off-site disposal. An integrity assurance plan would assure that the tanks are not leaking as the ACP takes possession of them. Following completion of this integrity assurance plan, inventory monitoring of the tank contents would be used to detect leaks from the Liquid Effluent Collection System (USEC, 2004).

Storm water runoff from the proposed ACP, along with some once-through cooling water, would drain to a pair of existing holding ponds, the X-2230N West Holding Pond and the X-2230M Southwest Holding Pond. These ponds provide an area for settling suspended solids, dissipation of chlorine, and oil diversion and containment before discharging to unnamed tributaries of the Scioto River. An automated sampler collects a weekly composite sample of the liquid effluent for radiological analysis as well as other required analyses (USEC, 2005b).

An inspection and maintenance program would be conducted for the proposed ACP's UF_6 cylinders to ensure that no licensed material is released to the storage pads (USEC, 2005b). Cylinder storage yards would have flat airport runway-quality concrete and would be sealed. The pad would be designed so that spills of liquids could be promptly contained and cleaned up, limiting decontamination of areas to the pad surfaces. Similarly, the floor designs in the process buildings would ensure that any spills of liquids can be contained and cleaned up, limiting decontamination of areas to floor surfaces (USEC, 2005b).

The radionuclides anticipated to be present in ACP liquid effluents are uranium-234, -235, -238, and technitium-99, due to historic contamination of the DOE reservation. Technitium-99 is a fission product that has contaminated much of the national fuel cycle and is present on the Piketon site. Measured technitium-99 concentrations in site outfalls have been falling for several years, but are still sometimes detected. Consequently, effluents from the proposed ACP would be analyzed for these four nuclides routinely. The "As Low As Reasonably Achievable" goal for liquid effluent radioactive releases from the ACP is 5.0×10^{-07} sievert per year (0.05 milllirem per year). This is less than the 10 milllirem per year goal recommended in NRC Regulatory Guide 8.37, Regulatory Position C.1.2 (USEC, 2005b).

Solid Waste Handling, Storage, and Transport

Satellite accumulation areas would be established throughout the proposed ACP as necessary to support waste handling, storage, and transport activities. Waste is then moved to the XT-847 Waste Management Staging Facility to be sampled and measured to assist in determining the proper waste characterization and disposal or treatment method.

Operations for long-term storage and preparation of waste for off-reservation shipment include sampling, batching, blending, glove box operations, nondestructive assay measurements, dry active waste and contaminated metal sorting, repackaging, and overpacking (USEC, 2005b). Sampling and batching of some solid waste, especially that with airborne potential, would be performed within a glove box enclosure. Sampling and batching of some liquid waste would be performed by utilizing a blending unit

system that is specifically designed for liquid waste collection and sampling. Sampling, batching, and repackaging may also be performed elsewhere on-site, as necessary. The nondestructive assay equipment located within the XT-847 facility includes a low density waste assay monitor and box monitor. This equipment is utilized to measure the activity of waste in a variety of containers including small diameter containers, drums, and boxes (USEC, 2005b).

Waste could also be repackaged and/or overpacked within the XT-847 facility. Prior to off-reservation shipment or upon discovery, damaged containers would be repackaged using either a similar container or an 85 or 110-gallon overpack. The contents of a leaking or damaged waste container may be repackaged by hand, or by utilizing a barrel lift, forklift, forklift rotator attachment, pump, or other means of transfer. Waste would be containerized and labeled in accordance with applicable U.S. Department of Transportation regulations and site procedures. Some general types of waste packaging include:

- Solid Waste — 5, 30, 55, or 110 gallon drums; small diameter containers
- Liquid Waste — polybottles; 5, 30, or 55 gallon drums
- Corrosives, Acids — polybottles or polydrums
- Scrap Metal/Dry Active Waste — B25 boxes or other similar boxes; various drums

Contaminated scrap metal, dry active waste, and other boxed waste may be stored outside. Typically, these B25 boxes would be stored on the XT-847 facility west pad; however, they may be stored outside elsewhere on the DOE reservation. If outdoor storage of waste is necessary in other than B25 boxes, radioactive wastes with removable contamination are packaged in containers, wrapped, or covered to prevent the release of radioactivity (USEC, 2005b).

Waste would be typically removed from the generating facilities and transferred to the XT-847 Waste Preparation facility prior to final disposal; however, in some instances, waste may be shipped off-reservation directly from other on-site areas. Sanitary/industrial waste would be transported to the USEC-approved onsite landfill. Hazardous waste would be stored on-site for up to 90 days prior to off-reservation shipment. Classified wastes[1] would be stored in accordance with the appropriate security and regulatory requirements and would be disposed at an appropriate site in accordance with regulatory requirements. Low level mixed waste and low level radioactive waste would be stored on-site in compliance with NRC, Federal, and State regulatory requirements until shipped off-reservation to a licensed Treatment, Storage, Disposal, Recycling facility. Shipments of low level mixed waste would occur approximately every 90 days. The low level mixed waste is exempted from the storage requirements of the *Resource Conservation and Recovery Act* as defined in OAC 37451-03. Low level mixed waste is eligible for this conditional exemption as it is a hazardous waste and would be generated and managed by USEC as described in 40 CFR Part 266, Subpart N and OAC 3745-266 (USEC, 2005b).

Low level radioactive waste and low level mixed waste generated at the proposed ACP would be containerized and given a unique identification number. The identification numbers would be entered and maintained in a computer-based database, and the database would be regularly updated to reflect location, characterization, treatment data, and waste disposal information. Table 2-6 presents a summary of solid waste generated during the operations phase.

[1] A waste that is classified because of its configuration, composition, contamination, or contained information.

Management and Disposal of Depleted UF_6 from Facility Operation

Approximately 41,105 Type 48G cylinders of depleted UF_6 would be generated by the 7 million SWU plant operating full time for 30 years (USEC, 2005b). These cylinders would contain approximately 512,730 metric tons (535,200 tons) of depleted UF_6. The depleted UF_6 would be stored onsite in cylinders prior to management or disposal in accordance with USEC's disposal strategy and applicable regulations under 40 CFR Part 266 and OAC 3745-266 (USEC, 2004). Figure 2-9 shows some example depleted UF_6 cylinders. Cylinders would be managed in accordance with NRC, U.S. EPA and Ohio EPA rules for storage, treatment, transportation and disposal of mixed wastes. These requirements include waste storage compatibility, personnel training, emergency planning, and full compliance with the NRC license.

Table 2-6 Solid Waste Generated during Facility Operations

Material/Activity	Type of Waste	Projected Annual Rate
Paper, office waste, bathroom supplies	Sanitary/industrial	227-272 t
Classified Waste[a]	Non-regulated[b]	9-11 m^3
Classified Waste[a]	Low-level radioactive waste	12-15 m^3
General maintenance, plant materials, laboratory, lubricants, vacuum system components, etc.	Mixed/RCRA	9-11 m^3
General maintenance, plant materials, laboratory, lubricants, vacuum system components, etc.	RCRA-regulated	2-3 m^3
General maintenance, plant materials, laboratory, lubricants, vacuum system components, etc.	Non-regulated[b]	5-6 m^3
General maintenance, plant materials, laboratory, lubricants, vacuum system components, etc.	Low-level radioactive waste	170-340 m^3
Polychlorinated biphenyl waste	TSCA-regulated	none projected
Asbestos waste	TSCA-regulated	none projected
fluorescent bulbs, circuit boards, lead-acid batteries, used oil	Recyclables	57 m^3

Notes:
[a]A Classified Waste is a waste that is classified because of its configuration, composition, contamination, or contained information.
[b]A Non-Regulated Waste is any discarded material that is excluded under the Ohio Administrative Code - OAC 3745-51-04, does not exhibit a characteristic of a hazardous waste under OAC 3745-51-20 to 3745-51-24, or does not meet any of the listing descriptions in OAC 3745-51-31 to 3745-51-33.
m^3 = cubic meters; t = metric tons; RCRA = *Resource Conservation and Recovery Act;* TSCA = *Toxic Substances Control Act*.
To convert m^3 to ft^3 multiply by 35.31.
To convert t to tons multiply by 1.1.
Source: USEC, 2005b.

Figure 2-9 Example of Depleted UF_6 Cylinders (Urenco, 2003)

The cylinders primarily used for storage of tails are known as Model 48G cylinders. These cylinders are made of carbon steel and are about 4 feet in diameter, 12 feet long, and weigh about 30,000 pounds when full (USEC, 2005b). While a cylinder is being filled, it is cooled so that the gaseous depleted UF_6 is solidified. Once the depleted UF_6 is solidified, a filled cylinder is then moved to a cylinder yard where it is stacked in place. The cylinders would be inspected and maintained while being stored onsite. Maintenance activities would include periodic inspection for corrosion, valve leakage, or distortion of cylinder shape. Repainting of the cylinders would be conducted as indicated by the inspections. Depleted UF_6 may be transferred into new cylinders during plant operation in the event that cylinder inspection indicates potential loss of cylinder containment.

Depleted UF_6 Conversion Process

Depleted UF_6 conversion is a continuous process in which depleted UF_6 is vaporized and converted to triuranium octaoxide (U_3O_8) by reaction with steam and hydrogen in a fluidized-bed conversion unit. The hydrogen is generated using anhydrous ammonia, although an option of using natural gas is being investigated. Nitrogen is also used as an inert purging gas and is released to the atmosphere through the building stack as part of the clean off-gas stream. The depleted powder is collected and packaged for disposition. The process equipment would be arranged in parallel lines. Each line would consist of two autoclaves, two conversion units, a hydrofluoric acid recovery system, and process off-gas scrubbers. Equipment would also be installed to collect the hydrofluoric acid co-product and process it into any combination of several marketable products. A backup hydrofluoric acid neutralization system would be provided to convert up to 100 percent of the hydrofluoric acid to calcium fluoride for storage and/or sale in the future, if necessary.

Source: (DOE, 2004a; DOE 2004b).

DOE has decided to construct and operate a new UF_6 conversion facility at the DOE reservation in Piketon (DOE, 2004b). The facility will convert DOE's inventory of depleted UF_6 now located at the Piketon reservation and at the East Tennessee Technology Park in Oak Ridge, Tennessee to a more stable chemical form (triuranium octaoxide [U_3O_8] or uranium dioxide [UO_2]) acceptable for transportation, beneficial use/reuse, and/or disposal. A related objective is to provide cylinder surveillance and maintenance of the DOE inventory of depleted UF_6, low-enrichment UF_6, natural assay UF_6, and empty and heel cylinders. The location of this conversion facility on the reservation property is directly north of the proposed ACP. The facility will have a construction period of two years, an operational period of 18 years, and a decontamination and decommissioning period of three years. Construction began in the summer of 2004. The environmental impacts of the proposed UF_6

conversion facility are addressed in detail in a separate EIS published by DOE in June 2004 (DOE, 2004b).

USEC proposes to transport the depleted UF_6 generated at the proposed ACP to this new UF_6 conversion facility on the DOE reservation in Piketon. This plan is based on Section 3113 of the *1996 United States Enrichment Corporation Privatization Act* that states the DOE "shall accept for disposal low-level radioactive waste, including depleted uranium if it were ultimately determined to be low-level radioactive waste, generated by [...] any person licensed by the Nuclear Regulatory Commission to operate a uranium enrichment facility under Sections 53, 63, and 193 of the *Atomic Energy Act of 1954* (42 U.S.C. 2073, 2093, and 2243)." On January 18, 2005, the Commission issued its ruling that depleted uranium is considered a form of low-level radioactive waste (NRC, 2005). The Commission also stated that disposal of depleted uranium tails at a DOE facility represents a plausible strategy for the disposition of depleted uranium tails (NRC, 2005).

Once converted to U_3O_8 or UO_2, the depleted uranium from the proposed ACP would be temporarily stored onsite and then shipped offsite for disposal. During its evaluation of disposal of depleted uranium in a licensed low-level radioactive waste disposal facility, the NRC staff determined that at least one facility (the Envirocare facility in Clive, Utah) is currently licensed to accept the material. Other disposal facilities, such as the DOE-operated Nevada Test Site facility, may also be able to accept this material and additional evaluations of these facilities may be required prior to disposal (DOE, 2004b).

2.1.4.4 Decontamination and Decommissioning

At the end of useful plant life, the proposed ACP would be decontaminated and decommissioned such that the facilities would be returned to DOE in accordance with the requirements of the Lease Agreement with DOE and in accordance with applicable NRC license termination requirements. Decontamination and decommissioning of the proposed ACP would be funded in accordance with the Decommissioning Funding Plan for the proposed ACP (USEC, 2005a). The Decommissioning Funding Plan, prepared by USEC in accordance with 10 CFR 70.25(a), provides information required by 10 CFR Part 70 regarding USEC's plans for funding the decommissioning of the proposed ACP and the disposal of depleted uranium tails generated as a result of plant operations. Funding would be provided by USEC by means of a surety bond or alternate financial assurance mechanism in accordance with NRC guidance in 10 CFR 70 and NUREG-1757 (NRC, 2003).

The intent of decommissioning is to return the proposed ACP site to a state that meets NRC requirements for release for unrestricted use after decontamination and decommissioning is completed (USEC, 2004). It is anticipated that at the end of the useful life of the plant, most of the buildings and outdoor areas of the plant would already meet NRC requirements for unrestricted use in accordance with 10 CFR 20.1402. Any buildings, outdoor areas, or equipment that do not already meet the NRC requirements at the time the ACP ceases operations would be decontaminated and decommissioned in accordance with the Decommissioning Plan for the site. The site decommissioning costs estimated in the Decommissioning Funding Plan are based on decontamination of the plant to the radiological criteria for unrestricted use in 10 CFR 20.1402. The total estimated cost of decommissioning a 7 million SWU plant in 2004 dollars is currently $435 million, not including the cost of disposal of depleted uranium tails generated by plant operations, which will be funded separately by USEC (USEC, 2005b). The surety bond or other financial mechanism would be updated throughout the operating life of the ACP in accordance with 10 CFR 70.25(e).

It is anticipated that the proposed ACP would generate approximately 19,030 metric tons (20,980 tons) per year of depleted UF_6. In total, approximately 41,105 cylinders containing more than 512,730 metric tons (535,200 tons) of depleted UF_6 would be generated by the 7 million separative work unit plant

operating full time for 30 years (USEC, 2005b). USEC has assumed that the depleted UF_6 would be processed in a DOE-operated conversion facility and then shipped offsite for disposal. Based on the amount of depleted UF_6 anticipated to be generated over the operating life of the proposed ACP, the estimated financial liability for depleted UF_6 disposal is approximately $1.8 billion in 2004 dollars This financial liability would be incrementally funded by USEC over the course of plant operating life as the depleted UF_6 is generated. The Decommissioning Funding Plan cost estimate for depleted UF_6 disposal is based on the assumption that the depleted UF_6 would be converted to a stable form (U_3O_8 or UO_2) and disposed of in accordance with the *USEC Privatization Act*, other applicable statutory requirements, and requirements applicable to DOE-operated depleted UF_6 conversion facilities and/or other licensed facilities.

Decontamination and decommissioning activities for the proposed ACP are anticipated to occur approximately 30 years in the future, and therefore only a general description of the activities that would be conducted for the proposed ACP can be developed at this time for the EIS. The facility will follow NRC decommissioning requirements in 10 CFR 70.38.

The NRC anticipates that decontamination and decommissioning will involve the following activities:

- Installation of decontamination facilities;
- Purging of process systems and equipment;
- Dismantling and removal of facilities and equipment;
- Decontamination and destruction of confidential materials;
- Decontamination of equipment, facilities, and structures;
- Survey and spot decontamination of outdoor areas;
- Removal and sale of any salvaged materials;
- Removal and disposal of wastes;
- Management and disposal of depleted uranium; and
- Final radiation survey to confirm that the release criteria have been met.

2.1.4.5 Ceasing Operations at Paducah

Enrichment operations at the Paducah Gaseous Diffusion Plant will ultimately cease after the ACP becomes operational. The control and categorization of the land for industrial use within the boundaries of the Paducah site would not change as a result of cessation of enrichment plant operations.

Decommissioning of the Paducah Gaseous Diffusion Plant and any other future use of the enrichment plant buildings, structures, or land are not considered part of the proposed action considered in this EIS. Decisions concerning decommissioning and any other future use of the enrichment plant would be the subject of other decisions and other environmental reviews.

2.2 No-Action Alternative

Under this alternative, the NRC would not approve the license application for the proposed ACP. The no-action alternative would result in USEC not constructing, operating, or decommissioning the proposed ACP at the DOE reservation in Piketon, Ohio. Under the no-action alternative, the uranium fuel fabrication facilities in the United States would continue to obtain low-enriched uranium from the currently available sources. Currently, the only domestic source of low-enriched uranium available to fuel fabricators is from production of the Paducah Gaseous Diffusion Plant and the down blending of highly enriched uranium under the "Megatons to Megawatts" program, as described in Section 1.3.1 of this EIS. Foreign enrichment sources are currently supplying as much as 86 percent of the U.S. nuclear power plants' demand (EIA, 2004).

Currently, the "Megatons to Megawatts" program will expire by 2013, potentially eliminating down blending as a source of low-enriched uranium. Opened in 1952, the Paducah Gaseous Diffusion Plant utilizes gaseous diffusion technology, a process that is more energy intensive and requires higher energy consumption than the newer gas centrifuge technology. Additional domestic enrichment facilities utilizing a more efficient technology in the future could be constructed. In 2003, Louisiana Energy Services submitted a license application to the NRC to construct, operate, and decommission a gas centrifuge uranium enrichment facility near Eunice, New Mexico. The proposed facility, called the National Enrichment Facility, would produce enriched uranium-235 up to 5 weight percent with an annual production level of 3 million separative work units. If the proposed National Enrichment Facility begins operations, this would represent a more efficient and less costly means of producing low-enriched uranium than the current gaseous diffusion technology at the Paducah Gaseous Diffusion Plant.

Another aspect of the no-action alternative specific to the DOE Portsmouth Reservation is that the buildings and land proposed to be used for the ACP would not be available for reindustrialization. The DOE evaluated the land, buildings, and facilities at the DOE Portsmouth Reservation for potential reindustrialization as well as the potential impacts of various reindustrialization programs at the reservation in DOE/EA-1346 (DOE, 2001). DOE concluded that approximately 526 hectares (1,300 acres) or about 35 percent of the reservation is available for transfer and that the facilities that are under lease to USEC are not available for reindustrialization, as such activities are crucial to fulfilling DOE's nuclear energy mission. Appendix C of DOE/EA-1346 contains a list of all the buildings and facilities on the reservation and whether or not they are available for the reindustrialization program. Once the USEC lease would expire, DOE would re-evaluate its mission needs and other considerations (e.g., contamination) and would determine which facilities would become available for the reindustrialization program and which would remain under DOE control. Because for the foreseeable future the buildings and land proposed to be used for the ACP currently are leased by USEC for the development and operation of the Lead Cascade Facility and the impacts associated with reindustrialization have been evaluated in DOE/EA-1346, no reindustrialization activities are associated with the no-action alternative.

2.3 Alternatives Considered but Eliminated

As required by NRC regulations, the NRC staff has considered other alternatives to the construction, operation, and decommissioning of the proposed ACP. The range of alternatives was determined by considering the underlying need and purpose for the proposed action. This analysis led to the following set of reasonable alternatives:

- An alternative of constructing the ACP at the existing Paducah Gaseous Diffusion Plant;
- Alternative sites within the DOE reservation at Piketon;
- Alternative sources from down blending highly enriched uranium;
- Alternative sources of low-enriched uranium;
- Alternative technologies available for uranium enrichment; and
- Alternative conversion and disposition methods for depleted UF_6.

These alternatives were considered but eliminated from further analysis due to economic, environmental, national security, or technological maturity reasons. The following sections discuss these alternatives and the reasons the NRC staff eliminated them from further consideration.

2.3.1 Construction and Operation of the ACP at the Paducah Gaseous Diffusion Plant in Paducah, Kentucky

The construction and operation of the ACP at the Paducah Gaseous Diffusion Plant was considered as a reasonable alternative to the proposed action. Figure 2-10 shows the location of the Paducah Gaseous Diffusion Plant in relation to the DOE reservation in Piketon, Ohio.

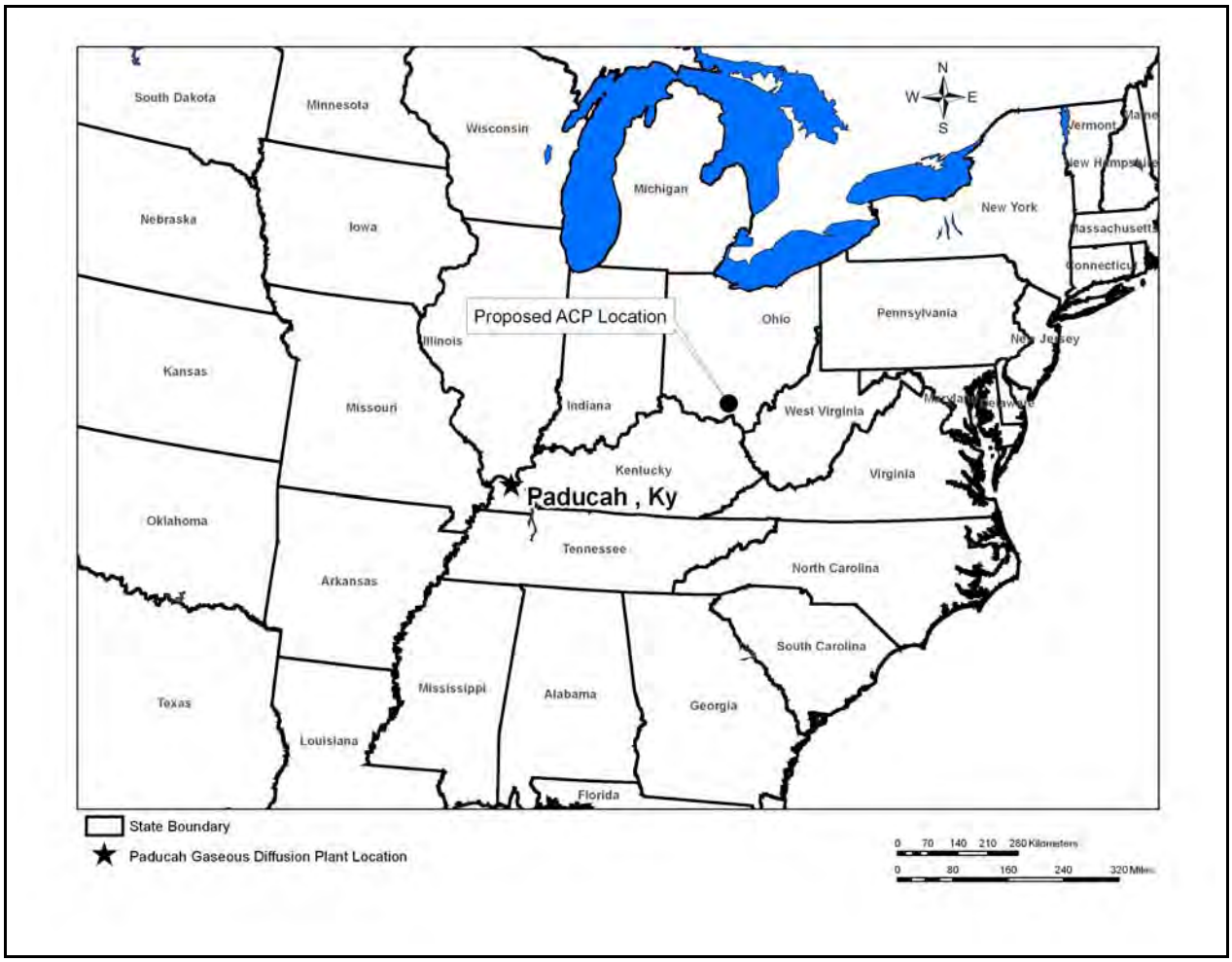

Figure 2-10 Location of the Paducah Gaseous Diffusion Plant

NRC staff concludes that while both sites are suitable on the basis of environmental, socioeconomic, and regulatory factors, the site in Paducah, Kentucky had a number of disadvantages. For example, seismic factors at Paducah would increase the cost of construction, could make the engineering effort more complex, and could make the plant safety considerations more uncertain. Overall, the NRC staff found that the selection of the Paducah site would result in somewhat greater environmental impacts due primarily to the need for construction of all new buildings, and the attendant excavation and land disturbance.

Table 2-7 provides a comparative analysis of the key environmental factors of the Piketon site versus the Paducah site. Based on this comparison, the NRC staff concludes that the Paducah site offers no environmental advantages and can be dropped from more detailed consideration in this EIS.

Table 2-7 Comparison of Environmental Impacts at Alternative Site Locations

Resource Area	Piketon[1]	Paducah	Greater Impact
Land Use	• The ACP would refurbish and use existing buildings and utilities. • Some new process buildings, support facilities, and cylinder yards would be constructed on previously disturbed land.	• All primary and secondary facilities for the ACP would be newly constructed and would disturb previously undeveloped and uncontaminated areas of the Paducah DOE reservation (managed lawns and fields). Utilities are already available onsite.	Paducah
Historic and Cultural Resources	• The impacts to historic and cultural resources identified onsite and around the site's perimeter would be small.	• The State Historic Preservation Officer would be consulted prior to construction at Paducah; however, potential impacts to historic and cultural resources are unknown.	Unknown
Visual/Scenic Resources	• Changes to existing facilities and construction of new buildings would be consistent with existing site architectural features. Neither these changes nor the new construction would alter the existing visual characteristics of the site. • There are no existing State nature preserves or scenic rivers at Piketon.	• Architectural consistency would be maintained to ensure blending of the ACP construction with existing facilities. • There are no existing State nature preserves or scenic rivers at Paducah.	Same
Air Quality	• Pike County and the proposed ACP site are in National Ambient Air Quality Standard (NAAQS) attainment for criteria pollutants. • Air quality impacts associated with construction will have no lasting significant impacts on air quality. • The average calculated hydrogen fluoride (HF) concentration is 2.35×10^{-3} micrograms per cubic meter at the location of the Maximally Exposed Individual. • The maximum emission rate anticipated under normal operations is 1.1 millicuries of uranium per week, or up to 0.057 curies per year.	• McCracken County is in NAAQS non-attainment for 8-hr ozone. The Paducah Gaseous Diffusion Plant site itself, however, is in attainment for all criteria pollutants. • Air quality impacts associated with construction will have no lasting significant impacts on air quality. • The average calculated HF concentration is 2.27×10^{-3} micrograms per cubic meter at the location of the Maximally Exposed Individual. • The projected maximum emission rate for the ACP is 1.86 millicuries per week, or 0.097curies per year of total uranium.	Paducah

Table 2-7 Comparison of Environmental Impacts at Alternative Site Locations (continued)

Resource Area	Piketon[1]	Paducah	Greater Impact
Geology and Soils	• Soil disturbance from project activities would occur in construction lay-down areas, destroying the soil profile and leading to a possible temporary increase in erosion due to storm water runoff and wind. Engineering controls and best management and construction practices would be implemented to minimize the extent of excavation, erosion, and sediment runoff.	• The nature of the impacts would be the same as that for Piketon, except they would be more extensive due to the need for all new construction.	Paducah
Water Resources	• Best management and construction practices and erosion controls would minimize potential impacts to surface and ground water during construction. • The Liquid Effluent Collection system, monitoring of liquid release points, and complying with all NPDES permitting requirements would minimize potential impacts to surface and ground water during plant operation.	• Best management and construction practices and erosion controls would minimize potential impacts to surface and ground water during construction. • Safety procedures, spill prevention plans, and spill response plans would avoid impacts from accidental discharges during plant operation.	Same
Ecological Resources	• Some threatened or endangered species, including the Indiana bat (*Myotis sodalis*), Virginia meadow-beauty (*Rhexia virginica*), and Carolina yellow-eyed grass (*Xyris difformis*) are present or potentially located in the surrounding region. None of the proposed site preparation and construction activities would occur in any of the jurisdictional or nonjurisdictional wetlands on the DOE reservation.	• Some threatened or endangered species including the Indiana bat (*Myotis sodalis*), the tuberculed-blossom pearly mussel (*Epioblasma torulora*), pink-mucket pearly mussel (*Lampsilis orbiculata*), and the orange-footed pearly mussel (*Plethobasus cooperrianus*) are present or potentially located in the surrounding region. Wetlands are in the area, but are not located in the immediate vicinity of the proposed construction area.	Same

Table 2-7 Comparison of Environmental Impacts at Alternative Site Locations (continued)

Resource Area	Piketon[1]	Paducah	Greater Impact
Socioeconomic	• 3,362 direct and indirect jobs per year are expected during the construction phase. • Facility operations are expected to create 1,500 direct and indirect jobs. • No significant impacts to tax revenue, population characteristics, housing availability, or community are expected.	• 3,899 direct and indirect jobs per year are expected during the construction phase. • Facility operations are expected to create 1,860 direct and indirect jobs. • No significant impacts to tax revenue, population characteristics, housing availability, or community are expected.	Paducah
Environmental Justice	• No disproportionately high and adverse impacts to minority or low-income populations within an 80-kilometer (50-mile) radius of the Piketon site.	• No disproportionately high and adverse impacts to minority or low-income populations within an 80-kilometer (50- mile) radius of the Paducah site (DOE, 2004a).	Same
Noise Impacts	• Construction noise levels are estimated to reach a 53 day-night average noise level, which meets the standards for community noise levels at the nearest residence. • No adverse impacts from operational noise are expected at the closest residential receptor due to low operational noise, attenuation from the building, and distance attenuation of over 914 meters (3,000 feet).	• Noise associated with the construction phase would be temporary and not expected to significantly increase overall noise levels at the Paducah site. • Operation of the centrifuge system is not expected to increase the noise levels outside the proposed facilities.	Same

Table 2-7 Comparison of Environmental Impacts at Alternative Site Locations (continued)

Resource Area	Piketon[1]	Paducah	Greater Impact
Transportation	• The proposed action will not significantly change the Level of Service classifications for U.S. Route 23 or SR 32. • During site preparation and construction, the expected number of injuries to workers is 93 and expected number of fatalities is 1.03. For drivers transporting material and equipment to and from the site, the expected number of injuries is 3.61and expected number of fatalities is 0.10. • During facility operation, the expected number of injuries to workers is 7.9 and expected number of fatalities is 0.09. For drivers transporting material and equipment to and from the site, the expected number of injuries is 0.19 and expected number of fatalities is 0.01.	• Transportation impacts during site preparation and construction would be approximately double that of Piketon due to the need for all new facility construction. • All other transportation impacts would be approximately the same.	Paducah
Public and Occupational Health	• Construction and industrial activities would be managed under the OSHA industrial regulations (29 CFR 1910) and in compliance with site licenses and permits. • The use of spill response plans, safety procedures, spill controls, countermeasures plans, and spill response equipment in accordance with Federal and State laws, would minimize the likelihood and severity of potential impacts from accidental discharges. • The radiological risk for all receptor groups is below applicable criteria.	• Construction and industrial activities would be managed under the OSHA industrial regulations (29 CFR 1910) and in compliance with site licenses and permits. • The use of spill response plans, safety procedures, spill controls, countermeasures plans, and spill response equipment in accordance with Federal and State laws, would minimize the likelihood and severity of potential impacts from accidental discharges. • The radiological risk for all receptor groups is below applicable criteria.	Same

Resource Area	Piketon[1]	Paducah	Greater Impact
Waste Management	• The projected annual rate of sanitary/industrial waste is 2,240 tons • The projected annual rate of RCRA and Mixed/RCRA waste is 1,510 cubic feet. • The projected annual rate of LLRW is 313,020 cubic feet. • The projected annual rate of non-regulated waste is 800 cubic feet. • The project annual rate of recyclables is 6,500 cubic feet. • The proposed ACP is expected to generate approximately 512,730 metric tons (535,200 tons) of tails over its 30-year license period (about 41,105 tails cylinders).	• Quantities of waste are assumed be the same as the proposed Piketon site for all activities except construction, which would generate more at Paducah. • Sanitary/industrial waste in the construction phase at Paducah is projected to be double that of Piketon, due to the need for all new buildings.	Paducah

2.3.2 Other Alternative Sites

USEC used a site-selection process to identify viable alternative sites for the construction, operation, and decommissioning of the proposed ACP. The NRC staff has evaluated that process and determined that it is rational and objective, and that its results are reasonable. The candidate sites and the reasons they were not chosen as the preferred site location are described in the following sections.

Alternative Locations at the DOE Reservation in Piketon, Ohio

The DOE reservation in Piketon was evaluated to identify alternative locations for the ACP and three possible sites were identified, as shown in Figure 2-11. Location A is the preferred location for the ACP and is discussed in detail as the proposed action. This location is within the existing footprint of the DOE Gaseous Diffusion Plant facility and would be classified as a "brownfield" site. Further, compared to the other potential site locations, this location is the most isolated from the property boundary, which would likely result in a lower potential dose to the general public from any accidental or operational releases during construction, operation, and decommissioning of the proposed ACP.

Location B is located in the southeast portion of the site. This location consists of a level to very gently rolling grass field to a rolling forested hill. The level area was graded during the construction of the Gaseous Diffusion Plant in the 1950s and has been maintained as grass fields.

Location C is located in the northeast portion of the site and, like Location B, consists of a level to very gently rolling grass field to a rolling forested hill. It too was graded during the construction of the Gaseous Diffusion Plant and has been maintained as grass fields.

Locations B and C were not selected as the preferred alternative primarily due to the lack of existing buildings, extensive site preparation that would be needed, lack of access to utility services, and new construction that would be required. Neither location B or C had an environmental advantage over Location A or afforded the advantages offered by Location A, which is the site of the former Gas Centrifuge Enrichment Plant buildings.

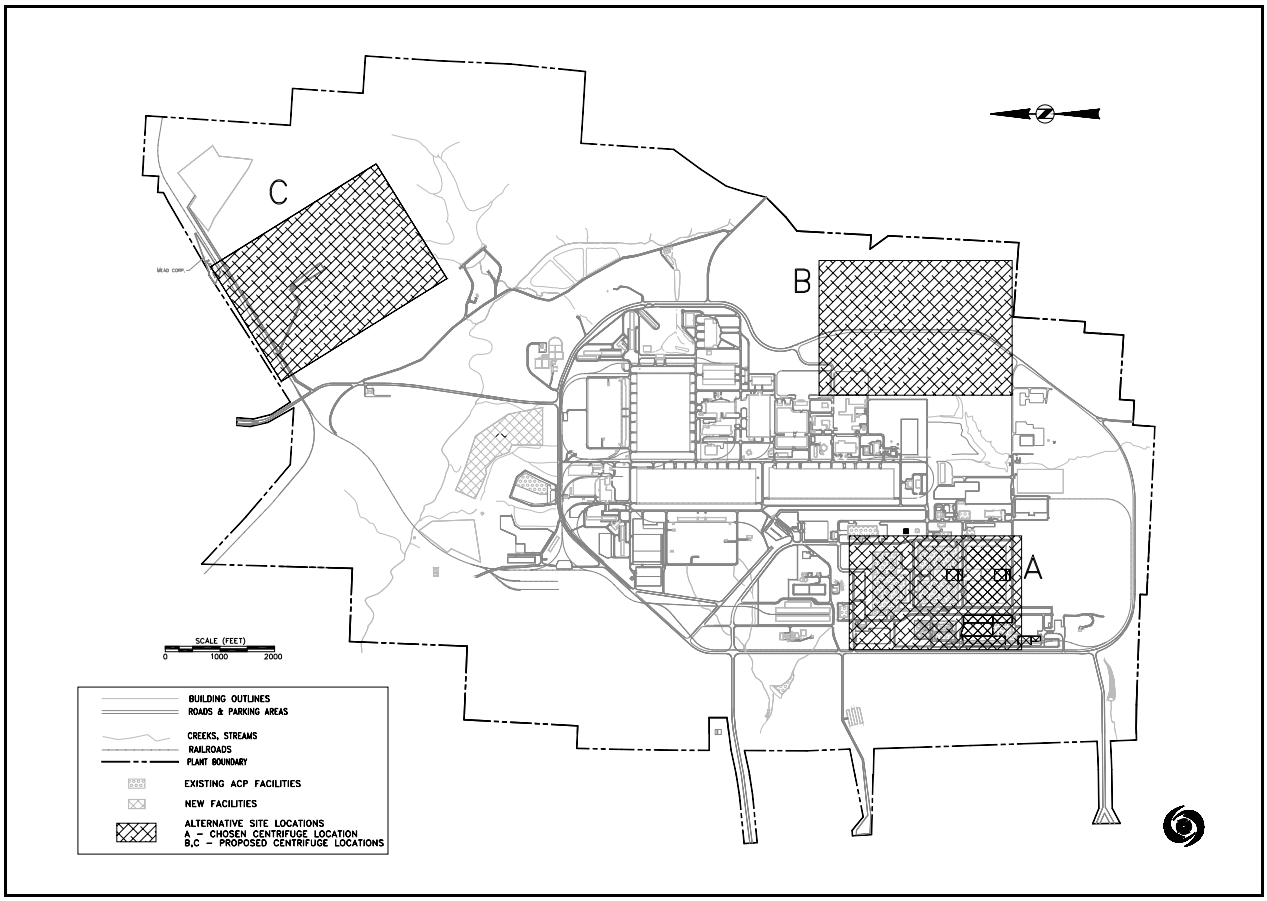

Figure 2-11 Alternative Sites at the DOE Reservation for the Proposed ACP

Construct and Operate the ACP at a Non-Gaseous Diffusion Plant Location

This alternative involves constructing and operating the ACP at an undisturbed "green field" site, or a disturbed site other than one of the existing Gaseous Diffusion Plants in Piketon, Ohio or Paducah, Kentucky. This alternative was not selected as the preferred alternative because it is inconsistent with the DOE-USEC Agreement and because the Gaseous Diffusion Plant sites provide schedule, regulatory, and cost advantages over other sites. The DOE-USEC Agreement stipulates that USEC deploy the ACP at either the DOE reservation in Piketon or Paducah. Also, no other sites offered the unique combination of (1) readily accessible environmental data; (2) past history and experience in uranium enrichment; and (3) the availability of skilled labor with uranium enrichment industry experience. A "green field" situation would not have readily accessible environmental data for the purpose of impact assessment and performance monitoring. Without available skilled labor with uranium enrichment experience, USEC would have to either provide training or relocate trained personnel at added expense. The environmental impact of this alternative would be either to disturb a "green field" site or to possibly introduce emission and effluents associated with uranium enrichment to an existing industrial site.

None of the alternatives considered would be obviously superior to the proposed location for the ACP at the DOE reservation in Piketon, Ohio.

2.3.3 Alternate Sources from Down Blending Highly Enriched Uranium

This alternative involves not constructing a domestic uranium enrichment plant to replace existing Gaseous Diffusion Plant production. Instead, an equivalent amount of separative work units would be obtained from down blending highly enriched uranium from either United States or Russian nuclear States or Russian nuclear warheads, or from the Nuclear Fuel Services facility in Erwin, Tennessee.

This alternative was not selected as the preferred alternative because it does not meet the commitments in the DOE-USEC Agreement, which requires that an ACP be constructed and operated. This alternative was also eliminated since it would be contrary to Congressional intent and common defense and security and does not meet the need as discussed in Section 1.3. USEC is the Executive Agent for a U.S. Government agreement that purchases low-enriched uranium that is derived from down blending of highly enriched uranium from Russian warheads. In February 1993, the U.S. Government agreed to purchase from Russia 500 metric tons (492 tons) of highly enriched uranium extracted from dismantled nuclear weapons over a 20-year period, which expires in 2013 (USEC, 2005b). It is uncertain whether this agreement will be extended beyond 2013.

Currently, the equivalent separative work units from down blended highly enriched uranium complements domestic separative work unit production at the Paducah Gaseous Diffusion Plant. While the U.S. Government may wish to extend this arrangement to continue the reduction of the number of nuclear weapons in the world, it is doubtful that the agreement would replace rather than complement domestic separative work unit production. As discussed in Section 1.3, it is a national priority to increase domestic supplies of enriched uranium to improve national energy security.

2.3.4 Alternative Sources of Low-Enriched Uranium

The NRC staff examined two alternatives to fulfill U.S. domestic enrichment needs. These alternatives, for reasons summarized below, were eliminated from further consideration.

Re-Activate the Portsmouth Gaseous Diffusion Facility at Piketon

United States Enrichment Corporation closed the Portsmouth Gaseous Diffusion Plant (located in Piketon) in May 2001 to reduce operating costs (DOE, 2003). United States Enrichment Corporation cited long-term financial benefits, more attractive power price arrangements, operational flexibility for power adjustments, and a history of reliable operations as reasons for choosing to continue operations at the Paducah Gaseous Diffusion Plant. In a June 2000 press release, United States Enrichment Corporation explained that they "...clearly could not continue to operate two production facilities." Key business factors in United States Enrichment Corporation's decision to reduce operations to a single production plant included long-term and short-term power costs, operational performance and reliability, design and material condition of the plants, risks associated with meeting customer orders on time, and other factors relating to assay levels, financial results, and new technology issues (USEC, 2000).

The NRC staff does not believe that there has been any significant change in the factors that were considered by United States Enrichment Corporation in its decision to cease uranium enrichment at Piketon. In addition, the gaseous diffusion technology is more substantially energy intensive than gas centrifuge. The higher energy consumption results in larger indirect impacts, especially those impacts which are attributable to significantly higher electricity usage (e.g., air emissions from coal-fired electricity generation plants) (DOE, 1995). The age of the existing Gaseous Diffusion Plant also calls into question its overall reliability. Therefore, this proposed alternative was eliminated from further consideration.

Purchase Low-Enriched Uranium From Foreign Sources

There are several potential sources of enrichment services worldwide. However, United States reliance on foreign sources of enrichment services, as an alternative to the proposed action, would not meet the national energy policy objective of a "...viable, competitive, domestic uranium enrichment industry for the foreseeable future" (DOE, 2000). For this reason, the NRC staff does not consider this alternative to meet the purpose and need for the proposed action, and eliminated it from further study.

2.3.5 Alternative Technologies for Enrichment

A number of different processes have been invented for enriching uranium, but only two have been proven suitable for commercial and economic use. Only the gaseous diffusion process and the gas centrifuge technology have reached the maturity needed for industrial use. Other technologies—namely the Electromagnetic Isotope Separation Process, Liquid Thermal Diffusion, and a laser enrichment process—have proven too costly to operate or remain at the research and laboratory developmental scale and have yet to prove themselves to be economically viable.

Electromagnetic Isotope Separation Process

Figure 2-12 shows a sketch of the Electromagnetic Isotope Separation Process. In this process, a monoenergetic beam of ions of normal uranium travels between the poles of a magnet. The magnetic field causes the beam to split into several streams according to the mass of the isotope. Each isotope has a different radius of curvature and follows a slightly different path. Collection cups at the ends of the semicircular trajectories catch the homogenous streams. Because the energy requirements for this process proved very high—in excess of 3,000 kilowatt hour per separative work unit—and the production was very slow (Heilbron et al., 1981), electromagnetic isotope separation was removed from further consideration.

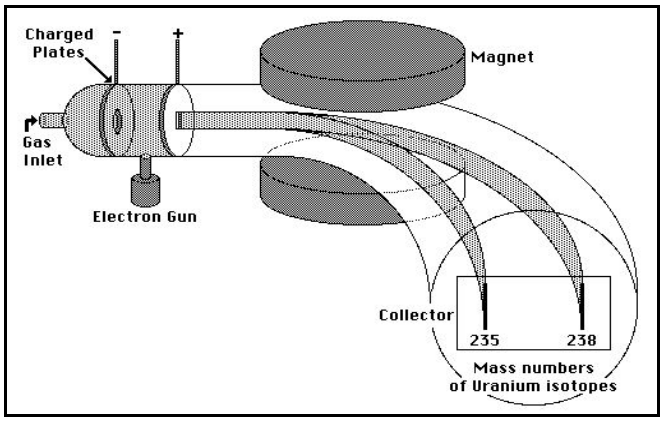

Figure 2-12 Electromagnetic Isotopic Separation Process (Milani, 2005)

Liquid Thermal Diffusion

The liquid thermal diffusion process was investigated in the 1940s. Figure 2-13 is a diagram of this process. It is based on the concept that a temperature gradient across a thin layer of liquid or gas causes thermal diffusion that separates isotopes of differing masses. When a thin, vertical column is cooled on one side and heated on the other, thermal convection currents are generated and the material flows upward along the heated side and downward along the cooled side. Under these conditions, the lighter UF_6 molecules diffuse toward the warmer surface and heavier UF_6 molecules concentrate near the cooler side. The combination of this thermal diffusion and the thermal convection currents causes the lighter uranium-235 molecules to concentrate on top of the thin column while the heavier uranium-238 goes to the bottom. Taller columns produce better separation. Eventually, a facility using this process was designed and constructed at Oak Ridge, Tennessee, but it was closed after about a year of operation because of cost and maintenance concerns (Settle, 2004). Based on high operating costs and high maintenance requirements, the liquid thermal diffusion process has been eliminated from further consideration.

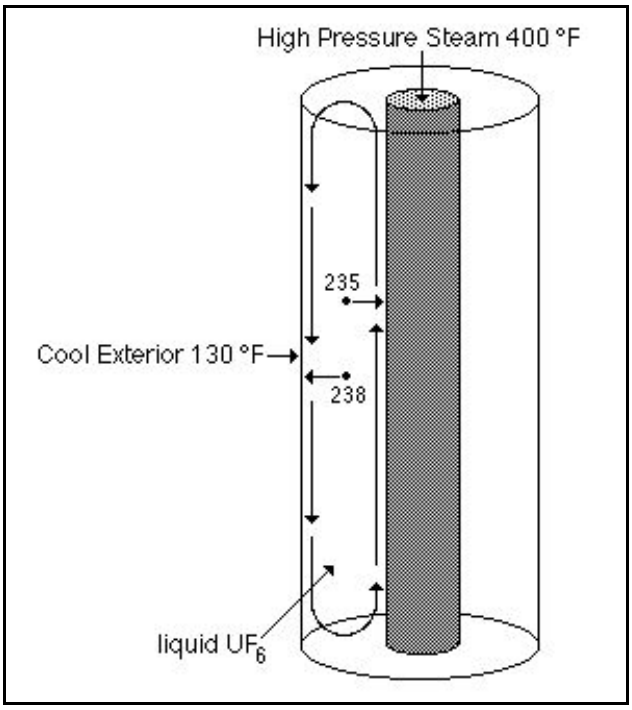

Figure 2-13 Liquid Thermal Diffusion Process (Milani, 2005)

Gaseous Diffusion Process

The gaseous diffusion process is based on molecular effusion, a process that occurs whenever a gas is separated from a vacuum by a porous barrier. The gas passes through the holes because there are more "collisions" with holes on the high-pressure side than on the low-pressure side (i.e., the gas flows from the high-pressure side to the low-pressure side). The rate of effusion of a gas through a porous barrier is inversely proportional to the square root of its mass. Thus, lighter molecules pass through the barrier faster than heavier ones. Figure 2-14 is a diagram of a single gas diffusion stage. The gaseous diffusion process consists of thousands of individual stages connected in series to multiply the separation factor. The gaseous diffusion plant in Paducah, Kentucky, contains 1,760 enrichment stages and is designed to produce UF_6 enriched up to 5.5 percent uranium-235. The design capacity of the Paducah Gaseous Diffusion Plant is approximately 8 million separative work units per year, but it has never operated at greater than 5.5 million separative work units. Paducah consumes approximately 2,200 kilowatt hours per kilogram of separative work unit, which is less than the electromagnetic isotopic separation process or liquid thermal diffusion process but still higher than the 40 kilowatt hours per kilogram of separative work unit possible in modern gas centrifuge plants (DOE, 2000; Urenco, 2004).

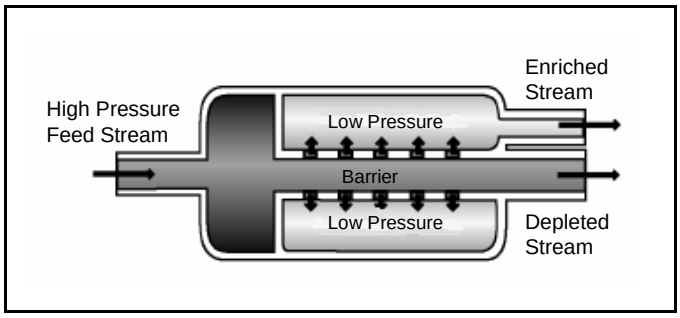

Figure 2-14 Gaseous Diffusion Stage (FAS, 2000)

The gaseous diffusion process is a 50-year-old technology that is energy intensive and has been eliminated from further consideration.

Laser Separation Technology

Laser separation technology encompasses two known developmental technologies that have yet to reach the maturity stage for industrial use. These are the Atomic Vapor Laser Isotope Separation and the Separation of Isotopes by Laser Excitation processes.

The Atomic Vapor Laser Isotope Separation process, diagrammed in Figure 2-15, is based on different isotopes of the same element. The isotopes, though chemically identical, have different electronic energies and absorb different colors of laser light. The isotopes of most elements can be separated by a laser-based process if they can be efficiently vaporized into individual atoms. In Atomic Vapor Laser Isotope Separation enrichment, uranium metal is vaporized and the vapor stream is illuminated with a laser light of a specific wavelength that is absorbed only by uranium-235. The laser selectively adds enough energy to ionize or remove an electron from uranium-235 atoms while leaving the other isotopes unaffected. The ionized uranium-235 atoms are then collected on negatively charged surfaces inside the separator unit. The collected material (enriched product) is condensed as liquid on the charged surfaces and then drains to a caster where it solidifies as metal nuggets. In June 1999, citing budget constraints, USEC stopped further development of the Atomic Vapor Laser Isotope Separation program (USEC, 1999).

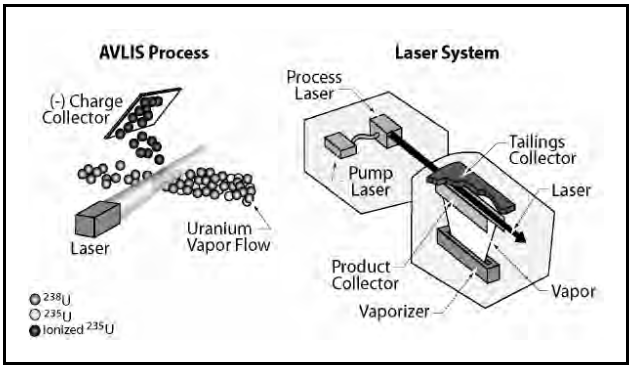

Figure 2-15 Atomic Vapor Laser Isotope Separation Process (Hargrove, 2000)

The Separation of Isotopes by Laser Excitation technology, developed by Silex Systems Ltd., uses a similar process to the Atomic Vapor Laser Isotope Separation process. The Separation of Isotopes by Laser Excitation process uses UF_6 vapor that passes through a tuned laser and an electromagnetic field to separate the isotopes of UF_6. The process is still under development and will not be ready for field trials for several years. USEC ended its support of the Separation of Isotopes by Laser Excitation program on April 30, 2003, in favor of the proposed American Centrifuge Plant (USEC, 2003).

Because neither the Atomic Vapor Isotope Separation process nor the Separation of Isotopes by Laser Excitation process is ready for commercial production of low-enriched uranium, these processes have been eliminated from further consideration.

Conclusion

The NRC considered the feasibility of utilizing alternative methods for producing low-enriched uranium. Gaseous diffusion and liquid thermal diffusion technology would be far more costly then the centrifuge technology proposed. The other technologies reviewed: the electromagnetic isotope separation process; and the laser separation technology, have not been sufficiently developed for commercial application. Accordingly, these technologies were not considered reasonable alternatives.

2.3.6 Depleted UF_6 Management Alternatives

DOE has evaluated the potential impacts of various disposition options in its "Final Programmatic Environmental Impact Statement for Alternative Strategies for the Long-Term Management and Use of Depleted Uranium Hexafluoride" (DOE, 1999). These include (1) storage as depleted UF_6 for up to 40 years, (2) long-term storage as depleted U_3O_8, (3) use of depleted U_3O_8, and (4) use of uranium metal. The Programmatic EIS also evaluated the potential environmental impacts of disposal in shallow earthen structures, below-grade vaults, and underground mines.

For the proposed ACP, NRC considered as reasonable alternatives for depleted UF_6 disposition the (1) onsite storage in anticipation of future use as a resource, and (2) conversion at facilities other than the new facility that DOE is now building at Piketon. These alternatives and the reasons they are not evaluated in detail in this EIS are presented in the following subsections.

Use of Depleted UF_6

DOE has evaluated a number of alternatives and potentially beneficial uses for depleted UF_6, and some of these applications have the potential to use a portion of the existing depleted UF_6 inventory (DOE, 1999; Brown et al., 1997). However, the current depleted UF_6 consumption rate is low compared to the depleted UF_6 inventory (DOE, 1999b), and the NRC has assumed that excess DOE and commercial inventory of depleted UF_6 would be disposed of as a waste product (NRC, 1995).

The NRC staff has determined that unless USEC can demonstrate a use for uranium in the depleted tails as a potential resource, the depleted UF_6 generated by the proposed ACP should be considered a waste product. Because the current available inventory of depleted uranium in the form of metal (UF_6 and U_3O_8) is in excess of the current and projected future demand for the material, this EIS will not further evaluate depleted UF_6 disposition alternatives involving its use as a resource, including continued storage at the proposed ACP site for more than 30 years in order to be used in the future.

If storage of depleted UF_6 beyond 30 years occurs, then the impacts described in Chapter 4 of this EIS would be extended for that storage period. If a use for depleted UF_6 is found, it could reduce the environmental impacts associated with its disposition. However, the likelihood of a significant commercial market for the depleted UF_6 generated by the proposed ACP is considered to be low.

Conversion at Alternate Sites

Other depleted UF_6 management alternatives include conversion at the DOE conversion facility in Paducah, Kentucky, or at an existing fuel fabrication facility. DOE has issued a Final EIS to construct and operate a conversion facility at Paducah (DOE, 2004a; DOE, 2004b). Additionally, DOE has issued its Record of Decision and construction of the Paducah conversion facility began in July 2004 (DOE, 2004c; DOE, 2004d). Since the shipment of the ACP's depleted UF_6 to Paducah for treatment offers no environmental advantage over onsite conversion at the Piketon facility, this alternative will not be analyzed further in this EIS.

Another potential strategy would be to perform the conversion of depleted UF_6 to U_3O_8 at an existing fuel fabrication facility. The existing fuel fabrication facilities are Global Nuclear Fuel-Americas, LLC, in Wilmington, North Carolina; Westinghouse Electric Company, LLC, in Columbia, South Carolina; and Framatome ANP, Inc., in Richland, Washington. These facilities have existing processes and conversion capacities and also use Type 30B cylinders. Therefore, the existing fuel-fabrication facilities would need to install new equipment to handle the larger Type 48G cylinders. The facilities would probably need to install separate capacity to process the depleted UF_6 to avoid quality control issues related to processing

enriched UF_6. The facilities would also need to manage and dispose of the hydrofluoric acid that would be generated from the conversion process. Furthermore, these existing facilities have not expressed an interest in performing these services, and the cost for the services would be difficult to estimate. For these reasons, this alternative is eliminated from further consideration in this EIS.

2.4 Comparison of Predicted Environmental Impacts

Chapter 4 of this EIS presents a more detailed evaluation of the environmental impacts of the proposed action and the no-action alternative. Table 2-8 summarizes the environmental impacts for the proposed and the no-action alternative.

Table 2-8 Summary of Environmental Impacts for the Proposed ACP and the No-Action Alternative

Affected Environment	Proposed Action: ***USEC would construct, operate, and decommission the proposed ACP in Piketon, Ohio.***	No-Action Alternative: ***The proposed ACP would not be constructed, operated, and decommissioned. Enrichment services would continue to be met with existing domestic and foreign uranium enrichment suppliers.***
Land Use	SMALL. Site preparation and construction activities would occur on approximately 22 hectares (55 acres) of land, which comprises about 1 percent of the total 1,497 hectare (3,700)-acre DOE reservation. The changes would occur on previously disturbed land that is not considered prime farmland, and would be consistent with current land use.	SMALL. Under the no-action alternative, no local impact would occur because the proposed ACP would not be constructed or operated. Existing land use would continue and the property would be available for alternative use. There also would be no land disturbances. Existing activities such as enrichment services from existing uranium enrichment facilities (including the possible re-opening of the gaseous diffusion plant at the Piketon site), from foreign sources, and from the "Megatons to Megawatts" program would have impacts as previously analyzed in their respective NEPA documentation and historical environmental monitoring. Additional domestic enrichment facilities could be constructed in the future and would have land use impacts similar to those of the proposed action, depending onsite conditions either at a new location or an existing industrial site. Impacts to land use would be expected to be SMALL.

Table 2-8 Summary of Environmental Impacts for the Proposed ACP and the No-Action Alternative (continued)

Affected Environment	Proposed Action: ***USEC would construct, operate, and decommission the proposed ACP in Piketon, Ohio.***	No-Action Alternative: ***The proposed ACP would not be constructed, operated, and decommissioned. Enrichment services would continue to be met with existing domestic and foreign uranium enrichment suppliers.***
Historical and Cultural Resources	SMALL. Within and adjacent to the area of potential effect (the DOE reservation boundary), while the impacts may be noticeable, there would be no indirect or direct effect on the eligible or potentially eligible sites for the National Register of Historic Places. Also, construction of new buildings and refurbishment of existing buildings would result in buildings of design, size, and function similar to the existing buildings, and therefore would not alter the historic setting of the existing Gaseous Diffusion Plant district. Additional disturbance of the site is not anticipated during decommissioning. Any such changes to buildings or structures would be evaluated by the appropriate agency for historic and cultural resources impacts prior to any implementation.	SMALL. Under the no-action alternative, the site would continue to be used for commercial industrial purposes and historical and cultural resources would be unaffected. The existing activities such as enrichment services from existing uranium enrichment facilities (including the possible re-opening of the gaseous diffusion plant at the Piketon site), from foreign sources, and from the "Megatons to Megawatts" program would have impacts as previously analyzed in their respective NEPA documentation and historical environmental monitoring. Additional domestic enrichment facilities could be constructed in the future and could have potential impacts to historical and cultural resources if at a new location. Impacts to historical and cultural resources at these other sites would have to be controlled in accordance with applicable Federal and State historic preservation laws and regulations. The impacts would be expected to be SMALL if built and operation at an exisiting industrial site. The impacts could be SMALL to MODERATE if additional domestic enrichment facilities were located at a new site, depending on specific site conditions.

Table 2-8 Summary of Environmental Impacts for the Proposed ACP and the No-Action Alternative (continued)

Affected Environment	Proposed Action: ***USEC would construct, operate, and decommission the proposed ACP in Piketon, Ohio.***	No-Action Alternative: ***The proposed ACP would not be constructed, operated, and decommissioned. Enrichment services would continue to be met with existing domestic and foreign uranium enrichment suppliers.***
Visual and Scenic Resources	SMALL. The Bureau of Land Management Visual Resources Management rating system classifies the proposed ACP site as Class III or IV, meaning it has moderate to little scenic value. Construction of the ACP would not alter the site's classification. No scenic rivers, nature preserves, or unique visual resources exist in the project area. No impacts are expected from decommissioning. Any such changes would be evaluated by the appropriate agency prior to implementation.	SMALL. Under the no-action alternative, the visual and scenic resources would remain the same as described in the affected environment section. The existing activities such as enrichment services from existing uranium enrichment facilities (including the possible re-opening of the gaseous diffusion plant at the Piketon site), from foreign sources, and from the "Megatons to Megawatts" program would have impacts as previously analyzed in their respective NEPA documentation and historical environmental monitoring. Additional domestic enrichment facilities could be constructed in the future with a possible impact on visual and scenic resources similar to that of the proposed action, depending onsite conditions either at a new location or an existing industrial site. Impacts to visual and scenic resources would be expected to be SMALL.

Table 2-8 Summary of Environmental Impacts for the Proposed ACP and the No-Action Alternative (continued)

Affected Environment	Proposed Action: ***USEC would construct, operate, and decommission the proposed ACP in Piketon, Ohio.***	No-Action Alternative: ***The proposed ACP would not be constructed, operated, and decommissioned. Enrichment services would continue to be met with existing domestic and foreign uranium enrichment suppliers.***
Air Quality	SMALL to MODERATE. Airborne emissions from site preparation and construction should not result in exceedances of air quality standards, with the possible exception of short-term increases in particulate matter. Radiological releases from soil disturbances and decommissioning of the Gas Centrifuge Enrichment Plant would be small and controlled. Emissions from diesel generators would not cause air quality problems and maximum predicted concentrations of hydrogen fluoride resulting from ACP operations are below safe levels. Based on the maximum radiological emission rates for the ACP and the comprehensive site monitoring program, the expected impact to air quality from the plant's radiological emissions is also expected to be SMALL. Impacts from decommissioning could result in the emission of solvents, but in small amounts and only for a short period of time.	SMALL. Under the no-action alternative, air quality in the general area would remain at its current levels described in the affected environment section. The existing activities such as enrichment services from existing uranium enrichment facilities (including the possible re-opening of the gaseous diffusion plant at the Piketon site), from foreign sources, and from the "Megatons to Megawatts" program would have impacts as previously analyzed in their respective NEPA documentation and historical environmental monitoring. Additional domestic enrichment facilities could be constructed in the future. Depending on the construction methods and design of these facilities, the likely impact on air quality would be similar to that of the proposed action. Impacts to air quality would be expected to be SMALL.

Table 2-8 Summary of Environmental Impacts for the Proposed ACP and the No-Action Alternative (continued)

Affected Environment	Proposed Action: ***USEC would construct, operate, and decommission the proposed ACP in Piketon, Ohio.***	No-Action Alternative: ***The proposed ACP would not be constructed, operated, and decommissioned. Enrichment services would continue to be met with existing domestic and foreign uranium enrichment suppliers.***
Geology and Soils	SMALL. Most of the site is an existing industrial facility with altered natural soils. The soils are cohesive and over-consolidated and have low potential for liquefaction. There is little likelihood of impact from soil compaction or subsidence. The flat terrain where the ACP buildings would be located, and the dense soil, low moisture content, and vegetative cover in the area of a new large cylinder storage yard (X-745H), make landslides unlikely. Construction activities would not alter current drainage and would not disturb any soils that qualify for protection as prime farmland. There would be a potential for increased erosion and siltation of streams near the construction site of the new large cylinder storage yard, but both of these potential impacts should be minimized by the use of standard best management practices. The potential for soil contamination during operations would be SMALL. Impacts from decommissioning would not exceed those identified for site preparation and construction. Any removal of contaminated soils would be limited in scope and the impact would be SMALL.	SMALL. Under the no-action alternative, existing land use would remain intact. The geology and soils of the proposed site would remain unaffected because no land disturbance would occur. Natural events such as wind and water erosion would remain as the most significant variable associated with the geology and soils of the site. The existing activities such as enrichment services from existing uranium enrichment facilities (including the possible re-opening of the gaseous diffusion plant at the Piketon site), from foreign sources, and from the "Megatons to Megawatts" program would have impacts as previously analyzed in their respective NEPA documentation and historical environmental monitoring. Additional domestic enrichment facilities could be constructed in the future with a likely impact on geology and soils similar to that of the proposed action, depending on site conditions either at a new location or an existing industrial site. Impacts to geology and soils would be expected to be SMALL.

Table 2-8 Summary of Environmental Impacts for the Proposed ACP and the No-Action Alternative (continued)

Affected Environment	Proposed Action: ***USEC would construct, operate, and decommission the proposed ACP in Piketon, Ohio.***	No-Action Alternative: ***The proposed ACP would not be constructed, operated, and decommissioned. Enrichment services would continue to be met with existing domestic and foreign uranium enrichment suppliers.***
Water Resources	SMALL. Potential stream sedimentation from construction activities would be minimized by the use of silt fences and other best management practices. Any impacts to stream water quality would be of short duration. None of the proposed site preparation and construction activities would occur within a 100-year floodplain. Groundwater withdrawals would increase by 12 percent over current usage rates, but would still be only 31 percent of the total design capacity of the site's well fields, would not affect groundwater availability, and would not pose an increased risk of subsidence. Wastewater would continue to discharge from permitted NPDES outfalls and would not alter the current water quality of the discharge. In addition, the water quality at NPDES outfalls would continue to be monitored. The additional sanitary waste water treated at the onsite water treatment plant would represent up to a 90 percent increase in the volume of sanitary water treated at the plant, but would only increase the total volume up to 75 percent of the plant's design capacity. The potential for leaks or spills that could contaminate water resources would be limited by (1) the leak collection system associated with the ACP; (2) implementation of best management practices; and (3) an approved Spill Prevention Control and Countermeasures Plan. During decontamination and decommissioning, smaller ground water withdrawals needed to support these activities (compared to withdrawals during operations), would cause a SMALL impact. With continued controls in place, the impacts associated with liquid discharges, and the likelihood and severity of potential spills during decontamination and decommissioning would be minimized and any resulting impacts should be SMALL.	SMALL. Under the no-action alternative, water resources would remain the same as described in the affected environment section. Water supply and demand would continue at current rates. The existing flow of stormwaters on the site would continue, and existing potential groundwater contamination pathways would remain the same. The existing activities such as enrichment services from existing uranium enrichment facilities (including the possible re-opening of the gaseous diffusion plant at the Piketon site), from foreign sources, and from the "Megatons to Megawatts" program would have impacts as previously analyzed in their respective NEPA documentation and historical environmental monitoring. Additional domestic enrichment facilities could be constructed in the future. Depending on the construction methods, design, and location of these facilities, the likely impact on water resources (including water usage) would be similar to that of the proposed action. Impacts to water resources would be expected to be SMALL.

Table 2-8 Summary of Environmental Impacts for the Proposed ACP and the No-Action Alternative (continued)

Affected Environment	Proposed Action: ***USEC would construct, operate, and decommission the proposed ACP in Piketon, Ohio.***	No-Action Alternative: ***The proposed ACP would not be constructed, operated, and decommissioned. Enrichment services would continue to be met with existing domestic and foreign uranium enrichment suppliers.***
Ecological Resources	SMALL. Construction of the X-745H Cylinder Storage Yard would result in increased erosion, stormwater runoff, and loss of 10 hectares (24 acres) of managed grassland and old fields, but would not require the removal of any upland or riparian forests. Implementation of the best management practices described in section 4.2.5.1 on soil impacts together with the fact that the upland mixed hardwood forest and the riparian forest adjacent to the managed field and old field would not be disturbed would reduce a potentially moderate impact to a SMALL impact. Such measures would reduce erosion and ensure that the existing forested buffer area between the proposed cylinder storage yard and the riparian areas associated with the tributaries and Little Beaver Creek would be preserved. Such measures would reduce the level and amount of sedimentation and erosion that would occur in the adjacent surface waters, and would preserve the existing forested buffer areas. The X-745H Cylinder Storage Yard is located approximately 500 meters (1,640 feet) from suitable summertime habitat for the Indiana bat, although studies have not documented the presence of the bat on the DOE reservation. Because the existing buffer area (upland and riparian forests) would not be removed and it is only considered potential summertime habitat, the impact would be SMALL. Ecological impacts associated with ACP decommissioning are anticipated to be bounded by the ecological impacts associated with ACP site preparation and construction.	SMALL. Under the no-action alternative, the land use would continue as it is currently, and the ecological resources would remain the same as described in the affected environment section. Land disturbances would also be avoided. The existing activities such as enrichment services from existing uranium enrichment facilities (including the possible re-opening of the gaseous diffusion plant at the Piketon site), from foreign sources, and from the "Megatons to Megawatts" program would have impacts as previously analyzed in their respective NEPA documentation and historical environmental monitoring. Additional domestic enrichment facilities could be constructed in the future and would have impacts similar to those of the proposed action, depending on the site conditions either at a new location or an existing industrial site. Impacts to ecological resources would be expected to be SMALL.

Table 2-8 Summary of Environmental Impacts for the Proposed ACP and the No-Action Alternative (continued)

Affected Environment	Proposed Action: ***USEC would construct, operate, and decommission the proposed ACP in Piketon, Ohio.***	No-Action Alternative: ***The proposed ACP would not be constructed, operated, and decommissioned. Enrichment services would continue to be met with existing domestic and foreign uranium enrichment suppliers.***
Socio-economics	SMALL to MODERATE. ACP construction and operation would result in a MODERATE increase in regional employment and a SMALL increase in regional tax revenues. Impacts to population characteristics, housing resources, community and social services, and public utilities are projected to be SMALL. Decontamination and decommissioning of the proposed ACP also would generally have SMALL impacts. An average of 841 direct and indirect jobs are expected to be created. State income tax, State sales tax, and county-level tax revenues would significantly increase as a result of decontamination and decommissioning. Likewise, decontamination and decommissioning activities are not expected to lead to housing shortages or increases in rental rates in the region. The small influx of workers would also have a small effect on public utilities, fire, law enforcement, healthcare, and administrative levels of service.	SMALL to MODERATE. Under the no-action alternative, socioeconomics in the local area would continue as described in the affected environment section. The existing activities such as enrichment services from existing uranium enrichment facilities (including the possible re-opening of the gaseous diffusion plant at the Piketon site), from foreign sources, and from the "Megatons to Megawatts" program would have impacts as previously analyzed in their respective NEPA documentation and historical environmental monitoring. Additional domestic enrichment facilities could be constructed in the future. Depending on the construction methods, design of the facilities, and local demographics, the likely socioeconomic impact would be similar to that of the proposed action. Socioeconomic impacts would be expected to be SMALL to MODERATE. Long-term uncertainty in future supplies of low-enriched uranium could be affected without replacement enrichment capacity for the existing U.S. enrichment facility or from the potential ending of the "Megaton to Megawatts" program in 2013.

Table 2-8 Summary of Environmental Impacts for the Proposed ACP and the No-Action Alternative (continued)

Affected Environment	Proposed Action: ***USEC would construct, operate, and decommission the proposed ACP in Piketon, Ohio.***	No-Action Alternative: ***The proposed ACP would not be constructed, operated, and decommissioned. Enrichment services would continue to be met with existing domestic and foreign uranium enrichment suppliers.***
Environmental Justice	SMALL. Within an 80-kilometer (50-mile) radius around the proposed ACP site, there are 18 Census tracts that have populations qualifying as low-income and two Census tracts that have populations qualifying as minority. The closest of these tracts is 28 kilometers (17 miles) from the proposed site. The proposed action would not result in disproportionately high and adverse impacts to any of these populations.	SMALL. Under the no-action alternative, no changes would occur to environmental justice issues, other than those that already may exist in the community. No disproportionately high and adverse impacts would be expected. The existing activities such as enrichment services from existing uranium enrichment facilities (including the possible re-opening of the gaseous diffusion plant at the Piketon site), from foreign sources, and from the "Megatons to Megawatts" program would have impacts as previously analyzed in their respective NEPA documentation and historical environmental monitoring. Additional domestic enrichment facilities could be constructed in the future, and environmental justice concerns would need to be evaluated on a site-specific basis. The impacts could be similar to those of the proposed action if the location has a similar population distribution or is located at a similar industrial site. Environmental justice impacts would be expected to be SMALL under most likely circumstances.

Table 2-8 Summary of Environmental Impacts for the Proposed ACP and the No-Action Alternative (continued)

Affected Environment	Proposed Action: ***USEC would construct, operate, and decommission the proposed ACP in Piketon, Ohio.***	No-Action Alternative: ***The proposed ACP would not be constructed, operated, and decommissioned. Enrichment services would continue to be met with existing domestic and foreign uranium enrichment suppliers.***
Noise	SMALL. Estimated construction noise levels at the site are below acceptable guidelines. No adverse noise impacts from ACP operations are expected at the closest residence due to low operational noise, the attenuation provided by the building façade, and distance attenuation of over 900 meters (3,000 feet). Noise during decommissioning would be generated from operation of heavy construction equipment and vehicles needed to move equipment, scrap metal, and waste. These noise levels are anticipated to be similar to those generated during construction of the proposed ACP. These noise level is within acceptable guidelines and would cause a SMALL impact.	SMALL. Under the no-action alternative, there would be no construction or operational activities or processes that would generate noise. Noise levels would remain as is currently observed at the site. The existing activities such as enrichment services from existing uranium enrichment facilities (including the possible re-opening of the gaseous diffusion plant at the Piketon site), from foreign sources, and from the "Megatons to Megawatts" program would have impacts as previously analyzed in their respective NEPA documentation and historical environmental monitoring. Additional domestic enrichment facilities could be constructed in the future. Depending on the construction methods, design of these facilities, and surrounding land uses, the likely noise impact would be similar to that of the proposed action. Noise impacts would be expected to be SMALL.

Table 2-8 Summary of Environmental Impacts for the Proposed ACP and the No-Action Alternative (continued)

Affected Environment	Proposed Action: ***USEC would construct, operate, and decommission the proposed ACP in Piketon, Ohio.***	No-Action Alternative: ***The proposed ACP would not be constructed, operated, and decommissioned. Enrichment services would continue to be met with existing domestic and foreign uranium enrichment suppliers.***
Transportation	SMALL to MODERATE. Increased truck and vehicle traffic should result in SMALL changes in current levels of congestion and delays on U.S. Route 23 and Ohio State Road 32, and MODERATE increases in the number of traffic accidents resulting in injuries or fatalities. Radiation exposures resulting from the planned shipments of radioactive materials are estimated to cause 0.02 latent cancer fatalities per year of operation or about one cancer fatality over thirty years of operation. The probability of a severe transportation accident that releases sufficient quantities of UF_6 that could pose a health risk is low, but that the consequences of such an accident, should it occur, are high (resulting in an overall MODERATE rating). Impacts associated with decommissioning should be far less than that for site preparation and construction.	SMALL to MODERATE. Under the no-action alternative, traffic volumes and patterns would remain as described in the affected environment section. The current volume of radioactive material and chemical shipments would not increase. The existing activities such as enrichment services from existing uranium enrichment facilities (including the possible re-opening of the gaseous diffusion plant at the Piketon site), from foreign sources, and from the "Megatons to Megawatts" program would have impacts as previously analyzed in their respective NEPA documentation and historical environmental monitoring. Additional domestic enrichment facilities could be constructed in the future, with a likely impact on transportation similar to that of the proposed action, depending on site conditions at either a new location or an existing industrial facility. Impacts to transportation would be expected to be SMALL to MODERATE.

Table 2-8 Summary of Environmental Impacts for the Proposed ACP and the No-Action Alternative (continued)

Affected Environment	Proposed Action: ***USEC would construct, operate, and decommission the proposed ACP in Piketon, Ohio.***	No-Action Alternative: ***The proposed ACP would not be constructed, operated, and decommissioned. Enrichment services would continue to be met with existing domestic and foreign uranium enrichment suppliers.***
Public and Occupational Health	SMALL. Occupational injuries and illnesses associated with the proposed site preparation and construction are estimated to be 11.7 incidents per 100,000 full-time equivalents (the number of workers per year) and 0.59 fatalities. The total maximum possible dose to construction workers is approximately 0.22 millisieverts per year (22 millirem), which is less than the 10 CFR Part 20 regulatory limit of 1 millisievert (100 millirem). The maximum annual dose to members of the public resulting from routine exposures is 0.01 millisieverts (1 millirem) per year for a hypothetical person living at the northern boundary of the DOE reservation. This predicted dose is significantly below the 10 CFR Part 20 limit of 1 millisieverts (100 millirem) and the 40 CFR Part 190 limit of 0.25 millisieverts (25 millirem) for uranium fuel-cycle facilities. Occupational injuries and illnesses associated with the proposed facility operation are estimated to be 2.5 incidents per 100,000 full-time equivalents (the number of workers per year) and 0.41 fatalities. The uranium concentration in workplace air is estimated to be approximately 0.7 milligram per cubic meter, which is less than the National Institute of Occupational Safety and Health standard. Occupational radiation exposure is expected to meet USEC's annual administrative limit of 10 millisieverts (1,000 millirem), which is well below the 10 CFR Part 20.1201 limit of 50 millisieverts (5,000 millirem).	SMALL to MODERATE. Under the no-action alternative, the public and occupational health would remain as described in the affected environment section. No additional radiological exposures are estimated to the general public other than from background radiation levels. The existing activities such as enrichment services from existing uranium enrichment facilities (including the possible re-opening of the gaseous diffusion plant at the Piketon site), from foreign sources, and from the "Megatons to Megawatts" program would have impacts as previously analyzed in their respective NEPA documentation and historical environmental monitoring. Additional domestic enrichment facilities could be constructed in the future. Depending on the construction methods and design of these facilities, the likely public and occupational health impacts from normal operations and accidents would be similar to the proposed action. Public and occupational health impacts for additional domestic enrichment facilities would be expected to be SMALL to MODERATE.

Table 2-8 Summary of Environmental Impacts for the Proposed ACP and the No-Action Alternative (continued)

Affected Environment	Proposed Action: ***USEC would construct, operate, and decommission the proposed ACP in Piketon, Ohio.***	No-Action Alternative: ***The proposed ACP would not be constructed, operated, and decommissioned. Enrichment services would continue to be met with existing domestic and foreign uranium enrichment suppliers.***
Waste Management	SMALL. Site preparation, construction, and operations would generate varying amounts of low-level radioactive, low-level mixed, hazardous, sanitary/industrial, and recyclable wastes. All of these wastes would be managed in accordance with existing procedures for controlling contaminant releases and exposures. With the exception of the depleted uranium, all of the wastes would also be generated at volumes that are well within existing management capacities. Over its 30-year lifetime, the ACP would generate approximately 41,105 cylinders of depleted UF_6, containing approximately 512,730 metric tons (535,200 tons) of material. All of this UF_6 could be converted to a more stable form at the new DOE conversion facility at Piketon, which would require DOE to significantly extend the life of this facility. The converted material would then be shipped by rail to an acceptable western disposal site, where sufficient capacity exists and where the disposal impacts should be SMALL.	SMALL. Under the no-action alternative, new wastes including sanitary, hazardous, low-level radioactive wastes, or mixed wastes would not be generated that would require disposition. Local impacts from waste management would be expected to remain SMALL. The existing activities such as enrichment services from existing uranium enrichment facilities (including the possible re-opening of the gaseous diffusion plant at the Piketon site), from foreign sources, and from the "Megatons to Megawatts" program would have impacts as previously analyzed in their respective NEPA documentation and historical environmental monitoring. Additional domestic enrichment facilities could be constructed in the future. Depending on the construction methods, design of these facilities, and the status of depleted UF_6 conversion facilities, the likely waste management impacts would be similar to that of the proposed action. For additional domestic enrichment facilities, impacts from waste management would be expected to be SMALL to MODERATE.

2.5 Staff Recommendation Regarding the Proposed Action

After weighing the impacts of the proposed action and comparing alternatives, the NRC staff, in accordance with 10 CFR § 51.71(e), sets forth its NEPA recommendation regarding the proposed action. The NRC staff recommends that, unless safety issues mandate otherwise, the proposed license be issued to USEC. In this regard, the NRC staff has concluded that environmental impacts are generally small, and taken in combination with the applicable environmental monitoring program described in Chapter 6 and the proposed mitigation measures discussed in Chapter 5, would eliminate or substantially lessen any potential adverse environmental impacts associated with the proposed action.

The NRC staff has concluded the overall benefits of the proposed ACP outweigh the environmental disadvantages and costs based on consideration of the following:

- The need for an additional, reliable, economical, domestic source of enrichment services; and

- The environmental impacts from the proposed action are generally SMALL, although they could be as high as MODERATE in the areas of air quality, socioeconomics, and transportation.

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3. AFFECTED ENVIRONMENT

This chapter describes the existing conditions at and near the proposed American Centrifuge Plant (ACP) site in Piketon, Ohio (see Figure 3-1). After an initial overview of the site location and activities, the chapter presents information on surrounding land use; historic and cultural resources; visual and scenic resources; climatology, meteorology, and air quality; geology, minerals, and soils; water resources; ecological resources; socioeconomic conditions; environmental justice considerations; noise levels; transportation systems; public and occupational health conditions; and current waste generation and management practices. This information forms the basis for assessing the potential impacts (see Chapter 4) of the proposed action (see Chapter 2).

3.1 Site Location and Description

The proposed ACP would be located within the confines of the U.S. Department of Energy (DOE) reservation in Pike County, Ohio, as described in Section 2.1.1. The DOE reservation is approximately 35 kilometers (22 miles) north of the Kentucky/Ohio State line and 113 kilometers (70 miles) southeast of Columbus, Ohio. The largest cities within an approximately 80-kilometers (50-mile) radius are Portsmouth, Ohio, located approximately 43 kilometers (27 miles) to the south, and Chillicothe, Ohio, located approximately 43 kilometers (27 miles) to the north. The reservation occupies approximately 304 controlled access hectares (750 acres) and is located about 2.4 kilometers (1.5 miles) east of U.S. Route 23, 3.2 kilometers (2 miles) south of Ohio State Road 32, and 3.2 kilometers (2 miles) east of the Scioto River.

Within the DOE reservation, the Portsmouth Gaseous Diffusion Plant occupies approximately 223 hectares (550 acres) of the controlled access area surrounded by the Perimeter Road, as described in Section 2.1.1. This plant began operations in the mid-1950s using gaseous diffusion technology to produce enriched uranium for government and commercial use. In the late 1970s, DOE selected the plant as the site for a new enrichment facility using gas centrifuge technology. Construction of this facility, called the Gas Centrifuge Enrichment Plant, began in 1979, but was halted in 1985 because the projected demand for enriched uranium decreased. In 1991, DOE suspended the production of highly enriched uranium at the Portsmouth plant, but continued to produce low-enriched uranium for use by commercial nuclear power plants. (USEC, 2005)

In accordance with the *Energy Policy Act of 1992*, the United States Enrichment Corporation, a subsidiary of USEC Inc. (USEC), assumed full responsibility for uranium enrichment operations at the Portsmouth Gaseous Diffusion Plant on July 1, 1993. Since that time, DOE has leased the uranium enrichment production and operations facilities to the United States Enrichment Corporation, while retaining certain responsibilities for decontamination and decommissioning, waste management, depleted uranium hexafluoride (UF_6) storage, and environmental remediation. In May 2001, the United States Enrichment Corporation ceased uranium enrichment operations at the Portsmouth plant and consolidated its enrichment operations at the Paducah Gaseous Diffusion Plant in Paducah, Kentucky. The United States Enrichment Corporation continued to operate its transfer and shipping activities at the DOE reservation until July 2002 in support of its enrichment business. At the request of DOE, the gaseous diffusion plant was placed in cold standby, a nonoperational condition in which the plant retains the ability to resume operations within 18 to 24 months. Currently, in accordance with a U.S. Nuclear Regulatory Commission (NRC) Certificate of Compliance, the United States Enrichment Corporation maintains the gaseous diffusion plant in cold standby status, performs uranium deposit removal activities in the cascade facilities, and removes technetium-99 from potentially contaminated uranium feed (USEC, 2005) from fuel reprocessing plants transferred to the United States Enrichment Corporation by DOE prior to privatization.

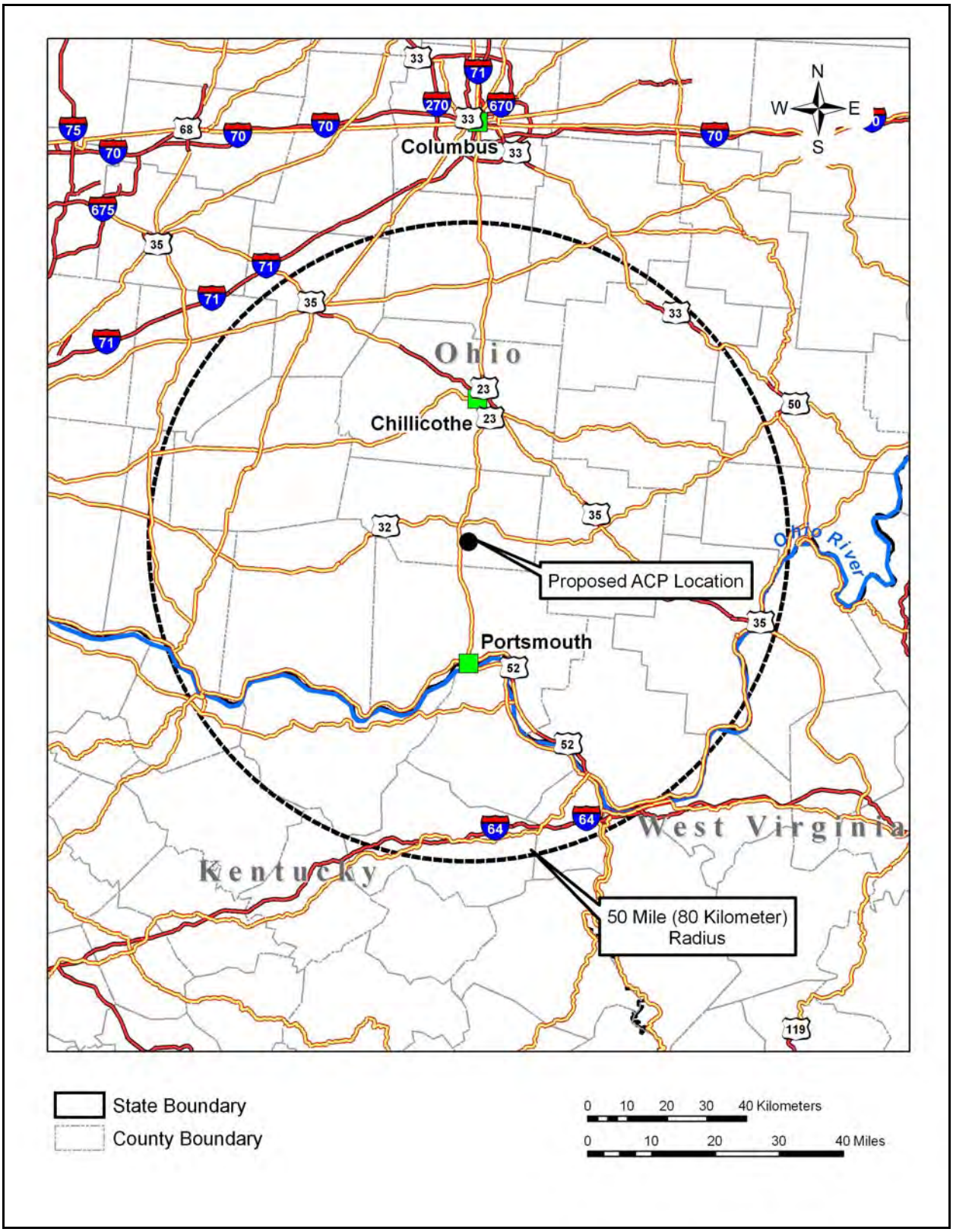

Figure 3-1 Proposed ACP Site and Surrounding Areas

The proposed ACP would be situated on approximately 81 hectares (200 acres) of the southwest quadrant of the controlled access area. In addition to this space, two UF_6 cylinder storage yards (the existing X-745G-2 and proposed X-745H), occupying a total of 11 hectares (27 acres), would be located in the northeast part of the DOE reservation just north of the Perimeter Road. The proposed ACP would consist of refurbished existing buildings and land formerly used for the Gas Centrifuge Enrichment Plant, as well as newly constructed facilities in that same area. This is the same location as the Lead Cascade Demonstration Facility, a test and demonstration facility designed to provide information on the reliability, performance, and cost of the gas centrifuge technology that will be used in the proposed ACP. In accordance with an NRC license issued to USEC on February 24, 2004, the Lead Cascade Demonstration Facility is presently under construction and scheduled to begin operation in late 2005.

The DOE reservation is not listed on the *Comprehensive Environmental Response, Compensation, and Liability Act* National Priorities List (also known as the Superfund List). Investigation and cleanup of hazardous substances (as defined in the *Comprehensive Environmental Response, Compensation, and Liability Act*) and hazardous wastes (as defined in the *Resource Conservation and Recovery Act*) that have been released to air, surface water, groundwater, soils, and solid waste management units as a result of past operational activities at the DOE reservation are being conducted under the provisions of the *Resource Conservation and Recovery Act*; the *Comprehensive Environmental Response, Compensation, and Liability Act*; and/or Ohio State law. The United States Enrichment Corporation maintains permits for the storage, handling, and use of hazardous materials and effluent discharges (air and water), as described in Section 1.5.4.

3.2 Land Use

The DOE reservation is located in Scioto Township of Pike County in south central Ohio. The region is characterized by steep to gently rolling hills in the general range of 130 to 250 meters (427 to 820 feet) above the Scioto River valley. Pike County is one of the State's lesser populated counties, with a population density of 24 people per square kilometer (63 people per square mile). Towns in the vicinity of the reservation include Piketon (6.4 kilometers [4 miles] north), Waverly (13 kilometers [8 miles] north), Jasper (1.9 kilometers [1.2 miles] northwest), and Wakefield (13 kilometers [8 miles] south). Brush Creek State Forest (8 kilometers [5 miles] southwest) and Lake White State Park (9.7 kilometers [6 miles] north) are two public recreational areas located in the vicinity of the reservation.

The general land use adjacent to the DOE reservation includes residential homes, private and commercial farms, light industry, and transportation corridors (rail and highway). Figure 3-2 presents a general land use map for the area surrounding and including the DOE reservation. Land within 8 kilometers (5 miles) of the reservation is used primarily for farms, pastures, forests, and rural residences. Dominant land use within an 8-kilometer (5-mile) radius includes about 10,291 hectares (25,430 acres) of farmland (including cropland, wooded lot, and pasture) and 9,874 hectares (24,400 acres) of forest (including commercial woodlands and recreational forest) (USEC, 2005). There are no State or national parks, conservation areas, or designated wild and scenic rivers within the immediate vicinity of the reservation (DOE, 2001a). Greater regional land use in the counties surrounding the DOE reservation is depicted in Table 3-1.

Farmland that qualifies for protection under the *Farmland Protection and Policy Act of 1981* (prime farmland) is located in Pike County, primarily along the floodplain of the Scioto River. Marginal quality farmland is located within and adjacent to the DOE reservation, and does not qualify as prime farmland under the *Farmland Protection and Policy Act of 1981* (Borchelt, 2003; and Yost, 2005). The Soil Survey for Pike County, Ohio indicates that the soil within and adjacent to the reservation is of low fertility and does not qualify as prime farmland (USDA, 1990).

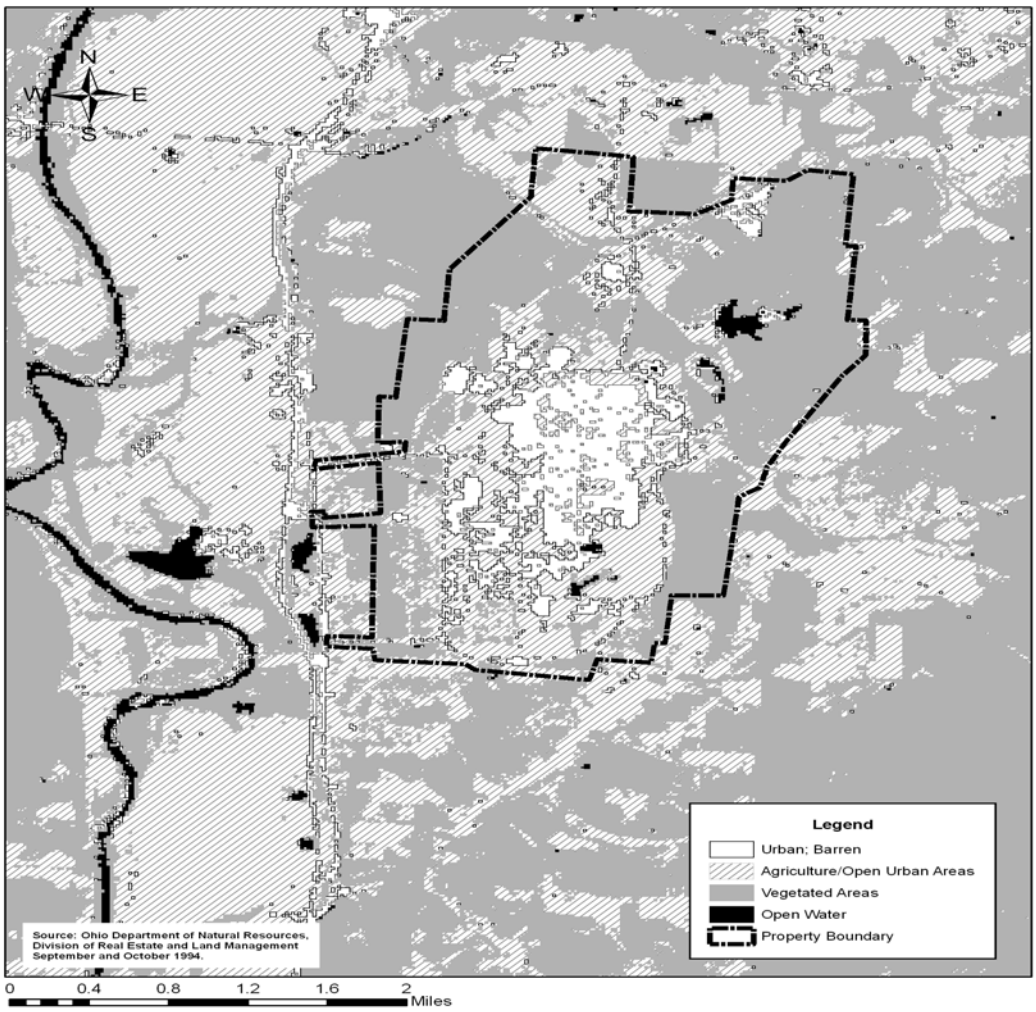

Figure 3-2 Land Use Surrounding the DOE Reservation at Piketon

Table 3-1 Percentage of Different Land Uses in the Region of Influence in 2000

County	Total Hectares[a]	Urban %	Agriculture %	Wooded %	Other % [b]
Jackson	109,126	2	32	60	6
Pike	114,917	1	27	66	6
Ross	179,348	1	48	45	6
Scioto	159,755	2	21	72	5

Notes:
[a] To convert hectares to acres multiply by 2.471.
[b] Other: Water/barren/scrub.
Source: ODOD, 2003.

The DOE reservation is situated on an approximately 1,497-hectare (3,700-acre) parcel of DOE-owned land in Scioto Township. Perimeter Road surrounds a 526-hectare (1,300-acre) central area, which includes a 304-hectare (750-acre) controlled access area. Approximately 150 buildings, trailers, and sheds are located within the central area, with the gaseous uranium enrichment facilities (now in cold standby) in the controlled access area. The central area is largely devoid of trees except for ornamental trees, with managed lawns, parking lots, and paved roadways dominating the open space. The portion of the reservation land outside of the Perimeter Road, consisting of 1,017 hectares (2,514 acres), is used for a variety of purposes including a water treatment plant, holding ponds, sanitary and inert landfills, cylinder storage yards, parking areas, and open fields and forested buffer areas.

The limited activities that occur on the DOE reservation include the cold standby management of the uranium enrichment facilities, ongoing remediation and waste management activities, the development of the DOE uranium conversion facility (described in the section on Management and Disposal of depleted UF_6 from Facility Operation, within Section 2.1.4.3), and general up-keep and security activities. In addition, DOE leases portions of the reservation to the United States Enrichment Corporation and the Ohio National Guard. The United States Enrichment Corporation also maintains office space at the facility. The Ohio National Guard uses the facility for classroom training/meeting activities and does not store weapons onsite. There are no other military installations located near the DOE reservation at Piketon. Other activities on the reservation that are managed by DOE's contractor, Bechtel Jacobs Company LLC, include environmental remediation, waste management, and management of depleted UF_6. (USEC, 2005)

3.3 Historic and Cultural Resources

"Cultural resources" include any prehistoric or historic district, site, building, structure, or object resulting from, or modified by, human activity. Under Federal regulation (Title 36 of the *Code of Federal Regulations* (36 CFR) Part 800), cultural resources designated as "historic properties" must be considered in assessing impacts of proposed Federal actions. "Historic properties" are cultural resources listed in, or eligible for listing in, the National Register of Historic Places because of their significance, as defined in 36 CFR § 60.4:

> *The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and that (a) are associated with events that have made a significant contribution to the broad patterns of our history; or (b) that are associated with the lives of persons significant in our past; or (c) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant distinguishable entity whose components may lack individual distinction; or (d) that have yielded or may be likely to yield information important in history or prehistory.*

To comply with Federal historic preservation laws and regulations as well as mandates of the *National Environmental Policy Act*, the NRC is required to identify historic properties in the area potentially affected by its actions and to consider potential effects on those properties. The principal driver for this process is Section 106 of the *National Historic Preservation Act*, as amended (16 U.S.C. 470 et seq.), and implementing regulations at 36 CFR Part 800, as amended through August 2004. Under Section 106, Federal agencies are required to consider the effects of their undertakings on historic properties; 36 CFR Part 800 describes the process by which this is done in consultation with the State Historic Preservation Officer. The *National Historic Preservation Act* and 36 CFR Part 800 also require that consultation in the Section 106 process should provide Indian tribes the opportunity to identify concerns about historic

properties on or off Tribal lands, present views about an undertaking's effects on such properties, and participate in the resolution of adverse effects.

The regulation (36 CFR § 800.16) defines the concept of "area of potential effect:"

> *(d) Area of potential effects means the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking.*

Historic properties could potentially be affected directly or indirectly by construction or operation of the proposed ACP. In accordance with 36 CFR Part 800, NRC defined the area of potential direct effects to include the footprint of all ground-disturbing activities and the perimeter of all buildings to be refurbished plus a 100-meter (328-foot) buffer around all such areas to account for heavy equipment operations, workers, and temporary staging of construction materials adjacent to the proposed work sites. NRC defined the area of potential indirect effects to include all area within the property boundary of the DOE reservation. This conservative area for indirect impacts accounts for potential indirect impacts, such as vandalism of historic properties or alterations of the setting or other qualities that contribute to the significance of historic properties, that could occur beyond the area of construction disturbance.

As a result of scoping comments that indicated concern that pumping from water supply wells might have an effect on prehistoric earthworks, NRC considered including the supply well locations within the area of potential effects, even though they are not contiguous DOE property. Because there will be no construction activity, increased vehicle traffic, nor subsidence associated with pumping that could directly or indirectly cause alterations in the character or use of prehistoric earthworks that may be located in the vicinity, NRC did not include the well locations within the area of potential effects for historic and cultural resources. Water resource impacts and ground subsidence impacts of pumping from the well locations are considered in Section 4.2.6.

As a result of scoping comments, NRC evaluated the historic properties (eligible or potentially eligible sites, structures or buildings) that are adjacent to the property boundary of the DOE reservation. NRC considers such properties to be outside of the area of potential effects (direct or indirect), but they were reviewed because they are adjacent to the boundary of indirect effects.

3.3.1 Historical Setting

Southern Ohio, where the DOE reservation is located, contains evidence of human presence dating back more than 10,000 years. Archaeologically, the area is best known for the Adena and Hopewell Indian mounds (elaborate geometric earthworks, enclosures, and mounds) that were constructed during the Woodland Period (900 B.C. to A.D. 900) (DOE, 2004a). During the early historic period (A.D. 1500), the Shawnee Indians had villages within the Scioto Valley, in the general area of Portsmouth. There is evidence of European presence in the region around A.D. 1550. European settlement in the region began in the late 1700s, with the first permanent Euro-american settlers arriving in Pike County in 1796 (Schweikert, 1997). The early development and economy in the region was almost entirely based on agriculture. The populations in the Portsmouth region grew slowly, with the growth of the transportation routes in the Scioto Valley as the primary impetus. During the 19th and early 20th centuries, several canals, roads, and, finally, railroads were constructed in the Scioto Valley region, and rural development of the area continued.

Large-scale industrial development began in 1952, when the Atomic Energy Commission, the present day DOE and NRC, selected a 9.3-square kilometer (5.8-square mile) tract of land in the Ohio Valley along the Scioto River in Pike County as the location for the Portsmouth Gaseous Diffusion Plant, to

complement gaseous diffusion facilities at Oak Ridge, Tennessee, and Paducah, Kentucky. Construction of the Portsmouth Gaseous Diffusion Plant began in 1952 and was completed in 1956. During construction, more than 486 hectares (1,200 acres) were cleared and more than 3.44 million cubic meters (4.5 million cubic yards) of earth were removed. The majority of the clearing, grading, and soil removal occurred within the central area of the Portsmouth Gaseous Diffusion Plant within the Perimeter Road (Schweikert, 1997). Since the initial development of the Portsmouth Gaseous Diffusion Plant in the 1950s, other construction activities have been initiated on the reservation to include additional administrative offices, warehouses, and the development of the Gas Centrifuge Enrichment Process facilities from 1979 to 1985 in the southwest portion of the reservation.

3.3.2 Methods

To identify the cultural resources present in and around the DOE reservation, NRC reviewed existing environmental documentation, including documents prepared under the *National Environmental Policy Act*, archaeological and architectural studies, the National Register of Historic Places, the Ohio Archaeological Inventory, and the Ohio Historic Inventory. The NRC initiated consultation with the State Historic Preservation Officer and with Indian tribes with possible ties to the reservation vicinity. The NRC also reviewed information about local cultural resources provided by the public. Copies of the consultation letters are provided in Appendix B.

3.3.3 Results of Document Review

An initial survey of the DOE reservation was completed in July and August of 1952, before construction of the facility began. The survey, under the supervision of Dr. Raymond S. Baby, Curator of Archaeology, the Ohio State Historical Society, reportedly found no evidence of archaeological materials within the reservation boundary (ERDA, 1977). In 1996, the DOE initiated additional studies, including an architectural survey and an archeological survey (Coleman, 1997; Schweikert, 1997). Figure 3-3 shows the four quadrants of the DOE reservation that were investigated as part of these surveys. In 2003, test excavations were conducted at one archaeological site (DuVall & Associates, 2003).

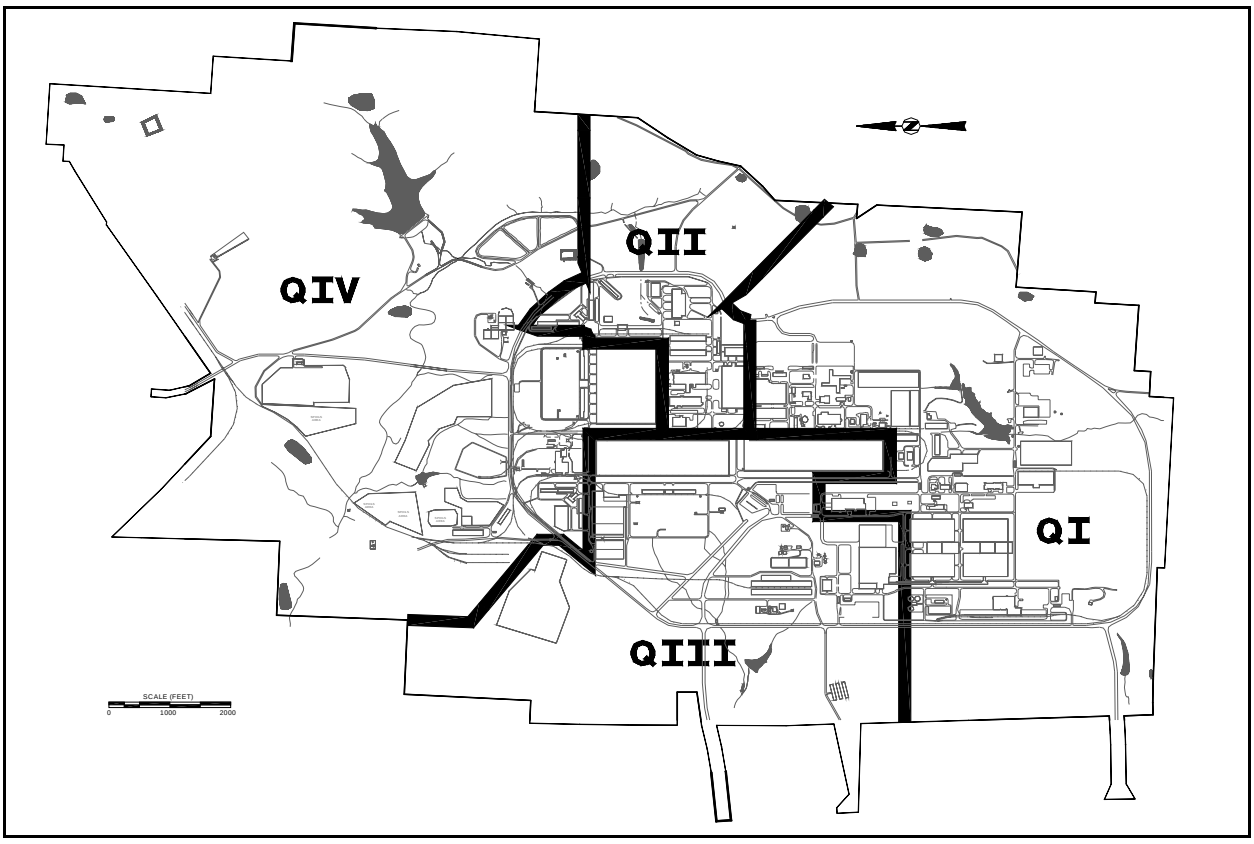

Figure 3-3 Quadrants Investigated at the DOE Reservation at Piketon

As reported by Schweikert (1997), a literature review of the following sources at the Ohio Historical Society and the Genealogy Section of the Pike County Public Library was conducted prior to the archaeological survey: United States Geological Survey 7.5' and 15' series topographic maps, Ohio Historic Preservation Office Archaeological Inventory files, National Register of Historic Places file, Ohio Historical Society Archaeological and Architectural Information files, Ohio Archaeological Council Report files, Pike County maps and histories, and Archaeological Atlas of Ohio (Mills, 1914). In addition, aerial photographs from 1939 and 1951 flights (predating construction of the Portsmouth Gaseous Diffusion Plant) were reviewed. The review focused on an area centered on the reservation, extending out 6.5 kilometers (4 miles) from the center of the reservation.

The search found no sites within reservation boundaries recorded in the State archaeological inventory, although 71 prehistoric sites were recorded within the study area (an area extending 6.5 kilometers [4 miles] from the center of the reservation). Likewise, no buildings within the reservation were listed on the Ohio Historic Inventory. Three buildings were listed within the study area. Of the three, only the Bailey Chapel is directly adjacent to the reservation boundary. The other two, former residences, are located in Seal township north of the reservation. Although not listed in the inventory, 49 other historic structures were observed on maps and photographs.

Three properties within 6.5 kilometers (4 miles) of the reservation are listed on the National Register of Historic Places. The Piketon Mounds (33 Pk 1), located 3.2 kilometers (2 miles) north of the boundary, consist today of a single large mound and two smaller mounds that are the remnants of a mound complex and series of graded ways that descended from one terrace to another and ran towards the banks of the Scioto River (Squire and Davis, 1848, as referenced in Schweikert, 1997).

The Scioto Township Works (33 Pk 22) are located to the southwest of the DOE reservation, approximately 250 meters (820 feet) from the boundary and approximately 1 kilometer (0.6 mile) from the Perimeter Road. The Scioto Township Works:

> *consisted of a circle and square works with gates on the northwest and southeast sides, parallel walls running out from two gateways, and a single mound just north of the works. This complex was surveyed by Squier and Davis in 1847, and excavations were conducted by the Bureau of American Ethnology before 1891. According to Fowke (1902) the square measured 260.3 meters (854 feet) per side east to west and 259.6 meters (852 feet) per side north to south. The parallel walls were 20.7 meters (68 feet) apart and extended 130 meters (427 feet) for the eastern wall and 122 meters (400 feet) for the western wall. Even by 1902, the large circle to the north had been all but obliterated (Fowke 1902). Recent gravel quarrying and cultivation has destroyed virtually all of this earthwork complex.* (Schweikert, 1997)

Currently, the Scioto Township Works (33 Pk 22) consists of two separate areas that have been heavily disturbed adjacent to Route 23 (DuVall & Associates, 2003).

The Van Meter Stone House and Outbuildings, located at a road intersection approximately 3.2 kilometers (2 miles) north of the boundary, dates from the early 1800s, is associated with one of the early farming families in the county, and includes what is thought to be the first school in the county (Schweikert, 1997).

An intensive archaeological reconnaissance was performed in September 1996, April 1997, and May 1997 on the entire DOE reservation, with the exception of areas occupied by plant-related buildings or structures, sanitary landfills, or lagoons. The archaeologist noted that buildings represented a small percentage of the overall reservation area outside of the Perimeter Road, although the Don Marquis power station and sanitary landfills and sludge lagoons outside the Perimeter Road were relatively large areas that were not surveyed because the original ground surface was not accessible. Techniques included overall visual inspection, with some surface collection and shallow shovel probes (to 12.5 centimeters [5 inches]) or tests (to 30 centimeters [12 inches]). (Schweikert, 1997)

The surveys resulted in the identification of 36 previously undocumented archaeological sites within the boundary of the DOE reservation. These were recorded in the Ohio Archaeological Inventory as sites 33 Pk 184 through 33 Pk 219. The 36 sites included 13 remnants of historic farmsteads; seven historic scatters or open refuse dumps; two historic isolated finds; four DOE reservation plant-related structural remnants; one historic cemetery; five prehistoric isolated finds; two prehistoric lithic scatters; and two sites that contained both prehistoric and historic temporal components: an historic cemetery with a prehistoric isolated find, and a prehistoric lithic scatter on a historic farmstead.

Investigators determined that 22 of the sites did not meet National Register eligibility criteria, although the two historic cemeteries within this class were recommended for preservation. One prehistoric lithic scatter (33 Pk 210) and 13 historic farmsteads were found to be potentially eligible for listing on the National Register under Criterion D, "have yielded, or may be likely to yield information important in prehistory or history." All of these sites are located outside the Perimeter Road.

In response to a request after State Historic Preservation Officer review of the 1997 survey report, DOE conducted archaeological testing at the prehistoric lithic scatter, 33 Pk 210. Investigators interpreted the results to mean that the site is not Register-eligible (DuVall & Associates, 2003; DOE, 2003a). The OHPO agreed that the portion of the site that was tested did not produce evidence of sensitive archaeological features, but noted that more than half of the site appears to extend south of DOE property and that insufficient testing had been done to conclude that the entire site would not meet National

Register criteria for eligibility (OHPO 2003, provided as part of OHPO comments on the Draft EIS; see Appendix B).

Coleman's 1997 architectural survey report states that the State Historic Preservation Officer indicated in 1994 that the Portsmouth Gaseous Diffusion Plant was eligible for inclusion on the National Register as a historic district because of its association with important events in history, even though it had achieved significance within fewer than 50 years (OHPO, 1994). (Normally, historic properties must be more than 50 years old.) In 1995, the State Historic Preservation Officer added the clarification that the district was eligible because of its exceptional significance in the history of post-World War II U.S., in particular, in U.S. development of nuclear energy (OHPO, 1995). In 1996, DOE initiated an architectural survey of all the architectural locations (buildings and structures) on the reservation to evaluate which might be contributing elements to the historic district. Coleman's survey identified a total of 160 architectural locations that were identified and documented on Ohio Historic Inventory forms.

Coleman evaluated each architectural location against its place in historic periods and thematic groups that characterize the historic district. Historic periods include the following: (1) the period prior to the construction of the DOE reservation; (2) the original reservation period; (3) the DOE reservation facility additions period; and (4) the Gas Centrifuge Enrichment Process period. Five thematic groups were identified: gaseous diffusion process, portals for the gaseous diffusion facility, cooling structures, warehouses, and facilities owned by the Ohio Valley Electric Corporation. This information was used to define the contributing and non-contributing architectural resources of the Portsmouth Gaseous Diffusion Plant historic district. Of the 160 architectural locations, 132 were recommended as contributing resources of the historic district and 28 were recommended as non-contributing resources. All of the structures associated with the Gas Centrifuge Enrichment Process facility, (the buildings to be refurbished under the proposed action) were found to be contributing resources of the historic district. The cylinder storage yards (some of which would be refurbished under the proposed action) were not included in the survey because such features do not contain architectural elements that warranted recording (Coleman, 1997).

3.3.4 Information from the Interested Public

The Barnes House, located adjacent to the southwestern boundary of the reservation, 800 meters (2,625 feet) from the Perimeter Road, may be eligible for listing on the National Register of Historic Places. The property includes or is near the location where the last passenger pigeon was reportedly killed, and the preserved body of that specimen was exhibited for some time in the Barnes House. The Ohio Historic Preservation Office has encouraged the property owner to submit a National Register nomination addressing Criterion A for the historical significance associated with the Sargent's Passenger Pigeon and Criterion C for the property's architectural significance (OHPO, 2004).

A local property owner and several scholars expressed concern that an earthen embankment at the southern well field might be a prehistoric earthwork with archaeological and cultural significance (see Appendix J comments PMT-010-4 and 008-5). A local resident provided information about the origin of the embankment (see Appendix J comment 011-1). The commenter describes it as "partially located on a Department of Energy well field located next to the Scioto River on the old Bill Cutlip farm." When the DOE wells were being drilled in the 1980s, the line from the river to the steam plant required the addition of concrete and ground cover over the original concrete anchors in order to hold the line in place. According to the commenter, the "result is a levy-like [sic] appearance." Concurrently, and into the 1990s, the Standard Slag company, owners of a sand and gravel quarry on the former Cutlip farm, moved its overburden down to the river and built a levee between the wells and river to make space for expansion. At first the levee was kept mowed, but when Standard Slag determined that it would not be able to quarry the terrace next to the levee, it was no longer maintained.

3.3.5 Information from Indian Tribes

NRC initiated consultation with federally recognized tribes in March of 2005. The NRC staff followed up the initial letters with numerous phone calls to elicit information from the Tribes regarding their interest in participating in the Section 106 consultation process. The vast majority of these tribes indicated that they had no specific information or were not interested. After the initial letters were sent to the tribes, a follow-up phone call in June 2005 was placed to each tribe that had not responded or electronic communication was continued with some tribes that requested such methods. This process was repeated in August 2005. Through these various phone and electronic communications the NRC was able to determine that 15 of 17 recognized tribes either had no additional information or no interest in participating in the Section 106 process. The NRC designated the Seneca Nation as a consulting party based on their interest in the project. The Absentee Shawnee Tribe of Oklahoma provided a letter that was included in an intervention. Based on this expression of interest, the NRC designated the Absentee Shawnee Tribe as a consulting party, but received no additional communication from the tribe in spite of additional requests for information. In the letter included in the intervention, the Shawnee Tribe of Oklahoma has identified a number of village sites in its ancestral homelands in the Ohio Valley, including some along the Scioto River. The Tribe considers that it is descendant from the people of the Hopewell culture who built the many earthwork sites in the region. The Tribe refers to "the Barnes Works in Scioto Township" (a reference to the Scioto Township Works, near the Barnes property mentioned above) as "one of the largest sacred sites in North America" (see Appendix B).

Tribes that were contacted are listed in Section 9.4. Copies of letters and records of communication are provided in Appendix B.

3.3.6 Historic Properties and Properties Considered Eligible for Listing on the National Register

Based on the results of the information review, one historic property, the Portsmouth Gaseous Diffusion Plant Historic District, is present within the reservation boundary. The State Historic Preservation Officer indicated the eligibility of the district under Criterion A ("associated with events that have made a significant contribution to the broad patterns of our history"). The specific buildings and other elements that contribute to the district's eligibility under Criterion A and the precise boundaries of the district have not been defined. However, the report by Coleman recommended 132 architectural locations as contributing resources and 28 architectural locations as non-contributing resources.

Outside of the reservation, but near the southwestern boundary, is one historic property, the Scioto Township Works, which today consists of two separate areas that have been heavily disturbed adjacent to Route 23 (DuVall & Associates, 2003). In addition to the archaeological values for which the site was listed on the National Register under Criterion D ("have yielded or may be likely to yield information important to history or prehistory"), the Absentee Shawnee Tribe has indicated that this site has cultural values.

Sites that have not received formal State Historic Preservation Officer concurrence as National Register eligible will be treated as if they are eligible for the purposes of this impact assessment. These include 13 historic farmstead sites within the reservation boundary that were identified by archaeologists as potentially eligible for listing on the National Register under Criterion D, although there is no record of State Historic Preservation Officer concurrence with the finding. In addition, prehistoric lithic scatter 33 Pk 210 will be treated as eligible under Criterion D in the absence of State Historic Preservation Officer concurrence with the finding that it is ineligible.

Adjacent to the reservation boundary is the Barnes House and property, which for the purpose of this review is considered potentially eligible for listing under Criteria A and C, although the State Historic Preservation Officer is awaiting submission of a formal nomination before making a determination.

Another cultural resource of local architectural and historical significance, the Bailey Chapel, is adjacent to the southeast boundary. The building is listed on the Ohio Historic Inventory, though not listed on the National Register.

Table 3-2 provides a summary of the historic properties and properties considered eligible for listing on the National Register, and the historic values associated with them. All of these properties were evaluated within the overall assessment of effects regardless of whether or not they are actually listed on the National Register.

Table 3-2 Historic Properties and Properties Considered Eligible for Listing on the National Register

Historic and Cultural Resource Name	Description of Historic Value
Portsmouth Gaseous Diffusion Plant Historic District	This site is eligible for listing on the National Register under Criterion A, "associated with events that have made a significant contribution to the broad patterns of our history." The specific buildings and other elements that contribute to the district's eligibility under Criterion A and the precise boundaries of the district have not yet been defined.
Prehistoric lithic scatter (33 Pk 210)	This site was thought to be eligible for listing on the National Register under Criterion D, "have yielded, or may be likely to yield information important in prehistory or history." However, further archaeological survey results indicated that the site does not meet this criterion and thus is not Register-eligible (DuVall & Associates, 2003; DOE, 2003a). For the purposes of this impact analysis, however, the site was treated as if it were eligible.
Thirteen historic farmsteads	These sites may be eligible for listing on the National Register under Criterion D, "have yielded, or may be likely to yield information important in prehistory or history," but a final determination has not been made. For the purposes of this impact analysis, the site was treated as if it were eligible.
Scioto Township Works	This site is listed on the National Register under Criterion D for its archaeological values. In addition, the Absentee Shawnee Tribe has indicated that this site has cultural values.
Barnes House	This site may be eligible for listing on the National Register under Criterion A for the historical significance associated with the Sargent's Passenger Pigeon and Criterion C for the property's architectural significance. However, a final determination has not been made. For the purposes of this impact analysis, the site was treated as if it were eligible.
Bailey Chapel	This site is listed on the Ohio Historic Inventory for its local architectural and historical significance, but is not listed on the National Register. For the purposes of this impact analysis, the site was treated as if it were listed.

3.4 Visual and Scenic Resources

The proposed ACP would be located within an existing industrial facility, close to existing production and support facilities, transmission lines, and vacant lots. The facilities are generally not visible off the reservation property or from the highway. Open areas within the facility are maintained as lawns and fields. Open and forested buffer areas, agricultural areas, limited residential areas, and densely forested hills are located adjacent to the proposed site. Rolling hills and small open farmlands dominate the nearby landscape.

The U.S. Bureau of Land Management developed criteria to assist in the protection of visual and scenic resources. Four Visual Resource Classes are used to represent the value of the visual resource, with Class I and II being the most valued, Class III having moderate value, and Class IV being the least valued. The proposed ACP site would be consistent in terms of scenic attractiveness and visual resources when compared with surrounding land within the DOE property, maintaining a Visual Resources Management Class III or IV designation both inside and outside the fenced area. Photographs of the proposed ACP site (existing buildings and future building locations) are shown in Figures 3-4 through 3-7.

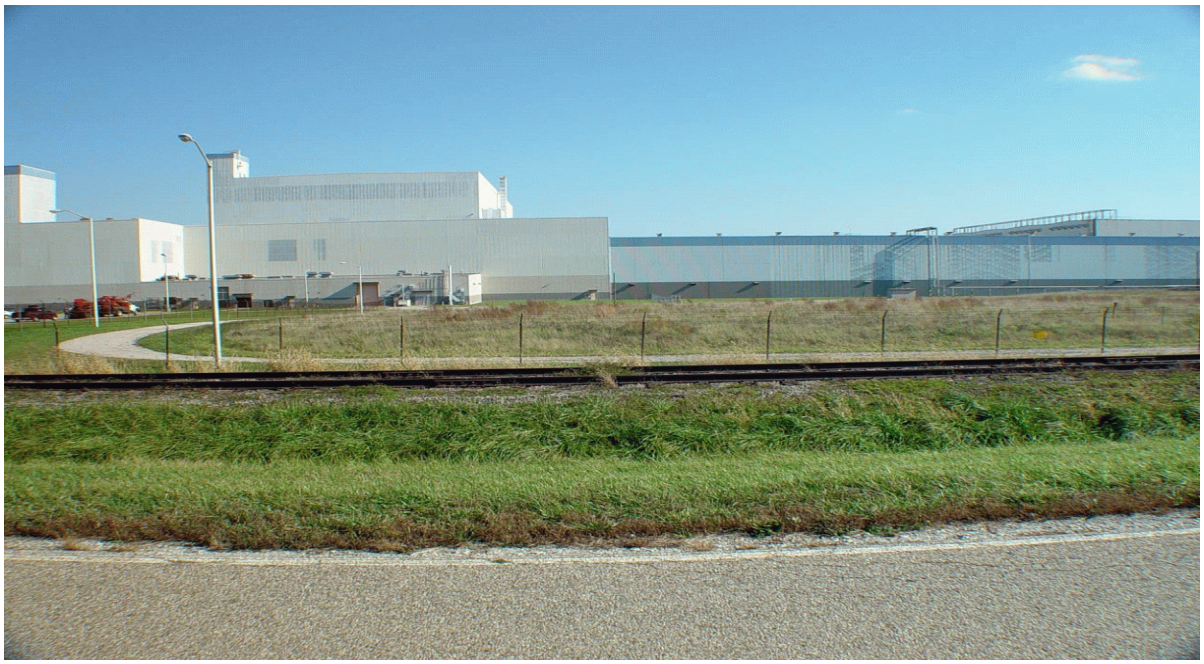

Figure 3-4 View of the X-7725 and X-7727H Facilities [Looking East] (USEC, 2005)

Figure 3-5 View of the X-7725 Facility [Looking Southwest] (USEC, 2005)

Figure 3-6 View of the X-3001 and X-3002 Process Buildings [Looking Northeast] (USEC, 2005)

Figure 3-7 Site of X-3346A Feed and Product Shipping and Receiving Building [Looking South] (USEC, 2005)

3.5 Climatology, Meteorology, and Air Quality

This section describes the climatology, meteorology, and air quality in the area surrounding the DOE reservation. This reflects the baseline condition for the Chapter 4 analysis of USEC's emissions under the proposed action.

3.5.1 Regional Climatology

The DOE reservation is located in south-central Ohio, west of the Appalachian Mountains. The area's climate is continental and moist and is characterized by moderate extremes of heat and cold. Summers are warm and humid with about 20 days per year reaching temperatures in excess of 32.2˚ Celsius (90˚ Fahrenheit), and winters are cold, with temperatures dipping below -17.7˚ Celsius (0˚ Fahrenheit) about two days a year. Precipitation averages about 7.5 to 10 centimeters (3 to 4 inches) per month; the fall months having slightly less precipitation than other months, in the range of 5 to 7.5 centimeters (2 to 3 inches) per month.

3.5.2 Site and Regional Meteorology

For the period 1961 through 1990 in Waverly, Ohio (about 16 kilometers [10 miles] to the north of the site), the mean annual temperature was about 11.6˚ Celsius (53˚ Fahrenheit). Average summer and winter temperatures are 23.4˚ Celsius (74˚ Fahrenheit) and -1.8˚ Celsius (29˚ Fahrenheit), respectively. Recorded extreme maximum and minimum temperatures are 39˚ Celsius (102˚ Fahrenheit) and -31˚ Celsius (-24˚ Fahrenheit). Moisture in the area is predominantly supplied by air moving northward from the Gulf of Mexico. The average amount of precipitation is about 102 centimeters (40 inches) per year and is usually well distributed throughout the year (DOE, 2001b). Occasionally, heavy amounts of rain

associated with strong thunderstorms or intense low pressure systems will fall in a short periods of time (USEC, 2003). Fall is the driest season. Although snowfall occurrence varies annually, snow is common from November through March, averaging approximately 52 centimeters per year (20 inches per year) (DOE, 2001b).

Surface meteorological data, including wind data, have been collected at the onsite meteorological tower at the 10-, 30-, and 60-meter (33-, 98-, and 197-foot) levels. The tower is in the southern part of the DOE reservation. A comparison of annual wind roses for the period 1995 through 2001 indicates that wind patterns at the 10-meter (33-foot) level are different from those at the 30-meter and 60-meter (98- and 197-foot) levels (DOE, 2002a). Winds at the 10-meter (33-foot) level appear to be influenced by local topographical and/or vegetative features, while wind data at the 30-meter (98-foot) level are believed to be more representative of the site. Accordingly, a wind rose at the 30-meter (98-foot) level is presented in Figure 3-8, which was prepared on the basis of data from the onsite tower from 1998 through 2002 (USEC, 2005). About a third of the time the wind blew from the south-southwest, with the prevailing wind blowing from the south. Average wind speed was about 2.7 meters per second (6.3 miles per hour). Directional wind speed was highest from the south at 3.6 meters per second (8.1 miles per hour), while lowest values were recorded in winds blowing from the east at 1.8 meters per second (4.0 miles per hour).

3.5.2.1 Severe Weather Conditions

According to weather observations from Columbus, thunderstorms occur an average of 35 days per year. Thunderstorms are most frequent during the period May through August, averaging 29 days per year, and the least frequent in winter, averaging only 2.5 days per year. (National Climatic Data Center, 2004)

Tornadoes are rare in the area surrounding the DOE reservation, and those that do occur are less destructive in this region than those occurring in other parts of the Midwest. For the period 1950 through 1995, 656 tornadoes were reported in Ohio, with an average of 14 tornadoes per year (Storm Prediction Center, 2002). Tornadoes are classified using the Fujita scale (F-scale) with classifications ranging from F0 to F5 (Fujita, 1971). F0-classified tornadoes have winds of 64 to 116 kilometers per hour (40 to 72 miles per hour) and F2-classified tornadoes have wind speeds of 182 to 253 kilometers per hour (113 to 157 miles per hour). While three tornadoes were reported in Pike County during the 1950-1995 period, most of these fell below the F2 level of the Fujita tornado scale (Storm Prediction Center, 2002).

3.5.2.2 Mixing Heights

Mixing height is defined as the height above the earth's surface through which relatively strong vertical mixing of the atmosphere occurs. Holzworth (1972) developed mean annual morning and afternoon mixing heights for the contiguous U.S. based on daily upper-air and surface climatological data. According to Holzworth's calculations, the mean annual morning and afternoon mixing heights at the DOE reservation at Piketon are approximately 510 meters (1,673 feet) and 1,700 meters (5,575 feet), respectively. Table 3-3 shows the average morning and afternoon mixing heights for Huntington,West Virginia, where the air station nearest to the DOE reservation is located.

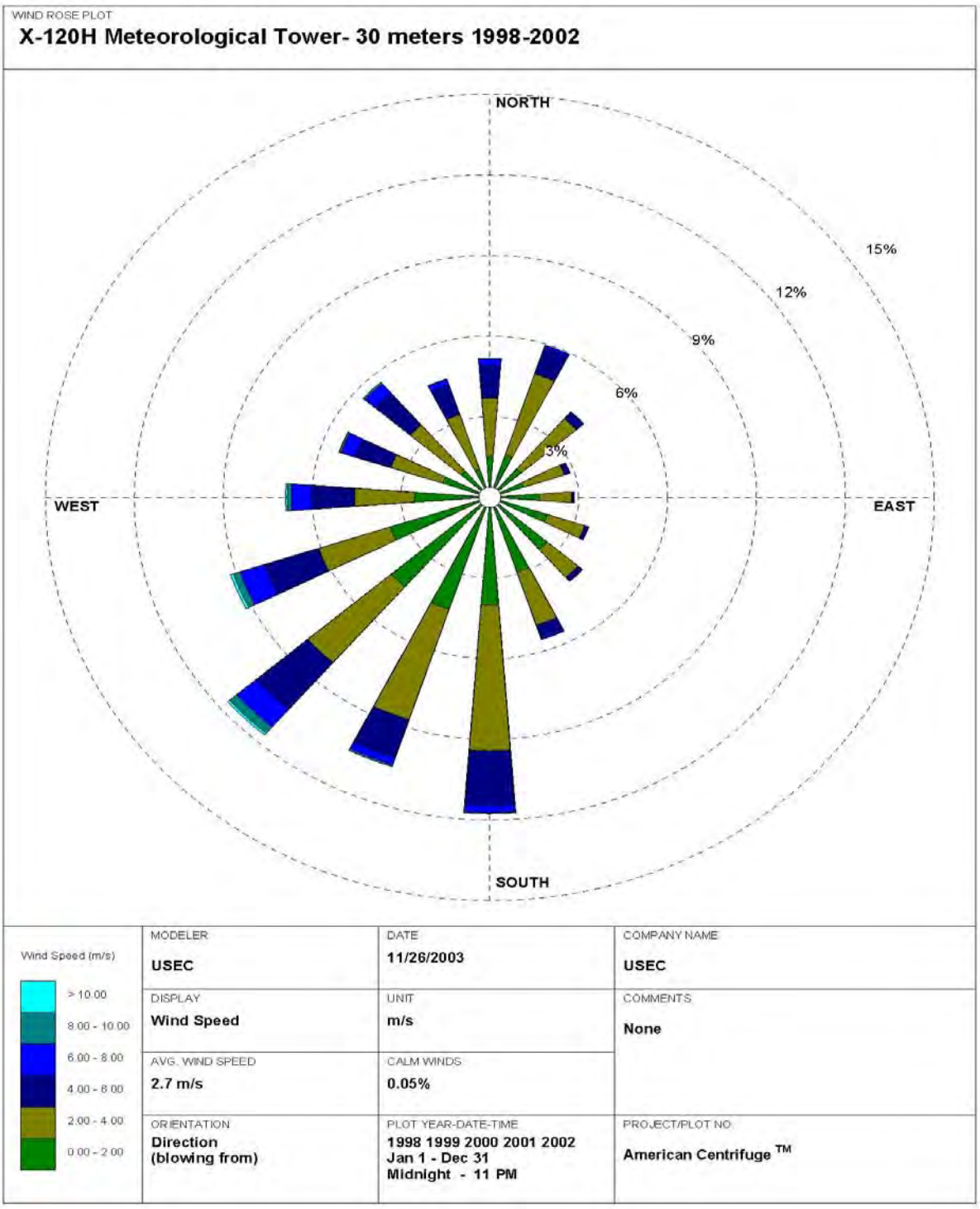

Figure 3-8 Wind Rose at 30 Meters (98 Feet) from the Onsite Meteorological Tower, 1998-2002 (USEC, 2005)

Table 3-3 Average Morning and Afternoon Mixing Heights for Huntington, West Virginia

Time Frame	Average Mixing Heights					
	Units	Winter	Spring	Summer	Fall	Annual
Morning	meters	634	721	338	403	524
	feet	2,080	2,365	1,109	1,322	1,719
Afternoon	meters	1,079	1,986	1,641	1,340	1,511
	feet	3,540	6,516	5,384	4,396	4,957

Source: Holzworth, 1972.

3.5.3 Air Quality

To assess air quality, the U.S. Environmental Protection Agency (EPA) has established maximum concentrations for pollutants that are referred to as the National Ambient Air Quality Standards (EPA, 2004). Table 3-4 presents a list of the National Ambient Air Quality Standards; Ohio State Ambient Air Quality Standards are identical. Six "criteria pollutants" are used as indicators of air quality: ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, particulate matter, and lead (see Criteria Pollutants text box). The U.S. EPA has designated areas around the country that do not meet these standards as "nonattainment areas." Areas are designated as attainment/nonattainment for each criteria pollutant. Pike County is in attainment for all criteria pollutants (40 CFR § 81.336). However, nearby Scioto County (5 kilometers [3 miles] from the DOE reservation's southern boundary) has been designated as a nonattainment area for the $PM_{2.5}$ standard (40 CFR § 81.336).

Table 3-4 National Ambient Air Quality Standards

Pollutant	Primary Standard (to Protect Public Health)			Secondary Standard (to Protect Public Welfare)		
	Level [a]	Averaging Time	Form	Level [a]	Averaging Time	Form
Ozone	0.12 ppm	One-hour	More than three days over three years	Same as primary standard		
	0.08 ppm	Eight-hour	Three-year average of annual fourth highest daily maximum			
Particulate Matter 10 microns or smaller (PM_{10})	150 $\mu g/m^3$	24-hour	Three-year average of annual 99th percentiles	Same as primary standard		
	50 $\mu g/m^3$	Annual	Not to be exceeded			

Table 3-4 National Ambient Air Quality Standards (continued)

Pollutant	Primary Standard (to Protect Public Health)			Secondary Standard (to Protect Public Welfare)		
	Level [a]	Averaging Time	Form	Level [a]	Averaging Time	Form
Particulate Matter 2.5 microns or smaller ($PM_{2.5}$)	65 $\mu g/m^3$	24-hour	Three-year average of annual averages	Same as primary standard		
	15 $\mu g/m^3$	Annual	Three-year average of 98th percentile			
Carbon Monoxide	35 ppm	One-hour	More than once per year	No secondary standard		
	9 ppm	Eight-hour	More than once per year			
Sulfur Dioxide	0.14 ppm	24-hour	More than once per year	0.55 ppm	Three-hour	More than once per year
	0.03 ppm	Annual	Not to be exceeded			
Nitrogen Dioxide	0.053 ppm	Annual	Not to be exceeded	Same as primary standard		
Lead	1.5 $\mu g/m^3$	Quarterly	Not to be exceeded	Same as primary standard		

Notes:
[a] ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter.
Source: 40 CFR Part 50.

Criteria Pollutants

Nitrogen dioxide *is a brownish, highly reactive gas that is present in all urban atmospheres. Nitrogen dioxide can irritate the lungs, cause bronchitis and pneumonia, and lower resistance to respiratory infections. The major mechanism for the formation of nitrogen dioxide in the atmosphere is the oxidation of the primary air pollutant nitric oxide. Nitrogen oxides play a major role, together with volatile organic carbons, in the atmospheric reactions that produce ozone. Nitrogen oxides form when fuel is burned at high temperatures. The two major emissions sources are transportation and stationary fuel combustion sources such as electric utility and industrial boilers.*

Ozone *is a photochemical (formed in chemical reactions between volatile organic compounds and nitrogen oxides in the presence of sunlight) oxidant and the major component of smog. Exposure to ozone for several hours at low concentrations has been shown to significantly reduce lung function and induce respiratory inflammation in normal, healthy people during exercise. Other symptoms include chest pain, coughing, sneezing, and pulmonary congestion.*

Lead *can be inhaled and ingested in food, water, soil, or dust. High exposure to lead can cause seizures, mental retardation, and/or behavioral disorders, and/or premature death. Low exposure to lead can cause central nervous system damage.*

Carbon monoxide *is an odorless, colorless, poisonous gas produced by incomplete burning of carbon in fuels. Exposure to carbon monoxide reduces the delivery of oxygen to the body's organs and tissues. Elevated levels can cause impairment of visual perception, manual dexterity, learning ability, and performance of complex tasks.*

Particulate matter *such as dust, dirt, soot, smoke, and liquid droplets are emitted into the air by sources such as factories, power plants, cars, construction activity, fires, and natural windblown dust. Exposure to high concentrations of particulate matter can affect breathing, aggravate existing respiratory and cardiovascular disease, alter the body's defense systems against foreign materials, and damage lung tissue.*

Sulfur dioxide *results largely from stationary sources such as coal and oil combustion, steel and paper mills, and refineries. It is a primary contributor to acid rain and contributes to visibility impairments in large parts of the country. Exposure to sulfur dioxide can affect breathing and may aggravate existing respiratory and cardiovascular disease.*

Source: EPA, 2004.

3.5.3.1 Current Emissions at the DOE Reservation

Non-Radiological Emissions

Nonradiological air emissions from the DOE reservation are predominant sources in Pike County (EPA 2003a). Currently, the United States Enrichment Corporation has three Ohio EPA operating permits. The Title V permit issued for current operations was effective as of August 21, 2003, and is a sitewide, Federally enforceable operating permit to cover emissions of all regulated air pollutants at the facility. The United States Enrichment Corporation has identified the following criteria pollutant emissions for the year 2001 (see Table 3-5): 54.30 metric tons (59.86 tons) of particulate matter with a mean diameter of 10 micrometers or less, 1.29 metric tons (1.42 tons) of volatile organic compounds, 2,474 metric tons (2,628 tons) of sulfur dioxide, and 328 metric tons (362 tons) of nitrogen oxides. These emissions are

Table 3-5 Nonradiological Air Emissions from United States Enrichment Corporation and DOE Sources at the DOE Reservation in 2001

Major Emission Source	Units	Emission Rate [a]					
		SO_2	NO_x	CO	VOCs	PM_{10}	$PM_{2.5}$
United States Enrichment Corporation facilities [a]	metric tons/year	2,384	328	Not Available	1.3	54.3	Not Available
	tons/year	2,628	362	Not Available	1.4	59.9	Not Available
DOE facilities [b]	metric tons/year	20	85	53	5.2	4.8	Not Available
	tons/year	22	94	59	5.7	5.3	Not Available

Notes:
[a] SO_2 = sulfur dioxide; NO_X = nitrogen oxides; CO = carbon monoxide; VOCs = volatile organic compounds; PM_{10} = particulate matter with a mean diameter of 10 micrometers or less; $PM_{2.5}$ = particulate matter with a mean diameter of 2.5 micrometers or less.
[b] Source: DOE, 2001c.
[c] Proposed maximum annual emissions based on the assumption that two boilers would operate full time.
Source: Bechtel Jacobs Company, 2003.

associated primarily with the boilers at the X-600 Steam Plant (that provides steam for the DOE reservation), a boiler at the X-611 Water Treatment Plant, an emergency generator, and a trash pump(DOE, 2001c). DOE operates numerous small sources that release criteria pollutants and volatile organic compounds. In November 2001, DOE began operation of the X-6002 Recirculating Hot Water Plant to provide heat for the DOE facilities that were formerly heated by hot water from the gaseous diffusion process. Maximum annual emissions from plant operations account for most of the DOE emissions (Bechtel Jacobs Company, 2003; see Table 3-5). Other DOE emissions, including two landfill venting systems, two glove boxes (not used in 2001), two aboveground storage tanks in the X-6002A Fuel Oil Storage Facility, and two groundwater treatment facilities, emit less than 0.9 metric tons (1 ton) per year of conventional air pollutants (on an individual basis).

The largest non-radiological airborne emissions from the DOE reservation are from the coal-fired boilers at the X-600 Steam Plant. These emissions are shown in Table 3-6. The boilers are permitted by Ohio EPA with opacity, particulate, and sulfur dioxide limits. Electrostatic precipitators on each of the boilers control opacity and particulate emissions. In addition, the boilers emit nitrogen dioxide and carbon monoxide. There are also minor contributions of these pollutants from oil-fired heaters, stationary diesel motors, and mobile sources (e.g., cars and trucks). Other air pollutants emitted from the DOE reservation in Piketon, Ohio, include gaseous fluorides, water treatment chemicals, cleaning solvent vapors, and process coolants. (USEC, 2005)

Radiological Emissions

Airborne discharges of radionuclides from the DOE reservation are regulated under the *Clean Air Act*, 40 CFR Part 61, Subpart H, National Emission Standards for Hazardous Air Pollutants. Currently, the United States Enrichment Corporation is responsible for most of the sources that emit radionuclides because DOE leases the production facilities to it. In 2001, United States Enrichment Corporation and DOE reported emissions of 7.40×10^9 and 2.33×10^7 becquerels (0.2 and 0.00063 curies) from their radionuclide emission sources, respectively. (DOE, 2004a)

Table 3-6 United States Enrichment Corporation's Non-Radiological Airborne Emissions

Total Particulate Matter	Air Permit Limit [a]	Stack Test Results [a, b]
Boiler Number 1	0.19 lbs/mmbtu	0.04 lbs/mmbtu
Boiler Number 2	0.19 lbs/mmbtu	0.05 lbs/mmbtu
Boiler Number 3	0.19 lbs/mmbtu	0.05 lbs/mmbtu
Sulfur Dioxide	**Air Permit Limit [a]**	**Analytical Results [a, c]**
Boiler Number 1	6.16 lbs/mmbtu	4.72 lbs/mmbtu
Boiler Number 2	6.16 lbs/mmbtu	
Boiler Number 3	6.16 lbs/mmbtu	

Notes:
[a] lbs/mmbtu = pounds per million British thermal unit.
[b] Boilers 1 and 2 tested in April 2003. Boiler 2 tested in November 2003.
[c] Steam plant total for 2002.
Source: USEC, 2005.

3.5.3.2 Current Air Quality Conditions

Non-Radiological Emissions

Ambient concentration data are not available for criteria pollutants around the site. The nearest monitoring site is in the City of Portsmouth, approximately 43 kilometers (27 miles) to the south of the reservation. On the basis of 1998 through 2003 monitoring data, the highest concentrations for sulfur dioxide, nitrogen dioxide, carbon monoxide, particulate matter with a mean diameter of 10 micrometers or less, and lead are less than 64 percent of their respective National Ambient Air Quality Standards listed in Table 3-4 (EPA, 2003b). It is expected that levels at the DOE reservation are equal to or lower than these reported concentrations. The highest concentrations of ozone and particulate matter with a mean diameter of 2.5 micrometers or less are approaching or are somewhat higher than the applicable standards. These high concentrations are of regional concern and are associated with high precursor emissions from the Ohio Valley region and long-range transport from southern States.

Radiological Emissions

Although not used to measure criteria pollutants, there is a network of 15 air samplers in and around the DOE reservation that primarily collect data on radionuclide concentrations at the site. These data are used to assess whether air emissions from the DOE reservation affect air quality in the surrounding area. In addition to radionuclides, samples for fluoride are collected weekly from 15 ambient monitoring stations in and around the reservation. With only one exception, the average ambient concentrations measured at these stations in 2001 were similar to or less than those collected at a background station located approximately 21 kilometers (13 miles) southwest of the reservation (see Table 3-7). The exception was for the network station that is located within the process area immediately east of the X-326 building.

Table 3-7 Background Air Concentrations

Chemical/ Radionuclide	Units [a]	Number of Samples (Measurement) [b]	Minimum [c]	Maximum [c]	Average [c, d]
Americium-241	pCi/m^3	12 (12)	ND	1.5×10^{-05}	
Fluoride	$\mu g/m^3$	52(8)	1.2×10^{-02}	1.9×10^{-01}	6.3×10^{-02}
Neptunium-237	pCi/m^3	12 (12)	ND	5.9×10^{-06}	
Plutonium-238	pCi/m^3	12 (12)	ND	1.2×10^{-05}	
Plutonium-239/240	pCi/m^3	12 (12)	ND	8.0×10^{-06}	
Technetium-99	pCi/m^3	12 (12)	ND	1.9×10^{-03}	
Uranium	$\mu g/m^3$	12 (1)	4.6×10^{-04}	1.2×10^{-03}	7.5×10^{-04}
Uranium-233/234	pCi/m^3	12 (0)	1.4×10^{-04}	4.6×10^{-04}	2.8×10^{-04}
Uranium-235	pCi/m^3	12 (6)	ND	1.5×10^{-05}	
Uranium-236	pCi/m^3	12 (12)	ND	6.0×10^{-06}	
Uranium-238	pCi/m^3	12 (1)	1.5×10^{-04}	3.9×10^{-04}	2.5×10^{-04}

Notes:
[a] pCi/m^3 = picoCuries per cubic meter, $\mu g/m^3$ = micrograms per cubic meter.
[b] Radiological samples are analyzed monthly, samples for fluoride are analyzed weekly. Number in parentheses is the number of samples that were below the detection limit.
[c] ND = Not detected above method detection limit. Results above the detection limit are provided in scientific notation.
[d] For radionuclides, averages are not calculated for locations that had greater than 15 percent of the results below the detection limit. If the analytical result for a sample was below the detection limit, the ambient air concentration was calculated based on the detection limit for the sample. Averages were calculated for fluoride at all sampling locations.
Source: DOE, 2002b.

3.6 Geology, Minerals, and Soil

This section provides a brief description of the regional and local geology, including bedrock and soil characteristics and seismicity. There are not any economically valuable mineral resources, including oil and gas resources, that could be recovered from the potentially affected area.

3.6.1 Regional Geology, Structure, and Seismicity

The DOE reservation is situated within the Appalachian Plateau Physiographic Province of the Appalachian Highland region near its northwestern terminus at the Central Lowlands Province. The Appalachian Plateau is characterized by deeply dissected valleys and even crested ridge tops. Just east of the Scioto River, the summits of the main ridges rise to an altitude of more than 355 meters (1,160 feet) above mean sea level, with relief of up to 150 meters (490 feet) from the bottom of the valleys. The proposed ACP site would be situated at an elevation of approximately 205 meters (670 feet).

Surface and near-surface geology at the site have been heavily influenced by glaciation and the associated meltwaters. The DOE reservation is located in an abandoned river valley that was later filled with lake sediments deposited during the existence of prehistoric Lake Tight (Rogers et al., 1988). Bedrock at the site is composed of sedimentary rocks, primarily shale and sandstone, deposited in a broad shallow sea during the Paleozoic Era more than 230 million years ago. The rock units of interest at the site are, in ascending order, Ohio Shale, Bedford Shale, Berea Sandstone, Sunbury Shale, Cuyahoga Shale, Gallia Sand, and Minford Clay. Figure 3-9 shows the relationship of the geologic units to the site and region.

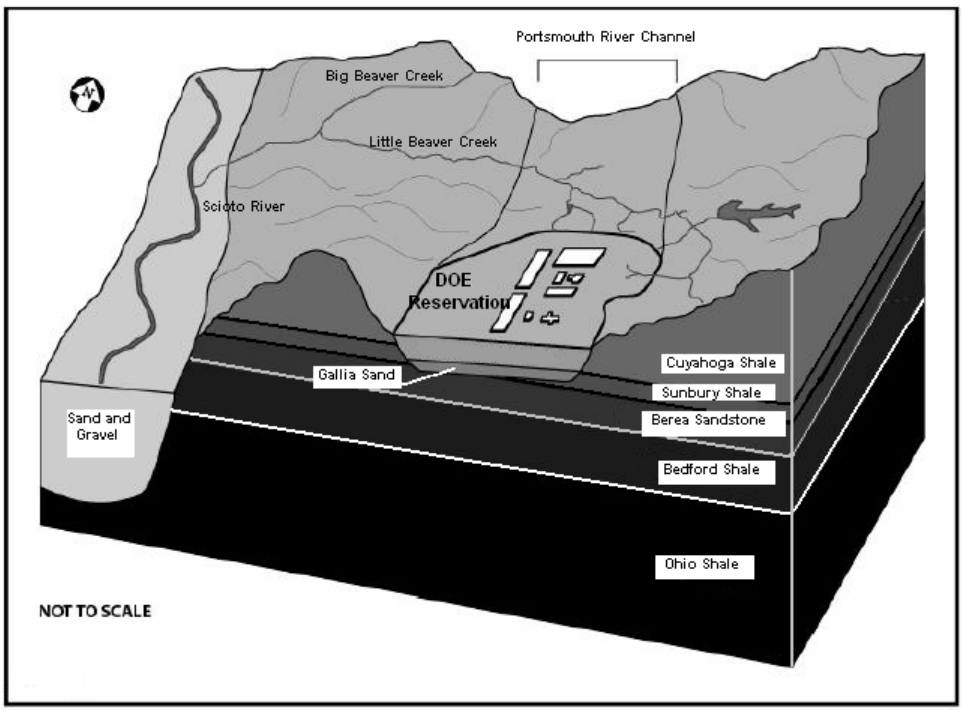

Figure 3-9 Site Geology in the Vicinity of the DOE Reservation at Piketon (NRC, 2004a)

The Ohio Shale is 90 to 120 meters (300 to 400 feet) thick at the site. It is black and thinly bedded and may contain noncommercial quantities of natural gas or oil. The Bedford Shale consists of interbedded thin sandstone and shale. The Berea Sandstone has a larger sand content than the Bedford Shale but is otherwise similar. At the proposed site, the Berea Sandstone forms an aquifer that has an average thickness of about 9 meters (30 feet). The Sunbury Shale is a black carbonaceous shale; this unit thins from east to west and may be completely absent in western portions of the site (DOE, 2004a)). The Teays Formation overlies the Sunbury Shale and is made up of Gallia Sand and Minford Clay, in ascending order. These unconsolidated deposits have a fluvial origin and occupy ancient channels of the Teays River System. The Gallia Sand member is a silty to clayey, coarse to fine-grained sand with a pebble base. The Minford Clay member contains interbedded silts and clays and is divided into two zones: an upper zone of clay and a lower zone of silty clay.

There are no major faults at the site. The nearest fault zone is the Kentucky River Fault Zone located approximately 40 kilometers (25 miles) south of the site. No seismic events have been associated with it. There have been no historical earthquakes within 40 kilometers (25 miles) of the site.

The largest recorded seismic event in the area was the Sharpsburg, Kentucky, earthquake of July 1980. Sharpsburg is located approximately 115 kilometers (70 miles) south of the DOE reservation. That earthquake registered a magnitude of 5.3 on the Richter Scale and a Modified Mercalli intensity of VII.

Ground motion from earthquakes causes damage to buildings and structures. Ground motion is measured as a percent of the acceleration of gravity. At 10 percent gravity (0.1g) some damage may occur in poorly constructed buildings. At 0.1g to 0.2g most people have trouble keeping their footing. In the 1980's DOE studied the historical seismicity of the areas surrounding the Portsmouth plant. Data were developed on probable seismic activity and the intensity levels were converted into acceleration values. They determined that the maximum earthquake likely to occur would produce a ground motion equal to 0.15

gravity, and a recurrence of 1,000 years. The GCEP and ACP were designed based on the Design Basis Earthquake of 0.15 gravity and 1,000 year recurrence. (DOE, 1980 and DOE, 1982)

3.6.2 Soils

A majority of the soils at the DOE reservation are formed on ancient river or lake deposits. Other important soil-forming materials are parent material from the underlying shale bedrock, colluvium, and loess (windblown material) (DOE, 2004a). Approximately 600 hectares (1,500 acres) of the site consist of moderately drained soils of the Urban Land-Omulga silt loam complex. The Omulga soil at the site is a dark grayish brown silt loam about 25 centimeters (10 inches) thick. Beneath this layer is about 137 centimeters (54 inches) of yellowish-brown subsoil. This material is characterized by a friable silt loam, a silty clay fragipan (low-permeability layer), and, near the bottom, a friable silt loam. Within the fragipan, the subsoil has low permeability. Other soils of the reservation include the Clifty and Wilbur silt loams, which occur in stream valleys. The upland areas contain a mixture of Coolville, Blairton, Latham, Princeton, Shelocta, and Wyatt soils. A description of these soils is provided in Hendershot et al. (1990).

Soil samples are collected semianually from nine onsite locations, six off-site locations within 5 kilometers (3 miles) of the site, and 12 remote locations 5 to 16 kilometers (3 to 10 miles) from the site. Samples are analyzed for total uranium, technetium-99, gross-alpha activity, and gross-beta activity. Table 3-8 summarizes the data from 1998 to 2002 and shows that the results from the different sampling locations are not significantly different. There are no soil data specifically from the proposed ACP site.

Table 3-8 Results of Baseline Soil Samples, 1998-2002 [a]

	Total Uranium mg/g	Technetium pCi/g	Gross Alpha pCi/g	Gross Beta pCi/g
Reservation (9 Soil Sampling Locations)				
No. of Samples [b]	117 (0)	117 (93)	117 (59)	117 (64)
Average	2.8	<0.2	<8	<14
Minimum	0.6	<0.1	<2	8
Maximum	4.4	1.5	21	36
Off Reservation (6 Soil Sampling Locations)				
No. of Samples [b]	74 (0)	74 (32)	74 (38)	74 (41)
Average	2.9	<0.2	<7	<14
Minimum	0.7	<0.1	<2	<8
Maximum	4.6	3.8	14	47
Remote (12 Soil Sampling Locations)				
No. of Samples [b]	139 (0)	139 (133)	139 (73)	139 (77)
Average	3.0	<0.2	<7	<14
Minimum	0.7	<0.1	<3	<7
Maximum	5.9	0.8	16	22

Notes:
[a] mg/g = milligrams per gram; pCi/g = picoCuries per gram.
[b] The "number of samples" shows the total number of samples collected, including replicate and duplicate samples collected for quality assurance purposes, followed by the number of samples that were lower than the Minimum Detectable Concentration in parentheses.
Source: USEC, 2004a.

3.7 Water Resources

This section presents a discussion of the surface water and its associated resources (floodplains) and groundwater in the vicinity of the DOE reservation, including the regional and local surface water features (rivers/streams and lakes/ponds) surrounding the reservation, as well as the floodplains located on the reservation. The discussion of surface water describes the existing features, summarizes the existing National Pollutant Discharge Elimination System permitted outfalls from the reservation to such features, and concludes with a discussion of water quality and its designated uses. The discussion of floodplains present the location and attributes of such features on the reservation. The groundwater discussion describes the regional groundwater aquifers, the groundwater well fields associated with the DOE reservation, and the onsite groundwater conditions and remediation activities.

3.7.1 Surface Water Features

The DOE reservation is within the Lower Scioto River watershed, U.S. Geological Survey Cataloging Unit: 05060002. The reservation occupies an upland area at an elevation of 200 meters (670 feet) above mean sea level and is bordered by ridges of low-lying hills. Surface waters drain from the DOE reservation via a network of tributaries to the Scioto River located approximately 3.2 kilometers (2 miles) to the west (Rogers et al., 1988). The average flow in the Scioto River measured at Higby (approximately 32 kilometers [20 miles] northeast and upstream of the reservation) is 133 cubic meters per second (2.1 x 10^6 gallons per minute). The 10-year low-flow discharge at Higby is 8.58 cubic metes per second (1.4 x 10^5 gallons per minute). The Scioto River discharges into the Ohio River approximately 40 kilometers (25 miles) south and downstream of the reservation. There are no known public or private water supplies draw from this section of the Scioto River (USEC, 2005).

Surface water features on the DOE property include streams, ditches, holding ponds, and lagoons as shown on Figure 3-10. There are four lagoons, eight holding ponds, several unnamed tributaries and drainage pathways, and four named streams and ditches on the DOE reservation. The four streams include Little Beaver Creek, Big Run Creek, the West Ditch, and the DOE Piketon Tributary. Little Beaver Creek drains the northern portion of the reservation, Big Run Creek drains the east-central and southern portions of the reservation, the West Ditch drains the west-central portion of the reservation, and the DOE Piketon Tributary drains the south-western portion of the reservation. Storm water at the DOE reservation is collected by a series of storm water sewers and open culverts. The reservation has eight specific storm water collection areas, which transmit the storm water flow to one of the onsite streams or ditches. All of the streams and ditches transport the surface water, including storm water, from the reservation to the Scioto River.

The largest stream on the DOE reservation is Little Beaver Creek, which discharges into Big Beaver Creek, which then discharges into the Scioto River. Upstream of the plant, Little Beaver Creek flows intermittently during the year. Onsite, it receives treated wastewater from a holding pond (via the east drainage ditch) and storm water runoff from the northwestern and northern sections of the reservation via several storm sewers, water courses, and the north holding pond. The average release to Little Beaver Creek for 1993 was 0.06 cubic meter per second (951 gallons per minute).

The next largest stream, Big Run Creek, receives effluent from the South Holding Pond (X-230K), and flows offsite to the southwest where it joins the Scioto River approximately 6.4 river-kilometers (4 river-miles) from the reservation. Storm sewers in the southern end of the reservation discharge to the South Holding Pond. The DOE Piketon Tributary, is a small intermittent watercourse leading from Holding Pond No. 1 (X-2230M, National Pollutant Discharge Elimination System permit number 012) to the

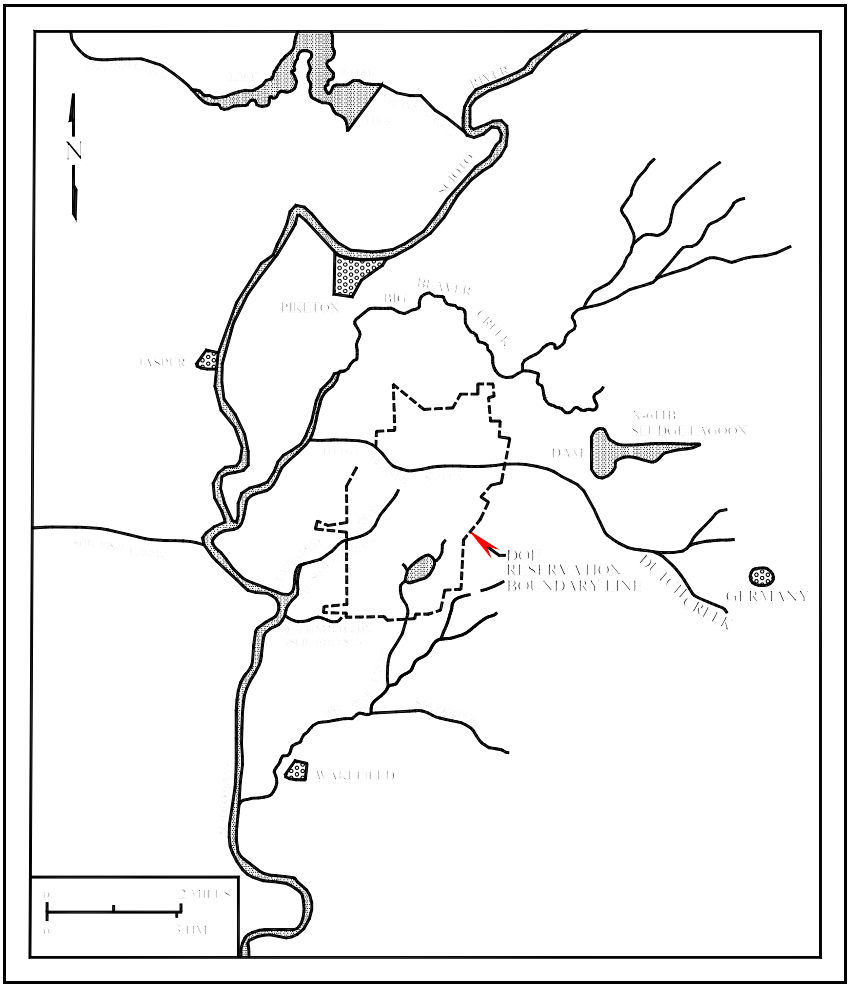

Figure 3-10 Surface Water Features at the DOE Reservation at Piketon (USEC, 2005)

Scioto River, 1.6 stream-kilometers (1 stream-mile) downstream. The West Ditch receives surface water from existing open drainage swales and from Holding Pond No. 2, X-2230N and flows for 6.4 stream-kilometers (4 stream-mile) before discharging into the Scioto River.

The Ohio Administrative Code (3745-1-09) for the Scioto river drainage basin classifies the designated uses of the surface waters within and surrounding the DOE reservation. The aquatic life habitat, water supply, and recreational use designations are defined in rule 3745-1-07 of the Ohio Administrative Code. The State resource water use designation is defined in rule 3745-1-05 of the Ohio Administrative Code. The most stringent criteria associated with any one of the use designations assigned to a water body will apply to that water body.

The surface water features that drain the DOE reservation as well as the Scioto River and their designated uses are as follows:

- Little Beaver Creek: State Resource Water; Warm Water Habitat; Agricultural Water Supply; Industrial Water Supply; and Primary Contact Recreation.

- Big Run Creek: Warm Water Habitat; Agricultural Water Supply; Industrial Water Supply; and Primary Contact Recreation.

- DOE Piketon Tributary: Limited Resource Water; Agricultural Water Supply; Industrial Water Supply; and Secondary Contact Recreation.

- West Ditch: Warm Water Habitat; Agricultural Water Supply; Industrial Water Supply; Secondary Contact Recreation.

- Scioto River: Warm Water Habitat; Public Water Supply; Agricultural Water Supply; Industrial Water Supply; Primary Contact Recreation.

The designated uses of the rivers, streams, and ditches aid in defining the parameters associated with the National Pollutant Discharge Elimination System permits issued by the State of Ohio. Currently, the DOE reservation maintains a total of 19 permitted outfalls, which are managed by both DOE and the United States Enrichment Corporation. DOE is responsible for eight of the 19 permitted outfalls, including:

- Three DOE outfalls that discharge directly to surface water (to the DOE Piketon Tributary, the West Ditch, and Little Beaver Creek).

- Three outfalls discharge to USEC building X-6619, Sewage Treatment Plant, which are subsequently discharged through a permit issued to USEC for Outfall 003. These three are Outfalls 608, 610, and 611.

- Two outfalls discharge to holding ponds.

The United States Enrichment Corporation is responsible for 11 of the 19 National Pollutant Discharge Elimination System permitted outfalls, including:

- Eight outfalls that discharge directly to surface water (DOE Piketon Tributary, West Ditch, Little Beaver Creek, Big Run Creek, and the Scioto River).

- Two outfalls that discharge to the X-6619 Sewage Treatment Plant (Outfall 003).

- One outfall that discharges to the X-230K South Holding Pond (Outfall 002). (USEC, 2003)

Table 3-9 lists the 19 outfalls by permit number and includes information on the operator (DOE or the United States Enrichment Corporation), a description of the outfall, and the ultimate receiving water body. These United States Enrichment Corporation outfalls are illustrated in Figure 3-11.

The domestic wastewater generated by the offices and change houses is treated on the reservation at the sewage treatment plant. The design capacity of the sewage treatment plant is 2,275,032 liters per day (601,000 gallons per day), and in 2003, the facility operated at 27 percent of that capacity (USEC, 2003). The discharge from the sewage treatment plant is within its National Pollutant Discharge Elimination System permit criteria.

Table 3-9 National Pollutant Discharge Elimination System Permit Operator, Description, and Receiving Water Body

Operator	Outfall	Description	Receiving Water Body
United States Enrichment Corporation	001	X-230J7 - East Holding Pond	Tributary of Little Beaver Creek
United States Enrichment Corporation	002	X-230K - South Holding Pond	Big Run
United States Enrichment Corporation	003	Building X-6619, sewage treatment plant	Scioto River
United States Enrichment Corporation	004	Cooling tower blowdown	Scioto River
United States Enrichment Corporation	005	X-611B - lime sludge lagoon	Little Beaver Creek
United States Enrichment Corporation	009	X-230L - North Holding Pond	Tributary to Little Beaver Creek
United States Enrichment Corporation	010	X-230J5 - Northwest Holding Pond	West ditch
United States Enrichment Corporation	011	X-230J6 - Northeast Holding Pond	Tributary to Little Beaver Creek
DOE	012	X-2230M pond	DOE Piketon Tributary
DOE	013	X-2230N pond	West ditch
DOE	015	Groundwater treatment facility	Tributary to Little Beaver Creek
DOE	608 [a]	Groundwater treatment plant	Sewage treatment plant
DOE	610 [a]	Groundwater treatment plant	Sewage treatment plant
DOE	611 [a]	Groundwater treatment plant	Sewage treatment plant
DOE	612 [a]	Groundwater treatment plant discharging to X-2230M pond	DOE Piketon Tributary - inactive
DOE	613	Particulate separator	Not applicable
United States Enrichment Corporation	602	X-621 coal pile runoff treatment facility	Big Run Creek
United States Enrichment Corporation	604	X-700 bio-nitrification facility	Sewage treatment plant
United States Enrichment Corporation	605	X-705 decontamination microfiltration facility	Sewage treatment plant

Notes:
[a] Discharging to receiving waters downstream of the surface water runoff pathway associated with the proposed action.
Note: DOE internal Outfalls 608, 610, and 611 discharge to United States Enrichment Corporation Outfall 003 (X-6619 Sewage Treatment Plant). DOE internal Outfall 612 discharges to DOE Outfall 012.

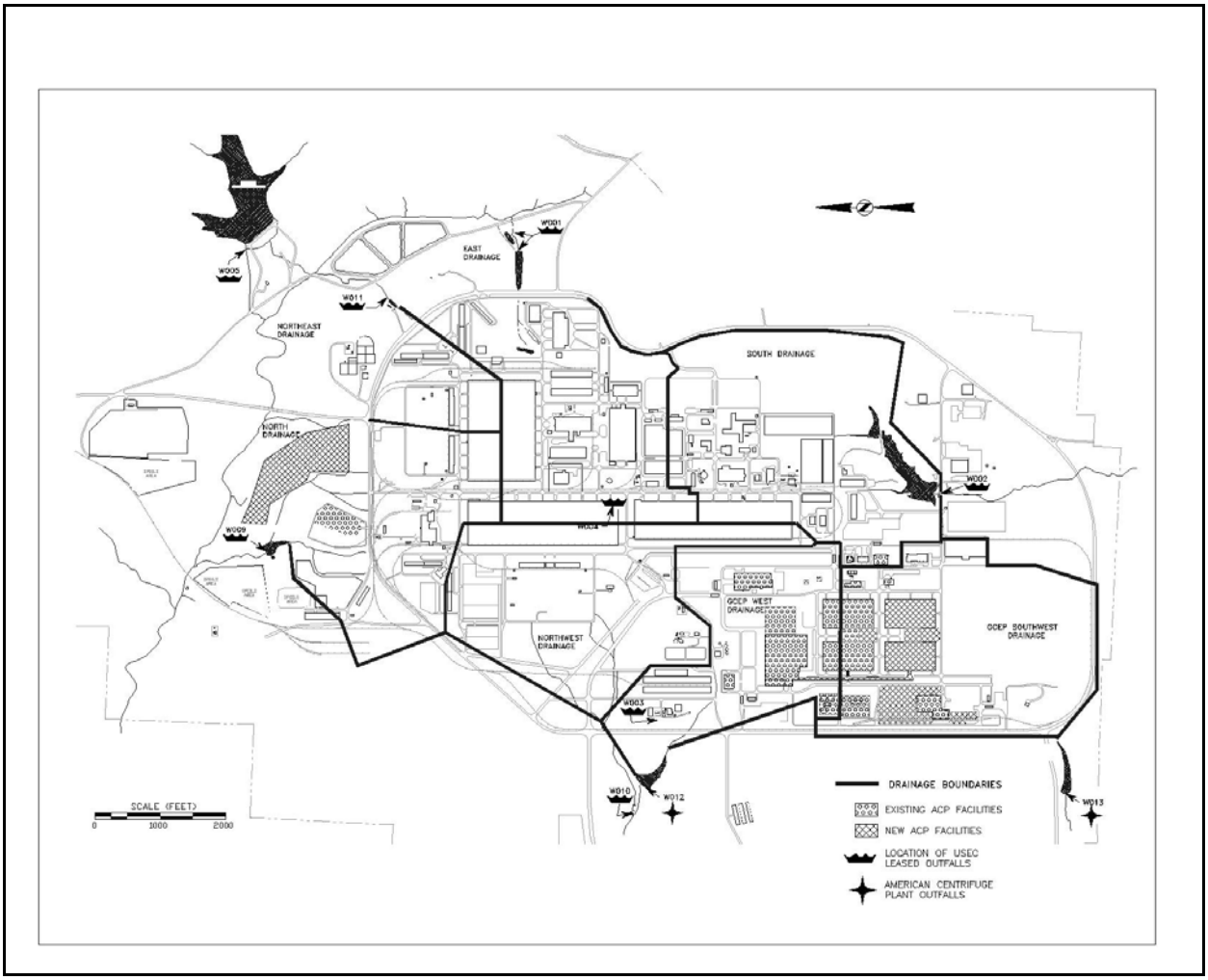

Figure 3-11 United States Enrichment Corporation National Pollutant Discharge Elimination System Outfalls at the DOE Reservation at Piketon

3.7.1.1 Surface Water Quality

At the DOE reservation at Piketon, DOE is responsible for eight permitted outfalls and the United States Enrichment Corporation is responsible for 11 permitted outfalls, as discussed earlier (DOE, 2002c). In addition to monitoring the water quality parameters required by Ohio EPA, DOE monitors radionuclides contained in the discharges. Ohio EPA selects the chemical parameters that must be monitored at each outfall based on the chemical characteristics of the water that flows into the outfall. Table 3-10 lists the parameters required by Ohio EPA for the outfalls that may be used for the development and operation of the proposed ACP.

Permitted outfalls managed by the United States Enrichment Corporation were in compliance with contaminant concentration discharge limits in 2002 (DOE, 2003b; NRC, 2004a). Permitted outfalls managed by DOE were in compliance with contaminant concentration discharge limits in 2003 (DOE, 2004a).

Table 3-10 National Pollutant Discharge Elimination System Permit and Monitoring Parameters

Operator	Outfall	Parameters
United States Enrichment Corporation	003	Ammonia-nitrogen, biochemical oxygen demand, chlorine, copper, fecal coliform (May-October only), mercury, nitrate-nitrogen, oil and grease, silver, suspended solids, zinc
United States Enrichment Corporation	009	Fluoride, cadmium, oil and grease, suspended solids, zinc
United States Enrichment Corporation	010	Cadmium, mercury, oil and grease, suspended solids, zinc
DOE	012	Chlorine, iron, oil and grease, suspended solids, total PCBs, and trichloroethene
DOE	013	Chlorine, oil and grease, suspended solids, and total PCBs
DOE	608 [a]	Trichloroethene and trans-1,2-dichloroethene
DOE	610 [a]	Trichloroethene and *trans*-1,2-dichloroethene
DOE	611 [a]	Trichloroethene

Source: DOE, 2002b.

In addition to the characteristics of the water the flows into the outfall, the National Pollutant Discharge Elimination System permits consider the designated use and the associated water quality of the receiving water body. The following uses have been designated for one or more of the surface water features that drain the DOE Reservation:

- Warm Water Habitat. Exhibits typical assemblages of fish and invertebrates belonging to any other than cold or cool water species. Warm water habitats are waters capable of supporting and maintaining a balanced, integrated, adaptive community of warm water aquatic organisms having a diverse species composition and functional organization.

- Limited Resource Water. These are waters that have been the subject of a use attainability analysis and have been found to lack the potential for any resemblance of any other aquatic life habitat as determined by the biological criteria in Table 7-15 of Ohio Administrative Code 3745-1-07. The use attainability analysis must demonstrate that the extant fauna is substantially degraded and that the potential for recovery of the fauna to the level characteristic of any other aquatic life habitat is realistically precluded due to natural background conditions or irretrievable human-induced conditions.

- Agricultural Water Supply. These are waters suitable for irrigation and livestock watering without treatment.

- Primary Contact Recreation. These are waters that, during the recreation season, are suitable for full-body contact recreation such as, but not limited to, swimming, canoeing, and scuba diving with minimal threat to public health as a result of water quality.

- Secondary Contact Recreation. These are waters that, during the recreation season, are suitable for partial body contact recreation such as, but not limited to, wading with minimal threat to public health as a result of water quality.

The specific water quality conditions and parameters associated with each designated use can be found in Ohio Administrative Code 3745-1-07 (water use designations and Statewide criteria).

With the exception of DOE outfall 613, a monthly grab water sample is collected from DOE external outfalls and analyzed for total uranium, uranium isotopes (uranium-233/234, uranium-235, uranium-236, and uranium-238), technetium-99, and transuranic radionuclides (americium-241, neptunium-237, plutonium-238, and plutonium-239/240). Outfall 613 is not monitored for radionuclides because there is no source for radiological contamination of the water discharged from this outfall. Also, water samples are collected from all external United States Enrichment Corporation outfalls and analyzed for total uranium, technetium-99, and transuranic radionuclides (americium-241, neptunium-237, plutonium-238, and plutonium-239/240). (DOE, 2004c)

Total radioactivity released from the DOE external outfalls was 0.0049 curie of uranium isotopes and 0.00004 curie of technetium-99. These values were calculated using monthly monitoring data from the DOE NPDES outfalls. Neptunium-237 was detected at 0.04637 picocurie per liter (pCi/L) in the sample collected from DOE Outfall 015 in the fourth quarter of 2003. Neptunium-237 was not detected at Outfall 015 in the other three quarterly samples collected in 2003. Americium-241, plutonium-238, and plutonium-239/240 were not detected in samples collected from any of the DOE outfalls in 2003. (DOE, 2004c). Total radioactivity released from the United States Enrichment Corporation external outfalls was 1.1×10^9 bequerels (0.0296 curies) of uranium and 1.2×10^9 bequerels (0.0335 curies) of technetium-99. Transuranic radionuclides (americium-241, neptunium-237, plutonium-238, and plutonium-239/240) were not detected in any of the samples collected from USEC NPDES outfalls in 2003. (DOE, 2004c)

In 2003, an estimated 4.3 kilograms (9.5 pounds) of uranium were discharged from DOE National Pollution Discharge Elimination System outfalls and 21 kilograms (46 pounds) were discharged from United States Enrichment Corporation outfalls, for a total of 25.3 kilograms (55.5 pounds). (DOE, 2004c)

The analytical results were compared to the standards included in DOE Order 5400.5, Radiation Protection of the Public and the Environment. DOE Order 5400.5 provides guidance and establishes radiation protection standards and control practices designed to protect the public and the environment from undue radiological risk from operations of DOE and DOE contractors. The order requires that off-site radiation doses do not exceed 100 millirem/year above background for all exposure pathways.

The derived concentration guide for each radionuclide as defined in DOE Order 5400.5 includes the following concentrations (in picocuries per liter):

- Americium-241 = 30
- Neptunium-237 = 30
- Plutonium-238 = 40
- Plutonium-239/240 = 30
- Technetium-99 = 100,000
- Uranium-233/234 = 500
- Uranium-235 = 600
- Uranium-236 = 500

- Uranium-238 = 600
- No derived concentration guide is available for total uranium.

All analytical results from the external NPDES outfalls are well below these DOE standards.

In addition to the external NPDES outfalls, the surface waters are monitored for radioactive contamination at 14 locations, including locations upstream and downstream from the DOE reservation. The surface water monitoring results for 2001 indicated that the measured radioactive contamination was consistently less than the applicable drinking water standards (DOE, 2002b and 2002c). Uranium concentrations were detected at levels similar to those that occurred naturally in the Scioto River. Technetium-99 was detected at 1,591 becquerels per cubic meter (43 picocuries per liter) in a sample collected downstream of Little Beaver Creek; this level is well below the DOE-derived concentration guide of 3.7×10^6 becquerels per cubic meter (100,000 picocuries per liter) (DOE, 2002c). The DOE derived concentration guide values given in DOE Order 5400.5 are reference values for radiological protection programs at operational DOE facilities (DOE, 1993b). In addition, in 2001, surface water samples were collected monthly from five locations at the DOE cylinder storage yards and analyzed for total uranium, uranium isotopes, transuranics, and technetium-99. The maximum detected concentration of uranium in these samples was 14 micrograms per liter, which is less than the drinking water Maximum Contaminant Level of 30 micrograms per liter; the maximum technetium-99 concentration was 370 becquerels per cubic meter (10 picocuries per liter), well below the DOE-derived concentration guide of 3.7×10^6 becquerels per cubic meter (100,000 picocuries per liter).

Sediment samples are also collected at the locations where surface water samples are collected by the United States Enrichment Corporation, and at the permitted outfalls on the east and west sides of the DOE reservation (DOE, 2002c). In 2001, the maximum uranium concentration in sediment was 5.6 micrograms per gram, at background sampling location (RM-10W). The maximum technetium-99 concentration was 592 becquerels per kilogram (16 picocuries per gram), at location RM-7 downstream on Little Beaver Creek. Several inorganic substances and polychlorinated biphenyls are also monitored; results of the monitoring indicate no major difference between upstream and downstream concentrations. Polychlorinated biphenyls were not detected in sediments.

3.7.2 Floodplains

Floodplains are land areas adjacent to streams or rivers susceptible to being inundated by stream-derived waters. The Federal Emergency Management Agency Flood Insurance Rate Map indicates that the 100-year floodplain for Little Beaver Creek extends from the confluence with the Big Beaver Creek upstream to the rail spur near environmental sampling point X-230J9. This is within the northwestern portion of the DOE reservation. No portion of the floodplain for Big Beaver Creek is located within the reservation boundary, as shown in Figure 3-12.

The DOE reservation has not been affected by flooding of the Scioto River. The highest recorded flood elevation of the Scioto River in the vicinity of the site was 174 meters (570 feet) above mean sea level in January 1913. The reservation occupies an upland area at an elevation of 200 meters (670 feet) above mean sea level.

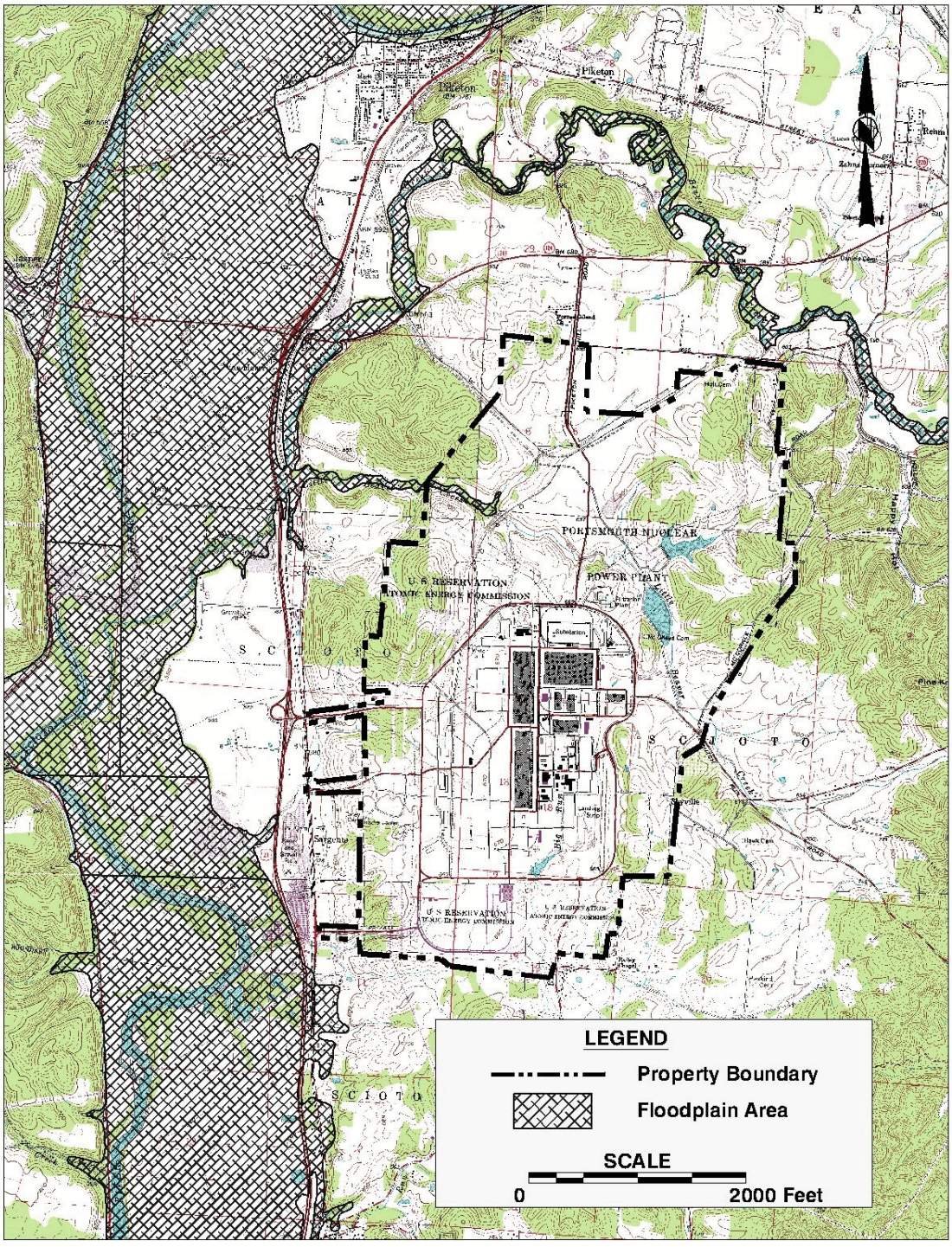

Figure 3-12 100-Year Floodplains at the DOE Reservation at Piketon (ODNR, 2005)

3.7.3 Groundwater

Five hydrogeological units are important for groundwater flow and contaminant migration beneath the DOE reservation. These units are: Minford Clay, Gallia Sand, Sunbury Shale, Berea Sandstone, and Bedford Shale. The upper two units form an aquifer in unconsolidated Quaternary aged deposits; the lower three units form a Mississippian-aged bedrock aquifer. At the site, the hydraulic conductivities of all of the units are very low (Geraghty & Miller, Inc., 1989). The most conductive unit is Gallia Sand with a mean hydraulic conductivity of 1 meter per day (3.4 feet per day) and a range of 0.03 to 46 meters per day (0.11 to 150 feet per day); the Gallia Sand acts as the principal conduit for contaminant transport. The next most permeable unit is the Berea Sandstone with a mean hydraulic conductivity of 0.05 meter per day (0.16 foot per day) and a range of 0.0013 to 4.6 meters per day (0.0045 to 15 feet per day). The average conductivity of Minford Clay, the shallowest unit, is estimated to be 7.0×10^{-5} meter per day (0.00023 foot per day) in the upper zone, while the conductivity of the lower zone is about 0.0013 meter per day (0.0042 foot per day). Average groundwater elevation is 196 meters (646 feet) above mean sea level, which is approximately 7.3 meters (24 feet) below ground surface.

Within the upper portion of the bedrock aquifer, permeability is primarily produced by fractures. As depth increases, the presence of fractures decreases, and permeability depends more on porosity, grain size and shape, and packing arrangement (MMES, 1993). At greater depth, the Berea Sandstone is probably more permeable than the shale units, which act as confining layers. The direction of groundwater flow beneath the site is controlled by a complex interaction between the Gallia and Berea units (Geraghty & Miller, Inc., 1989). The flow patterns are also affected by the presence of storm sewer drains and by the reduction in recharge caused by the presence of buildings and paved areas. Groundwater flow patterns in both the Gallia and Berea units are characterized by an east-west-trending groundwater divide. The direction of groundwater flow is generally to the south in the southern sections of the DOE reservation and to the north in the northern sections.

Vertical groundwater flow is generally downward from the Gallia to the Berea. In places where the Sunbury Shale is absent, upward vertical gradients are observed. The extent of the gradient is influenced by the thickness of the Sunbury Shale. Where the Sunbury Shale is thick, the gradient is large. Three main discharge areas exist for the groundwater system beneath the DOE: Little Beaver Creek to the north and east, Big Run Creek to the south, and two unnamed drainages to the west (Geraghty & Miller, Inc., 1989).

The DOE reservation draws its water from three well fields located along the Scioto River (see Figure 3-13). The well fields draw groundwater from the Scioto River buried aquifer and are located in the Scioto River alluvium within the Scioto River floodplain. Recharge of the aquifer occurs from river and stream flow as well as precipitation (annual average rainfall is 103 centimeters [40.7 inches]). The maximum potential production associated with the well fields is 49,000 cubic meters per day (13 million gallons per day). The current production is approximately 19,000 cubic meters per day (5 million gallons per day).

Groundwater quality has been studied extensively as part of DOE's environmental restoration activities. Groundwater quality is monitored for radioactive and nonradioactive constituents in 11 areas at and near the facility using more than 400 wells. For monitoring and treatment purposes, the site was divided into four quadrants roughly corresponding to groundwater flow patterns. The primary facilities for the proposed ACP site are located in Quadrant I; two of the cylinder storage yards are in Quadrant IV. In Quadrant I, groundwater discharges to Big Run Creek and to an unnamed Southwest drainage ditch. In Quadrant IV, groundwater discharges to the Little Beaver Creek and to the East and North drainage ditches.

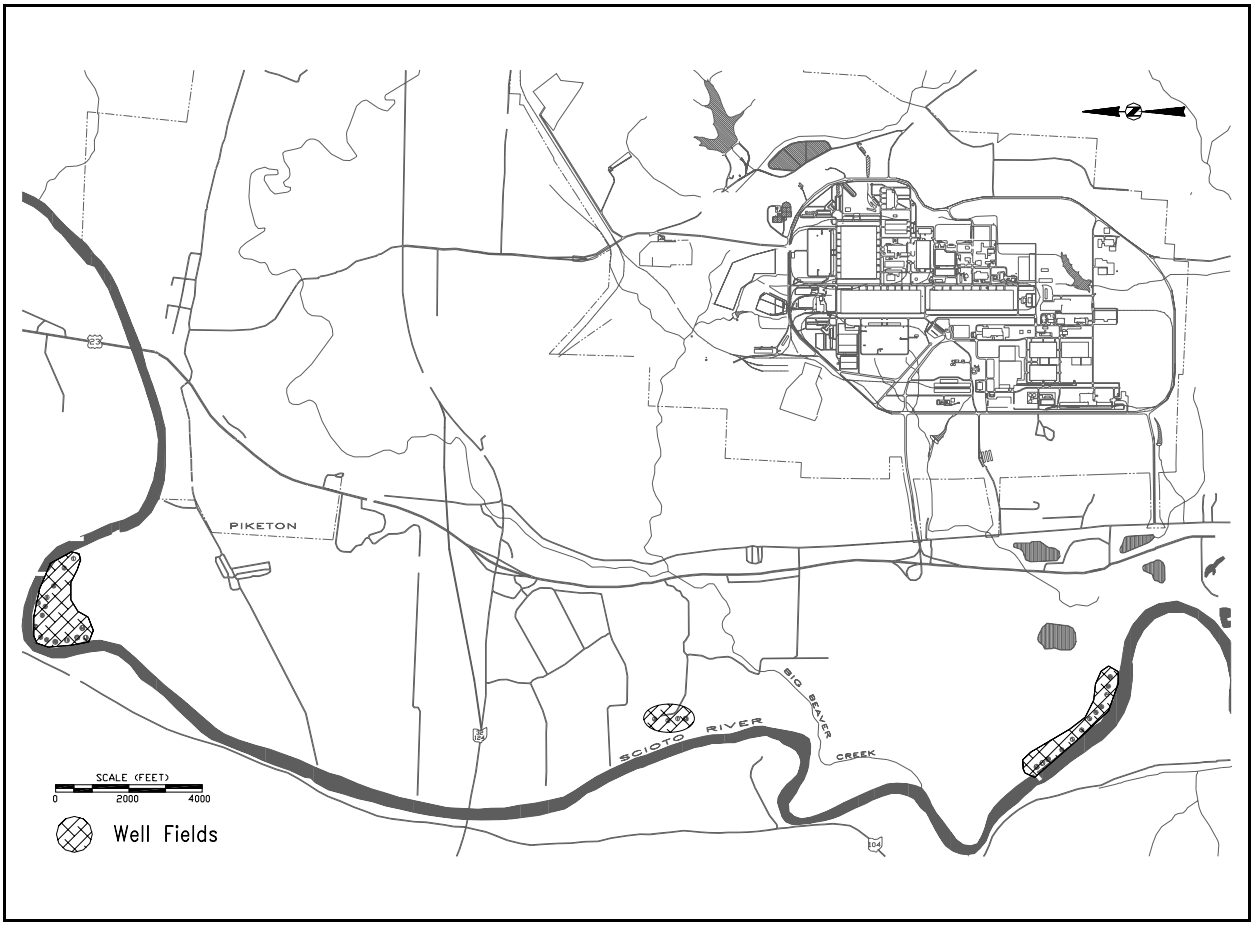

Figure 3-13 Well Fields at the DOE Reservation at Piketon (USEC, 2005)

Onsite, several areas of groundwater contamination have been identified. The main contaminants are volatile organic compounds (mostly trichloroethylene) and radionuclides (e.g., uranium, technetium-99) (DOE, 2002c). Data from the 2000 annual groundwater monitoring showed that five contaminants exceeded primary drinking water standards at the DOE reservation: beryllium, chloroethane, americium, trichloroethylene, and uranium. Alpha and beta activity also exceeded the standards (DOE, 2001a, b). The concentration of contaminants and the lateral extent of the plume did not significantly increase in 2001 (DOE, 2002c).

The primary facilities for the proposed ACP site are located approximately 60 to 90 meters (200 to 300 feet) north of the northern edge of the X-749 trichloroethylene plume. The proposed location for the new cylinder storage yards north of Perimeter Road is between three groundwater monitoring areas: X-533 switchyard, X-734 landfills, and X-735 landfills. Based on 2002 monitoring results, the proposed ACP facilities do not overlie contaminated groundwater. Various monitoring wells are located in the vicinity of the proposed ACP facilities; however, no groundwater extraction wells, phytoremediation areas, or groundwater treatment facilities are located within the footprint of the proposed ACP facilities.

3.8 Ecological Resources

This section describes the ecological resources, including terrestrial resources (flora and fauna); rare, threatened, and endangered species; wetlands; and other environmentally sensitive areas within the DOE reservation at Piketon.

3.8.1 Flora

The vegetative cover in surrounding Pike County consists mostly of hardwood forests and field crops (USEC, 2005). The terrestrial habitat types at the DOE reservation include (DOE, 1997a):

- Old field areas: Early successional stage of disturbed areas dominated by tall weeds, shade-intolerant trees, and shrubs.
- Scrub thicket: Later successional stage covering old field areas dominated by dense thickets of small trees.
- Managed grassland: Open areas actively maintained and dominated by grasses.
- Upland mixed hardwood forest: Mesic to dry upland areas dominated by black walnut, black locust, honey locust, black cherry, and persimmon.
- Pine forest: Advanced successional stage following scrub thicket. The overstory is dominated by Virginia pine.
- Pine plantation: Nearly pure stands of Virginia pines.
- Oak-hickory forest: Well-drained upland soils. White oak and shagbark hickory are the most dominant of the oaks and hickories.
- Riparian forest: Periodically flooded, low areas associated with streams. Dominated by cottonwood, sycamore, willows, silver maple, and black walnut.
- Beech-maple forest: Undisturbed areas dominated by American beech and sugar maple.
- Maple forest: Dominated by sugar maple and other shade-tolerant species.

The habitat types covering the largest area on the reservation are managed grassland (30 percent of total area), oak-hickory forest (17 percent), and upland mixed hardwood forest (11 percent). The areas covered by each habitat type are listed in Table 3-11 and shown in Figure 3-14 . Several species of animals have been observed within the DOE reservation property boundary.

Table 3-11 Terrestrial Habitat Types at the DOE Reservation at Piketon

Habitat Type	Approximate Total Area (hectares)	Approximate No. of Communities	Percent of Total Area [a]
Managed grassland	446	Numerous [b]	30
Oak-hickory forest	256	14	17.2
Old field	170	10	11.4
Upland mixed hardwood forest	162	20	10.9
Riparian forest	62	10	4.2
Maple forest	52	7	3.5
Scrub thicket	32	10	2.2
Pine forest	28	10	1.9
Beech-maple forest	2	1	0.1
Old white pine plantation with mixed hardwoods	2	1	0.1

Notes:
[a] Total site area is 1,497 hectares (3,700 acres). Approximately 252 hectares (629 acres, 16.9 percent) of the total area are covered by buildings, parking lots, and roads. The remainder of the total site area contains aquatic habitat.
[b] This habitat is present in many areas interspersed between buildings and paved areas across the plant site.
To convert hectares to acres multiply by 2.47.
Source: DOE, 1997b.

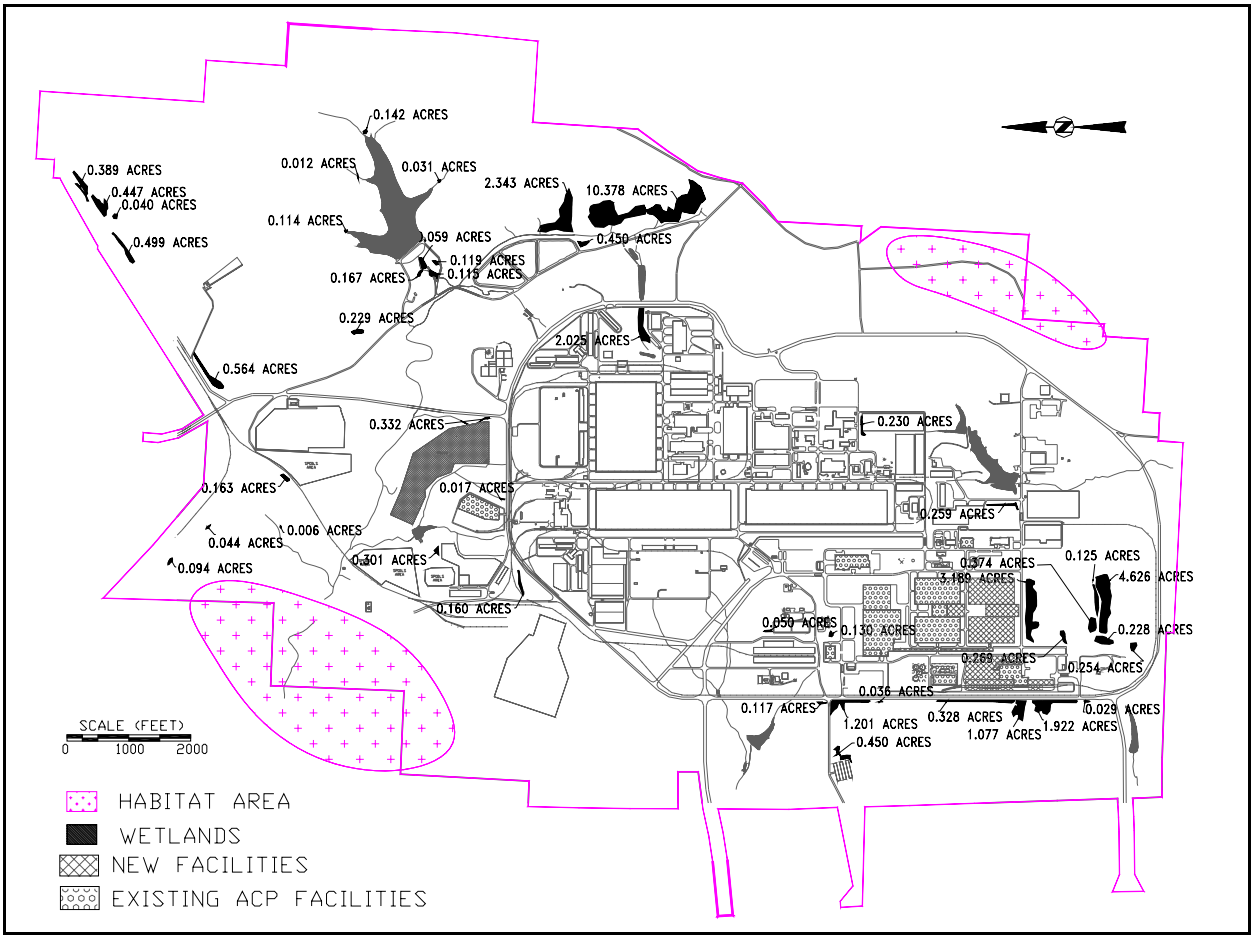

Figure 3-14 Habitat Areas and Wetlands on and Near the Proposed ACP Site (USEC, 2005)

The most common types of vegetation on the DOE reservation include managed grassland, followed by oak-hickory forests, old field communities, and upland mixed hardwood forest, the sum of which make up more than 69 percent of the total area of the reservation. The area in the southwest quadrant of the central area, where the majority of the proposed ACP facilities would be located, is dominated by existing infrastructure (buildings, structures, roads, and parking lots) and managed grasslands. Several wetland communities are also present in the southwest quadrant (see Section 3.8.4). The area where the 745-H Cylinder Storage Yard would be constructed contains managed grasslands, old fields, upland mixed hardwood forest, and riparian forest. Wetlands are also located around the proposed 745-H Cylinder Storage Yard and are associated with the tributaries of Little Beaver Creek.

The flora associated with the wetlands adjacent to the activities associated with the proposed action includes emergent vegetation including sedges, rushes, cat-tails, and various woody species (trees and shrubs) tolerant of the saturated conditions of wetlands.

3.8.2 Fauna

A relatively high diversity of fauna (terrestrial and aquatic species) utilize the various terrestrial and aquatic habitats at the DOE reservation. The reservation is within the home range of approximately 49 mammals, 114 bird species (year-round residents, winter residents, and migratory species), 11 reptile species, and six amphibian species (USEC, 2005). The most abundant mammals include the white-footed

mouse (*Peromyscus leucopus*), short-tailed shrew (*Blarina brevicauda*), opossum (*Didelphis virginiania*), eastern cotton tail rabbit (*Sylvilagus floridanus*), and white-tailed deer (*Odocoileus virginianus*). Common birds found at the reservation include year-round residents, winter residents, and migratory species. The species include red-tailed hawk (*Buteo jamaicensis*); water birds such as the mallard (*Anas platrynchos*) and wood duck (*Aix sponsa*); game birds such as wild turkey (*Meleagris gallopavo*); and non-game birds such as nuthatches (*Sitta* sp.) and wrens *(Troglodytes* sp.). The most common of the 11 reptile species and six species of amphibians observed on the site include the eastern box turtle (*Terrapene carolina*), black rat snake (*Elaphe obsolete*), northern black racer (*Coluber constrictor constrictor*), American toad (*Bufo americanus*) and northern dusky salamander *(Desmognathus fuscus*) (DOE, 1996a).

Common species occurring in open grassland areas like those at the proposed ACP site include eastern cottontail (*Lagomorpha Leporidae*), meadow vole (*Rodentia muridae*), and eastern meadowlark (*Sturnella magna*). Small wooded areas, such as those in the vicinity of the proposed ACP site, support numerous woodland and forest edge species such as raccoon (*Procyon lotor*), gray squirrel (Sciurus carolinensis), red-headed woodpecker (*Melanerpes erythrocephalus*), cardinal (*Cardinalis cardinalis*), white-breasted nuthatch (*Sitta carolinensis*), and yellow-rumped warbler (*Dendroica coronata*). Species that occur in the open grasslands and forest edges that are either actively managed (mowed) or adjacent to developed areas are tolerant of human activities and disturbances.

The aquatic habitats on the DOE reservation include the various holding ponds, intermittent streams, and streams that flow from or through the reservation. The aquatic habitats downgradient of the activities associated with the proposed action include Little Beaver Creek, the West Ditch, and the DOE Piketon Tributary, all of which discharge into the Scioto River. Little Beaver Creek and the West Ditch are designated warm water habitats. Warm water habitats are capable of supporting and maintaining a balanced, integrated, adaptive community of warm water aquatic organisms having a diverse species composition and functional organization. The aquatic habitat associated with Little Beaver Creek supports good to exceptional fish communities downstream of the X-230-J7 discharge from the DOE reservation, and fair fish communities upstream due to intermittent stream flow (OEPA, 1998). The most common of the 34 total fish species and four hybrids found in Little Beaver Creek are the Bluntnose Minnow (*Pimephales notatus*), Central Stoneroller (*Campostoma anomalum*), Creek Chub (*Semotilus atromaculatus*), Rainbow Darter (*Etheostoma caeruleum*), Spotfin Shiner (*Cyprinella spiloptera*), and Striped Shiner (*Luxilus chrysocephalus*). The aquatic habitat associated with the DOE Piketon Tributary is a limited resource water, which does not meet one or more of the warm water habitat characteristics. and provides limited aquatic habitat.

3.8.3 Rare, Threatened, and Endangered Species

The potential existence of Federal and State rare, threatened, and endangered species as well as candidate species in the vicinity of the DOE reservation was determined through a review of previously prepared *National Environmental Policy Act* documents, reviewing the results of previous site-specific studies, and through consultation with the Ohio Department of Natural Resources, Division of Wildlife and Division of Natural Areas and Preserves, and the U.S. Fish and Wildlife Service.

The review of the previous documents and site-specific studies, as well as the consultations indicated that the Indiana bat (*Myotis sodalis*) a Federally listed endangered species; the Carolina yellow-eyed grass (*Xyris difformis*) and the sharp-shinned hawk (*Accipiter striatus*), both Ohio State-listed endangered species; the Virginia meadow-beauty (*Rhexia virginica*), an Ohio State-listed potentially threatened plant; and the rough green snake (*Opheodrys aestivus*), an Ohio State-listed special interest species may occur or have been found on the DOE reservation. Other species that have been identified in the region, but not on the DOE reservation include the Timber rattlesnake (*Crotalus horridus*), and the long-beaked

arrowhead (*Sagittaria australis*). Table 3-12 lists the threatened, endangered, rare, and species of concern in the vicinity of the DOE reservation.

Table 3-12 Federal and State Listed Endangered, Potentially Threatened, and Special Concern Species near the DOE Reservation at Piketon

Category and Scientific Name	Common Name	Status [a]	
		Federal	State
Mammals			
Myotis sodalis	Indiana bat	E	E
Birds			
Accipiter striatus	Sharp-shinned hawk	NL	E
Reptiles			
Crotalus horridus horridus [b]	Timber rattlesnake	NL	E
Opheodrys aestivus	Rough green snake	NL	S
Plants			
Rhexia virginica	Virginia meadow-beauty	NL	P
Xyris difformis	Carolina yellow-eyed grass	NL	E
Sagittaria australis [b]	Long-beaked arrowhead	NL	T

Notes:
[a] E = endangered; P = potentially threatened; S = special concern; T = threatened, NL = not listed.
[b] Not located on the DOE reservation; located in the region.
Source: DOE, 1993a; DOE, 1996b.

Past and current consultations with the U.S. Fish and Wildlife Service indicate that some of the riparian areas on the DOE reservation may be suitable summer habitat for the Indiana bat. In 1994 and 1996, DOE conducted an onsite surveys to identify suitable habitat and then conducted mist netting in those areas to determine if Indiana bats were present. The surveys identified two potential riparian areas for Indiana bats and the mist netting results documented four different species of bats in the two riparian areas, but no Indiana bats were identified.

Past isolated sightings of State-listed species on the DOE reservation include the sharp-shinned hawk and the rough green snake, but no recent sightings have been reported (DOE, 1993a; DOE, 1996b).

The Virginia meadow-beauty has been found near X-611A, a former sludge lagoon, and the Carolina yellow-eyed grass has been tentatively identified at the X-611B sludge lagoon. The Virginia meadow-beauty is associated with the wetlands of the former sludge lagoon and its preferred habitat is on wet, sandy soils, particularly in sandy swamps. The Carolina yellow-eyed grass was observed in 1994; however, formal documentation of the species could not be performed as the grass was not in fruit or flower. Carolina yellow-eyed grass prefers wet peaty or sandy soils typically found in marshes or bogs.

The Ohio EPA determined that two State endangered fish species and four State threatened fish species exist near the DOE reservation, but are restricted to the Scioto River. Little Beaver Creek, the main body of water running through the site, does not provide sufficient habitat to support threatened or endangered species of fish. (OEPA, 1997)

3.8.4 Wetlands

Wetlands are areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (U.S. ACE, 1987). Wetlands generally include swamps, marshes, bogs, and similar areas. The DOE reservation contains 45 wetlands (41 jurisdictional and 4 non-jurisdictional wetlands) totaling 14 hectares (34 acres), excluding retention ponds and streams (DOE, 2003b). Jurisdictional wetlands fall under the protection of Section 404 of the *Clean Water Act*, while non-jurisdictional wetlands do not fall under Federal protection. The locations of these onsite wetlands are shown in Figure 3-14. The majority of the wetlands are associated with wet fields, areas of previous disturbance, drainage ditches, or wet areas along roads and railway tracks. Wetlands on the proposed site primarily support emergent vegetation like cattail, great bulrush, and rush. Palustrine forested wetlands occur along Little Beaver Creek (DOE, 1996c). Table 3-12 lists the jurisdictional wetlands, their size, current status and location in relation to the activities associated with the proposed action.

Table 3-13 Wetlands on the DOE Reservation Associated with the Proposed Action

Hectares	Location	Associated With
Wetlands in proximity to proposed primary facilities		
0.13	West Perimeter Road	Drainage swale
0.44	West Perimeter Road	Drainage swale
0.78	West Perimeter Road	Drainage swale
0.11	X-2207 Parking	Drainage ditch
1.3	Former Gas Centrifuge Enrichment Process site	Wet field
0.11	Former Gas Centrifuge Enrichment Process site	Wet field
0.15	Former Gas Centrifuge Enrichment Process site	Wet field
0.05	Former Gas Centrifuge Enrichment Process site	Wet field
1.9	Former Gas Centrifuge Enrichment Process site	Wet field
0.10	Former Gas Centrifuge Enrichment Process site	Wet field
0.10	Former Gas Centrifuge Enrichment Process site	Wet field
Wetlands in proximity to the two proposed cylinder storage yards		
0.13	North Access Road	Drainage ditch
0.01	X-7456 Cylinder Yard	Drainage ditch
0.07	X-752 Warehouse	Man-made ditch
0.08	X-747H landfill	Radioactive area

Notes:

To convert hectares to acres multiply by 2.47.

Although there are wetlands directly south and west of the proposed ACP site, as shown in Figure 3-14, there are no wetlands directly on the proposed ACP site where there would be new construction and operations. The wetlands near the proposed ACP site have poorly drained soils from previous grading activities and receive the surface runoff from the surrounding landscape. Along the southern border of the proposed ACP site is a large palustrine emergent wetland (1.3 hectares [3.2 acres]), composed primarily of cattails, and one small wetland (0.12 hectare (0.3 acre)). To the west of the proposed ACP site, across the Perimeter Road are six additional wetland areas, each with an area of approximately 0.5

hectare (1 acre) or less. One extremely small wetland (0.05 hectare [0.13 acre]) is located farther to the north of the proposed ACP site. As discussed above, drainage from the proposed site would exit via the southwest drainage ditch via the Southwest Holding Pond in the vicinity of the wetlands to the south of the proposed ACP.

The proposed ACP site in the southwest quadrant of the reservation includes five of the seven proposed cylinder storage yards that would support the ACP. The remaining two proposed cylinder storage yards, X-745G-2 and X-745H, would be located just north of the Perimeter Road. X-745G-2 is an existing yard, while X-745H would require new construction prior to its use. Three isolated wetlands, each less than 0.5 hectare (1 acre) and a number of small tributaries to Little Beaver Creek are located in the vicinity of these two proposed cylinder storage yards. Drainage from these yards would exit via the X-230L North Holding Pond, which discharges into Little Beaver Creek.

3.8.5 Environmentally Sensitive Areas

There are no State or national parks, conservation areas, wild and scenic rivers, or other areas of recreational, ecological, scenic, or aesthetic importance at the proposed ACP site or within a 1.6-kilometer (1-mile) radius of the DOE reservation (ODNR, 2003)

3.9 Socioeconomic Conditions and Local Community Services

This section describes current socioeconomic conditions and local community services within the region of influence of the proposed action. The region of influence is defined as a four-county area in southern Ohio comprising Jackson, Pike, Ross, and Scioto counties. This region encompasses the area in which workers are expected to spend most of their salary, and in which a significant portion of site purchase and non-payroll expenditures from the construction, manufacturing, operation, and decontamination and decommissioning phases of the proposed ACP are expected to take place. The counties included in the region of influence were selected primarily on the basis of the current residential locations of United States Enrichment Corporation and USEC workers at the DOE reservation in Pike County, where the proposed ACP would be located. Currently, approximately 92 percent of these workers reside in the four selected counties (USEC, 2005). Geographically, Ross, Jackson, and Scioto counties bound Pike County to the North, East and South, respectively (see Figure 3-1).

3.9.1 Population Characteristics

The population in the region of influence is characterized in terms of the major population centers around the proposed site, population growth trends, residential locations of current workers on the DOE reservation, and significant transient and special populations. The extent to which surrounding populations qualify as minority or low-income is discussed in the environmental justice evaluation in Section 3.10.

3.9.1.1 Major Population Centers

The major population centers in the region of influence are as follows (see Figure 3-15):

- **Piketon** is the nearest residential center to the DOE reservation. Located in Pike County, this town is approximately 6.4 kilometers (4 miles) north of the DOE reservation on U.S. Route 23. In 2000, the population of Piketon was 1,907 (ODOD, 2003).

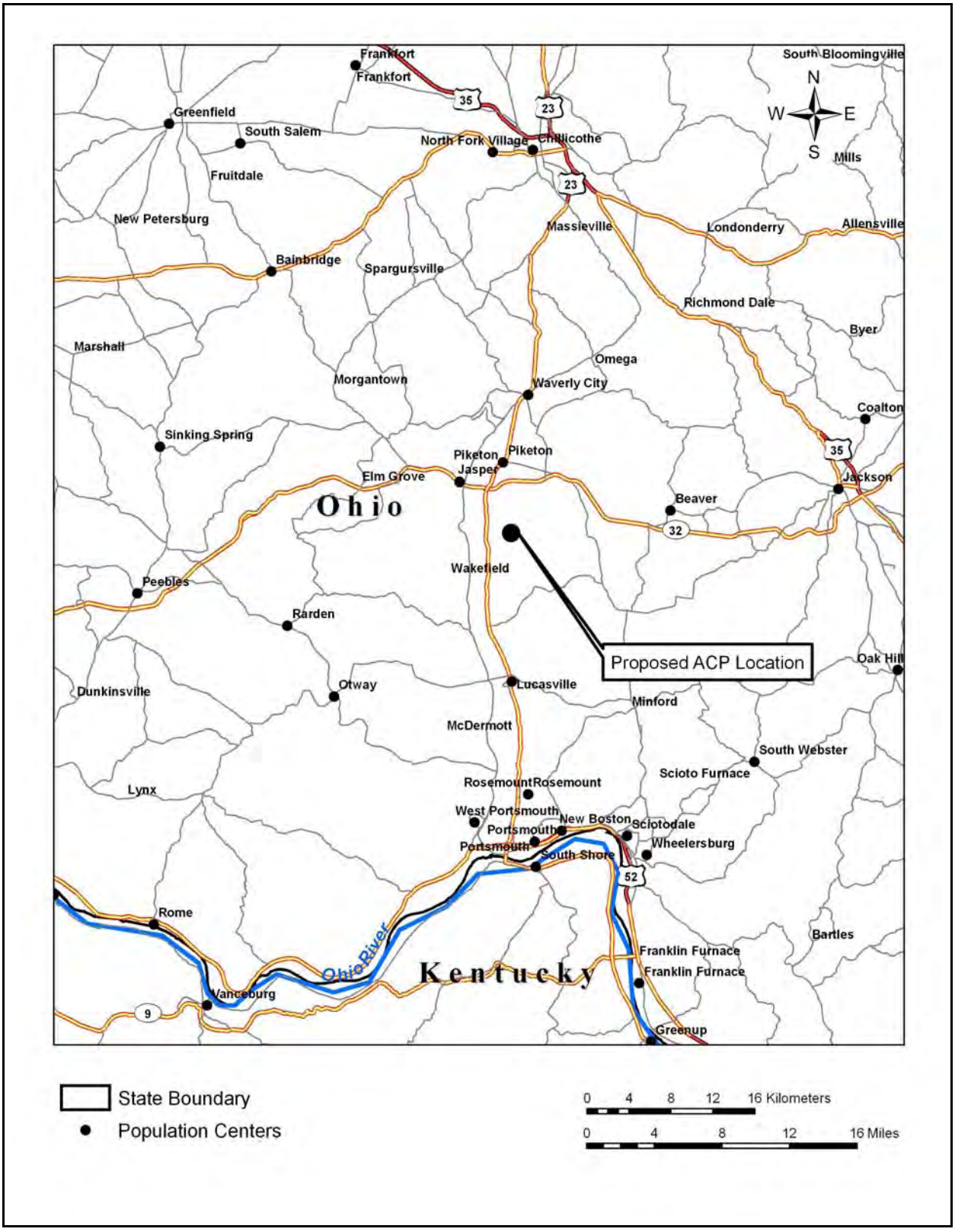

Figure 3-15 Population Centers in the Vicinity of the DOE Reservation

- Waverly is the largest town in Pike County. Located 13 kilometers (8 miles) north of the DOE reservation, the population of Waverly was 4,433 in 2000 (ODOD, 2003).

- The largest population center in the region of influence is Chillicothe, which is located in Ross County. Chillicothe is 43 kilometers (27 miles) north of the DOE reservation, and had a population of 21,796 in 2000 (ODOD, 2003).

- Other surrounding population centers include Portsmouth, which is in Scioto County and is 43 kilometers (27 miles) south of the DOE reservation. The population of Portsmouth was 20,909 in 2000 (ODOD, 2003).

- The town of Jackson is located in Jackson County and is 42 kilometers (26 miles) east of the DOE reservation. In 2000, Jackson's population was 6,184 (ODOD, 2003).

Figure 3-16 shows the population density surrounding the DOE reservation.

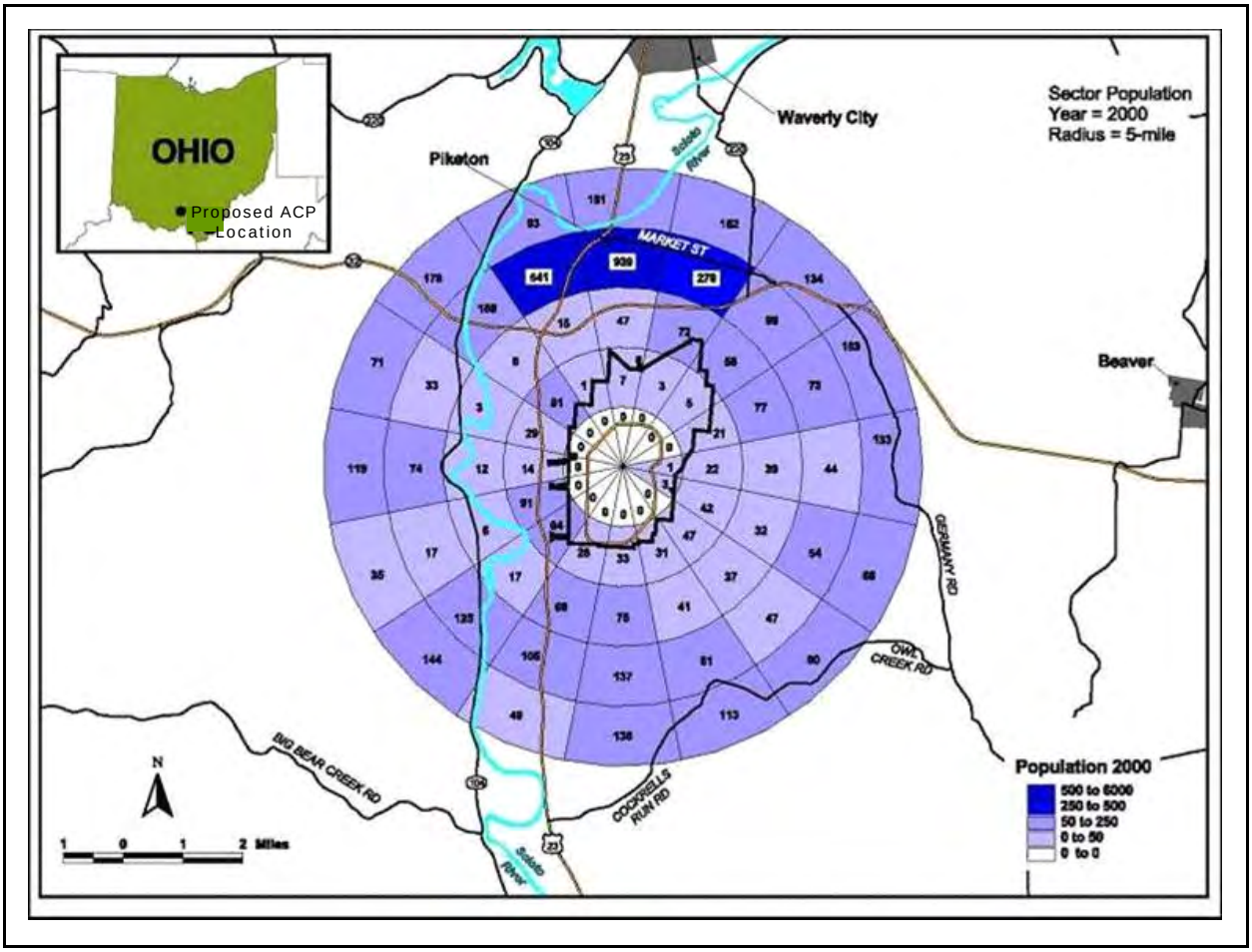

Figure 3-16 Population Density Surrounding the DOE Reservation at Piketon (USEC, 2004a)

3.9.1.2 Population Growth Trends

Table 3-14 presents historic and projected populations in the region of influence and State as a whole. As shown, the population of the region of influence was 212,876 people in 2000, having grown 4.3 percent since 1990 (ODOD, 2003). This growth was marginally lower than the Ohio population growth rate of 4.7 percent in the same decade.

Table 3-14 Population in the Proposed ACP Region of Influence and Ohio in 1990, 2000, and 2010

Location	1990	2000	Average Annual Percent Growth Rate 1990-2000	2010 (Projected)	Percent Growth 1990-2000	Percent Growth 2000-2010 (projected)
Pike County	24,249	27,695	1.3	29,766	14.2	7.5
Scioto County	80,327	79,195	-0.1	78,823	-1.4	-0.5
Jackson County	30,230	32,641	0.8	34,022	8	4.2
Ross County	69,330	73,345	0.6	78,380	5.8	6.9
Region of Influence	204,136	212,876	0.4	220,991	4.3	3.8
Ohio	10,847,120	11,353,140	0.5	11,666,850	4.7	2.8

Source: ODOD, 2003.

During the 1990s, each of the counties in the region of influence, with the exception of Scioto County, experienced a growth in population. Pike County recorded a population growth rate of 14.2 percent between 1990 and 2000, while Jackson and Ross counties grew by 8 percent and 5.8 percent, respectively, in the same decade. The growth rates for these three counties exceeded Ohio's overall growth rates in that period. In contrast, Scioto County registered a marginal decline (-1.4 percent) in population between 1990 and 2000.

The area population is expected to increase by 3.8 percent by the year 2010, compared to a projected overall Ohio growth rate of 2.8 percent in the same period. All counties in the region of influence, except for Scioto County, are projected to experience positive population growth between 2000 and 2010.

3.9.1.3 Residential Locations of Workers

In January 2004, there were 1,223 United States Enrichment Corporation and USEC workers employed at the DOE reservation (reflecting the current cold standby status) (USEC, 2005). Of these workers, 49 percent live in Scioto County, 22 percent live in Pike County, 12 percent live in Ross County, and 10 percent live in Jackson County (USEC, 2005). The remaining eight percent of United States Enrichment Corporation and USEC workers live outside the region of influence (USEC, 2005).

3.9.1.4 Significant Transient and Special Populations

In addition to the residential population, there are institutional, transient, and seasonal populations in the area. Institutional populations include school and hospital populations and are described in Sections 3.9.3.2 and 3.9.3.3.

The transient population consists of visitors participating in various seasonal, social, and recreation activities within the local area. Seasonal populations are also present. For example, usage of Lake White State Park, located approximately 9.7 kilometers (6 miles) north of the DOE reservation, is occasionally heavy and concentrated on the 37 hectares (92 acres) of land closest to the lake. Most of the land surrounding the lake is privately owned. The 136-hectare (337-acre) Lake White offers recreation (i.e., boating, fishing, water skiing, and swimming). There are 10 non-electric campsites for primitive overnight camping (USEC, 2005). These populations are likely to be unaffected by the proposed action due to the distance from the proposed ACP.

3.9.2 Economic Trends and Characteristics

This section describes employment in the region of influence, and at the DOE reservation in particular. It also describes per capita income in the region.

3.9.2.1 Employment in the Region of Influence

The past decade has seen a slight employment shift from the government, construction, and farm sectors towards the service, wholesale and retail trade, and manufacturing sectors within the region of influence. The service sector provides the highest percentage of employment in the region, at 24.7 percent, followed closely by the wholesale and retail trade with 21.7 percent, manufacturing with 17.9 percent, and government enterprises with 16.6 percent (BEA, 2002a).

Tables 3-15 through 3-18 summarize county-specific trends in employment in the region of influence. Pike County shows a substantially higher rate of manufacturing employment than other counties; and Scioto County shows the highest rate of services employment.

Table 3-15 Employment in Pike County by Industry in 1990 and 2000

Sector	No. of People Employed in 1990	Percentage of County Total	No. of People Employed in 2000	Percentage of County Total	Growth Rate 1990-2000
Services	1,666	16.5	2,410	16.1	44.7
Wholesale and Retail Trade	1,498	15.6	2,450	16.4	55.3
Government and Government Enterprises	1,556	15.4	1,859	12.4	19.5
Manufacturing	3,567	35.3	5,748	38.5	61.1
Construction	483	4.8	869	5.8	79.9
Finance, Insurance, and Real Estate	244	2.4	556	3.7	127.9
Transportation and Public Utilities	365	3.6	501	3.4	37.3
Farm Employment	548	5.4	551	3.7	0.5
Mining	32	0.3	Not Available	Not Available	Not Available
Other Sectors	52	0.5	Not Available	Not Available	Not Available
Total	10,091	100	14,944	100	48.1

Source: BEA, 2002a.

Table 3-16 Employment in Scioto County by Industry in 1990 and 2000

Sector	No. of People Employed in 1990	Percentage of County Total	No. of People Employed in 2000	Percentage of County Total	Percent Growth Rate 1990-2000
Services	7,810	28.2	10,134	31.1	29.8
Wholesale and Retail Trade	6,739	24.3	7,816	24	16
Government and Government Enterprises	5,370	19.4	6,120	18.8	14
Manufacturing	2,299	8.3	2,714	8.3	18.1
Construction	1,640	5.9	1,861	5.7	13.5
Finance, Insurance, and Real Estate	1,333	4.8	1,367	4.2	2.6
Transportation and Public Utilities	1,443	5.2	1,390	4.3	-3.7
Farm Employment	844	3	823	2.5	-2.5
Mining	43	0.2	23	0.1	-46.5
Other Sectors	189	0.7	289	0.9	52.9
Total	27,710	100	32,537	100	17.4

Source: BEA, 2002a.

Table 3-17 Employment in Jackson County by Industry in 1990 and 2000

Sector	No. of People Employed in 1990	Percentage of County Total	No. of People Employed in 2000	Percentage of County Total	Percent Growth Rate 1990-2000
Services	2,481	21.6	2,867	20.4	15.6
Wholesale and Retail Trade	2,472	21.5	3,196	22.7	29.3
Government and Government Enterprises	1,455	12.7	1,585	11.3	8.9
Manufacturing	2,661	23.2	4,027	28.6	51.3
Construction	556	4.8	Not Available	Not Available	Not Available
Finance, Insurance, and Real Estate	467	4.1	714	5.1	52.9
Transportation and Public Utilities	500	4.4	570	4.1	14
Farm Employment	694	6	736	5.2	6.1
Mining	149	1.3	362	2.6	143
Other Sectors	48	0.4	Not Available	Not Available	Not Available
Total	11,483	100	14,057	100	22.4

Source: BEA, 2002a.

Table 3-18 Employment in Ross County by Industry in 1990 and 2000

Sector	No. of People Employed in 1990	Percentage of County Total	No. of People Employed in 2000	Percentage of County Total	Percent Growth Rate 1990-2000
Services	6,191	21.7	8,763	25.2	41.5
Wholesale and Retail Trade	5,998	21	7,855	22.6	31
Government and Government Enterprises	6,052	21.2	6,762	19.4	11.7
Manufacturing	5,395	18.9	5,119	14.7	-5.1
Construction	1,401	4.9	1,728	5	23.3
Finance, Insurance, and Real Estate	1,001	3.5	1,378	4	37.7
Transportation and Public Utilities	1,055	3.7	1,978	5.7	87.5
Farm Employment	1,218	4.3	1,226	3.5	0.7
Mining	40	0.1	Not Available	Not Available	Not Available
Other Sectors	170	0.6	Not Available	Not Available	Not Available
Total	28,521	100	34,809	100	22.1

Source: BEA, 2002a.

The unemployment rate in the region of influence is higher than for the State as a whole. The regional unemployment rate, which was 7.8 percent in 1998, was 7.7 percent as of 2002, as shown in Table 3-19. The average unemployment rate for the State of Ohio was 5.7 percent in 2002, up from 4.3 percent in 1998 (ODOD, 2003).

Table 3-19 Unemployment Rates (percent)

Area	1998	2002
Jackson County	7	7.9
Pike County	8.8	8.9
Ross County	5.8	6.2
Scioto County	9.5	7.8
Region of Influence Total	7.8	7.7
Ohio	4.3	5.7

Source: ODOD, 2003.

The region of influence experienced stable growth in employment levels in recent years. Employment growth outpaced labor force growth, increasing from 86,900 in 1998 to 88,500 in 2002, for a growth rate of 1.8 percent for that period (ODOD, 2003). The labor force grew from 94,100 in 1998 to 95,500 in 2002, for a growth rate of 1.5 percent for that period (ODOD, 2003).

Although the overall region of influence unemployment rate decreased between 1998 and 2002, there are cross-county differences in employment trends within the region. Only Scioto County experienced a decline in unemployment levels between 1998 and 2002. Jackson, Pike, and Ross counties registered increases in unemployment rates in the same period.

3.9.2.2 Reservation Employment

As reported in Section 3.9.1.3, United States Enrichment Corporation and USEC employed a total of 1,223 workers at the site, as of January 2004. This number is approximately 11 percent of the total individuals working within Pike County. In addition, the DOE Bechtel Jacobs Company, LLC, subcontractors, and the Ohio Army National Guard employ an additional 374 workers at the DOE reservation (USEC, 2005).

3.9.2.3 Income

Table 3-20 summarizes personal income data for the region of influence for the years 1990, 2000, and 2002.

Table 3-20 Personal Income in the Region of Influence 1990, 2000, and 2002

Location and Type of Income	1990	2000	Percent Nominal Income Growth Rate 1990-2000	2002
Jackson County				
Total Personal Income (thousands of 2002$)	385,323	632,003	64	663,557
Personal per Capita Income (2002$)	12,743	19,362	52	20,112
Pike County				
Total Personal Income (thousands of 2002$)	300,851	547,173	82	574,226
Personal per Capita Income (2002$)	12,355	19,714	60	20,491
Ross County				
Total Personal Income (thousands of 2002$)	977,594	1,631,847	67	1,711,909
Personal per Capita Income (2002$)	14,086	22,219	58	23,015
Scioto County				
Total Personal Income (thousands of 2002$)	1,030,961	1,558,985	51	1,631,353
Personal per Capita Income (2002$)	12,827	19,716	54	20,890
Total Region of Influence				
Total Personal Income (thousands of 2002$)	2,694,729	4,370,008	62	4,581,045
Average Personal per Capita Income (2002$)	13,003	20,252	56	21,127

Source: BEA, 2002b.

Key conclusions that can be drawn from these data include:

- Per capita income in the region was $20,255 in 2000. This is 28.2 percent lower than the State of Ohio's average per capita income of $28,208 in the same year (BEA, 2002b).

- Per capita income in 2000 in the region of influence recorded a 56 percent nominal increase (not adjusted for inflation) from the 1990 level of $13,003 (BEA, 2002b). After adjusting for inflation, this equates to a 26.6 percent increase in real income in the region over that period.

- Per capita incomes in the region of influence vary significantly from one county to the next, ranging from a low of $20,449 in Jackson County to a high of $23,123 in Ross County in 2002 (BEA, 2002b).

For the purposes of quantifying socioeconomic impacts in Section 4.2.10, the analysis uses an average per capita income estimate of $25,317 (2004$) (USEC, 2005).

3.9.3 Housing Resources and Community and Social Services

This section describes housing and social services in the region, including: schools; hospitals and nursing homes; law enforcement, fire fighting, and other public services; and infrastructure and utilities. The social service centers located within 8 kilometers (5 miles) of the DOE reservation are shown in Figure 3-17.

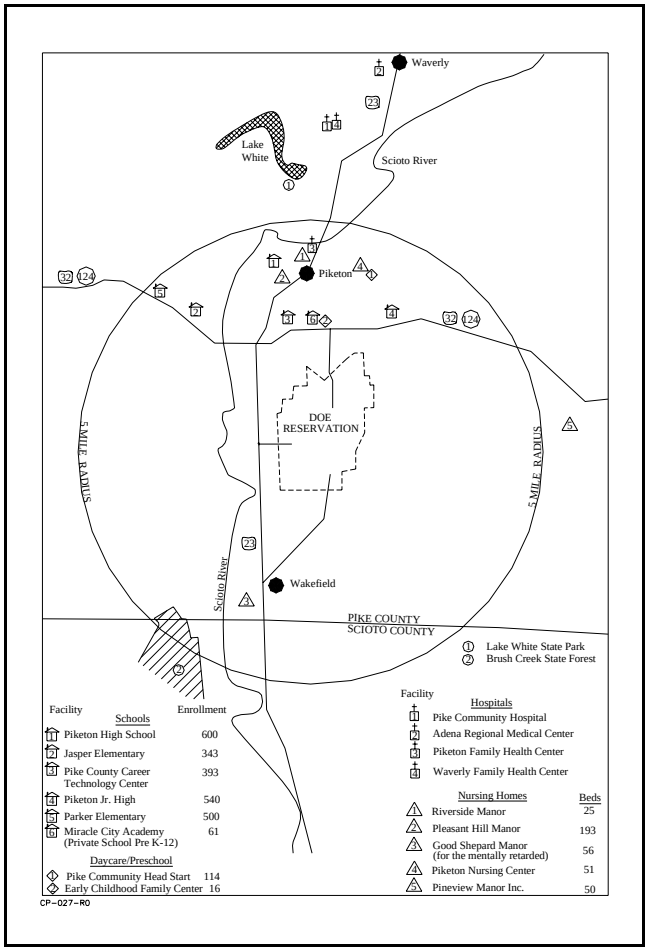

Figure 3-17 Social Service Centers within 8 Kilometers (5 Miles) of the DOE Reservation at Piketon (USEC, 2005)

3.9.3.1 Housing

Detailed housing characteristics for the region of influence are presented in Table 3-21. Between 1990 and 2000, all four counties registered an increase in the total number of owner-occupied and rental housing units (ODOD, 2003). Vacancy rates among rental units rose in each county during this period. As of 2000, there was an 8.6 percent vacancy rate among rental units (amounting to 1,963 vacant rental units) and an 1.8 percent vacancy rate among owner occupied units (amounting to 1,048 vacant owner-occupied units) in the region (U.S. Bureau of the Census, 2000). Housing density in the region of influence averages 106.7 units per square kilometer (41.2 units per square mile), and the median value is $74,550 (ODOD, 2003). In contrast, the Ohio State average housing density is 302.5 units per square kilometer (116.8 units per square mile), and the median value is $103,700 for the State (ODOD, 2003).

Table 3-21 Region of Influence Housing Characteristics, 2000

Location	Number of Owner-Occupied Units	Percent Vacancy Rate Owner-Occupied Units	Number of Rental Units	Percent Vacancy Rate Rental Units	Housing Density (units per square kilometer/units per square mile)	Median Value (2000$)
Jackson County	9,328	1.7	3,291	8.6	85.7/33.1	$70,400
Pike County	7,314	2	3,130	8.5	68.1/26.3	$77,400
Ross County	19,958	1.8	7,178	7.5	109.6/42.3	$87,000
Scioto County	21,646	1.9	9,225	9.5	144.0/55.6	$63,400
Region of Influence Total	58,246	1.8	22,824	8.6	106.7/41.2	$74,550

Source: U.S. Bureau of the Census, 2000 and ODOD, 2003.

3.9.3.2 Schools

The two school systems in the area are the Pike County Schools and the Scioto County Schools. However, only Pike County has school facilities within 8 kilometers (5 miles) of the DOE reservation: one private school that includes preschool through grade 12; two elementary schools, both of which include a preschool program; one junior high school; and one high school. The combined enrollment for the school year 2003-2004 is approximately 2,437 (USEC, 2004b). The total school population within 8 kilometers (5 miles), including faculty and staff, is 2,718 (USEC, 2005). The proximity of these schools to the DOE reservation and their enrollments are shown in Figure 3-17.

Four facilities within 8 kilometers (5 miles) of the DOE reservation provide daycare or schooling for preschool-aged children and after-school care for school-aged children. One facility has 114 registered children and is located in Piketon. The children in the remaining three facilities are consolidated in the numbers provided in the above paragraph (USEC, 2004b). The locations of these facilities are shown in Figure 3-17.

Table 3-22 presents school district data for the region of influence (ODOD, 2003). It is apparent that the student-to-teacher ratio in Jackson, Ross, and Pike counties is higher than the Ohio average.

Table 3-22 School District Data for the Region of Influence in 2000

Location	Number of Teachers	Student-to-Teacher Ratio
Jackson County	330	17.1
Pike County	364	15
Ross County	828	15.1
Scioto County	895	14.8
State of Ohio	117,955	14.8

Source: ODOD, 2003.

3.9.3.3 Hospitals and Nursing Homes

Pike Community Hospital is the hospital closest to the DOE reservation, and is located approximately 12 kilometers (7.5 miles) north of the DOE reservation on State Route 104 south of Waverly. USEC's onsite health protection program provides services for individuals to meet regulatory requirements and to maintain a high level of employee health. The X-1007 Fire Station maintains a first aid room and provides ambulance service for emergency conditions. Pike Community Hospital will provide healthcare services to ACP workers (USEC, 2005). The facility has 66 licensed beds. No other acute care facilities are located in Pike County. Adena Health Center operates as an urgent care facility, located approximately 12 kilometers (7.5 miles) north of the DOE reservation. Piketon and Waverly Family Health Centers, both located north of the DOE reservation, are also available during working hours for minor emergencies. The locations of these facilities are shown in Figure 3-17.

Three licensed nursing homes are located in the Piketon area, an additional one is in Wakefield, and another in Beaver. Four of these five nursing homes are located within 8 kilometers (5 miles) of the DOE reservation. The largest of these facilities is a 193-bed facility in Piketon. The combined licensed capacity of the facilities neighboring the DOE reservation is approximately 375. Figure 3-17 depicts these facilities and shows the number of beds per facility.

Table 3-23 provides data on the number of physicians, level of service (number of physicians per 1,000 persons), and hospitals in the region of influence counties in the year 2000. These data indicate that all counties in the region had a lower level of service than the Ohio average, which is 3.3 physicians per 1,000 persons (ODOD, 2003).

Table 3-23 Physicians and Hospitals in the Region of Influence in 2000

County	Physicians		Hospitals	
	Number of Physicians	Level of Service [a]	Number of Registered Hospitals	Number of Beds
Jackson	27	0.83	1	24
Pike	28	0.99	1	66
Ross	135	1.84	1	262
Scioto	139	1.76	1	421

Notes:
[a] Level of service denotes the number of physicians per 1,000 persons.
Source: ODOD, 2003.

3.9.3.4 Law Enforcement, Fire Fighting, and Other Public Services

Several State, county, and local police departments provide law enforcement in the region of influence. Pike County, which is where the DOE reservation is located, has 19 officers and will provide law enforcement services to the site. Other counties in the region have a total of 101 full-time officers, 16 in Jackson, 32 in Ross, and 53 in Scioto (FBI, 2000).

According to the U.S. Fire Administration's National Fire Department Census Database, there are 43 career and volunteer fire departments in the region of influence (USFA, 2005). The career fire departments include Portsmouth Fire Department, which has three engine houses comprising four engines, two ladders, and one rescue vehicle (PFD, 2005). In addition, the Chillicothe Fire Department consists of three units, each with 13 firefighters; three emergency medical service vehicles; and one 100-foot platform (CFD, 2005).

3.9.3.5 Infrastructure and Utilities

Historically, there has been very little overlap between utilities providing services to communities in the region of influence and those supporting the Portsmouth Gaseous Diffusion Plant. With the exception of natural gas and landfill services, dedicated utilities were developed to support the needs of the Portsmouth Gaseous Diffusion Plant. These dedicated utilities are expected to have more than adequate capacity to continue serving the ACP under the proposed action. Currently, there is a 5-centimeter (2-inch) diameter natural gas supply line to the Portsmouth Gaseous Diffusion Plant; the proposed action will not require augmentation of this supply line. For most utilities, therefore, the communities in the region of influence and the proposed action draw on a mutually exclusive set of suppliers. For this reason, no further details are provided on the capacity and structure of utility markets in the region of influence.

The proposed action is likely to share landfill facilities with the communities in the region of influence. The Pike County landfill is expected to be the primary endpoint for sanitary/industrial waste disposal and the Rumpke Beach Hollow landfill will be an alternative destination for these wastes. The project capacities and use of each are presented in Table 3-24.

Table 3-24 Capacity of Landfills in the Region of Influence

Landfill	Capacity	Space	Municipalities Using Landfill
Pike County Landfill	1,800 metric tons/day	34 more years	Jackson, Scioto, Pike, Lawrence, Adams, Brown, Highland and Ross
Rumpke Beach Hollow Landfill	240 metric tons/day	82 more years	Jackson, Wellston and Oak Hill

Notes:
To convert metric tons to tons multiply by 1.1.
Source: USEC, 2005.

3.9.4 Tax Structure and Distribution

The average property tax rates for Ohio cities are divided into three separate classifications: Class I Real (residential and agricultural), Class II Real (commercial, industrial, mineral, and public utility), and Class III Tangible Personal (general and public utility). For Waverly, in Pike County, the rate is $0.07412 per $1,000 for all three classifications; for Portsmouth, in Scioto County, the rate is $0.06663 per $1,000 for all three classifications; for Jackson, in Jackson County, the rate is $0.04864 per $1,000 for all three

classifications; and in Chillicothe, in Ross County, the Class I rate is $0.05401, the Class II rate is $0.05386, and the Class III rate is $0.05405 per $1,000 (Ohio Department of Taxation, 2003).

The State of Ohio has a graduated personal income tax. For example, the tax rate for incomes ranging from $20,000 to $40,000 is $445.80 plus 4.5 percent of excess over $20,000. For incomes ranging from $40,000 to $80,000, the tax rate is $1,337.20 plus 5.2 percent of excess over $40,000. And for incomes ranging from 80,000 to 100,000, the tax rate is $3,417.60 plus 5.943 percent of excess over $80,000. Ohio also has a 6.0 percent sales tax rate that was raised temporarily from 5.0 percent on July 1, 2003, with the present rate authorized until June 30, 2005 (Ohio Department of Taxation, 2003). In addition to the State sales tax, each county in Ohio has a county sales tax. Jackson, Ross, and Scioto Counties have a county sales tax rate of 1.5 percent and Pike County has a county sales tax rate of 1.0 percent (Ohio Department of Taxation, 2003).

3.10 Environmental Justice

On February 11, 1994, the President signed Executive Order 12898 "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," which directs all Federal agencies to develop strategies for considering environmental justice in their programs, policies, and activities. Environmental justice is described in the Executive Order as "identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations." On December 10, 1997, the Council on Environmental Quality issued "Environmental Justice Guidance Under the National Environmental Policy Act" (CEQ, 1997). The Council developed this guidance to "...further assist Federal agencies with their *National Environmental Policy Act* procedures." As an independent agency, the Council's guidance is not binding on the NRC; however, the NRC has committed to evaluate environmental justice issues as part of its *National Environmental Policy Act* reviews. To guide such evaluations, the NRC has issued a final policy statement on the "Treatment of Environmental Justice Matters in NRC Regulatory and Licensing Actions" (69 FR 52040; August 24, 2004) and environmental justice procedures to be followed in NEPA documents prepared by the NRC's Office of Nuclear Material Safety and Safeguards (NRC, 2003).

This section summarizes data from the 2000 U.S. Census (specifically the 2000 decennial U.S. Census Summary File 3) on minority and low-income populations within an 80-kilometer (50-mile) radius of the proposed ACP site. This area includes a total of 191 census tracts, including 139 in Ohio, 38 in Kentucky, and 14 in West Virginia.

To determine if environmental justice will have to be considered in greater detail, the NRC staff compared the percentage of minority and low-income populations in Census tracts in the area being assessed to the State and county percentages. If the minority or low-income population in a given tract exceeds 50 percent or is significantly greater than the State or county percentage, environmental justice will have to be considered in greater detail. Generally, the NRC staff considers differences greater than 20 percentage points to be significant. The following sections summarize the results of this analysis within 80 kilometers (50 miles) of the proposed ACP, first for minority populations, and then for low-income populations. This summary is supported by detailed tables that provide the results for each Census tract in Appendix F.

3.10.1 Minority Populations

The Council on Environmental Quality guidelines on environmental justice recommend "minority" being defined as members of American Indian or Alaska Native, Asian or Pacific Islander, Black non-Hispanic, and Hispanic populations (CEQ, 1997). The 2000 Census includes the data necessary to identify minority populations, according to both race and Hispanic origin (U.S. Census Bureau, 2002), and identifies

individuals claiming multiple racial identities, up to six races. To remain consistent with the Council's guidelines and NUREG-1748, the phrase "minority population" in this EIS refers to persons who identified themselves in the 2000 Census as follows:

- Partially or totally Black (including Black or Negro, African American, Afro-American, Black Puerto Rican, Jamaican, Nigerian, West Indian, or Haitian);
- American Indian or Alaska Native;
- Asian;
- Native Hawaiian or other Pacific Islander;
- Multiple Races; or
- Other Race.

In accordance with NUREG-1748, individuals identifying themselves as White and a minority were counted as that particular minority group. In addition, for the purpose of this EIS, minority populations were taken to include White individuals of Hispanic origin. To avoid double counting, tabulations include only White Hispanics since the above racial groups already account for non-White Hispanics. Therefore, the minority population considered in this environmental justice evaluation consists of all non-White persons (including those of multiple racial affiliations) plus White persons of Hispanic origin.

Figure 3-18 identifies Census tracts within a 80-kilometer (50-mile) radius of the proposed ACP site that contain minority populations in excess of the criteria outlined above. As shown in the figure, there are two Census tracts in which minority populations either exceed 50 percent and/or are significantly greater

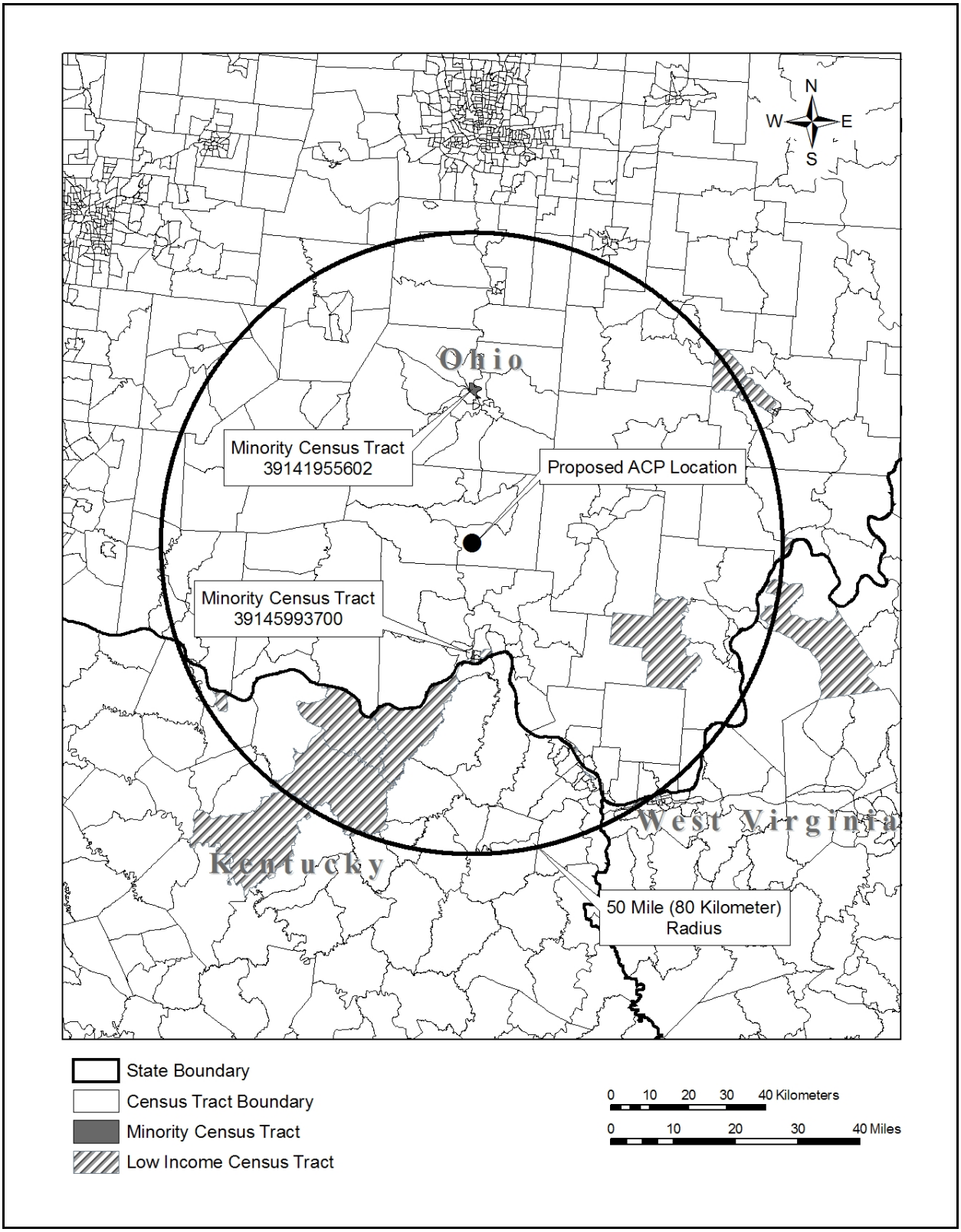

Figure 3-18 Census Tracts with Minority and Low-Income Populations within an 80-Kilometer (50-Mile) Radius of the Proposed ACP Site

than the State or county percentage. These tracts and their locations relative to the proposed ACP site are detailed in Table 3-25.

3.10.2 Low-Income Populations

In accordance with the Council on Environmental Guidelines and NUREG-1748, this environmental justice analysis identifies low-income populations as those falling below the statistical poverty level identified annually by the U.S. Census Bureau in its Series P-60 reports on income and poverty (NUREG-1748, Appendix C, p. C-4). Following the Office of Management and Budget's Statistical Policy Directive 14 (OMB, 1978), the U.S. Census Bureau uses a set of income thresholds that vary by family size and composition to define who falls below the poverty threshold. If the total income for a family or unrelated individual falls below the relevant poverty threshold, then the family or unrelated individual is classified as being "below the poverty level."

Table 3-26 shows the Poverty Thresholds in 2004 by family size and number of related children under 18. For example, in 2004, the poverty threshold for a family of three with one related child younger than 18 was an annual income of $15,205, while the poverty threshold for a family of five with one related child younger than 18 was an annual income of $23,838.

Table 3-25 Census Tracts Exceeding Minority Criteria [a]

Census Tract	County, State	Approximate Distance and Direction from the DOE Reservation
39141955602	Ross, Ohio	40 kilometers to the north
39145993700	Scioto, Ohio	28 kilometers to the south

Notes:
[a] See Appendix F for more detail.
km = kilometer
To convert kilometers to miles multiply by 0.62.

Table 3-26 Poverty Thresholds in 2004 (Annual Income in $)

Size of Family Unit	Weighted Average Threshold	Related Children Under 18 years								
		None	One	Two	Three	Four	Five	Six	Seven	Eight or More
One person	9,643									
Under 65 years	9,827	9,827								
65 years and over	9,060	9,060								
Two people	12,335									
Householder under 65 years	12,714	12,649	13,020							
Householder 65 years and over	11,429	11,418	12,971							
Three people	15,071	14,776	15,205	15,219						
Four people	19,311	19,484	19,803	19,157	19,223					
Five people	22,837	23,497	23,838	23,108	22,543	22,199				
Six people	25,791	27,025	27,133	26,573	26,037	25,241	24,768			
Seven people	29,304	31,096	31,290	30,621	30,154	29,285	28,271	27,159		
Eight people	32,430	34,778	35,086	34,454	33,901	33,115	32,119	31,082	30,818	
Nine or more people	38,659	41,836	42,039	41,480	41,010	40,240	39,179	38,220	37,983	36,520

Source: U.S. Census Bureau, 2005a, b.

Figure 3-18 identifies Census tracts within an 80-kilometer (50-mile) radius of the proposed ACP site that contain low-income populations in excess of the threshold criteria. There are 18 Census tracts in which low-income populations either exceed 50 percent and/or are significantly greater than the State or county percentage. These 16 tracts and their locations relative to the proposed ACP site are detailed in Table 3-27.

Table 3-27 Census Tracts Exceeding Low-Income Criteria [a]

Census Tract	County, State	Approximate Distance and Direction from the DOE Reservation
21019030300	Boyd, Kentucky	66 km to the southeast
21069980400	Fleming, Kentucky	78 km to the southwest
21135990100	Lewis, Kentucky	32 km to the southwest
21135990200	Lewis, Kentucky	50 km to the southwest
21135990400	Lewis, Kentucky	62 km to the southwest
21161960200	Mason, Kentucky	75 km to the southwest
39009972800	Athens, Ohio	75 km to the northeast
39009972900	Athens, Ohio	80 km to the northeast
39053953700	Gallia, Ohio	40 km to the southeast
39087050300	Lawrence, Ohio	60 km to the southeast
39105964400	Meigs, Ohio	80 km to the east
39145993200	Scioto, Ohio	28 km to the south
39145993600	Scioto, Ohio	34 km to the south
54011000600	Cabell, West Virginia	80 km to the southeast
54011000900	Cabell, West Virginia	80 km to the southeast
54011001000	Cabell, West Virginia	80 km to the southeast
54011001100	Cabell, West Virginia	80 km to the southeast
54053954900	Mason, West Virginia	77 km to the east

Notes:
[a] See Appendix F for more detail.
km = kilometer; mi = mile .
To convert km to mi multiply by 0.62.

3.11 Noise

As described earlier, the proposed ACP site is located in an industrial area within the DOE reservation in Piketon. The nearest actual resident that may hear noise from the site is currently 914 meters (3,000 feet) away to the southwest.

The DOE EIS (DOE, 2004a) for the depleted UF_6 conversion facility being constructed on the reservation just north of the proposed ACP site determined that ambient noise levels in this area would be approximately 40 day-night average noise level. However, construction of the conversion facility is now underway, so the existing noise environment at the proposed ACP would include this construction noise. The same EIS estimates noise levels from the construction of the depleted UF_6 conversion facility to be 91.5 decibels at 15 meters (50 feet). Because noise from a point source, such as a single piece of construction equipment, drops off at 6 decibels per doubling of distance, construction noise would be approximately 50 decibels at the closest residence. This assumes distance attenuation from the conversion facility to the residence closest to the proposed ACP. The distance from the conversion facility to this residence is approximately 1,829 meters (6,000 feet). The noise level would be 45 day-night average noise level if construction activities were limited to an eight-hour daytime shift. Consequently, the existing ambient noise level at the nearest residence would be 45 day-night average noise level during the conversion facility construction period and would drop back to 40 day-night average noise level after completion of construction. This noise level estimate is probably an upper bound since it does not account for other types of attenuation, such as air absorption and ground effects due to terrain and vegetation.

The U.S. Department of Housing and Urban Development has standards for community noise levels. It also has developed land use compatibility guidelines (HUD, 2002) for acceptable noise levels versus the specific land use. Table 3-28 shows these guidelines. The estimated ambient noise level of 45 day-night average noise level at the site is below these guidelines.

Table 3-28 U.S. Department of Housing and Urban Development Land Use Compatibility Guidelines for Noise

	Sound Pressure Level (dBA) [a]			
Land Use Category	**Clearly Acceptable**	**Normally Acceptable**	**Normally Unacceptable**	**Clearly Unacceptable**
Residential	<60	60-65	65-75	>75
Livestock Farming	<60	60-65	75-80	>80
Office Buildings	<65	65-75	75-80	>80
Wholesale, Industrial, Manufacturing & Utilities	<70	70-80	80-85	>85

Notes:
[a] dBA = decibels, A-weighted**;** DNL = day-night average noise level**.**
DNL is a 24 hour average with a 10 dBA nighttime penalty. DNL is measured in dBA, which is A-weighted decibels.
Source: HUD, 2002.

3.12 Transportation

The DOE reservation is served directly by road and rail. Nearby air and water transportation routes also serve the site area. Figure 3-19 shows the various transportation routes for roads, rail, water, and air.

3.12.1 Roads

The site is 5.6 kilometers (3.5 miles) south of the intersection of the U.S. Route 23 and Ohio SR 32 interchange. Both routes are four lanes with U.S. Route 23 traversing north-south and Ohio SR 32 traversing east-west (USEC, 2005). Principal access to the proposed ACP site area is by the Main Access Road (also called the West Access Road), a security-controlled access, four-lane road connecting with U.S. Route 23. The Main Access Road is closed to general public access and connects to the Perimeter Road that encircles the fenced portion of the DOE facility. Employees of the proposed ACP would utilize the Main Access Road for access from and traveling to U.S. Route 23. USEC anticipates that construction workers and delivery of construction material will use the Southwest Access Road to U.S. Route 23 or the North Access Road to Ohio SR 32.

U.S. Route 23 intersects I-270, I-70, and I-71 approximately 113 kilometers (70 miles) north of the site. Trucks also may access I-64 approximately 32.2 kilometers (20 miles) southeast of Portsmouth. SR 32 runs east-west from Cincinnati and through Piketon to Parkersburg, West Virginia. To the west, SR 32 provides access to Cincinnati's three interstate highways, I-71, I-4, and I-75. To the east, SR 32 is linked with I-77. (USEC, 2005)

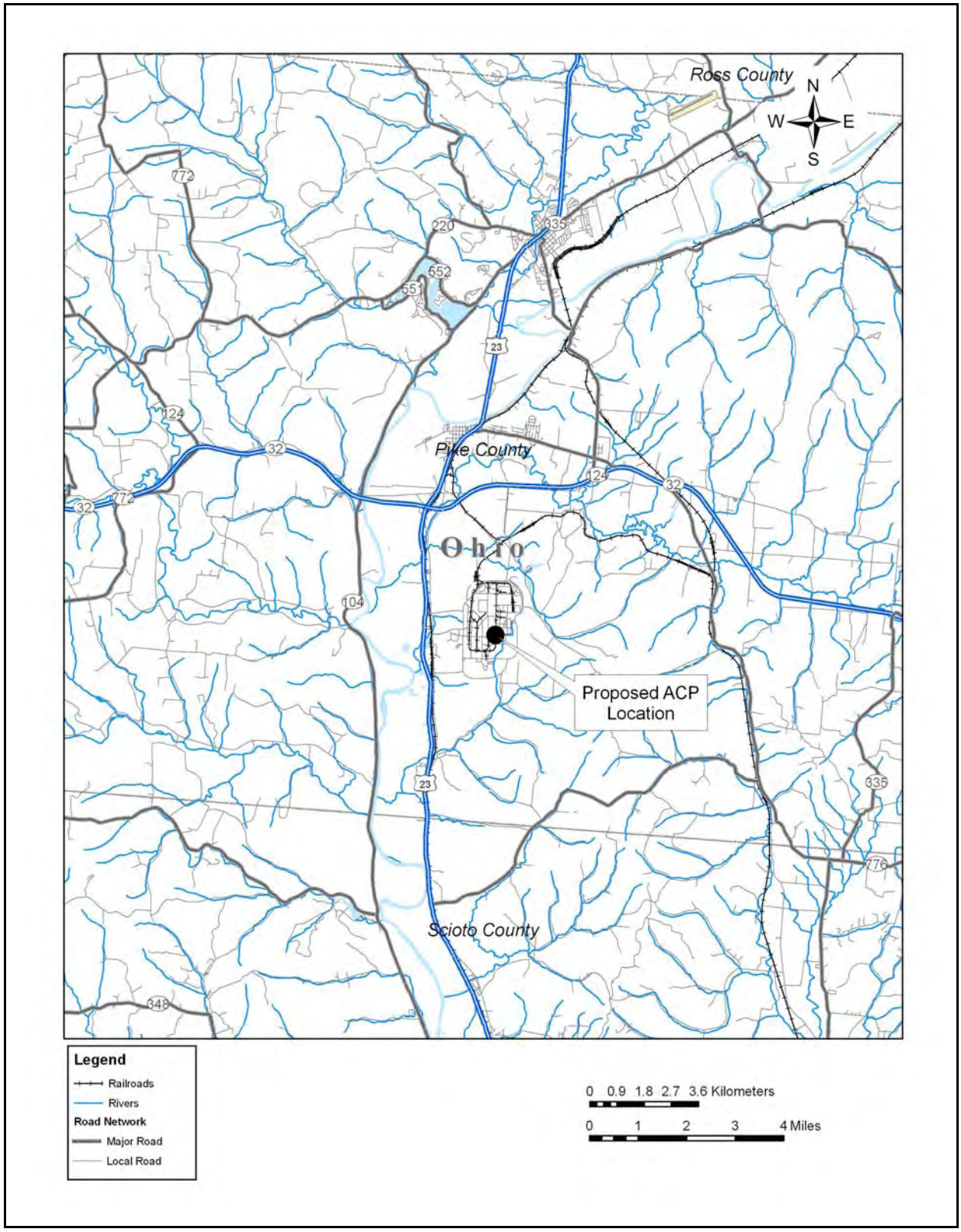

Figure 3-19 Transportation Routes In and Out of the DOE Reservation

U.S. Route 23 has an average daily traffic volume of 13,990 vehicles, while Ohio SR 32 has an average daily volume of 7,420 vehicles (traffic in both directions is included in these values). U.S. Route 23 is at 60 percent of design capacity with Ohio SR 32 at 40 percent of design capacity. The Ohio Department of Transportation supplied these data from a 1999 traffic study. Load limits on these routes are controlled by the Ohio Revised Code (38,556 kilograms [85,000 pounds]) gross vehicle weight. Special overload permitting is available. (USEC, 2005)

The DOE reservation road system is in generally good condition due to road repaving projects. Except during shift changes, traffic levels on the site access roads and Perimeter Road are low. Peak traffic flows occur at shift changes, and the principal traffic problem areas during peak morning/afternoon traffic are at locations where parking lot access roads meet the Perimeter Road. The site has 12 parking lots varying in capacity from approximately 50 to 800 vehicles. Total parking capacity is for approximately 4,400 vehicles. (USEC, 2005)

3.12.2 Rail

A rail system is located on the site with several track configurations possible. Two rail carriers, CSX and Norfolk Southern, service Pike County. The Norfolk Southern rail line is connected to the CSX Transportation Inc. line via a rail spur entering the northern portion of the site. The onsite system is used infrequently. The primary facilities for the proposed ACP site are connected to the existing rail configuration. Rail access is also available near the cylinder storage areas that would be located to the north, just outside the Perimeter Road. Track in the vicinity of Piketon allows a maximum speed of 96.6 kilometers per hour (60 miles per hour). The CSX Transportation Inc. line also provides access to other rail carriers. (USEC, 2005)

3.12.3 Water

The site can be served by barge transportation via the Ohio River at the ports of Wheelersburg, Portsmouth, and New Boston. The Portsmouth barge terminal bulk-materials-handling facility is available for bulk materials and heavy unit loads. All heavy unit loading is by mobile crane or barge-mounted crane at an open-air terminal. The Ohio River provides barge access to the Gulf of Mexico via the Mississippi River or the Tennessee-Tombigbee Waterway. Travel time to New Orleans is 14 to 16 days; to St. Louis, seven to nine days; and to Pittsburgh, three to four days. The U.S. Army Corps of Engineers maintains the Ohio River at a minimum channel width of 243.8 meters (800 feet) and a depth of 2.74 meters (9 feet). (USEC, 2005)

3.12.4 Air

The nearest airport is the Greater Portsmouth Regional Airport located approximately 24 kilometers (15 miles) south of the site. The airport has dual runways and T-hangars, and is operated by Chasteen Aviation, Inc. The airport serves mostly private aircraft owners and business travelers. There are no regularly scheduled commercial flights; however, charter service is available. (Scioto County Government, 2005) Another nearby airport, the Pike County Airport, is located just north of Waverly. This facility is similar in size and makeup to the Greater Portsmouth Regional Airport. In addition, three international airports are within a two-hour drive of the site: Cincinnati/Northern Kentucky International Airport, Dayton International Airport, and Port Columbus International Airport. (USEC, 2004a)

3.13 Public and Occupational Health

As described in Sections 3.5 through 3.7, several different media in and around the DOE reservation contain radionuclides and chemicals that are both naturally occurring and anthropogenic (i.e., human made) from historical and current operations at the site. These media include soil, surface water,

sediment, groundwater, and air. This section describes these radiological and chemical background and anthropogenic levels in terms of public and occupational exposure and health, as well as historical exposure levels for activities similar to the proposed action. It also summarizes public health studies performed in the region which were sufficient to establish baseline information for the Chapter 4 analysis of impacts to public and worker health that may be due to the proposed action.

3.13.1 Background Radiological Exposure

Humans are exposed to ionizing radiation from many naturally occurring and anthropogenic sources in the environment. Radioactivity from naturally occurring elements in the environment is present in soil, rocks, and living organisms. A major proportion of natural background radiation comes from naturally occurring airborne sources such as radon. Such natural radiation sources contribute approximately 3 millisieverts per year (300 millirem per year) to the radiation dose that a member of the U.S. population receives annually. The majority of this exposure - approximately 2 millisieverts per year (200 millirem per year) - is from naturally occurring radon gas from soil, rock, and water. Anthropogenic sources not attributable to the DOE reservation also contribute to the average amount of dose a member of the U.S. population receives. These sources include X-rays for medical purposes (0.39 millisieverts per year (39 millirems per year)), nuclear medicine (0.14 millisieverts per year [14 millirems per year]), and consumer products (0.05 to 0.13 millisieverts per year [5 to 13 millirems per year]) (e.g., smoke detectors). A person living in the U.S. receives a current average dose of about 3.6 millisieverts per year (360 millirems per year) (NRC, 2004b).

Air releases of radionuclides from current operations at the DOE reservation result in radiation exposures to people in the vicinity of the site. Both air monitoring and modeling data have been examined in detail. In terms of air monitoring, DOE collected data from a network of 15 air samplers in 2002 (DOE, 2003b). Data were collected both onsite and in the area surrounding the reservation. The monitoring network is intended to assess whether air emissions from the reservation affect air quality in the surrounding area. A background ambient air monitoring station is located approximately 21 kilometers (13 miles) southwest of the site. The analytical results from air sampling stations closer to the plant are compared to background measurements. Uranium-233/234 and uranium-238 were routinely detected at the stations and in most of the samples collected from each station. Uranium-235 was detected in slightly less than half of the samples collected in 2002. Uranium-236 was detected in one or two samples at eight of the 15 stations. Americium-241, neptunium-237, and plutonium-238 were detected once each at stations A28, A36, and A24, respectively. Technetium-99 was detected once at three sampling stations in 2002. Detections of the transuranic radionuclides, technetium-99 and uranium-236 were usually near the detection limit for the analytical method.

To confirm that air emissions are within regulatory requirements and are not harmful to human health, ambient air monitoring data were used in a separate study to calculate a dose to a hypothetical person living at the monitoring station. The highest net dose calculation is 1.9×10^{-5} millisieverts per year (0.0019 millirem per year) (Station A9), which is well below the U.S. EPA National Emissions Standards for Hazardous Air Pollutants limit of 0.1 millisieverts per year (10 millirem per year), and the NRC total effective dose equivalent limit of 1 millisievert per year (100 millirem per year) (DOE, 2003b).

Based on modeling of total radionuclide releases to the air for the year 2002 from United States Enrichment Corporation operations at the site, the estimated radiation dose to the maximum exposed individual—a hypothetical individual who is assumed to reside at the most exposed point on the plant boundary—is 2.60×10^{-4} millisieverts per year (0.026 millirem per year) (USEC, 2005). DOE operations contributed an additional 4.20×10^{-5} millisieverts per year (0.0042 millirem per year) to the maximum exposed individual, resulting in a combined dose of 3.10×10^{-4} millisieverts per year (0.031 millirem per year). These estimated maximum exposed individual doses are well below the U.S. EPA limit of 0.1 millisieverts per year (10 millirem per year) and the NRC limit of 1 millisievert per year (100 millirem

per year). These results also are comparable to those estimated in an EIS for the affected environment of a separate, depleted uranium conversion facility proposed on the DOE reservation (DOE, 2004a). That EIS reports a combined dose (USEC and DOE sources) of 6×10^{-4} millisieverts per year (0.060 millirem per year) for air, which also is well below the U.S. EPA limit of 0.1 millisieverts per year (10 millirem per year) and the NRC limit of 1 millisievert per year (100 millirem per year). Note that while this conversion facility dose estimate is approximately double the dose estimated for the proposed ACP's affected environment, this can be explained by the different location that was evaluated on the DOE reservation.

The depleted uranium conversion EIS (DOE, 2004a) also states that the maximum radiation dose to an offsite member of the public as a result of current onsite facility operations is estimated to be 2.0 millirem per year. This dose, while still lower than the U.S. EPA and NRC standards, includes several other exposure pathways as part of the assessment: waterborne (drinking, swimming, fishing), at 0.00039 millisieverts per year (0.039 millirem per year); ingestion (sediment, soil, locally produced vegetation and crops), at 0.0088 millisieverts per year (0.88 millirem per year); and direct gamma radiation, at 0.0098 millisieverts per year (0.98 millirem per year). This latter exposure, direct radiation, was estimated for a person driving slowly on the Perimeter Road and passing close to the edge of the cylinder yards two times a day for 185 days per year. This road, however, was closed to the public after September 11, 2001 and thus this exposure is a significant over-estimate of actual doses if the road remains closed.

According to USEC (USEC, 2005), on-reservation worker average whole body dose is less than 0.1 millisieverts per year (10 millirem per year). In the depleted uranium conversion facility EIS cylinder yard worker exposure is estimated (from monitored external radiation) at 0.64 millisieverts per year (64 millirem per year) (DOE, 2004a). Both estimates are significantly less than the NRC and DOE worker dose standards of 50 millisieverts per year (5,000 millirem per year).

3.13.2 Background Chemical Exposure

As discussed in Section 3.5.3, existing air quality on and around the site is in attainment with the criteria pollutants under the National Ambient Air Quality Standards and the standards adopted by the State of Ohio. These pollutants include particulate matter less than 10 microns (3.94×10^{-4} inches) in diameter, sulfur dioxide, carbon monoxide, nitrogen dioxide, lead, and ozone.

For other non-radiological pollutants and other possible exposure pathways, the depleted uranium conversion EIS (DOE, 2004a), specifically Section 3.1.7.2, provides a useful summary of health indicators using estimated hazard quotients (a comparison of estimated maximum potential human intake levels with intake levels below which adverse effects are very unlikely to occur). In all media assessed, air, soil, surface water, sediment, and groundwater, the hazard quotients are less than one, meaning adverse effects are very unlikely to occur as a result of non-radiological chemicals present in the environment around the site. Furthermore, only groundwater has a hazard quotient approaching one (i.e., 0.26), yet the monitoring wells resulting in this value are onsite wells that are not used for drinking water.

Regarding occupational exposure, DOE recently authorized Bechtel Jacobs Company, LLC to initiate characterization of potential beryllium contamination at the Portsmouth Gaseous Diffusion Plant. In December 2003, under contract to Bechtel Jacobs Company, LLC, the United States Enrichment Corporation began performing surface wipes, surface bulk, and destructive analysis sampling in various locations throughout the plant. Low levels of beryllium have been found in aluminum parts machined and used in several facilities, and these levels are significant based on initial surface characterization results in comparison with DOE beryllium contamination limits in 10 CFR Part 850. At least one credible exposure pathway has been identified with machining of aluminum parts, and several more have been suggested by professionals within the beryllium processing industry; these include grinding, buffing, welding, and chemical treatment/cleaning of beryllium-containing materials.

The Occupational Safety and Health Administration has issued permissible exposure limits for chemicals emitted into the air at this site (some of these limits are final, while others have only been proposed). Two of the key chemicals of concern—soluble and insoluble uranium compounds and hydrogen fluoride—are below those limits (DOE, 2004a). Other chemicals have been measured over the years at various levels at the Portsmouth Gaseous Diffusion Plant. Some of these levels have approached or exceeded occupational health benchmarks. For example, arsenic levels ranged up to 2.1 milligrams per cubic meter, which is higher than the permissible exposure limit of 0.01 milligrams per cubic meter, and lead levels ranged up to 19.5 milligrams per cubic meter, which is higher than the permissible exposure limit of 0.050 milligrams per cubic meter. Several other such examples exist. The measured levels were at the upper ends of the relevant ranges and the permissible exposure limits for eight-hour time weighted averages.

Another occupational health issue is the potential risk from exposure to chemicals in the onsite subsurface soil, groundwater, and surface water. Estimates of excess lifetime cancer risks to hypothetical workers range as high as 1.5×10^{-2}, and estimates of hazard quotients for noncarcinogens range as high as eight (DOE, 2004b). Note that these exposures are hypothetical and are based on unmitigated risks.

One final issue regarding occupational health is the potential for large quantities of highly hazardous material to be stored onsite. No threshold quantities, however, are present at the proposed ACP site, based on the Occupational Safety and Health Administration Process Safety Management Standard (29 CFR § 1910.119) and the U.S. EPA Risk Management Program Standard (40 CFR Part 68).

3.13.3 Public Health Studies

In 1992, Pike and Scioto County residents petitioned the Centers for Disease Control and Prevention to conduct an epidemiological health study. Residents expressed their desire for a health study on radiation-related diseases, and they raised questions about excessive cancer rates in Scioto County (which is south of the site), excessive birth defects, and other adverse health effects (such as heavy metal toxicity) believed to be related to environmental releases from the site. The petition was forwarded to the Agency for Toxic Substances and Disease Registry with a request to perform a public health assessment to determine what follow-up health activities, such as a health study (designed to evaluate whether disease in the community could be associated with exposure to site contaminants), were appropriate.

The public health assessment included an analysis of mortality data obtained specifically for the assessment from the Centers for Disease Control and Prevention's National Center for Health Statistics, Office of Analysis and Epidemiology and an analysis of 11 other sets of data or studies (ATSDR, 1996). The National Center for Health Statistics' data that were examined were from the Wide-ranging ONline Data for Epidemiologic Research Database for the years 1979 to 1991. A detailed look at all causes of death for Pike, Ross, and Scioto counties in Ohio shows significantly higher rates of cardiovascular disease for Pike County. The age-adjusted rate for childhood cancer mortality in Pike County was found to be roughly twice the national and State rates, but the number was too small to give a statistically reliable result. For example, this rate is based on only five cancer deaths for the 13-year period from 1979 to 1991, and none of the childhood cancers were of the same type and therefore could not be related to a common cause, both statistically and because different cancers suggest different causes.

The public health assessment also noted that if there were significant uranium exposure in the community surrounding the plant, a measurable increase in the rate of renal failure would be expected. No increase in the renal failure rate was identified in surrounding communities, and no other trends were found for the area for the years 1979 to 1991.

One of the 11 other data sets or studies analyzed in the public health assessment was the National Cancer Institute Report "Cancer in Populations Living Near Nuclear Facilities. Volume 2: Individual Facilities Before and After Startup" (1953-1984). Among the facilities examined in this report was the Portsmouth Gaseous Diffusion Plant. Relative risks (i.e., the ratio of the risk of a disease in an exposed person compared to the risk in an unexposed person) for a number of types of cancer—including bladder and stomach cancer, which were mentioned as cancers of concern by a member of the public during the July 9, 2004 public meeting in Piketon, Ohio, on the proposed ACP—all clustered around one, thus indicating that the populations living near the Portsmouth facility were at approximately the same risk of developing these cancers as populations not living nearby.

The Agency for Toxic Substances and Disease Registry concluded, through its public health assessment process, that exposure data could not be found to support a health study, and furthermore, available information about health outcomes did not suggest any adverse health impact from site operation (ATSDR, 1996). Because the Agency for Toxic Substances and Disease Registry's public assessment was published in 1996, however, more recent data regarding cancer mortality were compiled for this EIS using the Wide-ranging ONline Data for Epidemiologic Research Database (the same database used for the public health assessment).

The new cancer data compiled for this EIS are shown in Table 3-29. These data indicate that Pike County is similar to the rest of Ohio and the U.S. in terms of overall cancer mortality. New data also were sought for three specific cancers of interest—childhood cancer, stomach cancer, and bladder cancer—either because they were of interest in the public health assessment or a subsequent public meeting. The annual mortality counts from these cancers, however, were five or fewer for both Pike County and the nearby Ross and Scioto Counties and thus are not reported due to patient confidentiality concerns. Had they been available, the low rates also would have rendered them statistically unreliable.

New data also were compiled (Table 3-30 for mortality due to renal failure, a health endpoint of interest in the public health assessment because of uranium metal's role as a heavy metal in renal toxicity. The new data cover two date ranges: 1995 to 1998 and 1999 to 2001.[1] As seen by these data, there may have been an increase subsequent to the public health assessment in renal failure rates in the selected counties, particularly Pike County, when compared to all of Ohio or the U.S.; however, it cannot be concluded that this rise was solely due to uranium toxicity. While high levels of uranium can be a risk factor for renal failure, other risk factors, such as diabetes and hypertension, may be even more important. For 1999 to 2001, the Centers for Disease Control and Prevention's Wide-ranging ONline Data for Epidemiologic Research data show that age-adjusted annual mortality per 100,000 from diabetes in Pike County was 51 while in Ohio this rate was only 31 and in the U.S. was 25.

3.13.4 Occupational Injury and Illness Rates

There have been no industrial fatalities on the DOE reservation. Nevertheless, the National Institute for Occupational Safety and Health conducted an epidemiologic study at the reservation to examine the causes of death among workers employed by the facility between September 1, 1954 and December 31, 1991. Deaths among the workers were compared with rates for the general U.S. population. Possible relationships were evaluated for deaths from several types of cancer and exposures to ionizing radiation and certain chemicals (fluoride, uranium metal, and nickel). Based upon previous health studies of nuclear facility workers, including an earlier National Institute for Occupational Safety and Health

[1] The beginning year of the first range, 1995, was selected rather than 1992 (i.e., the year that would have followed the end of the original public health assessment date range of 1979 to 1991) because most of the gross annual mortality counts from 1992 to 1994 were five or fewer and thus not reported due to patient confidentiality concerns. Also, the cutoff between 1998 and 1999 is due to changes in the international classification of diseases codes (see Footnote 3 of Table 3-30).

investigation at the DOE facility, deaths from cancers of the stomach, lung, and the lymphatic and the hematopoietic systems including leukemia, were evaluated in more detail. The announcement of findings by the National Institute for Occupational Safety and Health, published in October 2001, stated that overall cohort mortality was significantly less than that of the U.S. population, as was mortality from all cancers. (USEC, 2005)

Table 3-29 Death Rate/Trend Comparison, All Cancers, Death Years Through 2001

Area	Death Rate Compared to US Rate (1)	Annual Death Rate over rate period	Lower 95% Confidence Interval for Death Rate	Upper 95% Confidence Interval for Death Rate	Rate Period	Rate Ratio (2) County to US	Recent Annual Percent Change (3) in Death Rates	Recent Trend (4)	Recent Trend Period (3,4)
United States	-	199.8	199.6	200	1997-2001	-	-1.1	falling	1993-2001
Ohio	similar	212.4	211.2	213.6	1997-2001	1.1	-1.2	falling	1995-2001
Pike County	similar	200.5	177.9	225.2	1997-2001	1	0.7	stable	1977-2001

Notes:
All rates are per 100,000 persons.
When the population size for a denominator is small, the rates may be unstable. A rate is unstable when a small change in the numerator (e.g., only one or two additional cases) has a dramatic effect on the calculated rate. Suppression is used to avoid misinterpretation when rates are unstable.
(1) Rate Comparison
"above" = when 95% confident the rate is above and Rate Ratio > 1.10.
"similar" = when unable to conclude above or below with confidence.
"below" = when 95% confident the rate is below and Rate Ratio < 0.90.
(2) Rate ratio is the county rate divided by the US rate.
(3) Recent trend in death rates were calculated using the Joinpoint Regression Program and are expressed as the annual percent change over the recent trend period. Recent trend period is the period since last change in trend as determined by Joinpoint.
(4) Trend
"rising" = when 95% confidence interval of annual percent change is above 0.
"stable" = when 95% confidence interval of annual percent change includes 0.
"falling" = when 95% confidence interval of annual percent change is below 0.
Source: Death data provided by the National Vital Statistics System public use data file. Death rates calculated by the National Cancer Institute using SEER*Stat. Death rates are age-adjusted to the 2000 US standard population by 5-year age groups. Population counts for denominators are based on Census populations as modified by NCI.

Table 3-30 Age-Adjusted Mortality Rates for Renal Failure

Year Range	United States	State of Ohio	Pike County	Ross County	Scioto County
1979 to 1991	8.3	8.4	6.4U(1)	8.8U(1)	8.8U(1)
1995 to 1998	8.8	11.2	32.2U	14.3U(2)	14.2U
1999 to 2001(3)	13.2	15.3	43.7U	14.6U(4)	12.9U

Notes:
All Rates are per 100,000 persons.
"U" indicates the data are statistically unreliable because they are based on fewer than 20 deaths.
(1) These rates are from ATSDR (1996), though the original source is as described below. They were not previously applied the "U" designation but they appear to require it based on the definition above. Furthermore, these exact numbers could not be duplicated from the source below and are slightly lower than the recalculated numbers. This discrepancy may be due to factors such as updated data or the year that was selected for the standard population used for the age-adjustment (the year 2000 for the new date range).
(2) The years averaged are 1994, 1997, and 1998 because the data for 1995 and 1996 are suppressed for confidentiality (i.e., deaths are five or fewer).
(3) Beginning in 1999, cause of death in the data source (below) is specified with the International Classification of Diseases 10th Revision rather than 9th revision codes. The two revisions differ substantially, which may account for some or all of the difference seen between the 1999 to 2001 group and the previous groups. This difference should have no effect, however, between the different locations or areas within the same year range group.
(4) The years averaged are 1999 and 2001 because the data for 2000 are suppressed for confidentiality (i.e., deaths are five or fewer).
Source: CDC, 2004.

The lower mortality among these workers is consistent with the "healthy work effect," which is found in most occupational epidemiologic studies. No statistically significant excesses in mortality from any specific cause were identified. Analyses of possible relationships between causes of death and the identified exposures failed to reveal any dose-response trends. For leukemia, no effect of cumulative exposure to either external or internal radiation was identified. Additionally, no dose-response relationships were observed for cancers of the stomach, lung, Hodgkin's disease, lymphoreticulosarcoma, and all cancers combined. Workers deaths from cancers of the lympho-hematopoietic tissue, including leukemia, equaled U. S. rates of matched controls. Stomach cancer deaths were greater than expected, but this difference was not statistically significant. Deaths from these cancers had been found to be slightly elevated in a previous National Institute for Occupational Safety and Health study of the site.

The Department of Labor has documented eight cases of beryllium sensitization and 14 cases of Chronic Beryllium Disease among current and former workers at the Portsmouth Gaseous Diffusion Plant. It has been estimated that about 1,200 of a total of 28,000 personnel (including subcontractors) who have worked at the DOE reservation have received a medical test to determine beryllium sensitivity. Likely exposure pathways are being or recently have been identified by Bechtel Jacobs Company, LLC, as authorized by DOE.

The United States Enrichment Corporation maintains a log and summary of recordable occupational injuries and illnesses under the guidance of the Occupational Safety and Health Administration's 29 CFR Part 1910, Part 1904, Recording & Reporting Occupational Injuries & Illnesses. The proposed ACP Environmental Report summarizes a comparison of year-to-date monthly Recordable Injury/Illness rates per 100 full-time workers for fiscal years 2002 and 2003. Calendar year 2002 and 2003 Recordable Injury/Illness rates are 2.95 and 1.94. For comparison, the U.S. Department of Labor, Bureau of Labor Statistics compiles annual injury and illness data including the incidence rates by industry. United States Enrichment Corporation standard industrial classification is 2819, "Industrial Inorganic Chemicals, not elsewhere classified." Calendar year 2003 Bureau of Labor Statistics' average incidence rate of nonfatal occupational injuries and illnesses are not currently published. The Bureau of Labor Statistics' national average incidence rate of nonfatal occupational injuries and illnesses for standard industrial classification

2819 for calendar year 2002 is 3.4, which is higher than the rates of 2.95 and 1.94 for the United States Enrichment Corporation.

3.14 Waste Management

This section describes the solid, hazardous, radioactive, and mixed (i.e., hazardous plus radioactive) wastes currently generated and managed by the United States Enrichment Corporation at the DOE reservation in Piketon. This reflects the baseline condition and is in contrast to the wastes that USEC would generate and manage under the proposed action, which are described in Chapter 2. This section also describes the existing waste management practices used by the United States Enrichment Corporation at the DOE reservation, most of which would also be used to manage wastes from the proposed ACP.

3.14.1 Current Waste Management Program

The United States Enrichment Corporation's Waste Management Program directs the storage, treatment, and disposal of waste generated by its operations at the DOE reservation at Piketon. The company must satisfy NRC, U.S. EPA, Ohio EPA, and Ohio Department of Health regulations as part of these activities. Waste generated by United States Enrichment Corporation operations at the DOE reservation and then transferred to DOE for storage, treatment, or disposal is subject to DOE Orders. Additional policies have been implemented by the United States Enrichment Corporation for management of radioactive, hazardous, and mixed wastes generated at the site. The United States Enrichment Corporation is currently operating in accordance with an NRC Certificate of Compliance issued under 10 CFR Part 76.

Waste collection and segregation activities are completed in accordance with applicable State and Federal rules and regulations and site procedures (see Table 1-3 in Chapter 1). Wastes are collected and packaged, where feasible, at the location where the waste is generated. Wastes are also segregated into the various waste streams and handled accordingly to minimize the generation of hazardous, low-level mixed waste, and low-level radioactive waste.

3.14.2 Baseline Waste Generation

Table 3-31 summarizes the projected baseline waste generation for the DOE reservation at Piketon, as reported in DOE's EIS supporting the proposed depleted UF_6 conversion facility at the reservation (DOE, 2004a). Volumes include operational and environmental restoration (i.e., cleanup) wastes projected from 2002 to 2025, not including the proposed ACP.

The waste volumes generated and managed by the United States Enrichment Corporation at the DOE reservation are much smaller than those reported above for operational and cleanup activities for the reservation as a whole. During 2003, the United States Enrichment Corporation disposed of approximately 0.1 cubic meter (3.5 cubic feet) of low-level radioactive waste and 15 cubic meters (530 cubic feet) of low-level mixed waste, and recycled approximately 76 cubic meters (2,684 cubic feet) of non-hazardous waste. The projected annual waste generation rates range from 182 to 355 cubic meters (6,420 to 12,520 cubic feet) of low-level radioactive waste and from 8 to 11 cubic meters (300 to 400 cubic feet) of low-level mixed waste (USEC, 2005).

Table 3-31 Projected Waste Generation Volumes for the DOE Reservation at Piketon [a]

Waste Category	Waste Treatment Volume, m^3/yr [b]
Low-level radioactive waste	73,000
Low-level mixed waste	5,600
Transuranic waste	none projected
Hazardous waste	110
Non-hazardous waste [b]	
Solids	3,200
Wastewater	145,000

Notes:
[a] Volumes include operational and environmental restoration wastes projected from FY 2002 to FY 2025.
[b] m^3/yr = cubic meters per year; ft^3/yr = cubic feet per year.
To convert m^3/yr to ft^3/yr multiply by 35.3.
Source: DOE, 2004a.

3.14.3 Current Waste Streams and Management Practices

Wastes generated by existing United States Enrichment Corporation operations at the DOE reservation at Piketon and/or managed onsite at the reservation include:

- Depleted uranium;
- Low-level radioactive waste;
- Non-radioactive hazardous waste;
- Low-level mixed waste;
- Recyclable waste;
- Classified/sensitive waste; and
- Sanitary/industrial waste.

The following sections summarize each of these waste streams from United States Enrichment Corporation activities at the DOE reservation along with the current facilities and procedures for managing these wastes.

3.14.3.1 Depleted Uranium

Regulatory Framework

Approximately 177,600 metric tons (195,800 tons (16,109 containers)) of depleted UF_6 were being stored at the DOE reservation as of June 2004 (DOE, 2004a). All of the depleted uranium is the responsibility of DOE under signed memoranda of agreement between the United States Enrichment Corporation and DOE. The depleted UF_6 stored at the reservation is managed in accordance with 40 CFR Part 266 and Ohio Administrative Code 3745-266. Section 3113(a) of the *USEC Privatization Act* (Public Law 104-134) requires DOE to accept low-level radioactive waste, including depleted uranium that has been determined to be low-level waste, for disposal, upon the request of, and reimbursement of costs by, the United States Enrichment Corporation. To date, this provision has not been invoked, and the form in which the depleted uranium would be transferred to DOE has not been specified. Depleted UF_6 has been classified by the NRC as a Low-Level Radioactive Waste (NRC, 2005). It is assumed that depleted uranium from the proposed ACP that is transferred under this provision of law in the future would be in the form of Depleted UF_6. This would add to the inventory needing conversion at the depleted UF_6 conversion facility, as discussed further in Section 4.2.12.3.

Waste Management Facilities and Practices

The DOE reservation has a total of 16,109 DOE-managed cylinders containing depleted UF_6 equivalent to approximately 177,627 metric tons (195,800 tons) (see Table 3-32). The cylinders are located in two storage yards that have concrete bases. The cylinders are stacked two high to comply with Defense Nuclear Facility Safety Board recommendations. All 9- and 13-metric ton (10- and 14-ton) cylinders stored in these yards have been, or are being, inspected and repositioned. They have been placed on new concrete saddles with sufficient room between cylinders and cylinder rows to permit adequate visual inspection of cylinders. (DOE, 2004a)

Table 3-32 DOE-Managed Depleted Uranium Hexafluoride Cylinders at the DOE Reservation at Piketon

Cylinder Type	Number of Cylinders
Full	16,018
Partially Full	42
Heel	49
Total	16,109

Source: DOE, 2004a.

The cylinder storage yards at the DOE reservation are sources of only a very small amount of waste compared with the volume of waste generated from ongoing plant operations. Cylinder yard waste consists of small amounts of metal, scrapings from cylinder maintenance operations, potentially contaminated soil, and miscellaneous items.

3.14.3.2 Low-Level Radioactive Waste

Waste Characteristics

Low-level radioactive waste is radioactively contaminated waste that is not classified as high-level radioactive waste, transuranic waste, spent nuclear fuel, or byproduct materials as defined in Section 11e(2) of the *Atomic Energy Act*. Low-level radioactive wastes have radionuclide concentrations that typically range from the minimum detectable activity of 0.2 to 0.5 micrograms per gram for total uranium and 37 becquerels per kilogram (1 picoCurie per gram) for technetium up to 0.5 milligram per gram for total uranium and 1,110 becquerels per kilogram (30 picoCuries per gram) for technetium. Higher concentrations do occasionally occur. Low-level radioactive waste includes dry active waste, radioactively contaminated metal, trap material, and used oil. Trap material consists of alumina, magnesium, and sodium fluoride pellets. Activities in trap material will typically range from the minimum detectable activity of 0.2 to 0.5 micrograms per gram for total uranium and 37 becquerels per kilogram (1 picoCurie per gram) for technetium up to 10.0 milligrams per gram for total uranium and 3.7×10^6 becquerels per kilogram (100,000 picoCuries per gram) for technetium. Magnesium trapping material from the feed stock decontamination project at the reservation has had technetium levels of up to 1.77×10^8 becquerels per kilogram (4.78 microCurie per gram). Depleted UF_6 is also considered a category of low-level radioactive waste, but is considered a separate waste stream for the purposes of this EIS, as discussed above.

Waste Management Facilities and Practices

Low-level radioactive wastes generated by United States Enrichment Corporation operations at the DOE reservation are generally transferred to the XT-847 Waste Management Staging Facility for temporary storage pending shipment to offsite treatment and disposal facilities. Such waste is stored onsite until shipment to an offsite treatment, storage, and disposal facility can be scheduled. During 2003, offsite treatment, storage, and disposal facilities that managed low-level radioactive waste generated by United States Enrichment Corporation operations at the DOE reservation included Envirocare, DSSI, and GTS Duratek. During 2003, approximately twice as much low-level radioactive waste was generated (283 cubic meters (10,016 cubic feet)) as was shipped offsite for disposal (155 cubic meters (5,465 cubic feet)).

The XT-847 facility consists of a steel structure with concrete floors and is divided into three storage areas, including a 90-day hazardous waste storage area. The XT-847 Facility is used to accumulate, stage, and prepare hazardous waste, radioactive and hazardous mixed waste, low level radioactive waste, and non-hazardous recyclable material prior to shipment off the reservation. The XT-847 Facility is equipped with truck and rail loading/unloading facilities. The facility also supports nuclear measuring activities.

3.14.3.3 Hazardous Waste

Waste Characteristics

The hazardous waste category is comprised of: (1) *Resource Conservation and Recovery Act* waste listed in 40 CFR Part 261, Subpart D or exhibits any hazardous waste characteristics reported in 40 CFR Part 261, Subpart C; (2) *Toxic Substances Control Act* waste; or (3) any waste defined as hazardous under equivalent State regulations. Hazardous wastes currently generated by the United States Enrichment Corporation at the DOE reservation include aerosol cans, solvents, and laboratory waste.

Waste Management Facilities and Practices

Hazardous wastes generated by the United States Enrichment Corporation at the DOE reservation are stored at the XT-847 Waste Management Staging Facility prior to transfer offsite for treatment and disposal. The company does not store hazardous waste for periods greater than 90 days. All hazardous waste is transferred to a *Resource Conservation and Recovery Act* Part B permitted "greater than-90-day" storage facility operated by DOE at the reservation within 90 days of generation in accordance with the Ohio EPA Director's Final Findings and Orders, issued to the United States Enrichment Corporation on October 5, 1995. The DOE reservation then provides long term onsite storage for hazardous waste at the X-7725 and X-326 hazardous waste storage areas. Several additional 90-day satellite storage areas are available for temporary storage of hazardous waste. Hazardous wastes are stored onsite at the reservation under DOE control until shipment to an offsite treatment, storage, and disposal facility can be scheduled. In 2003, offsite treatment, storage, and disposal facilities used for management of hazardous waste included LWD, DSSI, and Perma-Fix.

3.14.3.4 Low-Level Mixed Waste

Waste Characteristics

Low-level mixed waste is a waste that contains both low-level radioactive waste and *Resource Conservation and Recovery Act* hazardous waste, as defined in Ohio Administrative Code 3745-266-210. Such waste currently generated by the United States Enrichment Corporation at Piketon includes laboratory waste, solvents, and decontamination solutions.

Waste Management Facilities and Practices

Low-level mixed waste generated by the United States Enrichment Corporation at the DOE reservation is generally transferred to the XT-847 facility for temporary storage prior to transfer off site for treatment and disposal. Such waste is exempted from the storage requirements for hazardous waste as defined in Ohio Administrative Code 3745-51-03, since it is a hazardous waste and is generated and managed by the United States Enrichment Corporation, as described in 40 CFR Part 266, Subpart N and Ohio Administrative Code 3745-266.

All low-level mixed waste generated from United States Enrichment Corporation operations at the site is transferred to a *Resource Conservation and Recovery Act* Part B permitted "greater than-90-day" storage facility operated by DOE at the reservation in accordance with the Ohio EPA Director's Final Findings and Orders, issued to the United States Enrichment Corporation on October 5, 1995. The wastes are stored onsite until shipment to an offsite treatment, storage, and disposal facility can be scheduled. In 2003, mixed wastes were shipped offsite to facilities managed by LWD, DSSI, and Perma-Fix.

3.14.3.5 Recyclable Waste

Waste Characteristics

Recyclable waste includes waste that is:

- Not radioactively contaminated;
- Not regulated as hazardous under the *Resource Conservation and Recovery Act*;
- Not regulated under the *Toxic Substances Control Act*;
- Not categorized as classified/sensitive; and
- Is not acceptable for disposal at a sanitary landfill.

Some examples of recyclable waste currently generated by the United States Enrichment Corporation at Piketon include used oil, fluorescent bulbs, incandescent bulbs, High Intensity Discharge bulbs, circuit boards, and scrap metal.

Waste Management Facilities and Practices

Recyclable wastes generated by existing United States Enrichment Corporation operations at the DOE reservation are segregated and stored onsite until off-reservation shipment to a treatment, storage, and disposal facility can be scheduled. In 2003, offsite facilities that were used for recycling such waste included AERC, DOE-Run, and Safety-Kleen.

3.14.3.6 Classified/Sensitive Waste

Waste Characteristics

Classified/sensitive waste is any waste considered as such for security reasons. These materials may be classified due to configuration, composition, contamination, or contained information. Classified waste may be categorized as non-hazardous waste or as low-level radioactive depending upon its point of and method of generation. The classified/sensitive waste is primarily classified machine parts from the American Centrifuge Plant (ACP) process equipment and secondarily documents and electronic or other media containing classified/sensitive information. The machine parts may be radioactively contaminated (i.e., low-level waste), but are not expected to be a hazardous waste. The documents and media are normal office waste except for the classified/sensitive information and will be disposed of as such, following destruction in accordance with the ACP Security Program. (USEC, 2006)

Waste Management Facilities and Practices

Classified waste is stored onsite prior to disposal in classified offsite disposal facilities. There is no regulatory time limit associated with accumulation and disposal of classified/sensitive waste. Classified material that is to be shipped off-site to an approved facility for disposal is placed in, and accumulated within, approved secure storage containers or attended until such time that the shipping off-site is deemed necessary (i.e., until an economically practical amount for a shipment to a disposal facility is available). The current generation rate for classified/sensitive waste is very low, so it is anticipated that a single shipment may require an extended period to accumulate. Consequently, the storage time could range from a month to years before USEC Inc. accumulates enough classified waste to fill a single disposal container.

Classified/Hazardous waste will have a 90-day accumulation time limit. Shipments of low-level mixed waste will occur approximately every 90 days. Any classified/low-level mixed waste will remain on-site and managed in accordance with the low-level mixed waste rules in Ohio Administrative Code 3745-266 until shipments can be scheduled to an approved Treatment, Storage, Disposal, Recycling Facility.

3.14.3.7 Sanitary/Industrial Waste

Waste Characteristics

Sanitary/industrial waste includes non-hazardous solid waste generated by industrial processes and manufacturing and conventional waste material that is no longer usable for plant operations. Some examples of sanitary/industrial waste generated by the United States Enrichment Corporation at the DOE reservation include sludge from wastewater treatment, alkaline batteries, trash, paper, wood, metal, glass, and cafeteria/office refuse.

Waste Management Facilities and Practices

Sanitary/industrial solid wastes generated by existing United States Enrichment Corporation operations at the DOE reservation are disposed at the offsite Pike Sanitary Landfill. Sanitary wastewater (e.g., from showers and toilets) generated at the site are discharged to the plant sanitary sewer system and ultimately to the X-6619 sewage treatment plant. Treated sanitary wastewaters are discharged from X-6619 directly to the Scioto River through an underground pipeline via a permitted outfall. As discussed in Section 3.7, storm water runoff from the proposed ACP area drain to a pair of holding ponds (X-2230N West Holding Pond and X-2230M Southwest Holding Pond) to allow settling of suspended solids, dissipation of chlorine, and oil diversion and containment prior to discharge to unnamed tributaries of the Scioto River.

The only intentional process wastewater discharge resulting from plant operations is blow down from the Tower Cooling Water system.

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4. ENVIRONMENTAL IMPACTS

4.1 Introduction

This chapter evaluates the potential environmental impacts of the proposed action and the no-action alternative. Other reasonable alternatives that have been considered, including the construction and operation of the American Centrifuge Plant (ACP) at the Paducah Gaseous Diffusion Plant in Paducah, Kentucky, have been eliminated from detailed study for reasons explained in Chapter 2 and are not evaluated further in this chapter.

The chapter analyzes the four ACP life-cycle stages, as well as the corresponding cessation of uranium enrichment operations at the Paducah Gaseous Diffusion Plant, as described in Section 2.1. Even though the cessation of operations at Paducah is not part of the U.S. Nuclear Regulatory Commission's (NRC's) proposed action, it is evaluated in this Environmental Impact Statement (EIS) because it would eventually result from the proposed action (USEC, 2005a). For the purpose of this analysis, cessation of uranium enrichment operations at Paducah would include stopping uranium enrichment plant operations, but would not include decommissioning of the Paducah Gaseous Diffusion Plant, changes to any other activities at that site, or any alternate uses of the site in the future. Those other actions at Paducah would be the subject of subsequent decisions and environmental reviews.

Section 4.2 analyzes the proposed action, which would include construction, operation, and decommissioning of the proposed ACP in Piketon, Ohio. This section starts with 13 different sections that evaluate the potential impacts to different resource areas (land use, transportation, geology and soils, water resources, etc.). Within each of these resource areas, potential impacts are evaluated for: (1) ACP site preparation and construction; (2) ACP operation; and (3) cessation of uranium enrichment operations at the Paducah Gaseous Diffusion Plant.

Determination of the Significance of Potential Environmental Impacts

A standard of significance has been established for assessing environmental impacts. Based on the Council of Environmental Quality's regulations, each impact is to be assigned one of the following three significance levels:

- *Small: The environmental effects are not detectable or are so minor that they would neither destabilize nor noticeably alter any important attribute of the resource.*
- *Moderate: The environmental effects are sufficient to noticeably alter but not destabilize important attributes of the resource.*
- *Large: The environmental effects are clearly noticeable and are sufficient to destabilize important attributes of the resource.*

Source: NRC, 2003.

Section 4.2 also evaluates the potential impacts associated with the proposed manufacturing of centrifuges necessary for the ACP, much of which is expected to occur offsite. The impacts associated with shipping centrifuges or centrifuge components into the U.S. Department of Energy (DOE) reservation by truck are evaluated in different parts within Section 4.2 dealing with transportation (see Sections 4.2.2 and 4.2.11.1). However, because many of the details of the proposed centrifuge manufacturing process itself

are either proprietary or controlled for security reasons, this phase of the proposed action is discussed more generally in this EIS at the end of the 13 resource areas evaluated for site preparation and construction and facility operation (see Section 4.2.14).

The last part of Section 4.2 (Section 4.2.15) provides an initial evaluation of the potential environmental impacts of the decontamination and decommissioning of the ACP. Because decommissioning would take place well in the future, it is not possible to predict exactly how the plant would be decommissioned. For this reason, the NRC staff requires that an applicant for decommissioning of a uranium enrichment facility follow the NRC decommissioning requirements in 10 CFR 70.38.

Section 4.3 evaluates anticipated cumulative impacts associated with the proposed action. It recaps the specific impacts of the proposed action as presented in Section 4.2, describes past, present, and reasonably foreseeable future actions that relate to the proposed action, and evaluates the magnitude and significance of potential "cumulative effects," meaning effects of the proposed action combined with effects of reasonably foreseeable future actions.

Finally, Section 4.4 evaluates the potential impacts of the no-action alternative, which would involve continuing to operate the Paducah Gaseous Diffusion Plant and not developing the ACP at any site. This evaluation serves as a baseline for comparison to the potential impacts of the proposed action.

4.2 Impacts of the Proposed Action

Under the proposed action, USEC, Inc. (USEC) would construct and operate the ACP at Piketon and cease uranium enrichment plant operations at the Paducah Gaseous Diffusion Plant. At the end of its life, the ACP would be decontaminated and decommissioned. The potential environmental impacts of this proposed action are evaluated below for each of the potentially affected environmental resources.

4.2.1 Land Use Impacts

This section reviews the potential land use impacts associated with site preparation and construction activities, facility operation, and ceasing operations at the Paducah Gaseous Diffusion Plant.

4.2.1.1 Site Preparation and Construction

As described in Section 2.1, the majority of the site preparation and construction activities associated with the proposed ACP would occur within the 526-hectare (1,300-acre) central area of the DOE reservation. The proposed ACP would be situated on approximately 81 hectares (200 acres) in the southwest quadrant of the central area. The only facilities associated with the ACP that would be outside the central area would be a newly constructed 10-hectare (24-acre) cylinder storage yard (X-745H) and an existing 1.3-hectare (3-acre) cylinder storage yard (X-745G-2) located in the northern portion of the reservation, just outside of Perimeter Road. In addition to these facilities, approximately 1 hectare (2.5 acres) of new roads and parking areas would be constructed. Figure 2-5 in Chapter 2 presents the location of the proposed primary and secondary new facilities and proposed primary and secondary refurbished facilities associated with the proposed ACP. As discussed in Section 2.1.3, primary facilities are those that are critical to the enrichment process, while secondary facilities provide indirect support to the process. As shown in Table 2-1, 18 new facilities (including buildings and cylinder storage yards) and 16 existing or refurbished facilities would be associated with the proposed ACP.

All of the proposed ACP facilities in the southwest quadrant of the central area would be located adjacent to each other, and the X-745G-2 and X-745H Cylinder Storage Yards would be located adjacent to one another in the northern portion of the reservation. The total footprint for the proposed new and refurbished facilities in the southwest quadrant of the central area of the reservation would occupy approximately 24 hectares (60 acres). The remaining 57 hectares (140 acres) occupied by the proposed ACP in this area would be maintained as lawn or open space. Site preparation and construction activities within this central area would result in a small impact on land use because there would be no change in the overall land use of the central area. In addition, the soil types present in the southwest quadrant are non-prime soils, so this construction would not affect prime farmland (Borchelt, 2003).

The construction of the X-745H Cylinder Storage Yard in the northern part of the reservation just north of Perimeter Road would remove about 10 hectares (24 acres) of managed grassland and old fields and convert it into part of the developed infrastructure associated with the DOE reservation (USEC, 2005a). This cylinder storage yard would be located approximately 600 meters (1,969 feet) southeast from the nearest reservation boundary and would be surrounded by existing forested land to the north, east, and west, and by the central area to the south. The conversion of about 10 hectares (24 acres) of managed grassland and old fields into a paved cylinder storage yard would result in a small impact on land use at the reservation because approximately one percent of the area outside of Perimeter Road (10 hectares [24 acres]) would change from its current land use.

The proposed location of the X-745H Cylinder Storage Yard contains two soil types, Urban land-Omulga complex and Omulga silt loam. While some Omulga soils are considered prime farmland, the soils at this location do not qualify as such because of the slope and because Urban land-Omulga complex soils in particular are not prime farmland. Therefore, construction of the new X-745H Cylinder Storage Yard would not affect prime farmland (Yost, 2005).

The other cylinder storage yard north of Perimeter Road, X-745G-2 consisting of 1.3 hectares (3 acres), already exists but might require some minor refurbishment for use by the proposed ACP. Because this yard is already paved and intended for this purpose, any minor refurbishment for the proposed ACP should result in no new land use impacts.

The proposed action would not impact land use outside of the DOE reservation at Piketon. The nearest reservation boundary is approximately 800 meters (2,625 feet) to the west of the X-3001 Building, and 600 meters (1,969 feet) from the proposed cylinder storage yard. The site preparation and construction activities would not preclude or alter any of the existing land uses outside of the reservation. Because there are no State parks or national parks, conservation areas, or designated wild and scenic rivers within the immediate vicinity of the reservation, such areas would not be affected. Moreover, during construction of the proposed ACP, all equipment, supplies, temporary structures (construction trailers), and staging and storage areas would be located on previously disturbed land (parking lots or managed lawns) and would not require the removal or modification of any buffer areas or structures (USEC, 2005a).

In total, site preparation and construction would physically change approximately 22 hectares (55 acres) of land on the DOE reservation. These physical changes would be minor, because: (1) the area to be occupied by the proposed ACP would be only a small portion of the 1,497-hectare (3,700-acre) reservation; (2) the majority of the proposed land has been previously disturbed; (3) no prime farmland would be affected; and (4) site preparation and construction would not affect or preclude any existing land uses on the property that surrounds the DOE reservation. The changes would simply convert the land use on the DOE reservation from managed lawns, fields, and limited forest buffer to developed areas, resulting in an overall SMALL impact.

4.2.1.2 Facility Operation

The operation of the proposed ACP, including the new cylinder storage yards, would not result in any additional changes in land use on the DOE reservation, would not preclude any foreseeable land uses on the reservation, and would not affect or preclude any existing land uses on the property that surround the reservation. A recent DOE Environmental Assessment, which considered the land use impacts of the proposed ACP, found that the new facility would present no land use conflicts with any proposed future land use planning efforts on the DOE reservation or the surrounding area (DOE, 2001a). Therefore, the land use impacts of facility operation would be SMALL.

4.2.1.3 Ceasing Operations at Paducah

Ceasing enrichment plant operations at Paducah would not result in any change in land use. It is anticipated that after the Paducah enrichment plant is shut down, the existing buildings and structures would remain on the site and the site would remain categorized for industrial use, pending any later decisions on decommissioning and future use. Therefore, land use impacts associated with ceasing operations at Paducah would be SMALL.

4.2.2 Historic and Cultural Resources Impacts

The NRC staff evaluated potential effects of the proposed action on historic and cultural resources in accordance with the Advisory Council on Historic Preservation Regulations (specifically 36 CFR Part 800) (see Appendix B, Consultation Letters). As defined in 36 CFR § 800.16(i), "*Effect* means alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register." This may include direct effects such as disturbance or destruction of buildings or archaeological deposits; as well as indirect effects such as alteration of setting or vandalism of buildings and sites by workers.

Under 36 CFR § 800.4, once a Federal agency identifies and evaluates properties to determine whether they are eligible, it considers project effects. It may determine that there are "no historic properties affected" if there are no historic properties present or there are historic properties present but the undertaking will have no effect upon them as defined in 36 CFR § 800.16(i). The agency may determine that there is "no adverse effect" if there are historic properties present but the undertaking's effects do not meet the "criteria of adverse effect," or if an adverse effect is found that will be resolved by redesign or mitigation measures. In considering effect, the agency applies the criteria of adverse effect to historic properties within the area of potential effects (see text box in this subsection). The criteria of adverse effect are defined at 36 CFR § 800.5(a):

> *An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the National Register. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative.*

Properties within the Area of Potential Effect

The area of potential effect for direct effects includes the footprint of all ground disturbing activities and the perimeter of all buildings to be refurbished plus a 100-meter (328-foot) buffer around such areas (see Chapter 3 for more discussion). There is one historic property within the area of potential effect for direct effects, the Portsmouth Gaseous Diffusion Plant historic district considered by the State Historic Preservation Officer to be eligible under Criterion A for listing on the National Register. There are no other properties within the area of potential effect for direct effects that were identified as potentially eligible for listing on the National Register.

The area of potential effect for indirect effects includes all lands and structures within the reservation boundary (see Chapter 3 for more discussion). In addition to the Register-eligible historic district, there are 13 historic farmsteads and one prehistoric lithic scatter within the area of potential effect for indirect effects that the NRC staff considered as potentially eligible for listing under Criterion D, although State Historic Preservation Officer concurrence has not been received on their status as historic properties. In addition, the NRC staff included in the consideration of effect three properties located outside the area of potential effect for indirect effects, but close to its boundary. One is the Scioto Township Works site that is listed on the National Register under Criterion D and that has cultural value to the Absentee Shawnee Tribe. This site extends to within 250 meters (820 feet) of the area of potential effect boundary. A second property, the Barnes House, which may be eligible for listing under Criteria A and C, is immediately adjacent to the area of potential effect boundary. A third property, the Bailey Chapel, listed on the Ohio Historic Inventory but not the National Register, is also adjacent to the area of potential effect boundary.

The following sections evaluate potential effects for site preparation and construction activities for the proposed ACP operations, and for the corresponding cessation of uranium enrichment activities at the Paducah Gaseous Diffusion Plant.

4.2.2.1 Site Preparation and Construction

Site preparation and construction activities have the potential to directly affect the Portsmouth Gaseous Diffusion Plant historic district by destroying or altering contributing elements. Such activities also have the potential to indirectly affect the district by altering the setting, feeling, or association of the district. Nevertheless, in consultation with the State Historic Preservation Officer, the NRC staff has determined that the construction of new buildings and refurbishment of the existing buildings under the proposed action would result in buildings of design, size, and function similar to the existing buildings (OHPO, 2004; OHPO, 2005). That is, site preparation and construction activities would not destroy or alter contributing elements, (i.e. would have no direct effect). While there might be a short-term alteration in the feeling of the district during site preparation and construction (i.e., short term indirect effects), the net result would be no adverse effect on the historic property.

Site preparation and construction activities also have the potential to indirectly affect the 14 potentially Register-eligible sites within the area of potential effect for indirect effects by exposing them to vandalism by workers that might remove information important to history or prehistory. However, because the surface materials on these sites were recorded and portable artifacts were collected during prior study, and because workers would be expected to remain within designated work areas, the NRC staff considers that the likelihood of damage from vandalism would be small. Based on these factors, the NRC staff concludes that there would be no adverse effect on these properties. However, USEC may

elect to provide education programs and implement formal constraints on worker movements that would further minimize the likelihood of vandalism affecting a potentially register-eligible site.

Because the Scioto Township Works site is located one kilometer (0.62 mile) from the construction area and outside the fenced reservation boundary, vandalism from project construction workers would be even less likely than for sites within the area of potential effect. Consequently, the NRC staff considers that there would be no adverse project effect on the information values that make the site eligible under Criterion D. The setting and feeling of the site that may contribute to its cultural importance to the Shawnee have been previously affected by agricultural activities, quarrying, and construction and use of U.S. Route 23. The appearance of the proposed ACP complex on the DOE reservation as viewed from the site would not change substantially as a result of construction; as indicated above and discussed in more detail in Section 4.2.3, the new and refurbished buildings would be similar to existing buildings. Thus, the proposed action would not change the existing setting or feeling of the site, and the NRC staff finds that the proposed construction activities on the reservation would have no adverse effect on the Scioto Township Works.

The NRC staff also finds that there would be no adverse effect on the potentially eligible Barnes House. Given its location approximately 800 meters (2,600 feet) from Perimeter Road and the closest construction activities, site preparation and construction would not directly affect attributes of the property that may contribute to its architectural significance under Criterion C. Because the appearance of the industrial complex on the reservation would not be altered substantially by the construction, the project would not alter the existing setting, feeling, or association of the site that may contribute to its historic significance under Criterion A.

The Bailey Chapel is located even farther from the proposed site preparation and construction activities than the Barnes House, well away from any potential direct effect on the chapel building. The new construction would not change the character of the industrial complex or its current contribution to the existing setting. Thus, NRC finds no adverse effect associated with the proposed action on this property.

In the unlikely event that human remains are encountered during site preparation and construction activities (excavation), USEC would comply with the Native American Graves Protection and Repatriation Act regulations. This includes up to a 30-day work stoppage, notice to management, and screening of the find by a qualified archaeologist. If determined to be necessary, work would be stopped until completion of consultations that may be required under the *National Historic Preservation Act* or the *Native American Graves Protection and Repatriation Act*. (USEC, 2005a)

Based on this evaluation and the procedures that USEC would implement, the effects of proposed site preparation and construction activities on historic and cultural resources would SMALL.

4.2.2.2 Facility Operation

Facility operation would involve the regular presence of personnel on the DOE reservation and movement of trucks in and out and within the reservation. These activities would be consistent with the activities that characterized the Portsmouth Gaseous Diffusion Plant historic district during earlier operations, as well as current site activities to a more limited extent. In consultation with the State Historic Preservation Officer, the NRC staff has determined that these proposed new activities for the ACP would have no adverse effect on the historic district (Epstein, 2004).

Operations could have an indirect effect if workers vandalized the potentially eligible farmstead sites and lithic scatter sites outside of Perimeter Road. However, as with the potential effects of site preparation and construction, the NRC staff considers that the likelihood of damage from vandalism would be small,

should it occur, because the surface materials on these sites were recorded and portable artifacts were collected during prior study and because workers would be expected to remain within designated work areas. Based on these factors, the NRC staff concludes that there would be no adverse effect on these properties from facility operation.

Because the Scioto Township Works site is located outside the fenced reservation boundary, vandalism from operations workers would be even less likely than for sites within the area of potential effect. Consequently, the NRC staff considers that there would be no adverse effect on the information values that make the site eligible under Criterion D. Operation of the proposed facility would cause no change in existing setting or feeling of the site. The NRC staff thus finds that the operation of the new and refurbished facilities on the reservation would have no adverse effect on the Scioto Township Works.

Operation of the facility also would cause no change in the existing setting or feeling of either the Barnes House or Bailey Chapel. Facility operation would involve the regular presence of personnel on the DOE reservation and movement of trucks in and out and within the reservation. These activities would be consistent with the current operations on the reservation. Consequently, NRC finds that the operation of the new and refurbished facilities on the reservation would have no adverse effect on these properties.

The NRC staff also finds that there would be no effect on the flood control levee located near the DOE wellfields. As indicated in Section 4.2.6.2, additional pumping from water supply wells is not expected to cause subsidence for several reasons:

- The increase in consumption would be only 10 percent higher than current withdrawal rates and would represent only 31 percent of the total design capacity (and currently permitted rate) of the well field groundwater withdrawal system.

- The three well fields are located approximately 8, 11, and 24 kilometers (5, 7, and 15 miles) from the DOE reservation boundary along the Scioto River, and are spaced between 16 to 24 kilometers (10 to 15 miles) apart. The wells within each well field (between 4 and 15 individual wells) are located within 2 to 6 kilometers (1 to 3 miles) of each other. Therefore, the increased withdrawals will come from several spaced-out locations, rather than being all concentrated in one location.

- The wells produce water from the shallow saturated sand and gravel layers adjacent to the Scioto River. The sand and gravel layers are recharged from water in the river. Computer models have shown that 50 to 88 percent of the water drawn from the wells is from the river, and the chemical character of the groundwater is influenced by the river (Nortz et al., 1994). Therefore, any water withdrawn from the ground would be replaced by water from the river, and there would not be a decline in groundwater levels.

- Conversations with the Ohio EPA have confirmed that subsidence and sink holes from groundwater withdrawal are not an issue in the region, as water would be drawn down from the Scioto River, rather than create a void (Ohio EPA, 2005).

Based on this evaluation, the effects of proposed ACP operations on historic and cultural resources are expected to be SMALL.

4.2.2.3 Ceasing Operations at Paducah

Cessation of operations at the Paducah enrichment plant would not involve any excavation or disturbance of soils or the subsurface, or removal or external modification of buildings or structures. There would generally be a decrease in airborne emissions, a decrease in liquid and solid wastes generated and

disposed, a decrease in the onsite workforce, and a decrease in surrounding traffic. Therefore, the impacts on historic or cultural resources associated with ceasing operations at Paducah would be SMALL.

4.2.3 Visual and Scenic Impacts

As described in Section 3.4, the DOE reservation currently has a Class III or IV designation under the U.S. Bureau of Land Management's classification system. This means that the existing scenic value of the reservation is moderate to low, as the dominant viewshed consists of buildings, cylinder storage yards, transmission lines, and open and forested buffer areas. No scenic rivers, nature preserves, or unique visual resources exist in the project area.

4.2.3.1 Site Preparation and Construction

About half of the facilities needed for the proposed ACP, including two of the four large process buildings (28,242 square meters [304,000 square feet]), already exist in the southwest quadrant of the reservation's central area. While the new buildings and cylinder storage yards needed in this area would result in the loss of approximately 12 hectares (30 acres) of fields and lawns, the new facilities would be architecturally similar and would blend in with the existing facilities at this location. When driving on Perimeter Road surrounding the central area, the proposed ACP facilities in the southwest quadrant would be difficult to discern and would not in any way change the existing industrial setting of the site. Moreover, the existing and new facilities would generally not be visible from off the DOE reservation, because views along the property line are limited by distance, rolling terrain, and heavy forests and vegetation. Therefore, the proposed ACP facilities in the southwest quadrant of the reservation's central area would cause SMALL impacts on visual and scenic resources.

Site preparation and construction activities needed for the new 10-hectare (24-acre) cylinder storage yard (X-745H) north of Perimeter Road would occur within managed grasslands and old fields adjacent to tributaries of Little Beaver Creek. As described in Section 4.2.7.1, USEC would convert managed grasslands and old fields to a flat paved surface and would not remove any of the adjacent upland mixed hardwood forest or riparian forest. This would change the visual and scenic quality of this particular location, but it would not substantially alter the present look and feel of the area or of the reservation as a whole. The area in the vicinity of the new cylinder storage yard already contains other storage yards that are smaller but look the same (including the roughly 2.6-hectare [6.2-acre] X-745G Cylinder Storage Yard, half of which would be used for the proposed ACP). The new cylinder storage yard also would be right across the Perimeter Road from the reservation's industrialized central area and would not be visible from off the reservation, for reasons stated above. Therefore, although a more noticeable change than the new facilities within the central area, the new yard would also cause SMALL impacts to visual and scenic resources.

4.2.3.2 Facility Operation

All operations would be conducted within the proposed ACP buildings, at the cylinder storage yards, and along the existing roadway network. These operations would not create any new visual impacts (e.g., they would not result in the release of a visible plume to the air) and would not generate much new or different looking activity than already exists. Therefore, the impacts of facility operations on visual and scenic resources would be SMALL.

4.2.3.3 Ceasing Operations at Paducah

Cessation of operations at the Paducah enrichment plant would not involve any excavation or disturbance of soils, or removal or external modification of buildings or structures. Therefore, the impacts on visual or scenic resources would be SMALL.

4.2.4 Air Quality Impacts

This section analyzes airborne emissions of non-radiological and radiological contaminants and compares those emissions to air permit limits and/or air quality standards. The public and occupational exposures and health impacts associated with these emissions are addressed in Section 4.2.12.

4.2.4.1 Site Preparation and Construction

The following subsections discuss the non-radiological emissions and the radiological emissions associated with the site preparation and construction phase of the proposed action.

Non-Radiological Emissions

Table 2-1 in Chapter 2 of this EIS identifies the primary facilities that would be constructed to support the proposed ACP at the 7 million separative work unit (SWU) capacity. That construction would disturb a footprint of approximately 21 hectares (52 acres). In addition to the area needed for buildings and cylinder storage yards reported in Table 2-1, another 1 hectare (2.5 acres) of earth would be disturbed in preparation for roads and parking areas. Taken together, site preparation and construction activities would disturb approximately 22 hectares (55 acres).

Estimates of fugitive dust that would be emitted from land disturbance over this area were determined based on information using AP-42 emission factors (EPA, 1995a) for construction or, where more detailed information was available, by using fugitive dust emission factors based on the *2004 WRAP Fugitive Dust Handbook* (WRAP, 2004) as appropriate for a mid-west based location. Fugitive dust emissions were estimated for construction and demolition, materials handling, and traffic along paved roads. Because the new buildings identified in Table 2-1 previously had their foundations prepared, soil disturbance was assumed to be limited to construction activities associated with the installation of the utilities.

Exhaust emissions associated with heavy earth-moving equipment would also result in short-term increases in the release of nitrogen oxides, sulfur oxides, carbon monoxide, and particulates, including particulate matter equal to or less than 10 micrometers in diameter and equal to or less than 2.5 micrometers in diameter.[1] The NRC staff estimated these emissions by using information provided in the Environmental Report (USEC, 2005a) on the estimated total fuel consumption for construction activities, the anticipated diesel and gas powered construction equipment and the estimated daily fuel consumption, and reasonable assumptions made by USEC that influence the amount of fuel that would have to be used during construction (see Tables 4.6.3.1-2, 4.6.3.1-3, and 4.6.3.1-4 in USEC, 2005a). This information was used in combination with the U.S. Environmental Protection Agency's (EPA's) Non-Road emission factors from EPA's NR-009c, 010d, 012b (EPA, 2004a; EPA, 2004b; EPA, 2004c) to develop exhaust emissions estimates, assuming use of "Tier 1 equipment" (typically late 1990s to early 2000s model-year

[1] In evaluating impacts relating to the criteria pollutants, the NRC staff did not review potential impacts relating to ozone, including emissions of volatile organic compounds that are precursors to the production of ozone. Pike County is in attainment for ozone, which is generally recognized as a regional-scale air quality problem; therefore, the potential site-specific increases in the emission of volatile organic compounds would not affect regional ozone concentrations.

equipment depending on engine horsepower rating). Also included in the emission estimates were the emissions associated with construction crew trips to and from the facility each day. As estimated by USEC in its Environmental Report (USEC, 2005a), those trips include 2,612 one-way construction worker trips (1,306 commuting round trips) and an average of approximately 10 round trips of heavy-duty delivery trucks associated with construction material and building supplies. USEC assumed that each worker would arrive as a single-occupant vehicle and that half the vehicles would be light-duty trucks and half would be light-duty vehicles.

Once the estimates of airborne emissions were developed, the NRC staff then input those values into an air dispersion model to estimate the air quality impacts from the proposed site preparation and construction activities. The Industrial Source Complex Long-Term (EPA, 1995b) air dispersion model was used to estimate quarterly and annual average air concentrations at the facility boundary. Short term peak concentrations were then estimated by using scaling factors based on the maximum modeled concentration (EPA, 1992). In developing these estimates, the NRC staff used meteorologic data obtained from the 30-meter (98-foot) tower at the DOE reservation at Piketon as inputs to the model, combined with selected other meteorological data from the nearest archived meteorological data locations (in Waverly, Ohio and Huntington, West Virginia). Additional modeling details included the following: emission sources were modeled as uniform area sources at their site-specific locations; emissions were assumed to occur eight hours per day, 250 days per year; and emissions were estimated on a quarterly basis for each of the five years needed for the majority of the proposed site preparation and construction activities.

The results from this analysis are summarized in Table 4-1. This table shows predicted concentrations of the criteria pollutants over different time frames at the reservation property boundary. These predicted concentrations are added to concentrations measured at the nearest air quality monitoring station, which are reported in Table 4-1 as "background" values. Since ambient air quality data for the pollutants reported in Table 4-1 are not measured at the proposed ACP site, the NRC staff used monitoring data from the nearest monitoring site, located in Portsmouth, Ohio, as representative background values. The table then compares the sum of the maximum modeled and measured concentrations to the National Ambient Air Quality Standards.

As shown in Table 4-1, all modeled concentrations from site preparation and construction activities are below the National Ambient Air Quality Standard for each criteria pollutant with the exception of the annual average concentration of particulate matter with a mean diameter of 2.5 micrometers or less. The predicted annual average concentration of particulate matter with a mean diameter of 2.5 micrometers or less is 16.1 micrograms per cubic meter, which slightly exceeds the National Ambient Air Quality Standard of 15 micrograms per cubic meter up to a distance of 1,000 meters (3,280 feet) beyond the fenceline. While emissions from soil disturbance and burning of fossil fuel associated with proposed ACP site preparation and construction contribute to this exceedance, the vast majority of the exceedance is the result of high background concentrations for particulate matter with a mean diameter of 2.5 micrometers or less in the area. To avoid nuisance conditions and particulate matter concerns, USEC intends to use dust suppression techniques (e.g., water sprays and speed limits on dirt roadways) to mitigate releases of dust during excavation under dry conditions (USEC, 2005a). As a result, the non-radiological air quality impacts from site preparation and construction of the proposed ACP facility are considered MODERATE.

The NRC staff recommends additional mitigation measures to reduce the predicted impacts associated with particulate matter emissions. The staff's modeling results indicate that the majority of emissions are expected to come from construction vehicle exhaust, rather than automobile (worker vehicle) exhaust or fugitive dust from land disturbance activities. To reduce particulate emissions from construction vehicle exhaust, the NRC staff recommends that USEC: (1) use Tier 2 construction-related vehicles (2001 to 2006-model year equipment), which would reduce diesel particulate matter emissions by about 40

percent; and (2) use ultra-low sulfur diesel fuel (15 parts per million versus the current typical fraction of 500 parts per million), which would reduce particulate matter emissions by about 20 percent. If USEC implements these two additional mitigation measures, the NRC expects that the resulting $PM_{2.5}$ concentrations would be below the NAAQS standard of 15 $\mu g/m^3$, and therefore non-radiological air quality impacts from site preparation and construction would be reduced to SMALL.

Table 4-1 Predicted Property Boundary Air Concentrations from Site Preparation and Construction Activities and Applicable National Ambient Air Quality Standards ($\mu g/m^3$) [a]

Species [b]	Value [c]	1-hr	3-hr	8-hr	24-hr	Annual
CO	Modeled	262	236	184	105	26
	Background	8,360	-----	6,070	-----	-----
	Model + Background	8,622	-----	6,254	-----	-----
	NAAQS	**40,000**	-----	**10,000**	-----	-----
NO_2	Modeled	36.5	32.9	25.6	14.6	3.7
	Background	177	-----	-----	-----	32
	Model + Background	214	-----	-----	-----	36
	NAAQS	-----	-----	-----	-----	**100**
PM_{10}	Modeled	23	21	16	9.2	2.3
	Background	-----	-----	-----	49	19.7
	Model + Background	-----	-----	-----	58	22
	NAAQS	-----	-----	-----	**150**	**50**
$PM_{2.5}$	Modeled	23	20	16	9.1	2.3
	Background	-----	-----	-----	41.3	13.8
	Model + Background	-----	-----	-----	50.4	16.1
	NAAQS	-----	-----	-----	**65**	**15**
SO_2	Modeled	4.2	3.8	3	1.7	0.4
	Background	-----	309	-----	110	10
	Model + Background	-----	313	-----	112	10.4
	NAAQS	-----	**1,300**	-----	**365**	**80**

Notes:
[a] $\mu g/m^3$ = microgram per cubic meter.
[b] CO = carbon monoxide; NO_2 = nitrogen dioxide; PM_{10} = particulate matter with a mean diameter of 10 micrometers or less; $PM_{2.5}$ = particulate matter with a mean diameter of 2.5 micrometers or less; SO_2 = sulfur dioxide.
[c] NAAQS = National Ambient Air Quality Standard.

Radiological Emissions

Airborne radiological emissions from the proposed ACP would be regulated by the U.S. EPA under 40 CFR Part 61 Subpart H, the National Emissions Standards for Hazardous Air Pollutants. The limits imposed by these standards are based upon the estimated radiation dose to the public, not the quantity of material released.

During site preparation and construction activities, the decontamination and decommissioning of the existing Gas Centrifuge Enrichment Plant enrichment train could result in the release of airborne contamination. The residual contamination level in these old enrichment centrifuges is low, and two levels of airborne contamination control would be applied to minimize releases. First, best management practices would be employed, including temporary containment structures and localized air filtration to minimize the consequence of any release. Second, the buildings in which the work would be performed utilize air filtration and trapping systems in order to capture any releases. This dual containment system combined with the small quantity of uranium present in the Gas Centrifuge Enrichment Plant train ensure that any air quality impact from decontamination and decommissioning of the existing gas centrifuge facilities would be SMALL.

Radiological emissions could also occur during construction activities when soil is excavated. If the soil contains radioactive material, this material could be included in any dust suspended during construction. USEC plans to excavate approximately 146,956 cubic meters (192,099 cubic yards) of soil; the low concentration of radioactive materials in the soil to be excavated could result in a maximum expected release of radionuclides from this excavation of 2,760 grams of uranium-238, 6.7 grams of uranium-235, 0.038 grams of uranium-234, and 0.014 grams of technetium-99. Based on these small expected releases, the air quality impact of any radiological dust emissions during construction is expected to be SMALL.

Based on this analysis, the radiological impacts to air quality from site preparation and construction would be SMALL. The public health impacts of these radiological emissions are examined in Section 4.2.12.2.

4.2.4.2 Facility Operation

Non-Radiological Emissions

During routine operation of the proposed ACP, principal non-radiological pollutants would come from the exhaust of stationary diesel generators used for emergency power if supplied power is lost. Each of the 26 aboveground fuel storage tanks proposed for the proposed ACP would have a 900-horsepower, 600-kilowatt emergency diesel generator. These generators would be operated periodically for testing purposes and for scheduled preventive maintenance. Because the emergency diesel generators are expected to operate for less than 500 hours per year, they are exempt from Federal and Ohio air permitting. Airborne emissions are also possible from the 26 aboveground tanks themselves, each of which would have the capacity to store up to 4 cubic meters (1,000 gallons) of fuel except for two tanks that would have a capacity of 151 cubic meters (40,000 gallons) each. Emissions from these tanks, however, would be very small because they would hold diesel and No. 2 fuel oil, which are not significant sources of volatile organic emissions (emissions from the tanks should be less than the emissions associated with the firing of the diesel generators).

The NRC staff's quantitative analysis, therefore, focused on the long-term and short-term air quality impacts from the operation of the 26 generators. This analysis used emissions estimated by USEC assuming the generators were operated at full power, consuming 0.19 cubic meter per hour (50 gallons per hour) of low sulfur number two diesel (0.05 percent sulfur) (USEC, 2005a). These emissions estimates were then input into the same air dispersion model by using the same meteorological data described in Section 4.2.4.1. Modeling was performed for continuous operation and then scaled using a factor of 500/8760. Short-term concentrations were based on continuous operations. Emissions were modeled as point sources using stack parameters from a 1,109 horsepower diesel generator described in Appendix 7 of the California Air Resources Board's Diesel Risk Reduction Plan (CARB, 2000), except that a 10-meter (33-foot) stack was used to minimize any building downwash effects.

Table 4-2 shows the results of this modeling analysis, including the modeled concentrations expected to result from the generator operations plus representative background values compared to the National Ambient Air Quality Standard (as in Table 4-1 in Section 4.2.4.1). Airborne radiological emissions from the proposed ACP would be regulated by the U.S. EPA under 40 CFR Part 61 Subpart H, the National Emissions Standards for Hazardous Air Pollutants. The limits imposed by these standards are based upon the estimated radiation dose to the public, not the quantity of material released. As presented in Table 4-2, all air concentrations expected to result from the operation of the 26 emergency diesel generators are well below the National Ambient Air Quality Standard for each criteria pollutant. Therefore, the non-radiological air quality impacts from operation of the proposed ACP are expected to be SMALL.

Table 4-2 Predicted Property-Boundary Air Concentrations from Operation of 26 Emergency Diesel Generators and Applicable National Ambient Air Quality Standards ($\mu g/m^3$) [a]

Species [b]	Value [c]	1-hr	3-hr	8-hr	24-hr	Annual
CO	Modeled	142	128	99	57	0.3
	Background	8,360	-----	6,070	-----	-----
	Model + Background	8,502	-----	6,169	-----	-----
	NAAQS	**40,000**	-----	**10,000**	-----	-----
NO_2	Modeled	204	184	143	82	1.2
	Background	177	-----	-----	-----	32
	Model + Background	381	-----	-----	-----	34
	NAAQS	-----	-----	-----	-----	**100**
PM_{10}	Modeled	3.7	3.3	2.6	1.5	<0.1
	Background	-----	-----	-----	49	19.7
	Model + Background	-----	-----	-----	50.5	19.8
	NAAQS	-----	-----	-----	**150**	**50**
$PM_{2.5}$	Modeled	3.5	3.2	2.5	1.4	<0.1
	Background	-----	-----	-----	41.3	13.8
	Model + Background	-----	-----	-----	42.7	13.9
	NAAQS	-----	-----	-----	**65**	**15**
SO_2	Modeled	3.2	2.9	2.2	1.3	<0.1
	Background	-----	309	-----	110	10
	Model + Background	-----	312	-----	111	10.1
	NAAQS	-----	**1,300**	-----	**365**	**80**

[a] $\mu g/m^3$ = micrograms per cubic meter.
[b] CO = carbon monoxide; NO_2 = nitrogen dioxide; PM_{10} = particulate matter with a mean diameter of 10 micrometers or less; $PM_{2.5}$ = particulate matter with a mean diameter of 2.5 micrometers or less; SO_2 = sulfur dioxide.
[c] NAAQS = National Ambient Air Quality Standard.

The primary non-radiological air pollutant associated with the operation of the proposed ACP is hydrogen fluoride (HF). When UF_6 is released to the air, it reacts with atmospheric moisture to form particulate uranium (in the form of uranyl fluoride) and HF fumes. For this EIS, airborne concentrations of HF at various downwind locations were modeled using the stoichiometry of the UF_6 reaction with atmospheric

moisture, as described in Section 4.2.12.3 on the public dose from routine airborne releases of radioactive material. As shown in Table 4-21 in that section, the maximum predicted HF concentration is 2.35×10^{-3} microgram per cubic meter at the Ohio National Guard building located onsite 555 meters (1,820 feet) east of the proposed ACP buildings. This concentration is more than six orders of magnitude below the Occupational Safety and Health Administration Permissible Exposure Limit (as an eight-hour average) of 2,500 micrograms per cubic meter for HF. Therefore, the impacts associated with anticipated HF concentrations in the air resulting from proposed ACP operations should be SMALL

Radiological Emissions

Potential sources of airborne radiological releases for the proposed ACP are:

- X-3346 Feed and Customer Services Building;
- X-3001, X-3002, X-3003, and X-3004 Process Buildings;
- X-3356 and X-3366 Product and Tails Withdrawal Building;
- X-3012 Process Support Building;
- X-7725 Recycle/Assembly Facility;
- X-7726 Centrifuge Training and Test Facility;
- X-710 Laboratory; and
- X-7727H Interplant Transfer Corridor.

Ventilation air from the first seven locations listed above would be monitored under the site Radiation Protection Program. Environmental Compliance personnel would review summaries of the monitoring data at least quarterly to verify that ventilation exhausts are insignificant as defined in NUREG-1520, *Standard Review Plan for the Review of a License Application for a Fuel Cycle Facility*, which is a value less than 1.11×10^{-8} becquerels per milliliter (3×10^{-13} microcuries per milliliter) of uranium.

The eighth location listed above, the X-7727H Interplant Transfer Corridor, would never be exposed to open centrifuges or components, but does have some air transfer from the process buildings and X-7725 Facility. At worst, the airborne uranium concentration in the X-7727H Corridor would not exceed that in the process buildings or X-7725 Facility.

Each process vent in the X-3001, X-3002, X-3003, X-3004, X-3346, X-3356 and X-3366, and X-7725 Buildings would have gas flow monitoring instrumentation with local readout as well as analytical instrumentation to continuously sample, monitor, and alarm UF_6 breakthrough in the effluent gas stream. The continuous vent sampler would draw a flow proportional sample of the vent stream through two alumina traps in series by way of an isokinetic probe. Both vent and sampler flows would be monitored by the sampler's electronic controller. The controller adjusts a control valve in the sample line to maintain a constant ratio between the vent and sample flows. The flow instruments would be calibrated at least annually. The primary sample trap would be equipped with an automated radiation monitor to continuously monitor the accumulation of uranium in the sampler.

Detailed emission calculations would be based on laboratory analysis of the collected samples. Each vent sampler would have two traps permanently dedicated to each trap position, with one in-service and the other either being processed or standing by to replace the in-service trap. Normally, the primary sample traps would be replaced weekly and the secondary traps replaced quarterly. In the event of an unplanned or seriously elevated release, the involved sampler traps would be collected for immediate analysis as soon as the situation has stabilized. Alternatively, the sampling period may be extended, provided the sampler is operating continuously while the vent is operating. A hydrated alumina would be used in the vent samplers to convert absorbed UF_6 to uranyl fluoride for laboratory analysis.

Vent samples would be analyzed for uranium-234, uranium-235, uranium-238, and technetium-99 (technetium-99 is a fission product that has contaminated much of the fuel cycle as a result of past recycling of reprocessed uranium). Experience at the gaseous diffusion plant has shown that these three uranium isotopes account for more than 99 percent of the public dose due to uranium emissions. Feed material that meets the American Society of Testing and Materials specification for recycled feed may be used in the proposed ACP, which may contain additional radionuclides (i.e., uranium-236 and technetium-99). The proposed ACP would monitor process vent samples for technetium as a precautionary measure since experience at the gaseous diffusion plant indicates the potential for technetium-99 to eventually appear in some gaseous effluents.

The maximum gaseous effluent anticipated under normal operations is 9.6×10^{7} becquerels (0.003 curies) of uranium over a week, or up to 5.1×10^{9} becquerels per year (0.14 curies per year) (USEC, 2005a). The NRC staff estimated that the projected maximum airborne concentration of total uranium due to proposed ACP operations is only 2.0×10^{-10} becquerels per milliliter (5.4×10^{-15} microcuries per milliliter). This uranium concentration is less than one percent of the applicable concentration limit in 10 CFR Part 20, Appendix B, Table 2. Average emission rates are expected to be much lower.

Radiological releases to air would be routinely monitored to ensure that releases are at or below the expected quantities. DOE collects data from a monitoring network of 15 ambient air samplers; this network is described in the DOE site environmental report for 2002 (DOE, 2003), among other places. The monitoring network is intended to assess whether radiological air emissions from the DOE reservation affect air quality in the surrounding area. Data are collected both onsite and in the area surrounding the DOE reservation. A background ambient air monitoring station is located approximately 21 kilometers (13 miles) southwest of the site. The analytical results from air sampling stations closer to the plant are compared to background measurements (DOE, 2003).

Based on the maximum radiological emission rates for the proposed ACP and the comprehensive site monitoring program, the expected impact on air quality from radiological emissions is expected to be SMALL.

4.2.4.3 Ceasing Operations at Paducah

Ceasing operations at Paducah would decrease airborne emissions from those associated with current operation of the Paducah enrichment plant. Air quality impacts from non-radiological and radiological process and fugitive air emissions sources would be largely eliminated after cessation of operations. Air emissions after enrichment operations are shut down would be limited to combustion emissions from onsite utilities (e.g., boilers), combustion emissions from the operation of vehicles and equipment by the maintenance and security workforce, and fugitive particulate emissions from plant property and operation of vehicles on paved roads.

Fugitive particulate emissions would not be directly affected by cessation of enrichment plant operations. Existing fugitive dust management systems and procedures would be maintained after cessation of plant operations. Other than fugitive dust potentially containing radionuclides, no radiological air emissions are anticipated to occur once the enrichment operations are ceased. Air emissions of hazardous air pollutants could potentially result from maintenance activities, but such emissions would be lower than those associated with current plant operations.

Based on this analysis, the air quality impacts associated with the cessation of operations at Paducah are expected to be SMALL.

4.2.5 Geology and Soil Impacts

This section assesses potential impacts on geologic resources and soils during site preparation and construction and operation of the proposed ACP, along with the corresponding impacts associated with the cessation of gaseous diffusion operations at Paducah (centrifuge manufacturing and decommissioning of the proposed ACP are discussed separately in Sections 4.2.14 and 4.2.15, respectively). Impacts could result from planned excavation activities for the proposed ACP or spills that could cause soil contamination. There are no known mineral deposits on the proposed ACP site; therefore, there would be no impacts to mineral resources. Chapter 3 describes site soil, which is heavily altered due to past construction activities. The soils at and nearby the site are not considered prime farmland due to low fertility, previous disturbance, and slope (Borchelt, 2003; Yost, 2005).

4.2.5.1 Site Preparation and Construction

Site preparation and construction activities for the proposed ACP would occur primarily within the southwest quadrant of the DOE reservation's central area, as described in Section 2.1. In total, activities needed to construct new facilities in the central area would disturb approximately 12 hectares (30 acres). All of these activities would occur within an existing industrial facility with natural soils already altered as a result of mixing from previous cut and fill activities. The terrain in this area is flat and the new construction would not alter existing drainage patterns. Soils exposed during construction would be temporarily susceptible to increased erosion caused by wind or rain, but any such erosion would be very minor and short lived.

Cylinder Storage Yard X-745H, occupying 10 hectares (24 acres), would be constructed just north of Perimeter Road in an area containing managed grasslands and old fields with a small portion of upland forest. It has approximately 15 meters (50 feet) of topographical expression and is located between two tributaries to Little Beaver Creek. The majority of the topography and soils in this area have been previously disturbed and altered (USEC, 2005a). Construction of this yard would include cut and fill of approximately 10,000 cubic yards during a construction period of 24 months. During excavation and grading, the steep slopes would be more susceptible to soil erosion and the streams at the bottom of the slopes may receive an increased amount of silt. Engineering controls and best management practices would be implemented to minimize the extent of excavation. Disturbed areas would, to the extent practicable, be controlled to minimize erosion and sediment runoff; for example, USEC would implement best management practices, such as minimizing the area of disturbance, erosion control ditches, temporary vegetation seeding, and silt fencing, during construction to minimize erosion and siltation of streams (USEC, 2005a).

Site preparation and construction activities could also result in spills of oils, lubricants, and other materials from construction equipment. USEC would take precautions in accordance with applicable laws and best management practices to avoid accidental releases to the environment; this would include the use of liquid effluent tanks, holding ponds with oil diversion devices, and spill response equipment and procedures (USEC, 2005a). In addition, in accordance with best management practices, all USEC employees would be provided with required training to ensure that personnel adequately understand the hazards associated with the materials they are handling and understand procedures for spill response (USEC, 2005b). Spill response equipment, such as patch kits, sewer plugs, vacuum trucks, storage tankers, oil skimmers, spill response trailers, portable pumps, and portable lighting would also be maintained onsite (USEC, 2005b). Because of such precautions, spills should be small and occasional, and the response to such spills would be prompt and would contain and remove material that had been released or contaminated.

In summary, most of the site is an existing industrial facility with altered natural soils. Natural soils are cohesive and over-consolidated and have low potential for liquefaction. There is little likelihood of impact from soil compaction or subsidence. The flat terrain in the central area, and the dense soil, low moisture content, and vegetative cover in the majority of the X-745H Cylinder Yard Area make landslides unlikely. Construction activities would not alter current drainage and would not disturb any soils that qualify for protection as prime farmland (Yost, 2005). There would be a potential for increased erosion and siltation of streams near the construction site of Cylinder Storage Yard X-745H, as well as the potential for soil contamination from spills or leaks from construction equipment, but both of these potential impacts should be minimized by the use of standard best management practices, such as minimizing the area of disturbance, erosion control ditches, temporary vegetation seeding, and silt fencing, during construction to minimize erosion and siltation of streams (USEC, 2005a). The overall impacts on soils during site preparation and construction activities would therefore be SMALL.

4.2.5.2 Facility Operation

Operations potentially impacting soils include spills from production activities in the Feed and Customer Services Building and the Product and Tails Withdrawal Building, both of which would be located within the central area of the DOE reservation. Floors inside these buildings would be sealed and spill containment systems would be in place. Gaseous releases associated with cylinder connections and equipment upsets would quickly convert to solid uranyl fluoride, which typically would be collected via a gulper system that filters out the particulates; however, some uranyl fluoride may settle onto the floor (USEC, 2004c). Any such contamination would be collected in the liquid effluent collection system, which would consist of a series of tanks located throughout the ACP. Because the building construction and spill control systems make it unlikely that any spills inside these buildings will reach outside soils, the potential for soil impacts from this scenario is SMALL.

Normal operations would also release small amounts of uranium and fluoride to the air, which may be deposited onto soils downwind of the facility. Section 4.2.4.2 describes the potential releases from facility operations to air. Because these anticipated release and deposition rates are expected to be very minor, the potential for soil contamination at downwind locations would be SMALL.

UF_6 transfer and storage activities would occur at cylinder storage yards within the central area of the reservation and at the X-745G-2 and X-745H Cylinder Storage Yards north of Perimeter Road. These storage yards would be constructed of thick high-pressure concrete with a smooth troweled surface. The surface of the concrete would be sealed to prevent infiltration of materials. Cylinders in the storage yards would contain solid UF_6; therefore, there is no potential for liquid UF_6 release. Spills of other hazardous material, such as oils or lubricants from the cylinder handling equipment, would be isolated and cleaned up using spill containment and control equipment located at the storage pads. Because the yards are flat, any spilled liquids or any contamination suspended in storm water runoff could travel to the edge of the pad and migrate onto adjacent soil. If such contamination did reach the soil, mitigation measures would consist of delineating the extent of the contamination and removing it. Therefore, any resulting soil impacts would be temporary, localized, and SMALL.

There are no major geologic faults in the vicinity of the proposed ACP and there have been no historical earthquake epicenters within 40 kilometers (25 miles) of the site. For the Gas Centrifuge Enrichment Plant design in the 1980s, the maximum earthquake was defined as one with a mean recurrence interval of 1,000 years. The general design-basis earthquake for the proposed ACP is also based on a 1,000-year return period. Building X-3346A was designed at a higher safety margin with a design basis earthquake of 10,000-year return period. As a result of the probability of an event occurring and the large distance of a potential event to the site, any potential impacts from seismicity are expected to be SMALL.

4.2.5.3 Ceasing Operations at Paducah

Ceasing operations at the Paducah enrichment plant would not involve any excavation or disturbance of soils or the subsurface. Therefore, the impacts to geology and soils associated with this action would be SMALL.

4.2.6 Water Resource Impacts

This section assesses potential impacts of the proposed action on water resources, not including wetlands. Potential impacts to wetlands are covered in the ecological impact assessment included in Section 4.2.7.

4.2.6.1 Site Preparation and Construction

The following subsections discuss the potential impacts on surface water, floodplains, and groundwater associated with the site preparation and construction phase of the proposed action.

Surface Water

During the site preparation and construction activities, 15 buildings and one cylinder storage yard would be refurbished, and a total of 12 hectares (30 acres) of new buildings, facilities, and storage yards would be constructed within the southwest quadrant of the central area. In addition to these facilities, a new 10-hectare (24-acre) cylinder storage yard would be constructed outside of the central area, just north of Perimeter Road, in the northern portion of the DOE reservation. Because land disturbance activities would involve more than 2 hectares (5 acres), a National Pollutant Discharge Elimination System permit that would specify and regulate the quality of storm water runoff would need to be issued by the Ohio EPA. The site preparation and construction activities within the central area would drain to the DOE Piketon Tributary and the West Ditch, as those two surface water features are downgradient from the proposed land disturbing areas. The site preparation and construction activities associated with the 10-hectare (24-acre) X-745H Cylinder Storage would drain to two unnamed tributaries as well as Little Beaver Creek, which are immediately downgradient of the proposed storage yard. All of these surface waters discharge into the Scioto River.

Site preparation and construction activities in the southwest quadrant of the central area would involve land clearing, excavation, and minimal additional grading (the land in this area has already been leveled as part of earlier site preparation and construction activities). Such disturbances would result in a temporary increase in soil erosion and sedimentation in adjoining ditches during the 24-month construction period, which could increase turbidity and alter other water quality parameters (e.g., dissolved oxygen, pH, hardness levels, and chemical concentrations). However, because the onsite runoff and associated sediments would discharge into holding ponds, which have been designed to reduce such impacts, and would then discharge into the regulated portion of the West Ditch and the DOE Piketon Tributary, such impacts would be considered SMALL. The erosion and resulting sedimentation would not alter or preclude the designated uses of the West Ditch or Piketon Tributary, as presented in Section 3.7, nor would it affect the designated use and associated water quality criteria of the Scioto River.

Site preparation and construction activities for X-745H Cylinder Storage Yard outside of the Perimeter Road in the northern portion of the reservation would result in more extensive soil disturbances, as described in Section 4.2.5.1. The X-745H Cylinder Storage Yard would be located on a relatively flat grasslands and old fields bounded on the south by the Perimeter Road; on the east by an unnamed tributary to Little Beaver Creek (adjacent to the North Access Road); on the west by the eastern drainage channel to, and the discharge from, the X-230L North Holding Pond; and on the north by the valley of Little Beaver Creek. The proposed cylinder storage yard would be located in an upland area at

approximately 660 feet above mean sea level at its southern end dipping to 640 feet above mean sea level at the northern elevation. While this area is adjacent to riparian and upland forests and wetland areas of the Little Beaver Creek and its tributaries, the proposed construction would not require removal of or disturbance in those areas (USEC, 2005c).

Nevertheless, site preparation and construction activities for the new cylinder storage yard would result in a temporary increase in erosion and sedimentation during the 24-month construction period. The runoff, if not controlled, would directly enter the unnamed tributaries as well as Little Beaver Creek. Because of the size of the area to be disturbed (10 hectares [24 acres]), the steep topography, the extent of cut and fill activities needed, and the proximity to Little Beaver Creek, which is a State Resource Water that exhibits exceptional ecological values and/or exceptional recreational values (as defined in OAC 3745-1-09 for the Scioto River Drainage Basin), the erosion and sediments that could enter the creek could result in a MODERATE impact. Implementation of the best management practices described in Section 4.2.5.1 on soil impacts, together with USEC's plan to not disturb the upland mixed hardwood forest and the riparian forest adjacent to the managed field and old field (USEC, 2005c), would reduce this potentially MODERATE impact to a SMALL impact. Such measures would reduce the level and amount of erosion and sedimentation that would occur in the adjacent surface waters. With the implementation of these mitigation measures, the site preparation and construction activities needed for X-745H Cylinder Storage Yard also would not affect the designated use and associated water quality criteria of the Scioto River.

Sanitary wastewater associated with the site preparation and construction activities (up to 814 cubic meters per day [215,000 gallons per day]) would be treated at the Sewage Treatment Plant (Building X-6619). Currently, this plant treats approximately 909 cubic meters per day (240,000 gallons per day) and has a design capacity of 2,275 cubic meters per day (601,000 gallons per day). Effluent from the sewage treatment plant would discharge directly to the Scioto River via a pipeline that is regulated under a National Pollutant Discharge Elimination System permit. The additional 814 cubic meters per day (215,000 gallons per day) would represent a 90 percent increase in the wastewater currently processed at the sanitary treatment plant; however, the total processed wastewater would represent 75 percent of the plant's total design capacity (USEC, 2005a). The additional wastewater would not affect the status or water quality criteria of the permit. As a result, the additional wastewater discharge during site preparation and construction activities would cause an overall SMALL impact on surface water resources.

Finally, small and occasional spills or leaks of petroleum-based products (e.g., diesel fuel or oil) or hazardous materials associated with construction equipment could cause SMALL impacts to surface waters adjacent to site preparation and construction activities. To prevent such impacts, all temporary storage tanks or sheds that contain such material would have secondary containment features (berms or dikes to contain spilled contents), and would have appropriate spill response equipment appropriate for the materials present. In addition, trained and qualified spill response and clean-up professionals would respond to incidental or accidental releases of petroleum-based products or hazardous materials in accordance with the United States Enrichment Corporation's Spill Prevention Control and Countermeasures Plan and best management practices (United States Enrichment Corporation, 2004; and USEC, 2005b). The Spill Prevention Control and Countermeasures Plan would be revised to explicitly address the proposed ACP (USEC, 2005a).

Floodplains

None of the proposed site preparation and construction activities would occur within a 100-year floodplain. The clearing of 22 hectares (55 acres) of managed lawns, fields, and forested areas would result in increased storm water runoff; however, the DOE reservation has a storm water management system of open and closed culverts and ditches, as well as a series of holding ponds that have been designed to control storm water runoff (USEC, 2005a; USEC, 2004c). Because none of the proposed site

preparation and construction activities would occur within a 100-year floodplain, and the DOE reservation has an existing storm water management system, the impacts on floodplains would be SMALL.

Groundwater

Groundwater is approximately 9 meters (30 feet) below ground surface within the proposed site preparation and construction areas. Because this depth would be well below the depth of excavation needed for the proposed new facilities, groundwater would not be directly impacted during site preparation or construction activities. As presented in Section 3.7.3, the proposed site preparation and construction activities would not occur in areas directly overlying contaminated groundwater.

If they occur, spills or leaks of petroleum-based products (e.g., diesel fuel or oil) or hazardous materials associated with construction equipment could be potential sources of groundwater contamination. Implementation of the best management practices described in Section 4.2.5.1 on soil impacts, as well as providing for secondary containment features for all temporary storage tanks or sheds, and maintaining spill response equipment appropriate for the materials present, would reduce the potential impact of a release. In addition, trained and qualified spill response and clean-up professionals would respond to incidental or accidental releases of petroleum-based products or hazardous materials in accordance with the site's Spill Prevention Control and Countermeasures Plan and best management practices (United States Enrichment Corporation, 2004; USEC, 2005b).

The water that would be used during site preparation and construction activities would be drawn from water supply lines present on the DOE reservation, which is drawn from a series of well fields located along the Scioto River. The increased use of water during site preparation and construction (approximately 814 cubic meters per day [215,000 gallons per day]) would be less than that during facility operation (up to 1,995 cubic meters per day [527,000 gallons per day]) and would not impact the regional groundwater supply (see Section 4.2.6.2 for additional information).

In summary, groundwater would not be directly encountered during excavation activities, should not be contaminated by any new spills or leaks, and should not be depleted as a supply. As a result, any impacts to groundwater caused by site preparation and construction activities are expected to be SMALL.

4.2.6.2 Facility Operation

The following subsections discuss the potential impacts on surface water, floodplains, and wetlands associated with the proposed ACP operations.

Surface Water

The liquid discharges associated with operation of the proposed ACP facility include sanitary wastewater, discharge from the tower water cooling system, storm water runoff, and any incidental leaks or spills. The centrifuges used in the proposed ACP would be cooled via a closed-loop machine cooling water system and would not result in any discharges. The heat from the machine cooling water system would be transferred via a heat exchanger to the tower water cooling system. USEC does not anticipate any liquid discharges of licensed radioactive materials from the proposed ACP (i.e., from sanitary wastewater, cooling water, or storm water runoff). Any effluents potentially containing radioactive material would have to meet the NRC standards in 10 CFR Part 20 (Standards for Protection Against Radiation) prior to being discharged or would have to be disposed at a licensed facility (USEC, 2004c).

The flow from sanitary wastewater during facility operation (approximately 361 cubic meters per day [95,400 gallons per day]) would feed into the onsite sewage treatment plant, which in turn discharges to the Scioto River. This additional flow would represent a 40 percent increase in wastewater currently processed at the plant; however, the total processed wastewater would still represent only 56 percent of the plant's total design capacity (USEC, 2005a). This additional wastewater would not affect the status or water quality criteria of the National Pollutant Discharge Elimination System permit and would represent a SMALL impact on surface water quality.

The tower water cooling system would discharge approximately 273 cubic meters per day (72,000 gallons per day) of wastewater to the DOE reservation recirculating cooling water system, which discharges to the Scioto River in accordance with a National Pollutant Discharge Elimination System permit (United States Enrichment Corporation Outfall 004) (see Figure 3-11 in Chapter 3). This wastewater from the proposed ACP would be non-contact cooling water and would not alter the properties or quality of the current wastewater discharge. The volume would be the only attribute of the wastewater that would be altered relative to the current recirculating cooling water system discharge. Currently, 4,543 cubic meters per day (1.2 million gallons per day) are discharged from the cooling system, so the proposed additional discharge would represent a less than six percent increase in discharge rates. As such, the tower water cooling discharges associated with the proposed ACP would have a SMALL impact on surface water quantity and quality.

Storm water runoff from the ACP area would drain to a pair of existing holding ponds: the X-2230N West Holding Pond (National Pollutant Discharge Elimination System Outfall 013) and the X-2230M Southwest Holding Pond (National Pollutant Discharge Elimination System Outfall 012) (see Figure 3-11 in Chapter 3). Both of these ponds provide a quiescent zone for settling suspended solids, dissipation of chlorine, and oil diversion containment. The ponds discharge to unnamed tributaries to the Scioto River. An automated sampler currently collects a weekly composite sample of the liquid effluent for radiological analysis as well as samples for the National Pollutant Discharge Elimination System-mandated analyses (USEC, 2005a). Because discharges through these ponds would continue to be regulated under the National Pollutant Discharge Elimination System, and because the existing monitoring systems would continue to be implemented once the ACP becomes operational, storm water discharges associated with ACP operations should result in a SMALL impact on surface water quality.

Any leakage from the machine cooling water system and incidental spills of water elsewhere in the ACP would be collected by the Liquid Effluent Collection system. This system would consists of a set of drains and underground collection tanks for the collection and containment of leaks and spills of chemically treated water. The drains would be located throughout the ACP. The tanks would have a capacity of 550 gallons each and would be monitored by liquid level gauges mounted above grade on pipe stands. USEC would sample and analyze the water accumulated in the Liquid Effluent Collection tanks prior to disposal. If the contents meet the requirements of 10 CFR 20.2003 (which include concentration limits specified in Table 3 of Appendix B to 10 CFR Part 20), they may be pumped to the reservation sanitary sewer system. Otherwise the tank contents would be containerized for offsite disposal. An integrity assurance plan developed by USEC would assure the integrity of the tanks and inventory monitoring of the tank contents would be used to detect leaks from the Liquid Effluent Collection System. (USEC, 2004c)

A total of 26 aboveground fuel supply tanks with a total capacity of 394 cubic meters (104,000 gallons) would be installed to support backup generators and boilers. These tanks would be constructed of materials compatible with the product to be stored and with the conditions of storage (e.g., pressure and temperature), and would meet all operational regulatory requirements, including those outlined in the Spill Prevention Control and Countermeasures Plan (United States Enrichment Corporation, 2004). A secondary means of containment for tanks storing petroleum products, as required by 40 CFR § 112.8,

would provide for the entire capacity of each aboveground storage tank, with sufficient freeboard to contain precipitation in addition to any spilled fuel. All associated piping systems would conform to standards for fuel distribution pressure piping, would be designed to minimize abrasion and corrosion, and would allow for expansion and contraction. (USEC, 2005a)

Special precautions would also be taken to make sure fuel is transferred into the tanks in a way that minimizes the potential for accidental spills. For example, all fuel lines and tanks would be labeled in accordance with regulatory standards. Spill cleanup materials, such as absorbent pads and/or spill pallets, would be available at all hose connections. Standard fuel-oil delivery procedures would be followed by truck drivers and receiving personnel during unloading operations at each tank. Precautions also would be taken to avoid impacts from accidental releases, such as the use of safety procedures, spill prevention plans, and spill response plans in accordance with Federal and State laws. Drainage from the area of the aboveground tanks also runs directly to the X-2230M and X-2230N Holding Ponds, which are equipped with diversion systems to prevent spilled material from reaching the Scioto River (USEC, 2005a). These systems aid in preventing degradation of the overall water quality of the Scioto River because of the DOE reservation activities. Based on all of these measures, the likelihood and severity of potential impacts from accidental releases from the aboveground storage tanks would be minimized, and any resulting impact should be SMALL.

In addition to possible releases from the storage tanks described above, incidental spills and accidental releases associated with operation of the proposed ACP facility have the potential to adversely impact surface waters. Such spills or releases within a building would be contained within the building via the Liquid Effluent Collection system, and would be cleaned up before escaping outside. Likewise, any such spills or releases outside of a building (e.g., at a cylinder storage yard) are expected to be infrequent and small, would be contained within the area, and would be managed in accordance with applicable Federal and State regulations. In addition, any contaminated storm water runoff would be diverted to holding ponds and released through outfalls controlled under the National Pollutant Discharge Elimination System. Therefore, any impacts to surface waters caused by incidental spills and accidental releases should be SMALL.

As stated at the beginning of this section, USEC does not anticipate any liquid discharges of licensed radioactive materials from the proposed ACP. Such releases would be controlled through plant design, operations, and monitoring. Based on historical operating experience at the Portsmouth reservation, USEC has established maximum effluent concentrations expected under normal operations of the ACP. Table 4-3 lists these anticipated concentrations along with the corresponding release limits from 10 CFR Part 20 for comparison. As discussed above, the Liquid Effluent Collection system contents will be sampled and compared to the Table 3 limits prior to discharge. As shown, the anticipated radionuclide releases are well below the NRC's limits.

Table 4-3 Anticipated Radionuclide Concentrations in Liquid Effluents from Normal Operations

Effluent Source	Total Uranium[a] µCi/mL	Technetium µCi/mL
Liquid Effluent Control System Discharge[b]	<0.0000003 and <0.1 Ci/yr	<0.00000002 (<MDA)
Tower Water Cooling System Blowdown	<0.00000003	<0.00000002 (<MDA)
X-2230N West Holding Pond (NPDES Outfall 012)[c]	<0.00000001	<0.00000002 (<MDA)
X-2230M Southwest Holding Pond (NPDES Outfall 013)[c]	<0.00000001	<0.00000002 (<MDA)
Sanitary wastewater (excluding discharge from the Liquid Effluent Control System)	<0.00000003	<0.00000002 (<MDA)
North Cylinder Pad Runoff	<0.00000001	<0.00000002 (<MDA)
10 CFR Part 20, App. B, Table 2 limits	0.0000003	0.00006
10 CFR Part 20, App. B, Table 3 limits	0.000003	0.0006

Notes:
MDA = Minimum detectable activity; µCi/mL = microcurie per milliliter; Ci/yr = curies per year.
[a] Since uranium isotopes present at the ACP would have the same discharge limit, uranium isotope activities are combined into a Total Uranium activity to simplify comparison to the Table 2 limits.
[b] Liquid Effluent Control effluents are characterized prior to discharge. The single Ci/yr limit reported in the table applies to combined uranium and technetium activities.
[c] Anticipated concentrations are annual averages based on monthly grab samples from 1995 through 2000.
Source: USEC, 2004c.

If there are any spills or leaks containing licensed radioactive material at the ACP, they would be collected in the Liquid Effluent Control system. If the effluent concentration is below the 10 CFR Part 20, Appendix B requirements, as anticipated as shown in Table 4-3, then the effluent could be discharged into the Scioto River with no significant adverse consequences. If the effluent concentration does not meet the Part 20 requirements, then the effluent would be containerized for offsite disposal. Any discharges to the Scioto River would be well below regulatory limits prior to any dilution provided by the river.

In addition, with the exception of DOE outfall 613, a monthly composite water sample would be collected from all DOE National Pollutant Discharge Elimination System outfalls discharging to offsite waters and analyzed for total uranium, uranium isotopes (uranium- 233/234, uranium-235, uranium-236, and uranium-238), technetium-99, and transuranic radionuclides (americium-241, neptunium-237, plutonium-238, and plutonium-239/240). Outfall 613 would not be monitored for radionuclides because there is no potential source for radiological contamination of the water discharged from this outfall. A weekly composite water sample is also currently collected from all United States Enrichment Corporation outfalls discharging to offsite waters and analyzed for total uranium, technetium-99, and transuranic radionuclides; uranium isotopes are not analyzed (DOE, 2004b). All of this existing monitoring would continue once the ACP becomes operational.

Based on this analysis, the potential surface water impacts associated with ACP effluent containing radioactive material would be SMALL. Plant design, operation, and monitoring would ensure that any such discharge would meet the 10 CFR Part 20 requirements, and the current and future monitoring (all DOE and United States Enrichment Corporation outfalls) would ensure that such levels would be maintained.

Floodplains

The operation of the proposed ACP would not impact floodplains, as none of the operations would be located in a floodplain or would alter the characteristics of the floodplain.

Groundwater

The DOE reservation draws its potable and process water from three well fields in the Scioto River Valley Aquifer. The maximum potential water production from the well fields is 76,000 cubic meters per day (20 million gallons per day), which is also the permitted withdrawal volume. Current water use, in the gaseous diffusion plant's standby mode, is less than 21,000 cubic meters per day (5.5 million gallons per day). The proposed ACP would require an additional 2,500 cubic meters per day (0.65 million gallons per day) for drinking, hygiene, and tower water cooling makeup (non-contact cooling water) (USEC, 2005a). This additional groundwater withdrawal would result in a SMALL impact on the availability of groundwater in the Scioto River Aquifer and a corresponding small risk of subsidence caused by depressed groundwater levels. This conclusion is based on the following four reasons:

- The increase in consumption would be only 10 percent higher than current withdrawal rates and would represent only 31 percent of the total design capacity (and currently permitted rate) of the well field groundwater withdrawal system.

- The three well fields are located approximately 8, 11, and 24 kilometers (5, 7, and 15 miles) from the DOE reservation boundary along the Scioto River, and are spaced between 16 to 24 kilometers (10 to 15 miles) apart. The wells within each well field (between 4 and 15 individual wells) are located within 2 to 6 kilometers (1 to 3 miles) of each other. Therefore, the increased withdrawals will come from several spaced-out locations, rather than being all concentrated in one location.

- The wells produce water from the shallow saturated sand and gravel layers adjacent to the Scioto River. The sand and gravel layers are recharged from water in the river. Computer models have shown that 50 to 88 percent of the water drawn from the wells is from the river, and the chemical character of the groundwater is influenced by the river (Nortz et al., 1994). Therefore, any water withdrawn from the ground would be replaced by water from the river, and there would not be a decline in groundwater levels.

- Conversations with the Ohio EPA have confirmed that subsidence and sink holes from groundwater withdrawal are not an issue in the region, as water would be drawn down from the Scioto River, rather than create a void (Ohio EPA, 2005).

DOE is currently performing groundwater remediation activities at the X-749/X-120/Peter Kiewit Landfill area approximately 152 meters (500 feet) south of the proposed ACP site. As a result of previous landfill operations, the groundwater in the Gallia aquifer is contaminated with trichloroethene. A horizontal groundwater extraction well was installed between the proposed ACP site and the Peter Kiewit landfill to collect and treat contaminated groundwater. The groundwater remediation activities are not located within the construction or operational footprint of the proposed ACP or its associated utilities; therefore, the proposed action would not impact the ongoing groundwater remediation activities. Two

monitoring wells are located between the contaminated area and the proposed ACP site. The wells are monitored annually and did not show trichloroethene contamination in 2002.

Two existing underground fuel storage tanks with a total capacity of under 42 cubic meters (11,000 gallons) would be used in addition to the aboveground tanks described above. These tanks are currently in compliance with all applicable regulations covering leak detection, corrosion protection, and spill/overflow prevention. Therefore, any future impacts associated with the continued use of the underground storage tanks are expected to be SMALL.

Spills and accidental releases associated with other operations of the proposed ACP facility also have the potential to adversely impact groundwater. Any spills or releases within a building would be contained within the building and would be cleaned up before escaping outside. Likewise, any such spills or releases outside of a building (e.g., at a cylinder storage yard or an aboveground tank) are expected to be infrequent and small, would be contained within the area, and would be managed in accordance with applicable Federal and State regulations, as described in preceding sections. Therefore, any impacts on groundwater caused by other potential spills and accidental releases should be SMALL.

4.2.6.3 Ceasing Operations at Paducah

Ceasing operations at Paducah would decrease impacts to water resources from those associated with operation of the Paducah enrichment plant. Impacts to water resources from potable water utilization and impacts to water quality from wastewater discharges would be largely eliminated after cessation of operations. The enrichment plant operations consume approximately 98,000 cubic meters (26 million gallons) of potable water per day. After cessation of operations, potable water utilization at the site would be limited to domestic and sanitary water use by the maintenance and security workforce and use of water in onsite utility systems. Therefore, potable water use and associated impacts to water resources would decrease.

Wastewater discharges and associated impacts to water quality would also decrease upon cessation of Paducah enrichment plant operations. Wastewater discharges would be limited to sanitary wastewater discharge associated with the maintenance and security workforce, as well as potential discharge of blowdown of heating and cooling water from onsite utility systems. These should be far less than current discharge levels.

Potential impacts to water quality from storm water runoff to surface water from plant property would not be directly affected by cessation of enrichment plant operations. Existing storm water management systems and procedures would be maintained in operation after cessation of plant operations.

Based on this analysis, the water resource impacts of ceasing operations at Paducah are expected to be SMALL.

4.2.7 Ecological Impacts

This section evaluates the potential impacts of site preparation and construction activities, facility operations, and ceasing operations at Paducah on flora and fauna; rare, threatened, and endangered species; and wetlands. Impacts on environmentally sensitive areas are not evaluated because such areas are not located within a one-mile radius of the reservation and are not expected to be impacted (see Section 3.8.5).

4.2.7.1 Site Preparation and Construction

The following subsections discuss the potential impacts of the proposed site preparation and construction activities on flora and fauna; rare, threatened, and endangered species; and wetlands.

Flora and Fauna

Site preparation and construction for the proposed ACP facilities in the central area of the DOE reservation would be adjacent to existing structures. The proposed new buildings in this area would result in the loss of approximately 12 hectares (30 acres) of landscaped area (fields and lawns). Such areas provide habitat for a limited number of wildlife species that are tolerant of active human disturbance and would result in SMALL impacts on flora and fauna.

Site preparation and construction activities for X-745H Cylinder Storage outside of the Perimeter Road in the northern portion of the reservation would result in more extensive soil disturbances, as described in Section 4.2.5.1. This cylinder storage yard would be bounded on the south by the Perimeter Road; on the east by an unnamed tributary to Little Beaver Creek (adjacent to the North Access Road); on the west by the eastern drainage channel to and the discharge from the X-230L North Holding Pond; and on the north by the valley of Little Beaver Creek. The yard would be located in a relatively flat upland area made up of grasslands and old fields adjacent to riparian and upland forests and wetland areas of the Little Beaver Creek and its tributaries. However, the site preparation and construction activities would not require removal of, or disturbance of, vegetation in these adjacent areas (USEC, 2005c). The site preparation and construction activities within the grassland and old field area would result in a temporary increase in erosion and sedimentation during the 24-month construction period. The runoff, if not controlled, would directly enter the unnamed tributaries as well as Little Beaver Creek. Because of the size of the area to be disturbed (10 hectares [24 acres]), the steep topography, the extent of cut and fill activities needed, and the proximity to Little Beaver Creek, which is a State Resource Water that exhibits exceptional ecological values and/or exceptional recreational values (as defined in OAC 3745-1-09 for the Scioto River Drainage Basin), the erosion and sediments that could enter the creek could result in a MODERATE impact.

Implementation of the best management practices described in Section 4.2.5.1 on soil impacts, together with USEC's plan not to disturb the upland mixed hardwood forest and the riparian forest adjacent to the managed field and old field (USEC, 2005c), would reduce this potentially MODERATE impact to a SMALL impact. Such measures would ensure that the existing forested buffer area between the proposed cylinder storage yard and the riparian areas associated with the tributaries and Little Beaver Creek would be preserved. Such measures would also reduce the level and amount of sedimentation and erosion that would occur in the adjacent surface waters.

Rare, Threatened, and Endangered Species

Table 3-11 in Chapter 3 of this EIS lists the Federal and State Listed endangered, potentially threatened, and special concern species near the DOE reservation. Of the wildlife species, none would be impacted by the proposed site preparation and construction activities in the central area. The central area of the DOE reservation is a highly disturbed and managed area that does not provide suitable habitat for any of the species, and the nearest suitable habitats are over 1.5 kilometers (0.9 mile) away (USEC, 2005a).

Activities associated with the two cylinder storage yards outside of the central area would not impact the birds, reptiles, or plants listed in Table 3-11. The sharp-shinned hawk and the rough green snake have not been observed on the reservation for several years, and the timber rattlesnake has never been documented on the reservation. The plant species located on the reservation are associated with lagoon systems

located more than 1 kilometer (0.6 mile) from all the proposed site preparation and ground disturbing activities (USEC, 2005a)

There is a small potential for site preparation and construction activities at the cylinder storage yards outside of the central area to affect the potential summertime habitat for the Indiana bat. Previous studies have not documented the presence of the Indiana bat on the DOE reservation at Piketon, but have identified suitable summertime habitat on the reservation (USEC, 2005a). The proposed site preparation and construction activities for X-74H Cylinder Storage Yard, and any refurbishment activities needed at the X-745G-2 Cylinder Storage Yard, would be located approximately 500 meters (1,640 feet) from the suitable summer habitat for the Indiana bat. The construction noise, up to 94 decibels, could temporarily disrupt the activities or preclude Indiana bats from their potentially suitable habitat. However, the construction of the proposed X-745H Cylinder Storage Yard would only remove grassland and old field habitats and would preserve the existing upland mixed hardwood and riparian forests that act as a buffer between the proposed storage yard and the potential summertime habitat (USEC, 2005c). In addition, USEC indicated that it may implement the following mitigation measures:

- If trees (either live or dead) with exfoliating bark are encountered in the construction area, they should be saved if possible to avoid destroying potential habitat for the Indiana bat. If necessary, trees should be cut before April 15 or after September 15.

- Flexible construction schedules should be followed to avoid sensitive wildlife breeding or rearing periods.

- Temporarily disturbed areas should be revegetated with native vegetation.

- Bat habitat should be enhanced by installing bat houses.

- Natural material should be used for slope stabilization instead of engineered materials (concrete retaining walls). (USEC, 2005a)

The potential impacts on the Indiana bat and its potential habitat would be SMALL because, in addition to the potential mitigation measures, the Indiana bat habitat is only potential summertime bat habitat located approximately 500 meters (1,640 feet) away, and USEC would preserve the existing upland mixed hardwood and riparian forests around the proposed Cylinder Storage yard X-745H, which would act as a buffer. Because the Indiana bat habitat is only potential summertime bat habitat and is located approximately 500 meters (1,640 feet) away, because no forested habitat would be removed, and because USEC may implement the other mitigation measures listed above, the potential impact on the Indiana bat and its potential habitat would be SMALL.

Wetlands

None of the proposed site preparation and construction activities would occur in any of the jurisdictional or nonjurisdictional wetlands on the DOE reservation; however, such activities would be adjacent to jurisdictional wetlands regulated by the U.S. Army Corps of Engineers. The proposed site preparation and construction activities would not require the dredging or filling of any wetlands, but as discussed in the surface water section above, a temporary increase in erosion and sedimentation associated with construction would increase the turbidity for a short time and would alter water quality parameters of the surface flow that may enter wetlands adjacent to the land disturbing activities. Because no wetlands acreage would be lost and no Section 404 permit would be required, there is no need to develop a mitigation plan to enhance or replace any wetlands. However, standard erosion control best management practices would be implemented, as described in Section 4.2.5.1 on soils, and existing upland vegetative

buffers would be maintained, as described in the immediately preceding section on rare, threatened, and endangered species. With these mitigation measures, the impacts on wetlands would be SMALL.

4.2.7.2 Facility Operation

This section evaluates the potential impacts of proposed ACP operations on flora and fauna; rare, threatened, and endangered species; and wetlands.

Flora and Fauna

Operation of the proposed ACP would result in an increase in personnel traveling to and from the facility and in minor increases in noise emitted from the facility. Because the active operation of the proposed ACP is within an existing highly industrialized area with ongoing activities, the additional personnel and noise would result in a SMALL impact on the flora and fauna in the area, to the limited extent they are present in this area.

The proposed ACP operations would also result in minor increases in air emissions and point source water discharges. The additional air emissions and liquid discharges (effluent), as described in Sections 4.2.4 and 4.2.6, respectively, would result in SMALL impacts on the flora and fauna downwind or downstream of the facility. In terms of radiological air emissions and effluent releases, the small discharge rates from the proposed ACP are projected to result in ambient concentrations of radionuclides that are safe for humans (see Section 4.2.12). Since the level of radiation safety required for the protection of humans is adequate for other animals and plants (IAEA, 1992), no additional mitigation efforts would be necessary beyond those required to protect humans.

In terms of nonradiological releases, the primary pollutant of potential concern is HF in surrounding air. The chemical toxicity of airborne uranium (as opposed to its radiological hazard) is also of possible interest. As presented in Section 4.2.12.3, routine airborne emissions from the proposed ACP are projected to result in a maximum HF concentration of 2.35×10^{-3} micrograms per cubic meter and a maximum uranium concentration of 6.09×10^{-3} micrograms per cubic meter, both at the point of the Ohio National Guard building located onsite 555 meters (1,820 feet) from the proposed ACP buildings. No criteria exist to evaluate safe levels of HF and uranium exposures of plants and animals, but these predicted concentrations are orders of magnitude below criteria designed to ensure safe human exposures. Therefore, any impacts to flora and fauna are also expected to be SMALL.

Rare, Threatened, and Endangered Species

Normal operations for the proposed commercial centrifuge project would not affect any Federally listed threatened and endangered animal and plant species or critical habitat. The closest identified Indiana bat habitats on the DOE reservation is approximately 1,700 meters (5,600 feet) from the proposed ACP process facilities in the central area and is approximately 500 meters (1,640 feet) from the cylinder storage yards outside of Perimeter Road. During the summer months, airborne emissions from facility operations would be occurring at the same time when Indiana bats may be present. However, because of the distance from the actively used ACP facilities in the central portion of the facility, the low ambient levels of HF and total uranium as discussed above, and limited activity that would occur at the cylinder storage yards outside of the central area but closer to suitable summer habitat, the operation of the proposed ACP would not affect a listed species or critical habitat. Therefore, there would be a SMALL impact.

Wetlands

The operation of the proposed ACP would not encroach on wetlands. The operations would not involve activities in, releases to, or filling of wetlands. Therefore, the impacts would be SMALL.

4.2.7.3 Ceasing Operations at Paducah

Cessation of operations at the Paducah enrichment plant would not involve any excavation or disturbance of habitat. Potential impacts to ecological resources from storm water runoff to surface water from plant property would not be directly affected by cessation of enrichment plant operations. Existing storm water management systems and procedures would be maintained in operation after operations ceased. For the reasons, the impacts to ecological resources would be SMALL.

4.2.8 Socioeconomic Impacts

Major industrial projects have the potential to affect the socioeconomic dynamics of the communities in or around which they are situated. Capital expenditures and the migration of workers and their families into a community may influence factors such as regional income; employment levels; local tax revenue; housing availability; area community services such as healthcare, schools, and law enforcement; and the availability and cost of public utilities such as electricity, water, sanitary services, and roads. The objective of a socioeconomic impact analysis is to assess the likely beneficial and adverse impacts of a project on these and other factors important to the social and economic well-being of local communities, and to suggest measures to mitigate potentially adverse impacts if necessary. Methodologies for impact assessment may include both quantiative and qualitative approaches, as described in the methodologies section below.

This section provides a detailed analysis of the socioeconomic impacts of the proposed action. The impacts are evaluated over a region of influence covering four counties in southern Ohio – Pike, Scioto, Ross, and Jackson Counties. As described in Section 3.9 of this EIS, approximately 92 percent of the 1,223 United States Enrichment Corporation and USEC workers employed in 2004 at the DOE reservation in Piketon resided in these four counties. Of these workers, 49 percent lived in Scioto County, 22 percent lived in Pike County, 12 percent lived in Ross County, and 10 percent lived in Jackson County. Geographically, Ross, Jackson, and Scioto counties bound Pike County to the North, East and South, respectively. This region is expected to encompass the area in which workers employed by the project are expected to live and spend most of their salary (approximately half their after-tax income), and in which a significant portion of site purchase and non-payroll expenditures are expected to occur.

4.2.8.1 Methodology

This analysis examines the socioeconomic impacts of the proposed site preparation and construction activities at Piketon, the proposed ACP operations, decommissioning of the ACP, and the cessation of uranium enrichment activities at Paducah. Each of these activities is assessed for its potential impact on the following socioeconomic factors: (1) regional employment; (2) tax revenues; (3) population characteristics; (4) housing; (5) community and social services (including education, healthcare, law enforcement, and fire services); and (6) public utilities (including electricity, water, sanitary wastewater, and solid waste disposal).

Employment impacts are evaluated by estimating the level of direct and indirect employment created by the proposed action. Direct employment refers to jobs created by the proposed site preparation and construction activities and facility operations. Indirect employment refers to jobs created in the region of

influence to support the needs of the workers directly employed by the proposed action and jobs created to support site purchase and non-payroll expenditures. The number of direct jobs created in each stage is estimated based on anticipated labor inputs for various engineering and construction activities. Indirect employment is estimated using an economic model known as an input-output model. This analysis uses RIMS-II, an input-output model developed by the Bureau for Economic Analysis, to estimate the indirect employment impacts of the proposed action. Input-output models such as RIMS-II rely on regional input-output multipliers to account for inter-industry relationships within regions. Inputs into the model include information on the initial changes in output, earnings, or employment that are associated with the project. A detailed description of the impact analysis methodology is provided in USEC's Environmental Report (USEC, 2005a). The relative magnitude of the impact on regional employment is assessed by comparing total project-generated employment to current regional employment levels.

Impacts to State income tax revenues are estimated by assuming appropriate remuneration rates for project-related jobs and applying Ohio State income tax rates. Sales tax revenues are estimated by applying appropriate assumptions about the fraction of after-tax income generated by construction-phase jobs that will be spent within the region of influence and applying Ohio sales tax rates. Impacts to local tax revenues are estimated by applying appropriate assumptions about the fraction of after-tax income generated by project-related jobs that will be spent within each county and applying county-specific sales tax rates. The relative magnitude of the impact on regional tax revenues is assessed by comparing total project-generated tax revenues to current regional tax revenues.

Impacts to population characteristics are evaluated by estimating the fraction of direct and indirect jobs that will be filled by migration of workers from outside the region of influence. The average family size and age profiles of migrating families are estimated using appropriate demographic assumptions based on U.S. Census Bureau statistics. These estimates of potential migration are compared to existing regional population levels to assess the relative magnitude of impacts to population characteristics.

Impacts to area housing resources are estimated by a quantitative comparison of current housing vacancy statistics for rental and owner-occupied houses to the estimated population influx into the region of influence.

Impacts to community and social services are estimated using a level-of-service assessment approach. Level-of-service indicators typically measure the ratio of service providers to the recipient population for a particular service; examples include the student-to-teacher ratio for educational services and the number of physicians per 1,000 people for healthcare services. The most recent data on existing levels-of-service for education, healthcare, law enforcement, and fire services in the region of influence, if available, are combined with estimates of population influx and standard demographic assumptions to derive expected new levels-of-service. These are compared to State average levels-of-service for each community service to identify potentially adverse impacts.

Impacts to public utilities (such as water, sanitary wastewater, solid waste, and transportation and road services) are estimated by identifying any stages of the proposed action that would procure utilities from offsite vendors that service communities in the region of influence. Where applicable, the levels of potential procurement under the proposed action are compared to the existing capacities of the utilities and existing demand levels to assess whether the procurements are likely to affect the availability and pricing of services to local communities.

4.2.8.2 Site Preparation and Construction

As described in Chapter 2, several existing buildings from the former Gas Centrifuge Enrichment Plant would be refurbished. In addition, two new process buildings and associated feed, withdrawal, and

customer service facilities, and several cylinder storage yards, would be built. All of these site preparation and construction activities for the 7 million SWU plant would occur between calendar years 2006 and 2010, and are estimated to cost $1.45 billion.

Impacts to Regional Employment

In each year between 2006 and 2010, average annual employment as a result of site preparation, refurbishment, and construction activities is estimated at 3,362 full-time jobs. This estimate includes both direct and indirect employment. Thus, the total number of full-time worker-years of employment generated as a result of site preparation, refurbishment, and construction activities is estimated as the product of 3,362 full-time workers multiplied by a total of five years, resulting in 16,810 full-time worker years of employment. USEC developed this estimate from the RIMS-II model using appropriate assumptions about the number of direct jobs created, construction-related expenditures, and regional input/output multipliers. (USEC, 2005a).

The total number of persons employed in the four counties of the region of influence in the year 2000 was 96,347 (BEA, 2002a). The total number of persons employed in Pike County, the site of the proposed action, in the year 2000 was 14,944 (BEA, 2002a). The employment expected to be generated by the site preparation and construction phase of the proposed action therefore represents 3.5 percent of the total employment in the region of influence and 22.5 percent of Pike County employment at the year 2000 levels.

Based on these figures, the impacts to regional employment of the site preparation and construction activities are considered MODERATE.

Impacts to Tax Revenue

Impacts to regional tax revenues are calculated by using per capita income levels in the region of influence as an estimate of the average salary associated with jobs created by the site preparation and construction phase of the proposed action. USEC estimates that the region's per capita income in 2004 dollars is $25,317 (USEC, 2005a).

Ohio State income tax rates for incomes between $20,000 and $40,000 are structured as a flat payment of $445.80 plus 4.5 percent of income over $20,000 (Ohio Department of Taxation, 2003). The State income tax payable by a worker earning $25,317 (the per capita income in the region of influence) at these rates would be $685.07. The proposed action would create 3,362 jobs each year during the site preparation and construction phase; this level of employment remunerated at the per capita income in the region translates to State income tax revenues of $2.3 million per year for each year of the 5-year construction phase. Ohio's cumulative individual State income tax revenues for fiscal year 2003 were $8.3 billion (Ohio Department of Taxation, 2003). Income tax revenues resulting from the incomes generated by the site preparation and construction phase can therefore be expected to account for approximately 0.03 percent of Ohio's cumulative annual individual income tax receipts at fiscal year 2003 levels.

Ohio State sales tax revenues are estimated to rise by $3.7 million (2004 dollars) per year for the site preparation and construction phase of the proposed action, using the current six percent sales tax rate. The estimate is based on the assumption that 75 percent of earnings after State income taxes are spent in State. Federal income taxes are not considered in computing disposable income; if Federal income taxes were included, it is likely that sales tax revenues would be lower than estimated here. Ohio's cumulative State sales and use tax revenues for calendar year 2003 were $6.7 billion. Sales tax revenues resulting from incomes generated by the construction phase of the proposed action can therefore be expected to

account for approximately 0.06 percent of cumulative Ohio annual sales tax receipts at calendar year 2003 levels.

Pike County's annual sales tax revenues, derived from the county's one percent sales tax rate, are expected to rise by approximately $414,000 as a result of the new employment generated by the proposed site preparation and construction phase. This estimate is based on the assumption that half the after-tax income arising from jobs generated is spent on transactions within Pike County. This amount represents less than nine percent of Pike County's general fund budget in 2005 (Pike County Auditor, 2005).

As demonstrated above, it is unlikely that State income tax, State sales tax, and county-level tax revenues would significantly increase as a result of the site preparation and construction phase of the proposed action. Overall, the impacts to regional tax revenues may therefore be considered SMALL.

Impacts to Population Characteristics

Of the 3,362 estimated jobs that are expected to be created during the site preparation and construction phase, a total of 900 direct jobs are expected to be filled by USEC employees transitioned from the Portsmouth Gaseous Diffusion Plant; these jobs are to support management, design, licensing, assembly, testing and evaluation, quality assurance, nuclear and radiological safety, and operational readiness assessments. An estimated 2,088 indirect jobs are expected to support the 900 positions filled by transitioned USEC workers. Thus, a total of 2,988 jobs generated through construction activities represent jobs that are a continuation of already existing jobs generated or supported by current USEC activities. These jobs are therefore expected to be filled from within the region. (USEC, 2005a)

Using these numbers, 374 new jobs (direct and indirect) are expected to be created through construction-related activities between the years 2006 and 2010. Commonly, an average of 75 percent of construction-related employment derives from within the region of influence (DOE, 1999a). If 25 percent of the 374 construction-related jobs are filled from outside the region, a total of 94 workers may be expected to move into the region. If all workers are assumed to move in as family households, and the average national family household size is assumed to be 3.13 (U.S. Census Bureau, 2003), the population influx into the region of influence would be 293 persons. This represents 0.13 percent of the region population in the year 2000 (U.S. Census Bureau, 2000). The estimate used for household size is conservative because it represents the average size of a family household (3.13), rather than the average size of all households (2.57). This conservative assumption may result in an overestimate of the impacts on social services.

Based on this analysis, the impacts to population characteristics of the site preparation and construction activities are expected to be SMALL.

Impacts to Area Housing Resources

The average rental vacancy rate in the region of influence is 8.6 percent for rental property and there are approximately 22,824 rental units in all. This equates to an availability of approximately 1,963 rental housing units, based upon 2000 census data. Of the additional 374 jobs created by the site preparation and construction phase of the proposed action, only 25 percent are expected to be filled by migration from outside the community. Therefore, site preparation and construction activities are likely to increase the demand for rental housing by only 94 units out of a total of 1,963 rental units. Even accounting for seasonal increases in the demand for housing created by recreational activities, this influx of workers is not likely to cause housing shortages or increases in rental rates.

Therefore, the impacts to area housing resources of the site preparation and construction phase may be considered SMALL.

Impacts to Community and Social Services

A total of 94 family households may be expected to migrate to the region of influence as a result of employment opportunities generated in the site preparation and construction phase of the proposed action, as discussed above. According to the U.S. Census Bureau (2003), the average national family household size is 3.13 with an average of 0.95 individuals under the age of 18. Thus, the maximum influx of school-aged children is not expected to exceed 89, which is 0.24 percent of the region of influence school population in the year 2000. The region contains 24 public school districts with a total of 95 schools serving approximately 37,000 students (ODOD, 2003). The region's student-to-teacher ratio stood at 15.3 in 2000 (ODOD, 2003). This ratio would not change after the expected influx of school-age children into the region resulting from construction-phase employment. The average student-to-teacher ratio in the State of Ohio was only slightly lower at 14.8 in the year 2000. As a result, the impacts to education services in the region may be considered SMALL.

Levels of service of fire, law enforcement, healthcare, and administrative services in the region of influence are lower than the State average, but are consistent with those typical in rural counties. The influx of 293 persons represents an augmentation of the region's population of 0.13 percent and will have a SMALL effect on fire, law enforcement, healthcare, and administrative levels of service.

Impacts to Public Utilities

As described in Section 3.9.3.5, there has historically been very little overlap between utilities providing services to communities in the region of influence and those supporting the Portsmouth Gaseous Diffusion Plant. Dedicated utilities were constructed in the 1950s solely to support the needs of the Portsmouth Gaseous Diffusion Plant. The communities in the region of influence have never had access to these utilities. Under the proposed action, utilities would continue to be procured through existing resources. With the exception of natural gas and landfill services, these dedicated utilities are expected to have more than adequate capacity to continue serving the ACP under the proposed action. Historically, the Portsmouth Gaseous Diffusion Plant has had no impact on the availability or cost of these utilities to communities in the region. It is therefore unlikely that the proposed action would affect the cost or availability of public utility supplies in the region of influence.

With regard to natural gas usage, the proposed action would not require any more natural gas than can be supplied through the existing two-inch diameter supply line. The proposed action is expected to have no impact on the offsite availability or cost of natural gas.

The Pike County landfill would be the primary endpoint for sanitary/industrial waste disposal and the Rumpke Beach Hollow landfill is an alternative. The projected capacities and use of each are described in Section 3.9.3.5. As is apparent from Table 2-3 and Table 3-23, industrial/sanitary wastes from the construction phase of the proposed action will account for a minor fraction of the capacity of these facilities.

Although the site preparation and construction phase of the proposed action may result in migration of people into the region, the level of migration is expected to be well below the rental vacancy rate in the area, as discussed in the preceding section on housing resources. Therefore, the population influx due to construction phase jobs is not expected to affect either the pricing or availability of public utilities in the region.

Considering all of these factors, the impacts to public utilities caused by the proposed site preparation and construction activities would be SMALL.

4.2.8.3 Facility Operation

Depending on the timing for NRC licensing and other factors, USEC is proposing to begin commercial centrifuge plant operations in 2009 and to reach the 3.5 million SWU annual capacity by 2011. Expansion to the 7 million SWU per year capacity would not occur until sometime after 2011, likely around 2013. The overall period of operation for the proposed ACP is projected to be 30 years.

Impacts to Regional Employment

The operations phase of the proposed ACP is expected to create 600 full-time jobs and 900 indirect jobs in the region of influence (USEC, 2005a). The total number of persons employed in the four counties of the region in the year 2000 was 96,347. The total number of persons employed in Pike County, the site of the proposed ACP, in the year 2000 was 14,944. The employment expected to be generated by the operations phase therefore represents 1.6 percent of the total employment in the region and 10 percent of Pike County employment. Given these results, the impacts to regional employment of the facility operation phase are considered MODERATE.

Impacts to Tax Revenue

USEC estimates that the average income in 2013 dollars will be $36,226 per year for 900 direct jobs and 600 indirect jobs, the operations phase of the proposed action would generate $54.3 million in income (USEC, 2005a).

Income from these jobs will generate $1.8 million (2013 dollars) in State income tax revenue at the Ohio State income tax rates described in Section 4.2.8.2. Ohio's cumulative State income tax revenues for 2003 were $8.3 billion. Income tax revenues resulting from incomes generated by the proposed ACP operations phase can therefore be expected to account for less than 0.02 percent of Ohio's annual individual income tax receipts at 2003 levels.

Ohio State sales tax revenues are estimated to rise by $2.4 million (2013 dollars) per year as a result of the new income generated by 1,500 jobs during the operations phase of the proposed action, assuming a six percent rate of sales tax. This estimate is based on the assumption that 75 percent of earnings after State income taxes are spent in State. Federal income taxes are not considered in computing disposable income; if Federal income taxes were included, it is likely that sales tax revenues resulting from the proposed action would be lower than estimated here. Ohio State's sales and use tax revenues for 2003 were $6.7 billion. Incremental sales tax revenues resulting from incomes generated by the operations phase of the proposed action can therefore be expected to account for less than 0.04 percent of Ohio's annual sales tax receipts at 2003 levels.

Pike County's annual sales tax revenues are expected to rise by approximately $263,000 as a result of the new employment generated by the proposed ACP operations phase, based on a county sales tax of one percent. This estimate is based on the assumption that half of the after-tax income from jobs generated by the operations phase is spent on transactions within Pike County. This amount represents less than six percent of Pike County's general fund budget in 2005 (Pike County Auditor, 2005).

As demonstrated above, it is unlikely that State income tax, State sales tax, and county-level tax revenues would significantly increase as a result of the operations phase of the proposed action. Therefore, the impacts to area tax revenues of the proposed ACP operation phase are considered SMALL.

Impacts to Population Characteristics

Most of the direct and indirect jobs resulting from operations at the proposed ACP are expected to be filled from within the region of influence (USEC, 2005a). No substantial population influx is expected during the operations phase of the proposed action. Therefore, the impacts to regional population characteristics of the operations phase are considered SMALL.

Impacts to Area Housing Resources

As previously mentioned, most of the direct and indirect jobs resulting from operations at the proposed ACP are expected to be filled from within the region of influence (USEC, 2005a). No substantial population influx is expected during the operations phase. Therefore, the impacts to area housing resources of proposed ACP operations are also considered SMALL.

Impacts to Community and Social Services

Since most of the direct and indirect jobs resulting from proposed ACP operations are expected to be filled from within the region, no substantial population influx is expected during the operations phase (USEC, 2005a). The impacts to community and social services of the facility operation phase are therefore be considered SMALL.

Impacts to Public Utilities

As described in Section 3.9.3.5, there has historically been very little overlap between utilities providing services to communities in the region of influence and those supporting the Portsmouth Gaseous Diffusion Plant. The communities in the region have never had access to dedicated utilities that were constructed in the 1950s solely to support the needs of the Portsmouth reservation. For the proposed ACP operations, utilities would continue to be obtained through these existing resources. With the exception of natural gas and landfill services, these dedicated utilities are expected to have more than adequate capacity to continue serving the proposed ACP operations. Historically, the Portsmouth Gaseous Diffusion Plant has had no impact on availability or cost of these utilities to communities in the region. It is therefore unlikely that the proposed action would affect the cost or availability of public utility supplies in the region.

With regard to natural gas usage, the proposed ACP operations would not require any more natural gas than can be supplied through the existing two-inch diameter supply line. The proposed operations are expected to have no impact on the offsite availability or cost of natural gas.

The Pike County landfill will be the primary endpoint for sanitary/industrial waste disposal and the Rumpke Beach Hollow landfill is an alternative. The projected capacities and use of each are described in Section 3.9.3.5. Based on a comparison of the existing landfill capacities reported in Table 3-23 and the anticipated volumes of sanitary/industrial waste from proposed ACP operations reported in Table 2-6, sanitary/industrial wastes from the operations phase of the proposed action would account for a minor fraction of the capacity of these facilities.

Most of the direct and indirect jobs resulting from proposed ACP operations are expected to be filled from within the region of influence. No substantial population influx is expected during the operations phase. Therefore, the population influx on account of proposed ACP operations is not expected to affect either the pricing or availability of public utilities in the region.

For all of these reasons, the impacts to public utilities of the operations phase of the proposed action are expected to be SMALL.

4.2.8.4 Ceasing Operations at Paducah

The socioeconomic region of influence for the Paducah site is identified in the *Programmatic Environmental Assessment for Disposition of Potentially Reusable Uranium Materials* (DOE, 1999a). This region includes McCracken County, Kentucky, where the Paducah Gaseous Diffusion Plant is located. McCraken County had a population of 64,407, per capita personal income of $23,227, and a total person income of $1.8 billion in 1999 (BEA, 2002b). Wage and salary employment for the region was more than 41,859 in 2000 (BEA, 2002a). Total site employment in 1998 was 2,209 (DOE, 2001a).

Decommissioning of the Paducah Gaseous Diffusion Plant and any other further use of the enrichment plant buildings, structures, or land are not considered part of the proposed action considered in this EIS. Decisions concerning decommissioning and any other future use of the enrichment plant would be the subject of other decisions and other environmental reviews.

Cessation of operations at the Paducah enrichment plant would result in direct and indirect socioeconomic impacts associated with the termination of the operations workforce at the plant and associated reduction in payroll. It also would result in the loss of local expenditures for goods and services associated with current plant operations. The anticipated impacts of these changes are assessed below.

Impacts to Regional Employment

After cessation of operations, the workforce would be reduced to a smaller maintenance and security workforce, which would substantially reduce the number of full-time workers employed from current levels of 1,868 full-time employees. Also, the average wage of the workers once operations have ceased would decrease from that under plant operations, as the required skill level of the operations workers would generally be greater than that of the maintenance and security workers when there are no plant operations.

For the purpose of this EIS, the NRC staff did not perform comprehensive economic input-output modeling to estimate indirect jobs associated with employment and expenditures for operations at the Paducah facility. However, in the most conservative assessment, all the operations phase jobs and associated indirect jobs at the Paducah facility would be terminated. These losses would be temporarily mitigated to some extent by hiring of decommissioning workers in the event that the Paducah plant was to be decontaminated and decommissioned. In the event that the plant was decommissioned and then refurbished for future economic use, impacts to regional employment from the shutdown of the plant would be further mitigated. Based on this analysis, the impacts to regional employment of cessation of operations at the Paducah facility may be considered MODERATE.

Impacts to Tax Revenue

The cessation of operations at the Paducah facility is likely to have a negligible impact on Kentucky State income and State sales tax based on the fact that employment levels associated the facility account for a small fraction of total State employment. The impact on local tax revenues are also likely to be small but could be as high as moderate. The overall impacts to tax revenues are therefore expected to be SMALL.

Impacts to Population Characteristics

The loss of jobs associated with the Paducah Gaseous Diffusion Plant operations may result in migration out of the community. In the most conservative estimate, all the direct and indirect jobs associated with the Paducah facility would terminate after cessation of operations. However, not all of the indirect jobs associated with the facility are likely to terminate after direct employment at the Paducah facility ceases. Some of the indirect employment would continue through servicing other members of the region of influence and neighboring communities, and by diversifying into other lines of business. Furthermore, some direct jobs would continue at the Paducah facility, such as the jobs associated with maintaining the site in cold stand-by status. In the event that the plant was decommissioned and then refurbished for some other future economic use, impacts to population characteristics in the region from the shutdown of the plant would be further mitigated.

Based on these considerations, and the phased nature of any likely migration trends, the impacts to population characteristics of the cessation of operations at the Paducah facility may be considered SMALL.

Impacts to Area Housing Resources

Loss of employment and migration out of the region of influence resulting from cessation of operations at the Paducah facility are likely to increase vacancy rates in the rental market and increase the number of houses for sale. This could potentially lead to a downward trend in rents and housing values. However, these trends could be mitigated by the possible creation of new economic opportunities in the area such as if the plant was decommissioned and then refurbished for future economic use. Based on these considerations, and the phased nature of any likely migration trends, the impacts to area housing resources may be considered SMALL.

Impacts to Community and Social Services

The demand for community and social services is likely to decline following the potential loss of employment and migration out of the region resulting from cessation of operations at the Paducah facility. This may result in a temporary improvement in levels of service followed by a correction in the level of supply of community and social services. The levels of potential migration out of the region of influence are not considered significant enough to affect the viability of any community or social services. Based on these considerations, and the phased nature of any likely migration trends, the impacts to community and social services of the cessation of operations at the Paducah facility may be considered SMALL.

Impacts to Public Utilities

The demand for public utilities is also likely to decline following the potential loss of employment and migration out of the region of influence resulting from cessation of operations at the Paducah facility. This would potentially create some small level of overcapacity for certain services; however, most utilities are likely to employ any redundant capacities in servicing regional markets. The levels of potential migration out of the region are not considered significant enough to affect the viability or price structure of any public utilities. Based on these considerations, and the phased nature of any likely migration trends, any impacts to public utilities from the cessation of uranium enrichment activities at Paducah are also expected to be SMALL.

4.2.9 Environmental Justice Impacts

As described in Sections 4.2.1 through 4.2.8 and Sections 4.2.10 through 4.2.15, the impacts of the proposed action are expected to be SMALL for almost all of the resource areas evaluated. In these cases, the impacts to all human populations would be small, so there would not be any disproportionately high and adverse impacts to minority or low-income populations.

The NRC staff has concluded that potential impacts could be as high as MODERATE in eight cases. However, in each of these cases, the impacts would not appear to be disproportionately high and adverse for minority or low-income populations, for reasons outlined below.

- As described in Section 4.2.4.1, site preparation and construction activities are projected to cause a temporary increase in the concentrations of particulate matter with a mean diameter of 10 micrometers or less in the ambient air that slightly exceed the air quality standard up to a distance of 1,000 meters (3,280 feet) beyond the fenceline. However, there are no populations that qualify as minority or low-income this close to the site.

- As described in Section 4.2.8.2, the impacts to regional employment of the site preparation and construction activities are considered MODERATE. These impacts are generally considered positive.

- Similarly, as described in Section 4.2.8.3, the impacts to regional employment of the facility operation phase are considered MODERATE. These impacts are generally considered positive.

- As described in Section 4.2.8.4, the impacts to regional employment of cessation of operations at the Paducah Gaseous Diffusion Plant are considered MODERATE. In this case, the employment impacts would be adverse, and while they would not be so high as to significantly affect employment in the region, the impacts would be high to affected individuals. Because the demographics of the existing workforce that could be downsized at Paducah have not be studied in detail for this EIS, it is not clear that the impacts would disproportionately affect low-income or minority populations. It is likely that the potentially affected workforce at Paducah does not qualify as low-income, assuming that the average annual income level of $36,226 for operations workers at the proposed ACP reasonably represents the income of current employees at Paducah (for comparison, the per capita income for workers in the region surrounding Paducah is $23,227). Although the minority percentage in McCracken County where the Paducah Gaseous Diffusion Plant is located is more than 25 percent higher than the minority percentage in the State of Kentucky as a whole, the minority status of workers potentially downsized at Paducah is not known.

- As described in Section 4.2.11.1, the substantially greater transportation requirements during the construction phase could result in MODERATE impacts during the five-year period in which most of the construction activity is projected to occur. These impacts could include an increase in traffic congestion on U.S. Route 23 and, to a lesser extent, on Ohio State Road 32 in the vicinity of the ACP. It is also expected that construction traffic accidents would result in about 18 injuries a year on these roads, but only one fatality over the entire construction period. These impacts would be experienced by everyone traveling on U.S. Route 23 and Ohio State Road 32 and would not disproportionately affect minority or low-income populations.

- As described in Section 4.2.12.1, the probability of a severe transportation accident that releases sufficient quantities of UF_6 that could pose a health risk is low, but the consequences of such an accident, should it occur, are high. Based on this analysis, the public health impacts associated with such an accident as part of the proposed action are considered MODERATE. Such an accident could occur anywhere along the proposed routes for shipping UF_6 feed to Piketon (from Metrolpolis,

Illinois; Port Hope, Ontario, Canada; and Wilmington, Delaware) and the proposed routes for shipping UF_6 product from Piketon to customers or other distribution points (to Richland, Washington; Columbia, South Carolina; Wilmington, North Carolina; and Seattle, Washington). Since these transportation routes cover an extremely broad area that includes much of the United States as well as parts of Canada, and since all populations along these transportation routes would be subject to the same risk, no disproportionately high and adverse effects are expected for any particular segment of the population, including minority and low-income populations that could live along the proposed transportation routes.

- As described in Section 4.2.12.3, accidents associated with proposed ACP operations could result in SMALL to MODERATE impacts to the surrounding public. However, the impacts of such accidents are not expected to extend as far away as 28 kilometers (17 miles), where the closest minority and low-income Census tracts are located. Therefore, populations in those Census tracts are not expected to experience disproportionately high and adverse effects.

- As described in Section 4.2.13.2, the added inventory of depleted UF_6 coming from the proposed ACP should not change the nature or magnitude of the impacts from the DOE conversion facility operations; however, it would extend those impacts for several additional years, resulting in overall MODERATE impacts to DOE conversion facility operations. The DOE EIS for the conversion facility at Piketon concluded that the operations of that facility should not result in any environmental justice impacts because of a lack of high and adverse impacts (DOE, 2004a). Therefore, extending those operations for additional years should also not result in any disproportionately high and adverse impacts.

4.2.10 Noise Impacts

This section analyzes the potential noise impacts from proposed ACP site preparation, construction, and operation, along with the noise impacts associated with the corresponding cessation of enrichment plant operations at Paducah.

4.2.10.1 Site Preparation and Construction

USEC's Environmental Report (USEC, 2005a) estimates that construction noise levels would be around 73 to 94 A-weighted decibels (dBA) at 15 meters (50 feet). Assuming a drop-off rate of 6 decibels per doubling of distance, which is typical for construction noise equipment, the noise level at the nearest residence (914 meters [3,000 feet] from the proposed ACP) would be 58 dBA. This level would be 53 day-night average noise level (DNL), recognizing that most construction activities would occur during the day (USEC, 2005a).

The U.S. Department of Housing and Urban Development has standards for community noise levels. It has developed land use compatibility guidelines (HUD, 2002) for acceptable noise levels versus the specific land use (see Table 3-27 in Section 3.11 of this EIS). Because the estimated construction noise level of 53 DNL at the site is below these guidelines, the noise impacts from proposed site preparation and construction activities are expected to be SMALL.

4.2.10.2 Facility Operation

Once in operation, the centrifuges themselves would be very quiet since the centrifuge "floats" on a magnetic bearing and spins within a vacuum. Noise generation occurs when moving metal parts are in contact with each other, and when air molecules are available to transmit sound. Some noise occurs upon

centrifuge start up and shut down, which are assumed to be infrequent and brief activities since USEC plans to run the centrifuges continuously.

Catastrophic failure of the centrifuges could cause a sudden but brief loud noise, due to the high rotational speed of the centrifuge. However, the likelihood of a single centrifuge catastrophically failing is very low.

No adverse noise impacts are expected at the closest residential receptor due to low operational noise, the attenuation provided by the building facade, and the distance attenuation of over 914 meters (3,000 feet). Therefore, the noise impacts from the proposed ACP operations are expected to be SMALL.

4.2.10.3 Ceasing Operations at Paducah

Ceasing operations at Paducah would decrease noise levels from those associated with current operation of the Paducah enrichment plant. Noise associated with the operation of enrichment plant equipment would be largely eliminated after cessation of operations. Remaining noise sources would be limited to operation of equipment (e.g., boilers, pumps, compressors) associated with onsite utilities, operation of vehicles and equipment by the maintenance and security workforce, and the conduct of maintenance activities. These activities are anticipated to be intermittent and of short duration as compared to the those associated with continuous operation of enrichment plant equipment.

4.2.11 Transportation Impacts

Transportation impacts of interest are the potentials for delays, accidents, injuries, or fatalities associated with the movements of people and goods into and out of the proposed ACP. These impacts may occur during site preparation and construction, facility operations, and cessation of activities and decommissioning in the future. In each of these stages, raw materials and equipment would be brought to the site, wastes of various types would leave the site, and workers would travel back and forth to their places of residence. During facility operations, enriched UF_6 would also leave the site.

The sections below analyze two main categories of transportation impacts associated with site preparation and construction, facility operation, and cessation of operations at Paducah. The first is the potential for the proposed action to affect the "level of service" of – or cause traffic congestion and delays on – local roadways.[2] The second is the potential for traffic accidents and resulting injuries and fatalities. The potential injuries and fatalities that are estimated below would arise from traffic accidents in which there are no releases of radioactive materials. The additional impacts associated with the small fraction of accidents that might yield some level of release, as well as radiological exposures that are not associated with accidents, are presented in the analysis of public and occupational health impacts in Section 4.2.12.

4.2.11.1 Site Preparation and Construction

The following sections analyze the level of service impacts and the non-radiological accident impacts associated with increased road traffic from the proposed site preparation and construction activities. Impacts associated with rail, water, and air transport are not reviewed because the proposed site preparation and construction activities would not affect such modes of transportation.

[2] The concept of level of service is a qualitative measure that describes operational conditions with a traffic stream and their perception by motorists. A level-of-service definition describes these conditions in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions, comfort, convenience, and safety. The Highway Capacity Manual defines six levels of service, designated A through F.

Level of Service Impacts

This section forecasts the traffic impacts of the proposed construction of the proposed ACP, including the shipment of centrifuges and other required equipment into the site. The primary impact considered is the effect of vehicle trips generated by the facility on the level of service provided by U.S. Route 23 and Ohio State Road 32.

The proposed ACP would generate vehicle trips during site preparation and construction both through the movement of materials and through workers traveling to and from the site. This analysis starts with current traffic volumes and estimates the impact of the incremental change in traffic volume to the level of service of the roadways. The Highway Capacity Software from McTrans (McTrans Center, 2003) was used to estimate the effect of new traffic generated by the proposed ACP on the roadway level of service during peak conditions. This software uses a number of planning data inputs to calculate the level of service for a given road. These inputs include roadway characteristics and the following factors:

- The "average annual daily traffic," which provides an estimate of the typical daily volume of vehicles on a particular road segment.

- The "K factor," which measures what proportion of daily traffic occurs during the "design hour." The design hour values used for this analysis are the 30th highest traffic volume hour of the year.[3] For instance, if the K factor is 10.1, this means that for the 30th highest volume hour in the year, 10.1 percent of the traffic for the day occurred during that hour.

- The "D factor," which measures what percent of the traffic is moving in the peak direction during the design hour.

- The "30-hour volume of the roadway," which is obtained by multiplying the K factor by the average annual daily traffic.

The NRC staff obtained data on the 2004 traffic volumes for U.S. Route 23 and State Road 32 from the Ohio Department of Transportation Traffic Survey Reports (Ohio DOT, 2004a). Values for the K and D factors and 30-hour volume were obtained from the Ohio Department of Transportation's K and D factors report (Ohio DOT, 2004b). The data used to characterize current traffic conditions are shown in Table 4-4.

Table 4-4 2004 Traffic Conditions on Routes Adjacent to the Proposed ACP

Volume Characteristic	U.S. Route 23	State Road 32
Average annual daily traffic (number of vehicles)	15,110	8,830
Percent commercial truck	16%	19%
K factor	10.1%	10.1%
D factor	62.3%	62.3%
30-hour volume (number of vehicles)	1,526	892
Hour of the day for the 30-hour volume	4:00 PM	4:00 PM

Sources: Ohio DOT, 2004a; Ohio DOT, 2004b.

[3] The Highway Capacity Manual suggest the use of the 30th highest hour as the design hour for rural highways.

Current traffic conditions are not congested for the design hour. Ohio State Road 32 operates at Level of Service A, while U.S. Route 23 operates at Level of Service B (McTrans Center, 2003). For reference, these and the other four levels of service defined by the Highway Capacity Manual can be described as follows:

- Level of Service A describes completely free-flow conditions. Individual users are virtually unaffected by the presence of others in the traffic stream.

- Level of Service B also indicates free flow, but the presence of other vehicles becomes more noticeable. Freedom to select desired speeds is relatively unaffected, but there is a slight decline in the freedom to maneuver within the traffic stream from Level of Service A.

- Level of Service C is in the range of stable flow, but marks the beginning of the range of flow in which operation of individual users becomes significantly affected by interactions with others in the traffic stream. The selection of speed is now affected by others, and maneuvering requires substantial vigilance on the part of the user.

- Level of Service D represents high density but stable flow. Speed and freedom to maneuver are severely restricted, and the driver experiences a generally poor level of comfort and convenience.

- Level of Service E represents operating conditions at or near capacity level. All speeds are reduced to a low but relatively uniform value.

- Level of Service F is used to define forced or breakdown flow. This condition exists wherever the amount of traffic approaching a point exceeds the amount which can traverse the point. Queues form behind such locations. Operations within the queue are characterized by stop-and-go waves, and they are extremely unstable.

The NRC staff estimated potential impacts of proposed ACP site preparation and construction to these baseline traffic conditions. The staff estimated the volume of daily and peak hour trips that would be generated during site preparation and construction using information submitted by USEC in its Environmental Report (USEC, 2005a). Table 4-5 shows the results of this analysis.

Table 4-5 Highway Trips Generated by Proposed ACP Site Preparation and Construction

Trip Type	Number of Daily Vehicle Trips	Number of Peak Hour Vehicle Trips
Centrifuges, equipment, materials, etc.	27	3
Workers	2,612	1,306
Total	2,639	1,309

Source: USEC, 2005a.

The NRC staff estimates that the movement of centrifuges, equipment, and other materials needed for the proposed ACP would require no more than 17,870 truckloads, which would result in about 27 trips per day and approximately three trips during peak hours (assuming each truckload generates two trips). This estimate is based on information provided by USEC in its Environmental Report that indicates that site preparation and construction would occur over a period as long as six years (USEC, 2005a). For the purpose of this analysis, however, the NRC staff assumed that the period would be only five years, since the proposed construction schedule shows peak activity over a five-year period. Using five years rather

than six years in this analysis provides a reasonable upper-bound estimate of likely traffic impacts. USEC's Environmental Report also provides a yearly breakout of the centrifuge components to be shipped to the proposed ACP site. To be conservative, the NRC staff used the highest number of shipments reported for any single year, which was 2,286 truckloads, to estimate the number of trips needed to transport centrifuges and related components to the site. Since the total volume of materials needed is relatively large, the staff assumed that shipments would be spread out over 261 business days within a year, and within an 8-hour business day.

USEC's Environmental Report indicates that as many as 1,306 construction workers may be required to build the proposed ACP (USEC, 2005a). Using this peak number of workers to be conservative, rather than the average number of 900 workers per year over the entire construction period, the NRC staff assumed that as many as 1,306 commuting trips could occur during the peak hour and twice as many trips (to account for round trips) could occur each day. As shown in Table 4-5, these commuter trips are estimated to have the largest traffic impact.

Based on these estimated increases in traffic volumes, the NRC staff calculated the effect on the roadway level of service during peak hour traffic for site preparation and construction. The staff estimated the level of service impacts for both Ohio State Road 32 and U.S. Route 23 assuming that all of the new trips generated by the project would occur on both roads, although the actual traffic volumes produced on these roads are likely to be lower. For U.S. Route 23, site preparation and construction traffic would temporarily change the level of service from B to C. In Level of Service C, the influence of traffic density on operations becomes marked, the ability to maneuver within the traffic stream is affected by other vehicles, and the travel speeds reduce somewhat. Also, minor disruptions in Level of Service C can cause serious local deterioration in service and queues could form behind any significant traffic disruption. For State Road 32, the staff estimated that site preparation and construction would temporarily change the level of service of the roadway from A to B, which still represents uncongested roadway conditions. These changes would last only as long as the construction period (peak period limited to five years). However, because the increased traffic would be sufficient to noticeably change the level of service for this timeframe, the NRC concludes that the impacts would be MODERATE.

Non-Radiological Accident Impacts

Motor vehicle safety is typically measured through accident rates, whether for trucks or passenger vehicles. To obtain estimates of injuries or fatalities associated with the movement of workers, materials and equipment needed for site preparation and construction, NRC staff gathered information on all the trips that would need to occur for this phase of the project, including the number of trips and the overall distance traveled.

Based on the information provided by USEC in its Environmental Report (USEC, 2005a), the overall results shown in Table 4-6 were compiled. In some instances, only total kilometers are presented in order to preserve the proprietary nature of certain information on quantities of equipment or preferred suppliers. The number of shipments listed includes all those made during the five-year preparation and construction phase, with one- or two-way trips considered as specified in the Environmental Report (USEC, 2005a).

Table 4-6 Transportation Requirements During Site Preparation and Construction[a]

Item or Material	Total Number of Shipments or Trips	Distance in Kilometers	Total Kilometers	Comments
Building Materials	12,105	45	545,456	Trucks; one-way trips
Electrical Materials			245,405	Trucks
Process Materials			2,515,029	Trucks; one-way trips
Feed/Withdrawal Equipment	382	4,001	1,528,275	Trucks; the number of miles from USEC's "Scenario 3" was used for conservatism.
Machines	10,884	4,001	43,543,834	Trucks; the number of miles from USEC's "Scenario 3" was used for conservatism.
Balance Stands			86,426	Trucks; three separate supply locations combined
Total Truck Kilometers			48,464,425	
Workers	3,408,660	40	137,138,913	Cars; 40 kilometers estimated one-way travel

Notes:
[a] Some cells are left blank to preserve the proprietary nature of certain information.
To convert kilometers to miles multiply by 0.62.
Source: USEC, 2005a.

Given the variety of routes traveled and the number of States involved, national injury and fatality rates were applied. As demonstrated by data from the Insurance Information Institute (III, 2005) and from the National Highway Traffic Safety Administration (NHTSA, 2005), fatal accident rates for Ohio have been slightly lower than the national average in recent years, making this a slightly conservative approach for travel within the State.

The National Highway Traffic Safety Administration's *Traffic Safety Facts 2003* (NHTSA, 2005) give the injury and fatality rates per vehicle mile traveled shown in Table 4-7. Such rates per vehicle mile traveled reflect the activity levels of a project better than those that are per vehicle or per registered driver.

Table 4-7 Injury and Fatality Rates Per Vehicle Mile Traveled

Type of Vehicle	Injury Rate	Fatality Rate
Large Trucks	12/100 million vehicle miles traveled	0.33/100 million vehicle miles traveled
Light Trucks	85/100 million vehicle miles traveled	1.18/100 million vehicle miles traveled
Passenger Cars	109/100 million vehicle miles traveled	1.21/100 million vehicle miles traveled

Source: NHTSA, 2005.

Given the similarity between light trucks and passenger cars, it was assumed that all workers use passenger cars. Large trucks are defined by the National Highway Traffic Safety Administration as those over 4,536 kilograms (10,000 pounds), so all material and equipment deliveries or shipments were assumed to be in large trucks.

Combining the total mileage data with these accident rates gives the estimated numbers of fatalities and injuries shown in Table 4-8. Over the course of the work to prepare the site and construct the necessary facilities, it is expected that there would be slightly less than one injury per year associated with the drivers bringing materials and equipment onto the site and about 18 injuries a year involving employees traveling to or from their jobs. If employees travel less than 40 kilometers (25 miles) each way, this estimate would decrease accordingly. These same impacts would be expected if the same employees were driving to different employers. The overall injury impact is therefore considered MODERATE.

Table 4-8 Transportation Impacts From Site Preparation and Construction

Item or Material	Total Miles	Injury Rate per Vehicle Mile Traveled	Fatality Rate per Vehicle Mile Traveled	Number of Injuries	Number of Fatalities
Materials and Equipment	30,115,220	1.2×10^{-7}	0.33×10^{-8}	3.61	0.10
Workers	85,216,500	1.09×10^{-6}	1.21×10^{-8}	93	1.03

Notes:
To convert miles to kilometers multiply by 1.61.

In terms of fatalities, only one fatality is expected for all the workers over the full site preparation and construction period. For drivers transporting material and equipment to and from the site, the expected number of fatalities is less than one. The overall fatality impact is therefore considered SMALL.

4.2.11.2 Facility Operation

The following sections describe the level of service impacts and non-radiological accident impacts associated with increased road traffic during ACP operations. Impacts on water and air transport are not reviewed because the proposed facility operation would not affect such modes of transportation. Impacts on rail transport are also not reviewed because facility operations are estimated to require only one train every three months to ship converted depleted uranium to an offsite disposal facility (see Section 4.2.12). This small increase in train traffic should not cause any impacts.

Level of Service Impacts

This section forecasts the traffic impacts of the proposed ACP operations. The primary impact analyzed is the effect of an increase in the number of vehicle trips on the level of service provided by U.S. Route 23 and Ohio State Road Route 32, using the same basic approach as described above for level of service impacts during site preparation and construction. The proposed ACP would generate vehicle trips during operations through new workers employed at the site, through the movement of supplies to the site, and through the movement of product and waste from the site.

This analysis starts with current traffic volumes and estimates the impact of an incremental change in traffic volume on the level of service of the two roadways. The Highway Capacity Software from McTrans (McTrans Center, 2003) was used to estimate level of service impacts. Section 4.2.11.1 on site

preparation and construction impacts contains a description of the current traffic conditions that were used as inputs to the software.

The NRC staff estimated the volume of daily and peak hour trips that proposed ACP operations would generate, using information submitted by USEC in its Environmental Report (USEC, 2005a). Table 4-9 shows the estimated increases in traffic volumes.

Table 4-9 Highway Trips Generated by the Operation of the Proposed ACP

Trip Type	Number of Daily Vehicle Trips	Number of Peak Hour Vehicle Trips
Materials, wastes, etc.	24	3
Workers	1,113	199
Total	1,137	202

The staff conservatively assumed that the movement of materials and wastes due to the operation of the facility would be spread throughout the 216 business days of the year and across eight hours of the day. USEC's Environmental Report estimated that there would be approximately 3,134 truckloads associated with the movement of feed material, product, heels, and waste (USEC, 2005a). The staff assumed that each truckload generates a delivery trip and a return trip. This results in 24 trips per day and three trips during the peak hour.

In addition to shipments for materials and wastes, a peak of 795 employees would be needed to operate the proposed ACP (USEC, 2005a). Of these, 75 percent, or 596, would be shift workers with rotating 7:00 AM-7:00 PM shifts, spread across five shift schedules. For any given day, three of the five shifts would be working and two shifts would be off, meaning that 358 of these shift employees would work on any particular day. In addition, 25 percent of the employees required for proposed ACP operations (or 199 people) would be administrative employees, working a 7:30 AM to 4:00 PM shift. Each of these employees would generate two trips per day. Taken together, these employees would generate 1,113 trips during a typical day, but only 199 trips would be likely to occur during the peak hours, from 4:00 PM to 6:00 PM.

Based on these estimated increases in traffic volumes, the NRC staff calculated the effect on the roadway level of service during peak hour traffic. The staff estimated the level of service impacts for both Ohio State Road 32 and U.S. Route 23 assuming that all of the new trips generated by the project would occur on both roads, although the actual traffic volumes produced on these roads are likely to be lower. This analysis showed no level of service impacts from the operation of the facility to either State Road 32 or Route 23.[4] As a result, excess capacity presently exists on these roadways and the traffic impacts due to proposed ACP operations are considered to be SMALL.

[4] There would be some overlap in the proposed ACP site preparation and construction activities and the facility operations activities, but site preparation and construction activities would be slowly phased out as operations are brought online. This EIS assesses the traffic impacts from site preparation and construction separately from those impacts from facility operation, but the NRC staff also estimated the effect of simultaneous construction and operation to provide an upper bound of possible traffic impacts. Considering both impacts together did not change the results of the analysis.

Non-Radiological Accident Impacts

Table 4-10 shows the overall transportation requirements for the proposed ACP operations phase, based on information provided by USEC in its Environmental Report (USEC, 2005a). The number of shipments listed are made annually for as long as facility operations are underway, and represent one- or two-way trips as specified in the Environmental Report (USEC, 2005a).

Table 4-10 Transportation Requirements During Facility Operations

Item or Material	Number of Shipments or Trips Each Year	Distance in Kilometers	Total Kilometers	Comments
Uranium Feed	1,100	789 to 896	1,133,317	Trucks; three locations
Heeled Cylinders	600	782 and 3,837	1,385,628	Trucks; two locations
Radiological Waste	22	1,344 to 3,355	62,611	Trucks; three locations
Various Supplies	216	a	a	No sources indicated
Total Truck Kilometers (Miles)			2,581,556	
Workers	290,493	40	11,687,260	Cars; 40 kilometers (25 miles) estimated one-way travel

Notes:
To convert kilometers to miles multiply by 0.62.
[a] This text is withheld pursuant to 10 CFR 2.390(a)(4).
Source: USEC, 2005a.

Table 4-11 combines the total mileage data with historical accident rates to estimate the numbers of fatalities and injuries. During facility operations, it is expected that there would be about eight injuries per year associated with employees traveling to or from their jobs. If employees travel less than 40 kilometers (25 miles) each way, this estimate would decrease accordingly. These same impacts would be expected if the same employees were driving to different employers. In addition, there would be another injury roughly every five years involving the trucks transporting materials to and from the site. The overall injury impact is therefore considered SMALL.

Table 4-11 Transportation Impacts Per Year From Facility Operations

Item or Material	Total Miles	Injury Rate per Vehicle Mile Traveled	Fatality Rate per Vehicle Mile Traveled	Number of Injuries	Number of Fatalities
Materials and Equipment	1,604,149	1.2×10^{-7}	0.33×10^{-8}	0.19	0.01
Workers	7,262,325	1.09×10^{-6}	1.21×10^{-8}	7.9	0.09

Notes:
To convert miles to kilometers multiply by 1.61.

In terms of fatalities, one fatality would be expected every 10 years for the combination of the trucks transporting materials and workers traveling to and from the site. The overall fatality impact is therefore considered SMALL.

4.2.11.3 Ceasing Operations at Paducah

Ceasing operations at Paducah would decrease transportation impacts from those associated with current operation of the Paducah enrichment plant. Transportation impacts would be largely eliminated upon cessation of operations, as there would be no transportation of raw materials to the plant, of products from the plant, or routine operations wastes from the plant. Also, the workforce at the plant would be greatly reduced and the number of workers commuting to and from the site would decrease accordingly, thereby reducing traffic. A smaller workforce would remain after cessation of operations to secure and maintain the buildings and structures pending a decision on decommissioning and future site use. This workforce would continue commuting to and from the site. However, this traffic would be much lower than that associated with the existing operations workforce, resulting in an overall decrease in transportation impacts.

Short-term transportation impacts may result from transportation of ancillary equipment into the plant that is needed to shut the plant down. Any such impacts are anticipated to be small and of short duration.

Based on this analysis, the transportation impacts associated with ceasing operations at Paducah are expected to be SMALL.

4.2.12 Public and Occupational Health Impacts

This section evaluates the potential public and occupational health impacts associated with all of the transportation needed to bring people and materials in and out of the proposed ACP site. It also evaluates the public and occupational health impacts associated with the proposed site preparation and construction activities and the proposed ACP operations, separate from the transportation associated with those activities.

4.2.12.1 Transportation

Potential public and occupational health impacts could arise from airborne emissions from routine transportation associated with the proposed action, from radiation emitted during routine transportation, and from postulated transportation accidents resulting in the release of radiological and non-radiological materials. Each of these potential impacts is addressed below.

Airborne Emissions from Routine Transportation

Incoming and outgoing shipments associated with site preparation and construction activities, centrifuge manufacturing, and facility operation would result in increased emissions of vehicle exhaust to the air. This section evaluates the potential impacts of these emissions, based on the following assumptions.

- *Site Preparation and Construction.* Transportation associated with site preparation and construction (including the refurbishment of existing facilities) includes incoming truck shipments of building supplies and concrete, all of which were assumed to originate within 80 kilometers (50 miles) of the Piketon site. Incoming truck shipments of other equipment, such as electrical equipment, process equipment, and feed and withdrawal equipment, are also included in the site preparation and construction phase, but are assumed to originate at distances greater than 80 kilometers (50 miles). In addition, site preparation and construction shipments are assumed to include the truck shipment of wastes generated from the cleanup of the former Gas Centrifuge Enrichment Plant to an offsite disposal facility more than 80 kilometers (50 miles) from Piketon.

- *Centrifuge Manufacturing.* For the purpose of this analysis, centrifuge components and centrifuge stands were assumed to be manufactured offsite, at a distance more than 80 kilometers (50 miles) away, and shipped to Piketon by truck. Annual average emission rates were estimated assuming a centrifuge assembly rate of 16 centrifuges per day (USEC, 2005a).

- *Facility Operation.* Transportation associated with facility operation was assumed to include the transportation of UF_6 feed material to the proposed ACP, enriched UF_6 product from the proposed ACP, radioactive waste to various disposal sites, and "heeled cylinders" (cylinders containing small quantities of UF_6 left after being emptied) to two possible vendor sites. This analysis includes the offsite shipment of depleted uranium that is generated from facility operations and converted in DOE's onsite conversion facility, but not the voluminous other wastes that would be generated during facility decontamination and decommissioning (those shipments are considered separately in Section 4.2.15). The analysis also includes shipments of assorted chemicals used for operations, solid (non-hazardous waste), and hazardous waste. All impacts were assessed assuming a plant capacity of 7 million SWUs per year and assuming all shipments would be by truck, except for the offsite shipment of converted depleted uranium, which is assumed to occur by rail.

Site Preparation and Construction and Centrifuge Manufacturing

Because some centrifuge manufacturing is likely to occur at the same time as site preparation and construction activities, the analysis combines these two activities to determine maximum potential impact. In all cases, the incremental increase in average daily traffic emissions was estimated for two types of trucks: long-haul and medium-haul. The trucks associated with the building supplies and concrete were assumed medium-haul and all others long-haul. The number of truck trips was taken from USEC's Environmental Report (USEC, 2005a). In addition to emissions from the trucks, emissions would also increase as a result of the construction workers' personal vehicles. As many as 1,306 construction workers may be required to build the facility (USEC, 2005a). USEC assumed that each worker would arrive as a single-occupant vehicle and that half the vehicles would be light-duty trucks and half would be light-duty vehicles. Emissions were determined near the beginning of the active site preparation and construction period, since heavy-duty truck emissions are expected to be substantially reduced over the next ten years starting in 2007 with the introduction of catalyst-equipped and particulate trap heavy-duty diesel trucks (see 40 CFR Parts 80 and 86). Emission factors used in this analysis for the heavy-duty trucks, light-duty trucks, and light-duty vehicles are shown in Table 4-12.

Table 4-12 2010 U.S. Long- and Medium-Haul Heavy-Duty Trucks, Light-Duty Trucks, and Light-Duty Vehicles Fleet Average Emission Factors [a, b]

Truck Type	Road Type	VOC (g/mi)	CO (g/mi)	NOx (g/mi)	PM_{10} (g/mi)	SO_2 (g/mi)
Long-Haul Heavy-Duty	Arterial/ Highway	0.36	1.25	5.61	0.11	0.011
Medium-Haul Heavy Duty	Arterial/ Highway	0.44	1.85	8.32	0.16	0.011
Light-Duty Trucks	Arterial	0.91	11.7	0.78	0.025	0.0089
Light-Duty Vehicles	Arterial	0.74	9.49	0.54	0.025	0.011

Notes:
[a] VOC = volatile organic compound; CO = carbon monoxide; NO_X = nitrogen oxides; PM_{10} = particulate matter with a mean diameter of 10 micrometers or less; SO_2 = sulfur dioxide.
[b] g/mi = grams per mile.
To convert miles to kilometers multiply by 1.61.
Source: EPA, 2003.

The NRC staff compared the estimated incremental emissions from the trucks and construction worker trips to the current annual average emissions associated with all vehicles along U.S. Route 23 near the DOE reservation entrance. The current (2004) average 24-hour traffic volume near the entrance is 15,110 vehicles (average daily traffic), with 16 percent of the vehicles classified as heavy-duty trucks (Federal Highway Administration Class 5-13), as reported in the Ohio Department of Transportation's Traffic Survey Report (Ohio DOT, 2004a). Construction activity was assumed to occur over a five-year period. The increase in emissions associated with this increase in traffic volume was then calculated for each criteria pollutant and is reported in Table 4-13 on a grams per day basis near the entrance to the facility. The results reported in Table 4-13 are for 2010, which is the year expected to have the greatest volume of traffic coming in and out of the proposed site.

Table 4-13 Vehicle Emissions Associated with Construction-Related Traffic at the DOE Reservation Entrance (in 2010) [a, b, c]

	VOC (g/mi/day)	CO (g/mi/day)	NOx (g/mi/day)	PM_{10} (g/mi/day)	SO_2 (g/mi/day)
Current Baseline					
2004 Traffic	12,088	145,623	19,482	704	137
Increment					
Long-Haul	3.1	10.6	47.6	1.0	0.1
Medium-Haul	8.4	35.2	158.8	3.0	0.2
Worker Vehicles	2,160	27,648	1,725	65	26
Total Emissions	2,172	27,694	1,932	69	26
Percent Change over Baseline	18%	19%	10%	10%	19%

Notes:
[a] Includes incoming shipments of centrifuge components.
[b] VOC = volatile organic compound; CO = carbon monoxide; NO_X = nitrogen oxides; PM_{10} = particulate matter with a mean diameter of 10 micrometers or less; SO_2 = sulfur dioxide.
[c] g/mi = grams per mile.
To convert miles to kilometers multiply by 1.61.

As shown in Table 4-13, the largest estimated impact is a 19 percent increase in carbon monoxide and sulfur dioxide emissions, while the smallest estimated impact is a 10 percent increase for nitrogen oxides and particulate matter with a mean diameter of 10 micrometers or less. These changes are likely to be sufficiently large to be detected through ambient air quality monitoring. However, they would occur only temporarily during the construction phase and are unlikely to be large enough to cause an exceedance of the National Ambient Air Quality Standards. Because the National Ambient Air Quality Standards are designed to protect human health, the changes are unlikely to cause any adverse health impacts within the surrounding population. Therefore, for the purpose of this analysis, the potential health impacts associated with increased emissions from construction-related traffic are expected to be SMALL.

Facility Operation

The analysis of facility operations was similar to that described above for site preparation and construction and centrifuge manufacturing. Emission estimates were developed for truck activity associated with all incoming and outgoing materials, and for the rail shipments of depleted uranium to a suitable offsite disposal facility, after being converted to a non-reactive form in DOE's onsite conversion facility at Piketon. The number of truck trips was taken from USEC's Environmental Report (USEC, 2005a). Estimates of emissions from the rail shipments of converted depleted uranium were developed based on an estimate of approximately 41,105 cylinders of depleted uranium being generated over the 30-year license period.[5] Approximately one train with 100 railcars would be needed every three months to ship this depleted uranium to an offsite disposal facility. In addition to increased emissions from the truck and rail shipments, emissions would increase from the proposed ACP workers' personal vehicles. As discussed in Section 4.2.11.2, workers needed to support proposed ACP operations would on average

[5] USEC estimates that approximately 41,105 cylinders of depleted uranium tails would be generated if product is enriched to 5 percent by weight of uranium-235, as is expected most of the time. If the ACP were to produce enriched uranium at the maximum licensed assay of 10 weight percent of uranium-235, the tails generation rate would be about 87 percent of the rate analyzed in this EIS (USEC, 2005a).

generate 1,113 trips per day. USEC assumed that each worker would arrive in a single-occupant vehicle and that half the vehicles would be light-duty trucks and half would be light-duty vehicles. As in the preceding section, emissions were estimated starting in 2010, since heavy-duty truck emissions are expected to have substantially reduced emissions over the next ten years starting in 2007 (see 40 CFR Parts 80 and 86). Emission factors used in this analysis were the same as reported in Table 4-12. Rail emission factors were based on EPA's Regulatory Support Document, Appendix O, line-haul fleet average emission factor for 2010 (EPA, 1998).

Table 4-14 compares the incremental increase in emissions from the combined truck, rail, and employee trips during proposed ACP operation to the current annual average emissions associated with all vehicles along U.S. Route 23 near the DOE reservation entrance. The largest impact is an estimated 11 percent increase in sulfur dioxide emissions, while the smallest impact is an estimated increase of almost five percent for nitrogen oxides and particulate matter with a mean diameter of 10 micrometers or less. These changes are highly unlikely to be large enough to cause an exceedance of ambient air quality standards and are sufficiently small that the change would be difficult to detect through ambient air quality monitoring. As a result, the health impacts associated with vehicle traffic during the proposed ACP operations phase are expected to be SMALL.

Table 4-14 Vehicle Emissions Associated with Operations-Related Traffic at the DOE Reservation Entrance (in 2010) [a, b]

	VOC (g/mi/day)	CO (g/mi/day)	NOx (g/mi/day)	PM_{10} (g/mi/day)	SO_2 (g/mi/day)
Current Baseline					
2004 Traffic	12,088	145,623	19,482	704	137
Increment					
Train Activity	2.1	6.8	37.2	1.4	4.2
Long-Haul	8.7	30.2	135.2	2.7	0.3
Worker Vehicles	920.5	11,781.1	735.1	27.9	11.1
Total Emissions	931.3	11,818.1	907.5	32.0	15.5
Percent Change over Baseline	7.7%	8.1%	4.7%	4.5%	11.4%

Notes:
[a] VOC = volatile organic compound; CO = carbon monoxide; NO_X = nitrogen oxides; PM_{10} = particulate matter with a mean diameter of 10 micrometers or less; SO_2 = sulfur dioxide.
[b] g/mi/day = grams per mile per day.
To convert miles to kilometers multiply by 1.61.

Radiological Impacts from Routine Transportation and Transportation Accidents

Transportation of radiological materials would include shipments of feed material to the proposed ACP, shipments of product materials (enriched UF_6) from the proposed ACP, and shipments of radioactive waste from the proposed ACP. Depleted UF_6 is assumed to be stored onsite until it is converted from UF_6 to triuranium octaoxide (U_3O_8), a more stable chemical form, at the new DOE conversion facility at Piketon and then transported by railcar to a low-level waste disposal site. According to USEC's Environmental Report (USEC, 2005a), feed materials would be transported from Metropolis, Illinois; Port Hope, Ontario, Canada; and Wilmington, Delaware in Type 48Y, Type 48X , and Type 30B cylinders, respectively. Product materials would be shipped to Richland, Washington; Columbia, South Carolina; Wilmington, North Carolina; and Seattle, Washington in Type 30B cylinders if the product is enriched to 5 percent or less, or another suitable 2.5-ton cylinder if the product is enriched to a higher percent.[6] Wilmington, Delaware is the shipping port for feed materials from Russia, while Seattle is the port for product shipments to Korea and Japan. Low-level radioactive waste would be shipped to Gainsville, Florida; Clive, Utah; and/or the Nevada Test Site. The transportation of radiological materials is subject to NRC regulations (10 CFR Part 71) and U.S. Department of Transportation regulations (49 CFR Parts 171-180). All the materials shipped to or from the proposed ACP would be shipped in Type A containers. The product material is regulated by the NRC as fissile material and would require additional fissile packaging considerations such as using an overpack surrounding the shipping container.

Exposure to radiation from radioactive shipments is assumed to result in an increased risk of latent cancer to crews operating the truck or train, persons sharing the route with the shipment (on-link public), persons living alongside the route (off-link public), and persons at rest stops and inspection stops. These latent cancers do not occur immediately after exposure, but instead occur a number of years after the exposure. The radiological impacts to occupational workers and the general public from the transport of the above-mentioned radioactive materials were estimated using RADTRAN 5, a computer code for analyzing the consequences and risks of radioactive material transportation. RADTRAN 5 estimates the number of latent cancer fatalities from accidents and the incident free transport of the materials, where the term "incident-free" means that no traffic accident or other incident resulted in the release of radioactive material to the surrounding environment. In this context, accidents refer only to incidents that result in the release of radioactive material.

NRC classifies accidents into eight severity categories, based on the mechanical (impact) and thermal (fire) forces involved (NRC, 1977). Category I is the least severe and Category VIII is the most severe. Less severe accidents occur more frequently, but have relatively mild consequences. More severe accidents happen less frequently, but have more significant consequences, including the release of some or all of the radioactive material in the shipment. For this EIS, the NRC staff has estimated the fraction of accidents for truck and rail transport that fall within each category. Additionally, the staff has estimated the fraction of accidents in each category that occur in rural, suburban, and urban areas. Less severe accidents are most likely to occur in urban areas, where driving speeds are typically lower, while more severe accidents are more likely to occur in rural areas where driving speeds are higher (NRC, 1977). These estimates when combined with average accident rates are used to estimate the number of latent cancer fatalities due to exposure to radiation and radioactivity from transportation accidents. For

[6] No 2.5-ton cylinder is currently certified to ship uranium enriched to higher than 5 weight percent of uranium-235. Although it is currently believed to be unlikely, USEC may enrich product up to 10 weight percent of uranium-235. In the event this higher enrichment occurs, USEC would have to gain the appropriate certification before it shipped 10 percent product in either an existing 2.5-ton cylinder or in a new 2.5-ton cylinder. This EIS's analysis of direct radiation surrounding Type 30B cylinders containing enriched product is considered reasonable for shipping scenarios involving higher-enriched product in another type of approved 2.5-ton cylinder (i.e., direct radiation levels for such alternate containers are expected to be similar).

purposes of this analysis, all releases of material are assumed to be airborne and respirable, which is very conservative. Fatalities due to chemical effects and bodily injury are addressed separately.

The RADTRAN 5 results presented in Table 4-15 are based on a number of input parameters, including the number of trips per year, the quantity of material transported per trip, the route used, the average accident rates for the route, and the population density along the route. The results in Table 4-15 are also based on the most likely scenario in which the enriched product contains approximately 5 percent by weight of uranium-235. Routes and population densities were determined using the Transportation Routing Analysis Geographic Information System model developed by Oak Ridge National Laboratory for the Department of Energy's National Transportation Program. Radioactive shipments were treated as Highway Route Controlled Quantities for route determination. More detail on the methods and inputs used for this analysis are provided in Appendix D of this EIS.

As shown in Table 4-15, the transportation of feed material, product, heel cylinders, radioactive waste, and the converted depleted uranium results in some increased risk of cancer to both the occupational workers transporting and handling the material and to members of the public driving on the roads or living along the transportation routes. The transport of all materials is estimated to result in approximately 0.014 latent cancer fatalities per year of operation from exposure to direct radiation during incident-free transport, and an additional 0.008 latent cancer fatalities per year from accidents that result in the release of radioactive material into the environment. The total latent cancer fatalities is estimated to be 0.02 per year of operation or less than one cancer fatality over 30 years of operation.

The results presented above are for product materials enriched to approximately 5 weight percent of uranium-235. Although it is currently believed to be unlikely, USEC may in the future enrich product up to 10 weight percent of uranium-235. There are currently no 2.5-ton cylinders certified for the shipment of this higher enriched material. In the event this higher enrichment occurs, USEC would have to gain the appropriate certification before it shipped 10 product in either an existing 2.5-ton cylinder or in a new 2.5-ton cylinder. External exposure rates surrounding such a cylinder would likely be similar to those around the 30B cylinders presently used to ship 5 percent product and less than the external dose equivalent rates used in this assessment. For this reason, the risks associated with the incident-free transport of the 10 percent enriched product would not be significantly different than that of the 5 percent enriched product.

However, the accident-related radiological risks associated with the transport of the 10 percent enriched product would be somewhat greater than that of the 5 percent enriched product. This is primarily due to the higher activity of uranium-234 in the 10 percent enriched product. Uranium-234 does not contribute significantly to the external dose rate, but is an inhalation hazard if released. Table D-16 in Appendix D shows the calculated latent cancer fatalities from the transport of the higher enriched product for the same routes analyzed previously. The number of expected latent cancer fatalities associated with accidents involving only the transport of the 10 percent enriched product – not considering the other materials that would also be shipped – would be approximately three times greater than that for the 5 percent enriched product (i.e., 0.0087 latent cancer fatalities per year rather than the 0.0029 latent cancer fatalities per year reported in Table 4-15). When this higher number is added to the risks reported in Table 4-15 for incident-free shipping and transportation accidents involving the other materials, the total estimated latent

cancer fatalities becomes 0.03 per year of operation, which still equates to less than one cancer fatality over 30 years of operation. It should be noted that this analysis for 10 percent enriched product is conservative in that it assumes all the product material is enriched to 10 percent and it does not account for the decreased accident risks associated with the corresponding lower activities of uranium-234 in shipments of the conversion products (since uranium-234 activity would be higher in the 10 percent product it would be lower in the accompanying tails).

Based on these results, the public and occupational health impacts associated with the proposed transport of radioactive materials are expected to be SMALL.

Table 4-15 Estimated Latent Cancer Fatalities from the Transportation of Radioactive Materials for One Year of Operation

Material	Incident Free								Accidents
	General Population			Occupational Workers			Total	Maximally Exposed Individual	
	Off-Link	On-Link	Rest Stops	Crew	Inspection Stops	Loading Crew			
Feed Material	2.3×10^{-4}	1.7×10^{-3}	2.3×10^{-3}	2.9×10^{-3}	2.0×10^{-3}	9.2×10^{-4}	9.9×10^{-3}	9.4×10^{-9}	4.2×10^{-3}
Product[a]	4.6×10^{-5}	3.4×10^{-4}	6.9×10^{-4}	7.5×10^{-4}	3.3×10^{-4}	2.7×10^{-4}	2.4×10^{-3}	6.7×10^{-10}	2.9×10^{-3}
Heels	3.6×10^{-6}	2.7×10^{-5}	5.3×10^{-5}	6.4×10^{-5}	3.0×10^{-5}	9.8×10^{-5}	2.8×10^{-4}	8.9×10^{-11}	1.6×10^{-5}
Radioactive Waste	1.3×10^{-5}	1.1×10^{-4}	2.6×10^{-4}	3.2×10^{-4}	9.3×10^{-5}	1.1×10^{-4}	9.0×10^{-4}	3.5×10^{-10}	1.2×10^{-5}
Converted Products (Depleted Uranium and Calcium Fluoride)	7.3×10^{-7}	7.3×10^{-8}	2.7×10^{-5}	2.2×10^{-6}	0.0×10^{0}	0.0×10^{0}	3.0×10^{-5}	3.2×10^{-11}	7.5×10^{-4}
Total	**2.9×10^{-4}**	**2.2×10^{-3}**	**3.2×10^{-3}**	**4.0×10^{-3}**	**2.4×10^{-3}**	**1.4×10^{-3}**	**1.4×10^{-2}**	**9.4×10^{-9}**	**7.8×10^{-3}**

Notes:
[a] Assuming the most likely scenario involving product enriched to 5 percent by weight of uranium-235.

Non-Radiological Impacts from Transportation Accidents

In addition to the radiological impacts during transportation described above, chemical impacts from a transportation accident involving uranium could also affect the surrounding public. Uranium compounds, in addition to being radioactive, can have toxic chemical effects (primarily on the kidneys) if inhaled or ingested. The operation of the ACP would result in the truck transport of UF_6 as feed and product material to and from the ACP, as well as the rail transport of U_3O_8 as a conversion product for offsite disposal. Calcium fluoride, another conversion product, contains small amounts of uranium as a contaminant.

When released from a shipping cylinder, UF_6 reacts with the moisture in the atmosphere to form HF and uranyl fluoride. HF is extremely corrosive and can damage the lungs and cause death if inhaled at high enough concentrations. Irreversible adverse effects resulting from sufficiently high concentrations of these chemicals include permanent organ damage, or the impairment of everyday functions, and death. Adverse effects from exposure to lower concentrations include skin rash and respiratory irritation. The number of deaths resulting from the chemical effects of HF and uranyl fluoride is estimated to be 1 percent of those experiencing irreversible effects (Policastro et al., 1997)

To estimate the chemical effects of an accident involving the transport of UF_6 and U_3O_8, DOE modeled the dispersion of chemical emissions released into the environment from a transportation accident involving a fire (ANL, 2001; DOE, 2004a). The results were used to determine the number of people whose exposure would exceed the threshold for adverse effects and irreversible adverse effects. DOE estimated the chemical effects for accidents in rural, suburban, and urban areas. Table 4-16 shows the potential chemical impacts to the public from a hypothetical severe transportation accident that involves a fire. The assumptions supporting the impacts summarized in this table are provided in Appendix D.

Table 4-16 Potential Chemical Consequences to the Population from Severe Transportation Accidents

Material	Mode	Number of Persons with Potential Adverse Health Effects			Number of Persons with Potential Irreversible Adverse Health Effects		
		Rural	Suburban	Urban	Rural	Suburban	Urban
UF_6	Truck	6	760	1,700	0	1	3
U_3O_8	Rail	0	47	103	0	17	38

Source: DOE, 2004a.

Based on the total number of trips, the length of the trips, and the mean accident rate, the estimated number of accidents involving shipments of UF_6 is 0.5 accidents per year or an average of one accident every two years. This would translate into a total of 15 potential accidents over the 30-year operating life of the proposed ACP. Of these accidents, approximately 55 percent would not result in the release of any UF_6, and another 43 percent would result in a release of no more than 10 percent of the UF_6. About two percent of all accidents are expected to be severe enough to result in the release of all the UF_6 present. The probability of one or more of the 15 expected accidents being this severe is about 26 percent. Such an accident is most likely to occur in a rural or suburban area. The shipment of U_3O_8 would likely involve no more than four trainloads per year, making an accident unlikely.

These results indicate that the probability of a severe transportation accident that releases sufficient quantities of uranium that could pose a health risk is low, but that the consequences of such an accident,

should it occur, are high. Based on this analysis, the public health impacts associated with such an accident as part of the proposed action are considered MODERATE.

4.2.12.2 Site Preparation and Construction

This section evaluates the potential for occupational injuries and illnesses associated with the proposed site preparation and construction activities. It also evaluates the potential public and occupational health impacts from non-radiological and radiological releases during site preparation and construction.

Occupational Injuries and Illnesses

Non-radiological occupational injuries and illnesses associated with site preparation and construction were estimated using annual injury and illness data for heavy construction compiled by the U.S. Bureau of Labor Statistics. This Bureau compiles statistics by the North American Industry Classification System, which replaced Standard Industrial Classification Codes in 2000. Site preparation and construction of the proposed ACP is classified under North American Industry Classification System Code 2379, *Other Heavy and Civil Engineering Construction*. Incident rates for Total Recordable Cases and Lost Workday Cases for calendar year 2003, in units of incidents per 100 full-time equivalents, were obtained from the Bureau of Labor Statistics Publication *Table 1, Incident Rates of Nonfatal Occupational Injuries and Illnesses by Industry and Case Types 2003* (BLS, 2004a). Fatality incident rates for *Construction* (North American Industry Classification System Code 23) for calendar year 2003, in units of incidents per 100,000 full-time equivalents, were obtained from Bureau of Labor Statistics Publication *National Census of Fatal Occupational Injuries in 2003* (BLS, 2004b).

The number of construction workers per year (full-time equivalents) and the duration of construction were obtained from USEC's Environmental Report (USEC, 2005a). The incident rates for Total Recordable Cases, Lost Workday Cases, and Fatalities were applied to the number of construction workers per year and the construction schedule to estimate the total number of incidents. The incident rates, total full-time equivalents, and total incidents are summarized in Table 4-17. Based on the total number of incidents estimated for site preparation and construction, impacts to occupational safety from site preparation and construction would be SMALL.

Table 4-17 Health and Safety Statistics for Estimating Industrial Safety Impacts Common to the Workplace and Total Incidents for Site Preparation and Construction

FTEs [a]		Total Recordable Cases		Lost Workday Cases		Fatalities	
FTEs per year	Total FTEs	Incidents per 100 FTEs	Total Recordable Cases	Incidents per 100 FTEs	Lost Workday Cases	Incidents per 100,000 FTEs	Total Fatalities
1,013	5,065	4.3	218	1.9	96	11.7	0.59

Notes:
[a] FTEs = full-time equivalents.
Source: USEC, 2005a; BLS, 2004a; BLS, 2004b.

Non-Radiological Impacts

During the site preparation and construction phase, there may be occupational exposures to fugitive dust kicked up from land disturbances and to pollutants exhausted from vehicles and earth-moving equipment, including particulate matter, nitrogen oxides, sulfur oxides, and carbon monoxide. For this EIS, the NRC

staff predicted the following maximum (one-hour) airborne concentrations in workplace environments: 0.31 milligrams per cubic meter of particulate matter, 0.50 milligrams per cubic meter of nitrogen oxides, 0.06 milligrams per cubic meter of sulfur oxides, and 0.14 milligrams per cubic meter of carbon monoxide (see Section 4.2.4.1). All of these concentrations are substantially lower than workplace exposure limits, so the occupational health impacts would be SMALL.

Both the water and air exposure pathways are of interest for the public. As discussed in Section 4.2.6.1, the potential impacts to surface water and groundwater quality due to site preparation and construction activities are expected to be small, because releases to surrounding ditches, tributaries, and creeks would be controlled under the National Pollutant Discharge Elimination System and through the use of engineering controls and best management practices. The primary threat to water quality would be a temporary increase in sedimentation and turbidity, as a result of storm water runoff from soils exposed during the construction phase, but this potential impact is not a human health concern. Therefore, the public health impacts associated with any non-radiological water contamination would be SMALL.

As discussed in Section 4.2.4.1 (see Table 4-1), site preparation and construction activities are predicted to result in airborne concentrations of criteria pollutants at the reservation boundary that are below the National Ambient Air Quality Standards, except for a slight exceedance of the standard for particulate matter with a mean diameter of 2.5 micrometers or less out to a distance of 1,000 meters (3,280 feet) beyond the southern fenceline. While emissions from site activities contribute to this exceedance, the vast majority of it is the result of high background concentrations of 13.8 micrograms per cubic meter for particulate matter with a mean diameter of 2.5 micrometers or less in the area. Overall, this exceedance would be small in magnitude (the predicted concentration is 16.1 grams per cubic meter relative to the standard of 15 grams per cubic meter), temporary, confined to a limited area, and a public health threat only if somebody were to move to the affected area near the fenceline. Therefore, the anticipated public health impacts are expected to be SMALL.

Radiological Impacts

Radiological impacts during site preparation and construction would be primarily to the construction workers performing those activities. Exposures to offsite personnel are greatly below those of the construction workers themselves because of atmospheric dispersion of airborne material and increased distance from external exposure sources. The construction workers are assumed to be an unmonitored population, meaning that they are not monitored for radiation exposure by the onsite radiation exposure control program. Because the workers are not considered “radiation workers,” the applicable dose limits for the construction workers are those for the general public listed in 10 CFR § 20.1301(a)(1).

Site preparation and construction activities would not generate any radiological contamination, but they would disturb areas contaminated by previous site activities, including operation of the Gas Centrifuge Enrichment Plant, operation of the Gaseous Diffusion Plant, and storage of previously accumulated cylinders of uranium-bearing material. Therefore, the primary modes of exposure for construction personnel would be: (1) inhalation of previously existing radiological contamination that are in the dust suspended by construction activities; (2) external exposure from radionuclides contained in contaminated soil suspended in the air; (3) external exposure from radionuclides previously deposited in the soil on the ground; and (4) external exposure from existing sources nearby on the site such as the cylinder storage yards. Internal exposure from ingestion of food and drinking water is not considered a potential exposure mode for the construction workers.

The method for estimating the radiation dose received by the construction personnel from each of these exposure modes is given in Appendix C. Dose from inhalation of radioactive material suspended in the air, external exposure from radioactive material suspended in the air, and external exposure from

radioactive material in the surrounding soil was calculated using data from site environmental reports and dose factors from Federal Guidance Report 13 (the latest dose conversion factors published by the U.S. EPA) (EPA, 1999). The dose from external exposure to existing sources of radiation at the site was estimated using information from the thermoluminescent dosimeters located at various locations within the site boundary. Many of these thermoluminescent dosimeters are located near the locations where construction work is expected to be performed, making them the best available data on ambient radiation fields in the vicinity of the work activities.

The maximum estimated dose for each of the exposure modes was calculated for an annual exposure period. These estimated doses are:

- Internal dose from inhalation – less than 1×10^{-3} millisieverts per year (0.1 millirem per year);
- External dose from submersion – less than 1×10^{-3} millisieverts per year (0.1 millirem per year);
- External dose from radionuclides in soil – less than 1×10^{-3} millisieverts per year (0.1 millirem per year);
- External dose from existing sources – 0.88 millisieverts per year (88 millirem per year); and
- Total maximum possible dose – 0.89 millisieverts per year (89 millirem per year).

The maximum dose is dominated by the external dose received from existing external sources. As described in Appendix C, the 0.88-millisieverts (88-millirem) dose from existing external sources is derived from a worst-case exposure analysis for a worker employed for a full year at the location of the highest reading thermoluminescent dosimeters near the proposed X-745H Cylinder Storage Yard. The most likely dose to construction workers from existing external sources is 0.20 millisieverts per year (20 millirem per year) based on the nearest thermoluminescent dosimeter readings, which would provide for a total maximum possible dose approximately 0.22 millisieverts per year (22 millirem per year) (DOE, 2003). A dose of 0.20 millisieverts (20 millirem) is on the same scale as the variations in individual annual dose caused by the fluctuation in natural background. Background radiation exposure in the U.S. averages approximately 3.6 millisieverts per year (360 millirem per year) (NRC, 2005a).

The total maximum possible dose to construction workers from all four pathways is less than the 1 millisievert per year (100 millirem per year) limit in 10 CFR § 20.1301(a)(1), even for estimates combining the most conservative analytical assumptions. This is a negligible dose, representing a lifetime excess cancer risk of less than 5×10^{-5} (less than a 5 in 100,000 chance of getting cancer) when using a risk coefficient of 5×10^{-2} risk per sievert (5×10^{-4} risk per rem) (EPA, 1994). Based on this assessment, the impact on workers from radiological exposure during site preparation and construction is SMALL.

The dose to offsite personnel will be significantly smaller than that for construction workers, particularly since offsite personnel will not have any potential for measurable exposure from the cylinder storage yards. As described in Appendix C, the maximum exposure to offsite personnel is estimated to be less than 1×10^{-3} millisieverts per year (0.1 millirem per year). The impact on offsite personnel from site preparation and construction is therefore SMALL.

4.2.12.3 Facility Operation

This section evaluates potential occupational injuries and illnesses, as well as public and occupational health impacts associated with non-radiological and radiological releases, from the proposed ACP operations. It also evaluates the potential impacts of plausible accident scenarios.

Occupational Injuries and Illnesses

As for site preparation and construction, non-radiological occupational injuries and illnesses associated with facility operation were estimated using annual injury and illness data from the U.S. Bureau of Labor Statistics. Operation of the proposed ACP is classified under North American Industry Classification System Code 325188, *All Other Basic Inorganic Chemical Manufacturing*. Incident rates for Total Recordable Cases and Lost Workday Cases for calendar year 2003, in units of incidents per 100 full-time equivalents, for North American Industry Classification System Code 325188 were obtained from the Bureau of Labor Statistics Publication *Table 1, Incident Rates of Nonfatal Occupational Injuries and Illnesses by Industry and Case Types 2003* (BLS, 2004a). Fatality incident rates for *Manufacturing* (North American Industry Classification System Code 325) for calendar year 2003, in units of incidents per 100,000 full-time equivalents, were obtained from Bureau of Labor Statistics Publication *National Census of Fatal Occupational Injuries in 2003* (BLS, 2004b).

The number of operations workers per year (full-time equivalents) and the duration of facility operation were obtained from USEC's Environmental Report (USEC, 2005a). The incident rates for Total Recordable Cases, Lost Workday Cases, and Fatalities were applied to the number of operations workers per year and the operation schedule to estimate the total number of incidents. The estimated incident rates, total full-time equivalents, and total incidents are presented in Table 4-18. Based on the small total number of incidents reported in this table, impacts to occupational safety from facility operation should be SMALL.

Table 4-18 Health and Safety Statistics for Estimating Industrial Safety Impacts Common to the Workplace and Total Incidents for Facility Operation

FTEs [a]		Total Recordable Cases		Lost Workday Cases		Fatalities	
FTEs per year	Total FTEs	Incidents per 100 FTEs	Total Recordable Cases	Incidents per 100 FTEs	Lost Workday Cases	Incidents per 100,000 FTEs	Fatalities
600	16,200	2.8	454	1.3	211	2.5	0.41

Notes:
[a] FTEs = full-time equivalents.
Source: USEC, 2005a; BLS, 2004a; BLS, 2004b.

Routine Non-Radiological Impacts

The greatest potential for occupational exposures is in the product and tails withdrawal buildings, where cylinder connections and disconnections have the potential to release small amounts of UF_6 into the workplace environment. Any released UF_6 would react with ambient moisture to form HF and uranyl fluoride. Gulper systems, utilizing a flexible hose or ventilation hood, would be used to evacuate any such releases from the workplace. Airborne concentrations of HF and uranyl fluoride are expected to be insignificant with respect to worker exposure except in the area in the immediate vicinity of the release area and the gulper. Based on historical monitoring results and the anticipated amount of UF_6 released, USEC estimates that workplace concentrations of HF would be less than one percent of the Occupational Safety and Health Administration's Permissible Exposure Limit of 2.5 milligrams per cubic meter over an eight-hour averaging time. Concentrations of HF in the immediate vicinity of the UF_6 release point could be briefly higher, but are still expected to be less than 10 percent of the Permissible Exposure Limit (USEC, 2005a). Based on this analysis, the impacts associated with occupational exposures to HF in the workplace should be SMALL.

The NRC staff estimates that uranium concentrations in the workplace air could be as high as 0.7 milligram per cubic meter. This concentration was estimated using USEC's reported maximum short-term concentration of HF and then using the stoichiometry of the UF_6 reaction with atmospheric moisture to form uranyl fluoride and HF fumes. The staff expects that concentrations this high would represent short-term peaks in the immediate vicinity of "puff releases" of UF_6. For such short-term exposures, a relevant standard is the National Institute of Occupational Safety and Health's Immediately Dangerous to Life and Health level of 10 milligrams per cubic meter of uranium over a one-hour period. Since the staff's predicted concentration is below this standard, the impacts associated with occupational exposures to uranium in the workplace air are also likely to be SMALL.

In addition to the HF and uranyl fluoride, workers could be exposed to airborne concentrations of criteria pollutants emitted from the operation of the proposed ACP's emergency diesel generators. The NRC staff predicted that these emissions would result in the following maximum (one-hour) airborne concentrations in workplace environments: 0.006 milligrams per cubic meter of particulate matter, 0.34 milligrams per cubic meter of nitrogen oxides, 0.005 milligrams per cubic meter of sulfur oxides, and 0.09 milligrams per cubic meter of carbon monoxide (see Section 4.2.4.2). All of these concentrations are substantially lower than workplace exposure limits, so the occupational health impacts associated with exposures to criteria pollutants would be SMALL.

With respect to public health impacts, Section 4.2.6.2 concludes that non-radiological releases from proposed ACP operations to surface water and groundwater should be small and should not degrade existing water quality. Therefore, the public health impacts associated with such liquid releases would also be SMALL.

Public health impacts associated with non-radiological releases to the air are also expected to be SMALL. As detailed in Section 4.2.12.3, routine airborne emissions from the proposed ACP are projected to result in a maximum HF concentration of 2.35×10^{-3} micrograms per cubic meter and a maximum uranium concentration of 6.09×10^{-3} micrograms per cubic meter, both at the point of the Ohio National Guard building located onsite 555 meters (1,820 feet) from the proposed ACP buildings. Both of these concentrations are orders of magnitude below safe levels established by the Occupational Safety and Health Administration (2,500 micrograms per cubic meter for HF and 50 micrograms per cubic meter for uranium, both averaged over eight hours). Similarly, as discussed in Section 4.2.4.2, the predicted concentrations of criteria pollutants in air at the property boundary are well below the National Ambient Air Quality Standards.

Routine Radiological Impacts

This section describes the potential radiological impacts to members of the public and workers from the proposed ACP operations. Appendix C documents the methodology used in evaluating and reviewing information and site-specific data provided by USEC. Technical reports and safety analyses related to the potential hazards, and other independent information sources, were also reviewed.

Public Health Impacts

Radiation exposure to the public is possible via intake of uranium released from proposed ACP operations or from direct external exposure to the radiation emitted by the uranium. The two potential pathways of concern leading to public intake of uranium are airborne releases and liquid releases. Airborne releases may occur from routine operations or from small controlled releases to the atmosphere from the uranium enrichment process lines, specifically at the feed, withdrawal, sampling, and analysis points. Liquid releases may result from decontamination and maintenance of failed equipment or equipment being serviced and any associated releases of radioactive liquids to surface water. Direct external exposure

could occur from emission of radiation from the process lines, storage and handling of UF_6, and the collection, management, temporary storage, and transportation of other low-level radioactive or low-level mixed waste. Direct radiation and skyshine (radiation reflected from the atmosphere) originating from operations inside the facility would be expected to be undetectable at offsite areas. The direct radiation emitted by the uranium in the facility would be significantly absorbed by the heavy process lines, walls, equipment, and tanks at the proposed ACP. Additionally, any direct radiation would have to travel over 900 meters (3,000 feet) to reach the current nearest member of the public.

Public Dose From Airborne Releases of Radioactive Materials

The proposed ACP would release small amounts of uranium to the atmosphere during operation. The modeling performed for this analysis evaluated the impact of these releases to offsite populations and to onsite populations that are not included in the site's radiological dose monitoring program. Both of these groups are considered to be limited by the 1 millisievert per year (100 millirem per year) public exposure limits in 10 CFR § 20.1301(a)(1) and by the 0.1 millisieverts per year (10 millirem per year) airborne dose limits in 40 CFR Part 61, Subpart H, the U.S. EPA's National Emissions Standards for Hazardous Air Pollutants.

This analysis modeled releases from five release sources: (1) stacks on the process buildings (X-3001, X-3002, X-3003, and X-3004); (2) the product and tails withdrawal buildings (X-3356 and X-3366); (3) the analytical laboratory (X-710); (4) the feed component of Building X-3346; and (5) the customer services component of Building X-3346. The feed, withdrawal, and product operations uranium-235 design assay may range from approximately 1.6 percent to 10 percent. The customer product range is typically from approximately 2.4 percent to 5 percent, although it may occasionally be as high as 10 percent. Table 4-19 shows the annual release rates modeled for each of the locations using a customer product assay of 5 percent by weight of uranium-235. The values in this table represent the maximum of the typical customer assay range and should provide a reasonably high estimate of the most likely potential dose received from airborne releases of uranium from the ACP. In order to bound the infrequent and less likely possibility of product being enriched to 10 weight percent of uranium-235, this analysis also calculated the potential annual dose from airborne emissions assuming the maximum customer assay allowable under the NRC license.

Table 4-19 Airborne Release Rates Assuming Enrichment of 5 Weight Percent of Uranium-235

Location	Uranium-234 Bq/yr	Uranium-235 Bq/yr	Uranium-238 Bq/yr
Feed (X-3346)	2.89×10^{7}	1.27×10^{6}	2.76×10^{7}
Analytical Lab (X-710)	2.33×10^{8}	1.07×10^{7}	8.14×10^{7}
Process Buildings (X-3001through X-3004)	2.21×10^{9}	1.02×10^{8}	7.70×10^{8}
Withdrawal (X-3356 and X-3366)	8.29×10^{7}	3.81×10^{6}	2.89×10^{7}
Customer Services (X-3346)	5.07×10^{7}	1.79×10^{6}	5.37×10^{6}
Total Plant	2.60×10^{9}	1.19×10^{8}	9.14×10^{8}

Notes:
Bq/yr = becquerels per year
1 curie (Ci) = 3.7×10^{10} becquerels

Version 3 of the U.S. EPA air modeling code CAP88-PC was used to assess the impacts from proposed ACP emissions of uranium. The CAP88-PC model analyzes radiation dose from a number of exposure pathways. These include inhalation, submersion (external dose from a cloud of airborne radioactive material), groundshine, and ingestion of foodstuffs containing radioactive material propagated into the foodchain following deposition on the ground. CAP88-PC is approved by U.S. EPA for demonstrating compliance with the National Emission Standards for Hazardous Air Pollutants; version 3 is the latest update that includes the most recent dose and risk conversion factors. A description of the modeling approach in CAP88-PC Version 3, together with the compiled outputs from CAP88-PC for this analysis, are provided in Appendix C.

As shown in Table 4-19, the feed operation's emissions would derive from natural uranium. The process, withdrawal, and analytical laboratory buildings are assumed to have an average 2 percent uranium-235 assay, and the customer services building emissions would derive from material having an average 5 percent uranium-235 assay based on typical customer orders. The process building vent characteristics were based on the existing process vents in X-3001 and X-3002 where the vent height is 23 meters (75 feet) above grade and the vent diameter is 0.05 meter (2 inches). The vent heights for the feed, withdrawal, and customer services buildings are 12 meters (39 feet) above grade. The analytical laboratory vent height is 9 meters (30 feet) above grade. The model assumed a zero height plume rise for all atmospheric stability categories.

Although CAP88-PC has allowance for up to six independent stacks, all stacks modeled in any given case are assumed to be co-located. In most assessments this does not present a problem since vents that are physically offset by distances that are small relative to the downwind area being assessed can be safely assumed to be co-located. In this analysis, four of the vents are located in close proximity relative to the assessment distances being modeled. The only exception is the X-710 Laboratory Facility; this facility is treated as if it were co-located with the other vents in the model. In reality this facility is approximately 850 meters (2,800 feet) upwind from the critical receptor location relative to the other vents. The modeling ignores this difference in distance, which should result in a small overestimation of the dose at the critical receptor location.

Wind velocities used in the model were from the onsite meteorological station and represent measurements collected at 30 meters (98 feet) above grade from 1998 to 2002. The prevailing winds at the proposed ACP site blow from the southwest toward the northeast with a secondary frequency in the opposite direction towards the southwest. Although the primary direction is from the southwest, the DOE reservation has its greatest extent towards the northeast, resulting in greater dispersion of emissions in that direction prior to the emissions reaching any receptor locations at or beyond the northeast corner. Also, the proposed ACP would be located in the southwest corner of the reservation thus maximizing the possible dispersion prior to any emissions from the proposed ACP reaching receptors located in the direction of the prevailing winds.

For modeling purposes the distances from the proposed ACP stacks to the receptor locations were measured from the center point between the four process buildings to the DOE reservation boundary in each of the 16 compass directions. The model also evaluated the two onsite tenant organizations, the Ohio National Guard at the X-751 Mobile Equipment Maintenance Shop and the Ohio Valley Electric Cooperative office building on the Main Access Road, as the nearest members of the public. Distances were scaled from a blueprint-size site map with the Universal Transverse Mercator grid (100-meter [328-foot] increments) overlaid.

The model used a rural food consumption pattern to estimate the dose to an assumed critical receptor location at the DOE reservation boundary and the collective population dose for an 80-kilometer (50-mile) radius around the proposed ACP. The rural food consumption pattern assumes a high percentage of

foodstuffs are produced at home or at the point of exposure (70 percent vegetables, 40 percent milk, and 44 percent meat), with the remainder produced within an 80-kilometer (50-mile) radius. Onsite tenants were also assumed to consume foodstuffs produced within the 80-kilometer (50-mile) radius surrounding the proposed ACP, but not food products raised on the DOE reservation. These food consumption assumptions provide for an assessment that calculates a dose from ingestion representing the upper end of those doses expected to be reasonably possible, since few people actually consume a diet produced exclusively within 80 kilometers (50 miles) of their residence.

Table 4-20 shows the estimated dose to receptors residing at the site boundary in each of the 16 directions modeled in CAP88, along with the estimated dose to the two onsite tenant organizations. The estimated doses shown in this table are for the highest typical customer product assay of 5 weight percent of uranium-235. The maximum exposure is to the critical receptor residing on the DOE reservation boundary 1.1 kilometers (0.68 mile) south-southwest of the proposed ACP. The maximum individual 50-year total effective dose equivalent rate at this location from air emissions is modeled to be 2.10×10^{-3} millisieverts per year (0.21 millirem per year). The Ohio National Guard X-751 Mobile Equipment Maintenance Shop received the maximum individual total effective dose equivalent rate for the onsite tenant organizations at 3.0×10^{-3} millisieverts per year (0.30 millirem per year). These estimated doses are well below the U.S. EPA National Emission Standards for Hazardous Air Pollutant limit of 0.1 millisieverts per year (10 millirem per year) and the NRC total effective dose equivalent limit of 1 millisievert per year (100 millirem per year).

For the 10 weight percent customer assay scenario, which is expected to be much less frequent than the 5 weight percent scenario presented above, the maximum fenceline dose is estimated to be 3.3×10^{-3} millisieverts per year (0.33 millirem per year) and the dose at the Ohio National Guard location is 1.1×10^{-2} millisieverts per year (1.1 millirem per year). Although the 10 weight percent scenario was analyzed for the purpose of bounding the possible dose, the results are not considered reasonable for an annual exposure because of the low probability and infrequent occurrence of that product assay. Table 4-20 reports the results for a full year of operation at a product assay of 5 percent by weight of uranium-235, which represents a reasonable maximum given the expected ACP customers. Nevertheless, even at the 10 percent assay, the predicted doses are well below the U.S. EPA National Emission Standards for Hazardous Air Pollutant limit and the NRC total effective dose equivalent limit noted above.

Table 4-20 Annual Total Effective Dose Equivalent from Air Releases During Operation Assuming Enrichment of 5 Weight Percent of Uranium-235

Location	Direction	Distance meters[a]	Dose millisievert/year[b]
Site Boundary	North	3,350	1.0×10^{-3}
Site Boundary	North-northwest	2,012	1.2×10^{-3}
Site Boundary	Northwest	1,344	1.6×10^{-3}
Site Boundary	West-northwest	1,062	1.7×10^{-3}
Site Boundary	West	950	1.6×10^{-3}
Site Boundary	West-southwest	1,062	1.4×10^{-3}
Site Boundary	Southwest	1,308	1.4×10^{-3}
Site Boundary	South-southwest	1,118	2.1×10^{-3}
Site Boundary	South	1,050	1.8×10^{-3}
Site Boundary	South-southeast	1,230	1.2×10^{-3}
Site Boundary	Southeast	1,344	1.2×10^{-3}
Site Boundary	East-southeast	1,342	1.3×10^{-3}
Site Boundary	East	1,875	1.1×10^{-3}
Site Boundary	East-northeast	2,404	1.2×10^{-3}
Site Boundary	Northeast	4,137	8.0×10^{-4}
Site Boundary	North-northeast	4,891	7.0×10^{-4}
National Guard	East	555	3.0×10^{-3}
Ohio Valley Electric Cooperative	North-northwest	1,526	1.6×10^{-3}

Notes:
[a] To convert meters to feet multiply by 3.28.
[B] To convert millisievert to millirem multiply by 100.

CAP88-PC output includes a table of calculated airborne concentrations, in units of microcuries per cubic meter, for each radionuclide at each location defined by the user in the model's input file. These concentrations can then be converted from microcuries per cubic meter to micrograms per cubic meter for the purpose of evaluating the potential chemical toxicity of uranium rather than its radiation hazard. The uranium concentrations are not expected to be noticeably different in the case of a customer assay of 10 weight percent of uranium-235 rather than 5 weight percent of uranium-235. Changes in assay do not significantly affect the total uranium release, only the isotopic makeup of the uranium in the release.

Table 4-21 provides the calculated airborne uranium and corresponding HF concentrations at the identical receptor locations listed in Table 4-20.[7] The maximum fenceline airborne uranium concentration is predicted to be 0.005 micrograms per cubic meter along the south property line. The maximum airborne uranium concentration modeled for an onsite location is 0.006 micrograms per cubic meter at the Ohio National Guard X-751 Mobile Equipment Maintenance Shop. These estimated concentrations are well below the National Institute for Occupational Safety and Health Time-Weighted Average Recommended Exposure Level and the American Conference of Industrial Hygienists Threshold Limiting Value for uranium of 200 micrograms per cubic meter (NIOSH, 1996; NIOSH, 2005).

[7] Average HF concentrations can be estimated using the stoichiometry of the UF_6 reaction with atmospheric moisture to form uranyl fluoride (a solid particulate) and HF fumes. Four molecules of HF are generated for each molecule of UF_6 released.

Table 4-21 Predicted Airborne Concentrations of Uranium and Hydrogen Fluoride at Receptor Locations

Location	Direction	Distance meters[a]	Total Uranium ($\mu g/m^3$)[b]	Hydrogen Fluoride ($\mu g/m^3$)
Site Boundary	North	3,350	1.73×10^{-3}	6.69×10^{-4}
Site Boundary	North-northwest	2,012	2.29×10^{-3}	8.84×10^{-4}
Site Boundary	Northwest	1,344	3.03×10^{-3}	1.17×10^{-3}
Site Boundary	West-northwest	1,062	3.45×10^{-3}	1.33×10^{-3}
Site Boundary	West	950	3.09×10^{-3}	1.19×10^{-3}
Site Boundary	West-southwest	1,062	2.61×10^{-3}	1.01×10^{-3}
Site Boundary	Southwest	1,308	2.59×10^{-3}	1.00×10^{-3}
Site Boundary	South-southwest	1,118	4.09×10^{-3}	1.58×10^{-3}
Site Boundary	South	1,050	5.21×10^{-3}	2.01×10^{-3}
Site Boundary	South-southeast	1,230	2.30×10^{-3}	8.88×10^{-4}
Site Boundary	Southeast	1,344	2.21×10^{-3}	8.53×10^{-4}
Site Boundary	East-southeast	1,342	2.32×10^{-3}	8.96×10^{-4}
Site Boundary	East	1,875	2.05×10^{-3}	7.94×10^{-4}
Site Boundary	East-northeast	2,404	2.12×10^{-3}	8.20×10^{-4}
Site Boundary	Northeast	4,137	1.23×10^{-3}	4.75×10^{-4}
Site Boundary	North-northeast	4,891	1.01×10^{-3}	3.90×10^{-4}
National Guard	East	555	6.09×10^{-3}	2.35×10^{-3}
Ohio Valley Electric Cooperative	North-northwest	1,526	3.15×10^{-3}	1.22×10^{-3}

Notes:
[a] To convert meters to feet multiply by 3.28.
[B] $\mu g/m^3$ = micrograms per cubic meter.

In summary, airborne emissions of uranium from proposed ACP operations are predicted to cause radiation doses to the public that are well below EPA's National Emission Standards for Hazardous Air Pollutants, as well as airborne concentrations of uranium that are well below toxicity limits established by the National Institute for Occupational Safety and Health and the American Conference of Industrial Hygienists. Therefore, the impacts from such emissions are expected to be SMALL.

Public Dose From Direct Gamma Radiation

The presence of radioactive materials in quantities above natural background provides the possibility for members of the public to receive radiation dose from gamma photons emitted from these materials. At the proposed ACP, only isotopes of uranium would be present in quantities large enough to provide the potential for members of the public to receive measurable external radiation dose. Of the uranium onsite, only that being stored as depleted uranium would be continuously present in sufficient quantity to represent a potential source of direct radiation dose to the public. There would be small amounts of other gamma emitters present onsite as sealed sources and laboratory standards, but these are not detectable at any large distance.

Using a model to predict radiation dose to the public from a site like the proposed ACP always yields uncertain estimates, given the lack of knowledge of the locations of the receptors as a function of time relative to the location of the source, and the associated shielding and distances involved. The best

approach for developing estimates of radiation dose in these situations is to use measured radiation dose at various locations of interest. The site conducts external gamma radiation monitoring using a network of lithium fluoride thermoluminescent dosimeters positioned at various locations both on and off the DOE reservation. There are nine thermoluminescent dosimeters spaced around the perimeter of the controlled access area of the DOE reservation including cylinder storage yards; eight dosimeters spaced around the DOE reservation boundary; and two dosimeters located off-reservation. Each of these dosimeters are collected and analyzed quarterly. Thermoluminescent dosimeter processing and evaluation is performed by a facility having current accreditation from the National Voluntary Laboratory Accreditation Program of the National Institute of Standards and Technology.

The thermoluminescent dosimeters of interest in this assessment are those at the reservation boundary, near the National Guard and Ohio Valley Electric Cooperative locations, the thermoluminescent dosimeter in Piketon, and the thermoluminescent dosimeter on Camp Creek Road near the Pike County/Scioto County line. The gamma radiation levels recorded by these thermoluminescent dosimeters can be used to determine if the existing depleted uranium storage yards are generating any noticeable increase in gamma radiation levels above ambient background at the potential locations of receptor populations. Table 4-22 shows the measured gamma radiation reading at the thermoluminescent dosimeters of interest for the four quarters in the year 2003.

Table 4-22 Thermoluminescent Dosimeter Gamma Radiation Readings for the Year 2003 [a, b]

Dosimeter	Location	Quarter 1 2003 mR	Quarter 2 2003 mR	Quarter 3 2003 mR	Quarter 4 2003 mR	Total 2003 mR
1404A	C Road	22	24	25	18	89
862	A Road	26	31	31	21	109
A12	Boundary East	22	25	26	18	91
A15	Boundary Southeast	24	16	27	19	86
A23	Boundary Northeast	23	27	26	20	96
A24	Boundary North	24	27	27	lost TLD	N/A
A28	Camp Creek Road	22	25	26	18	91
A29	Boundary West	23	27	28	19	97
A3	Boundary South	22	25	25	18	90
A6	Piketon	22	25	26	18	91
A8	Boundary North	28	28	28	21	105
A9	Boundary Southwest	24	27	28	19	98

Notes:
[a] TLD = thermoluminescent dosimeter.
[b] mR = milliRoentgens; 1 milliRoentgen of exposure produces approximately 8.7×10^{-3} millisieverts (0.87 millirem) of dose.

Thermoluminescent dosimeters 1404A and 862 are included to provide an estimate of potential exposures at the National Guard facility and the Ohio Valley Electric Cooperative office, respectively. The thermoluminescent dosimeters on the boundary provide an indication of the maximum radiation exposure

that an offsite receptor located full time at the boundary could receive over the course of a year. The Camp Creek and Piketon thermoluminescent dosimeters indicate whether any exposure above ambient background is being detected in those locations.

The ambient background exposure rate in the region is approximately 90-95 milliRoentgens per year (approximately 0.8 millisieverts or 80 millirem). None of the thermoluminescent dosimeters show significantly elevated exposure rates above this ambient level. The only thermoluminescent dosimeters with readings above the ambient background are thermoluminescent dosimeters 862 and A8, the two thermoluminescent dosimeters in the group nearest the cylinder storage yards (dosimeter 862 is within the controlled access area near some existing cylinder storage yards on the western side of the property, and dosimeter A8 is on the northern boundary of the DOE reservation in the vicinity of an existing cylinder storage yard just outside of the Perimeter Road). Along the northern boundary near dosimeter A8, where a member of the public might actually stand, the maximum amount of radiation exposure above the ambient background amounts over the course of a year to less than 15 milliRoentgens (0.13 millisieverts or 13 millirem) for an unshielded receptor spending 100 percent of the year standing at that location. If a person were actually living at that northern boundary location near dosimeter A8 (nobody currently resides in that area), that person would receive on the order of 1 milliRoentgen (0.0087 millisieverts or 0.87 millirem) per year additional exposure when the effects of shielding and residence time are included. This dose is not expected to increase should the ACP product change from the expected 5 weight percent of uranium-235 to the less likely 10 weight percent of uranium-235. The number of tails cylinders is expected to be less in a 10 percent scenario and the isotopic content of each tails cylinder will not change unless the tails assay changes. Accordingly, the estimated dose at 5 percent should be equal to or higher than that for the 10 percent product scenario.

The thermoluminescent dosimeter readings are inclusive of any exposure caused by the presence of existing radiation sources on the DOE reservation, including direct radiation and skyshine. Even for those thermoluminescent dosimeters of interest nearest the existing cylinder storage yards, which are the largest potential sources of direct radiation, there is only a minimal increase in the annual exposure rate. According to the 2003 thermoluminescent dosimeter data, the presence of the existing storage yards has a minimal effect, if any, on the exposure rate at the site boundary. The additional storage yards planned for the proposed ACP are also expected to have a minor effect on the radiation exposure rate at the site boundary. USEC is stationing four additional thermoluminescent dosimeters near the planned X-745H Storage Yard, and one additional thermoluminescent dosimeter near the proposed ACP to the southwest (USEC, 2004c). Should either the X-745H Yard or the proposed ACP produce unexpected increases in the environmental exposure rate, that increase will be detected by both the new and existing thermoluminescent dosimeters, giving USEC the information needed to correct a potentially harmful situation. Therefore, the impact from direct exposure is expected to be SMALL.

Public Dose From Liquid Releases of Radioactive Material

The dose to the public from water-borne releases of radioactive material from the proposed ACP are expected to be negligible. As discussed in Section 4.2.6.2, USEC does not anticipate any liquid discharges of licensed radioactive materials from the proposed ACP. Any effluents potentially containing radioactive material would have to meet the NRC standards in 10 CFR Part 20 (Standards for Protection Against Radiation) prior to being discharged or would have to be disposed at a licensed facility (USEC, 2004c). The most likely pathway for release of uranium from the process facilities would by through the cooling water system, which is an isolated closed loop system. The only routine intentional wastewater discharge from plant operation will be blowdown water from the tower water cooling system, which does not come into contact with the main cooling system. Fluids from maintenance and cleaning activities are captured in dedicated drains to eliminate uncontrolled releases of potentially contaminated liquids. Accordingly, the impact from water-borne releases of radioactive materials is expected to be SMALL.

Summary of Public Dose

Based on these estimates, normal operations at the proposed ACP would have SMALL impacts to public health. The most significant impact would be from direct radiation exposure to receptors close to the cylinder storage yards (containing filled and empty Type 48Y cylinders). Members of the public who are nearest to the cylinder storage yards would have annual direct radiation exposures combined with exposure through inhalation. The maximum public dose is predicted for a hypothetical person living on the northern boundary of the DOE reservation near thermoluminescent dosimeter A8. The annual dose at that location is estimated to be approximately 0.01 miilisieverts (1 millirem), of which 90 percent is predicted to come from direct gamma exposure and 10 percent is predicted to come from exposure to radionuclides emitted to the air. These results are based on conservative assumptions (see Appendix C), and it is anticipated that actual exposure levels would be less than presented here. The total annual dose from all exposure pathways would be less than the limit of 1 millisievert per year (100 millirem per year) established in the NRC's regulations in 10 CFR § 20.1301. All exposures are also expected to be significantly below the U.S. EPA limit of 0.25 millisieverts per year (25 millirem per year), as set in 40 CFR Part 190 for uranium fuel-cycle facilities.

These conclusions are valid even in the event that the ACP operates at product enrichments of 10 weight percent uranium-235. The maximum dose from airborne releases of uranium, liquid releases, and direct external exposure from the cylinder storage yards will not be significantly affected by enrichment up to 10 percent. Only the airborne exposures are expected to potentially increase, but the maximum dose from air releases is still only about 0.011 millisieverts per year (1.1 millirem per year). No increase in dose from direct external exposure or liquid releases is expected in the event of enrichment to 10 weight percent uranium-235.

Occupational Exposure Impacts

Under the proposed action, the most significant contributor to occupational radiation exposure would be direct radiation from the UF_6. The most substantial sources of direct radiation include: the empty Type 48Y cylinders with residual material; full Type 48Y cylinders containing either feed material or depleted UF_6; Type 30 product cylinders; and various traps that help minimize UF_6 losses from the cascade while simultaneously concentrating it. The occupational doses received by personnel involved even with these higher sources is traditionally low; the average dose to cylinder workers at the Portsmouth reservation in 2003 was 0.29 millisieverts (29 millirem) (DOE, 2004b).

The United States Enrichment Corporation has implemented a comprehensive exposure control program at the site to manage occupational radiation exposure and dose. The program maintains exposures "As Low As Reasonably Achievable" through the use of radiation monitoring systems, personnel dosimetry, and mitigation systems to reduce environmental concentrations of uranium. USEC would adapt and apply a similar program specifically for the ACP. The proposed ACP personnel monitoring program would monitor for internal exposure from intake of uranium as well as dose from external exposure to radiation. USEC would also apply an annual administrative limit of 10 millisieverts (1,000 millirem), which is well below the 10 CFR § 20.1201 limit of 50 millisieverts (5,000 millirem).

The occupational exposure analysis and the historical exposure data from the United States Enrichment Corporation facilities demonstrate that a properly administered radiation protection program at the proposed ACP would maintain the radiological occupational impacts below the regulatory limits of 10 CFR § 20.1201. Therefore, the impacts from occupational exposure at the proposed ACP are expected to be SMALL.

Impacts from Plausible Accidents

Operation of the proposed ACP would involve risks to workers, the public, and the environment from potential accidents. The NRC's regulations in 10 CFR Part 70, Subpart H, (Additional Requirements for Certain Licensees Authorized to Possess a Critical Mass of Special Nuclear Material), require that each applicant or licensee evaluate, in an Integrated Safety Analysis, its compliance with certain performance requirements. Appendix H of this EIS summarizes the methods and results used by NRC staff to independently evaluate the consequences of potential accidents identified in USEC's Integrated Safety Analysis. The accidents evaluated by the staff are a representative selection of the types of accidents that are possible at the proposed ACP.

The analytical methods used in this consequence assessment are based on NRC guidance for analysis of nuclear fuel-cycle facility accidents (NRC, 1990; NRC, 1991; NRC, 1998; NRC, 2001). With the exception of the criticality accident, the hazards evaluated involve the release of UF_6 vapor from process systems that are designed to confine UF_6 during normal operations. As described below, UF_6 vapor poses a chemical and radiological risk to workers, the public, and the environment.

Selection of Representative Accident Scenarios

The Integrated Safety Analysis Summary and Emergency Plan (USEC, 2004a; USEC, 2004b) describe potential accidents that could occur at the proposed ACP. Accident descriptions are provided by USEC for two groups according to the severity of the accident consequences: high-consequence events and intermediate-consequence events.

In this EIS, a range of possible accidents was selected for detailed evaluation to assess the potential human health impacts associated with accidents. The accident sequences selected vary in severity from high- to low-consequence events, and include accidents initiated by operator error and equipment failure. The accident sequences evaluated by NRC staff were as follows:

- Explosion from wrecked centrifuge(s) following backfill with air;
- Process building construction fire;
- Cold trap shell structure failure;
- Breach of over-pressurized liquid cylinder;
- Breach of piping during liquid UF_6 transfer; and
- Generic inadvertent nuclear criticality.

Accident Consequences

Table H-11 in Appendix H presents the predicted consequences from the selected accident scenarios, assuming such accidents occur. The analytical results indicate the accidents at the proposed ACP pose acceptably low risks. The most significant accident consequences are those associated with the release of UF_6 caused by a breach of an over-pressurized cylinder. The proposed ACP design reduces the likelihood of this event by having automatic high temperature and high pressure trips.

More generally, NRC regulations and USEC's operating procedures for the proposed ACP are designed to ensure that the high and intermediate accident scenarios would be highly unlikely. The NRC staff's Safety Evaluation Report assesses the safety features and operating procedures required to reduce the risks from accidents. The combination of Items Relied on for Safety that mitigate emergency conditions, and the implementation of emergency procedures and protective actions in accordance with the proposed Emergency Plan for the ACP, would limit the impacts of accidents that could otherwise extend beyond

the proposed ACP boundaries. The Items Relied on for Safety include such measures as active and passive engineered controls.

Based on this analysis, accidents at the proposed ACP would result in SMALL to MODERATE impacts to workers, the environment, and the public.

4.2.12.4 Ceasing Operations at Paducah

Cessation of enrichment plant operations at Paducah would reduce radiological occupational exposures. Upon shutdown, no additional uranium would be transported to the plant for enrichment, and no additional depleted uranium would be generated by enrichment operations. Depleted uranium contained in process equipment would eventually be purged from the equipment. Some radiological occupational exposure would result from the purging, but such exposure would be short term and controlled to within regulatory limits. After purging of equipment, however, potential radiological exposure associated with handling of uranium raw material, operation of enrichment plant equipment, and generation of depleted uranium would be eliminated. Also, the operations workforce would be reduced to a much smaller maintenance and security workforce, which would reduce the number of workers potentially exposed to radiation as well as the level of radiation exposure for each worker. Therefore, radiological occupational health impacts associated with cessation of Paducah enrichment plant operations would be lower than that associated with plant operations.

Non-radiological occupational health impacts would also be reduced by cessation of Paducah operations. There would be a temporary increase in the number of plant workers and an increase in the person-hours worked as the plant is shut down. Some potential non-radiological occupational health impacts could result from these increased activities, but any such increase would be temporary. After the plant ceases operations, the number of workers and the associated annual person-hours worked would be reduced, thereby reducing potential non-radiological occupational health impacts. The potential for such impacts would also be reduced because the more potentially hazardous occupational activities associated with enrichment plant operations would be eliminated. Therefore, non-radiological occupational health impacts associated with cessation of Paducah enrichment plant operations would be lower than that associated with plant operations.

Cessation of Paducah enrichment plant operations would also reduce public health impacts. Air emissions, wastewater effluents, and waste generated by enrichment plant operations would be reduced, thereby reducing associated radiological and non-radiological public health impacts. Ongoing public health impacts associated with historical radiological releases from Paducah enrichment plant operations (e.g., historical deposition of particulate radionuclides to soils and sediments) would not be affected by cessation of operations.

Based on this analysis, the cessation of operations at the Paducah Gaseous Diffusion Plant would be expected to cause SMALL impacts to public and occupational health.

4.2.13 Waste Management Impacts

This section describes potential impacts associated with the generation, management, and disposal of radioactive and non-radioactive wastes generated from the proposed action. It includes an analysis of the management and disposal of depleted uranium expected to be generated by proposed ACP operations. However, the management and disposal of decontamination and decommissioning wastes are assessed separately in Section 4.2.15.

4.2.13.1 Site Preparation and Construction

Site preparation and construction would include refurbishment of existing facilities, including dismantling of the former Gas Centrifuge Enrichment Plant, and construction of the proposed ACP. The types and quantities of wastes anticipated to be generated during site preparation and construction are summarized in Table 2-3 in Chapter 2 of this EIS. These include centrifuge parts and other low-level radioactive waste; rags, wipes, aerosol cans, and other hazardous wastes; paper, construction debris, wood, and other sanitary/industrial waste; and circuit boards, bulbs, lead parts, and other recyclables. The major portion of the wastes generated from site preparation and construction activities would be from refurbishment of the X-3001, X-3002, and X-3346 Buildings. It is anticipated that only sanitary/industrial wastes would be generated during proposed ACP construction activities. Management procedures for wastes generated from refurbishment, site preparation, and construction activities are summarized in Section 2.1.4.1. The potential impacts associated with these management procedures are discussed below.

Low-Level Radioactive Waste

The only significant amounts of radioactive waste generated during site preparation and construction would result from the removal of the 720 centrifuges that were part of the prototype Gas Centrifuge Enrichment Plant built at the reservation in the early 1980s. Removing these centrifuges and their associated piping and equipment would produce between 7,787 and 8,495 cubic meters (275,000 and 300,000 cubic feet) of low-level radioactive waste. The centrifuges and the associated systems contain only very small amounts of residual uranium, resulting in a very low activity per cubic foot of material. The low activity should remain contained and produce no measurable dose hazard to the public. Occupational exposures would also be low because the low specific activities would produce only small external dose rates, and because airborne activities would be controlled by using air monitoring and ventilation systems during removal operations. Occupational doses would also be controlled and monitored through the site radiation exposure control program.

No long term storage or disposal of the Gas Centrifuge Enrichment Plant equipment would occur onsite. After removal from the X-3001 and X-3002 Process Buildings, the equipment will be shipped to a licensed low-level radioactive waste disposal facility, such as the EnviroCare facility in Utah, which is subject to regulatory controls to limit radiological releases and exposures. As a result, the impacts associated with the management of this wastestream should be SMALL.

Low-Level Mixed Waste

Hazardous wastes generated from site preparation and construction activities would in general be collected and packaged by the waste generator. All such wastes would be considered as potentially radioactive until characterized. Hazardous wastes that are ultimately categorized as low-level mixed waste based on the radionuclide content would be segregated and managed separately from strictly *Resource Conservation and Recovery Act* hazardous wastes. Waste generation and management procedures would be implemented to minimize the generation of any low-level mixed waste, and in fact none is currently anticipated. Therefore, the impacts associated with the management of this wastestream should be SMALL.

Hazardous Waste

Hazardous wastes generated from site preparation and construction activities would be accumulated and staged at the XT-847 Facility prior to shipment off reservation for treatment and disposal. The XT-847 Facility is equipped with concrete floors, four-hour rated fire walls, and fire doors, and is divided into three staging areas. The XT-847 Facility also includes a *Resource Conservation and Recovery Act* 90-

day storage facility. Hazardous wastes may be further characterized at this facility and would be packaged and labeled in accordance with *Resource Conservation and Recovery Act* regulations and U.S. Department of Transportation regulations. The waste containers would be subject to periodic inspection, and any leaking containers would be transferred to other containers or overpacked prior to shipment offsite to a hazardous waste treatment, storage, or disposal facility. Hazardous waste would not be stored at the XT-847 Facility for more than 90 days prior to transfer offsite, and hazardous wastes would be determined to meet the waste acceptance criteria of the receiving offsite treatment, storage, or disposal facility prior to shipment. All such shipments would be made only to USEC-approved treatment, storage and disposal facilities. All hazardous wastes (and other wastes) generated from site preparation and construction activities would be tracked through a Request for Disposal system and assigned a unique identification number. Waste shipments offsite for treatment and disposal would be tracked by this identification number with respect to location, characterization, and other factors.

As shown in Table 2-3, up to approximately 17 cubic meters (600 cubic feet) of *Resource Conservation and Recovery Act* hazardous waste per year would be generated during site preparation and construction activities. Onsite waste management capacity at the XT-847 Facility is adequate to manage this amount of waste, and this amount of waste would not exceed the capacity of hazardous waste treatment, storage, and disposal facilities. Waste management procedures are in place for *Resource Conservation and Recovery Act* hazardous wastes generated from existing operations, as described above and in Section 2.1.4.1 and Section 3.14 of this EIS, and would be applied to hazardous wastes generated from site preparation and construction activities for the proposed ACP. Such procedures would serve to minimize onsite releases and ensure offsite treatment and disposal in accordance with *Resource Conservation and Recovery Act* regulations and other applicable regulations. Therefore, impacts associated with the management of hazardous wastes from site preparation and construction activities would be SMALL.

Recyclable Waste

As shown in Table 2-3, up to approximately 184 cubic meters (6,500 cubic feet) of recyclables would be generated from site preparation and construction activities. Potentially recyclable materials would be considered as such until characterized. Potentially recyclable materials that are categorized as low-level radioactive waste, low-level mixed, or hazardous waste would be segregated and managed separately from recyclables. Reasonable efforts would be taken using USEC waste minimization and pollution prevention policies and established recycling procedures to minimize the amount of waste generated.

Recyclable wastes generated from site preparation and construction activities would generally be transferred offsite to local recycling firms. Such firms have adequate capacity to manage the anticipated volumes of such materials. Therefore, the impacts of managing recyclables from site preparation and construction activities would be SMALL.

Classified/Sensitive Waste

No classified waste would be generated from the proposed site preparation and construction activities.

Sanitary/Industrial Waste

Sanitary/industrial waste generated from site preparation and construction would be disposed of primarily at the Pike County Landfill. The Rumpke Beach Hollow Landfill is also available for the disposal of such waste. Both of these landfills are used by local municipalities and are subject to State and local environmental protection regulations. The capacity of the Pike County Landfill is 1,814 metric tons per day (2,000 tons per day) and that of the Rumpke Beach Hollow Landfill is 240 metric tons per day (264 tons per day). At current disposal rates, the Pike County Landfill has sufficient disposal capacity for 34

years and the Rumpke Beach Hollow has sufficient disposal capacity for 82 years. As shown in Table 2-3, approximately 1,270 metric tons (1,400 tons) of sanitary/industrial waste would be generated during site preparation and construction, which would not significantly affect the disposal capacity of the local landfills. Therefore, the impact of sanitary/industrial waste generated from site preparation and construction activities would be SMALL.

4.2.13.2 Facility Operation

Section 2.1.4.3 of this EIS summarizes the types and quantities of wastes anticipated to be generated from facility operations over the 30-year license period, along with the proposed practices for managing each wastestream. These wastes include depleted uranium; other low-level radioactive waste; low-level mixed waste; hazardous waste; recyclable waste; classified waste; and paper, office waste, and other sanitary/industrial wastes. The potential impacts associated with the generation, storage, treatment, and disposal of each wastestream are assessed in turn below.

Depleted Uranium

Up to approximately 41,105 Type 48G cylinders of depleted UF_6 would be generated by the 7 million SWU plant operating full time for 30 years (USEC, 2005a). This is the most likely estimate of the amount of tails to be produced assuming USEC enriches product to the expected average of approximately 5 percent by weight of uranium-235. It is also a reasonably conservative estimate, as production of more highly enriched product at the same tails assay results in lower rates of tails generation. If the ACP were to generate product at the maximum licensed assay of 10 weight percent of uranium-235, the tails generation would be about 87 percent of the amount reported above (USEC, 2005a).

These cylinders would contain a total of approximately 512,730 metric tons (535,200 tons) of depleted UF_6. Each individual cylinder would contain the following amounts of radioactivity: 1.92×10^{10} becquerels (0.52 curies) of uranium-234, 1.48×10^{9} becquerels (0.04 curies) of uranium-235, and 9.25×10^{10} becquerels (2.5 curies) of uranium-238.

USEC currently manages depleted UF_6 at the DOE reservation in accordance with 40 CFR Part 266 and Ohio Administrative Code 3745-266, and these same management procedures would be used for the new depleted UF_6 cylinders produced by the proposed ACP. Ohio EPA establishes requirements for management, inspection, testing, and maintenance associated with the depleted UF_6 storage yards and cylinders owned by USEC at the DOE reservation, as stipulated in Section 9 of the ACP License Application.

The need for a long-term disposal path for depleted UF_6 has become clear; the current practice of storing the depleted UF_6 in cylinders on pads at the enrichment facility has been successful as an intermediate practice, but viable uses for large amounts of depleted uranium have not materialized. DOE has recognized that long-term disposal of the depleted uranium will require conversion to a non-reactive form such as U_3O_8 and has begun construction of a depleted UF_6 conversion facility at Piketon in order to convert the depleted uranium owned by DOE into a more non-reactive form suitable for long-term disposal.

Impact on DOE Conversion Facility Operation

Section 3113(a) of the *USEC Privatization Act* (Public Law 104-134) requires DOE to accept low-level waste, including depleted uranium that has been determined to be low-level waste, for disposal upon the request and reimbursement of costs by USEC. Section 3113 was recently amended (by HR4818, Omnibus Appropriations bill) to add the following new paragraph to subsection (a):

> (*4) In the event that a licensee requests the Secretary to accept for disposal depleted uranium pursuant to this subsection, the Secretary shall be required to take title to and possession of such depleted uranium at an existing depleted UF_6 storage facility.*

To date, this provision has not been invoked and the form in which the depleted uranium would be transferred to DOE has not been specified. However, it is likely that depleted uranium from the proposed ACP transferred under this provision of law in the future would be in the form of depleted UF_6, thus adding to the inventory of material needing conversion at the Piketon depleted UF_6 conversion facility. DOE is aware of the possibility that the conversion facility being constructed at Piketon may need to operate longer than initially planned in order to process waste transferred to DOE from the proposed ACP. DOE acknowledges in its EIS for the conversion facility that "…it is reasonable to assume that the conversion facilities could be operated longer than specified in the current plans in order to convert this material." (DOE, 2004a)

The Piketon conversion facility is planned to operate for 18 years beginning in 2006. The existing inventory planned for conversion is 243,000 metric tons (267,862 tons) of depleted UF_6 (DOE, 2004a). The projected maximum amount of 571,000 metric tons (629,420 tons) of depleted UF_6 generated by the proposed ACP represents a significant increase in this existing inventory. Converting the depleted UF_6 from the proposed ACP would require DOE to significantly extend the life of the conversion facility, or to construct a second conversion facility on the site. DOE has maintained that, with routine facility and equipment maintenance, periodic equipment replacements, or upgrades, the conversion facility could be operated safely beyond the 18-year planned life-time period to process the additional depleted UF_6 from the proposed ACP. In addition, DOE indicates the estimated impacts that would occur from prior conversion facility operations would remain the same when processing the proposed ACP wastes. The overall cumulative impacts from the operation of the conversion facility would extend proportionately with the increased life of the facility (DOE, 2004a).

Based on this analysis, the added inventory of depleted UF_6 coming from the proposed ACP should not change the nature or magnitude of the impacts from the DOE conversion facility operations, but it would extend those impacts for several additional years. As a result, the overall impacts to DOE conversion facility operations are considered MODERATE.

Transportation Impacts

Once the depleted UF_6 cylinders are filled at the proposed ACP and then cooled so that the gaseous depleted UF_6 is solidified, they would be transported onsite to one of two cylinder storage yards located north of Perimeter Road (the existing X-745G-2 Yard would support the first five years of operation and the new X-745H Yard would support the remaining 25 years of operation). They would then be transported back for processing in the onsite DOE conversion facility, located just north of the proposed ACP in the southwest quadrant of the reservation's central area. This onsite handling and movement of solidified depleted UF_6 cylinders would be in accordance with all applicable NRC requirements and standard operating procedures, and would be conducted in a manner designed to minimize risks to workers, the public, and the environment.

Consistent with assumptions made in the DOE EIS for the conversion facility at Piketon (DOE, 2004a), the NRC staff assumes that the depleted U_3O_8 from the conversion facility would be loaded into empty cylinders or bulk bags, which would be loaded onto railcars for shipment for disposal at either the Envirocare facility in Clive, Utah (the proposed DOE disposition site) or the DOE facility at the Nevada Test Site (the optional DOE disposition site). The calcium fluoride generated from the conversion process is also assumed to be packaged and shipped in this same manner. Given the quantities of material generated, the NRC staff estimates that approximately one train with 100 railcars would be needed every three months to ship the U_3O_8 and calcium fluoride to an offsite disposal facility.

The impacts associated with this rail shipment are assessed in Section 4.2.12.1. As shown in Table 4-15, this shipment is estimated to result in 2.8×10^{-5} latent cancer fatalities per year of operation from exposure to direct radiation during incident-free transport, and an additional 7.5×10^{-4} latent cancer fatalities per year from accidents that result in the release of radioactive material to the environment. The total latent cancer fatalities per year is estimated to be approximate 8×10^{-4} or less than one cancer fatality over 30 years of operation. Based on this analysis, the impacts associated with the offsite shipment of materials from the conversion facility are expected to be SMALL.

Disposal Impacts

DOE has analyzed the human health impacts from long-term disposal of uranium oxides in their Programmatic Environmental Impact Statement on disposal of depleted uranium (DOE, 1999b). Four options for disposing of depleted uranium in oxide form were examined in the study: disposal of U_3O_8 in either a grouted or ungrouted form, or disposal of UO_2 in either a grouted or ungrouted form. Ungrouted waste is typically in a powder or pellet form, while grouted waste is the material resulting from mixing the uranium oxide material with cement and repackaging in drums. Grouting the waste is intended to increase the waste's structural strength and reduce the leaching rate of the waste to water.

DOE's analysis determined that the long-term disposal of depleted uranium in the oxide form at a "generic dry location" is feasible. DOE determined that, for shallow earthen structures in a dry setting, the chemical stability of the oxide forms combined with the low infiltration rate of water into the material results in no contamination of groundwater by the uranium. Without the groundwater pathway available DOE's analysis calculated no dose to the maximally exposed individual receptor for the dry site.

In a subsequent *National Environmental Policy Act* analysis, DOE specifically evaluated disposing the depleted uranium at Envirocare (a specific location) (DOE, 2004a). DOE assessed whether the oxide forms of depleted uranium would be acceptable for disposal at the Envirocare site based upon Envirocare's license requirements and waste acceptance criteria (Croff, 2000a), and the characteristics of the anticipated depleted uranium destined for the Envirocare facility. This assessment determined that the uncertainty in whether the Envirocare site could accept the oxide forms of depleted uranium for disposal was comparable to the uncertainty in disposal at DOE's Nevada Test Site. An analysis by DOE of the capability of the Nevada Test Site to accept depleted uranium waste determined that, in the oxide form, depleted uranium was suitable for disposal at the Nevada Test Site (Croff, 2000b). The conclusion by DOE from these analyses was that, from a NEPA analysis standpoint, depleted uranium was acceptable for disposal at Envirocare.

NRC staff reviewed the Waste Acceptance Criteria for the Envirocare site which allows for the disposal of depleted uranium with no volume restrictions. During this review, NRC staff contacted the Division of Radiological Control of the State of Utah to discuss the Envirocare Waste Acceptance Criteria and performance assessment (NRC, 2005b). Following these discussions NRC staff reviewed amendments 19 and 20 to the Envirocare disposal license, which document the State of Utah's permission for the Envirocare site to dispose of depleted uranium in Class A disposal cells based on the State's regulatory

requirements which require compliance with performance criteria equivalent to 10 CFR Part 61. NRC staff concluded based on these reviews that the oxide forms of depleted uranium are acceptable for disposal at the Envirocare site.

NRC also reviewed the licensing basis for the Envirocare license issued by the State of Utah. The staff reviewed the report prepared by R. D. Baird , et al, which analyzed the potential exposures to workers and the public from disposal of radioactive materials at the Envirocare site (Baird, 1990). The analysis used the PATHRAE model to assess the radiation dose to members of the public for a variety of scenarios; intruder-agriculture, intruder-construction, intruder-explorer, and off-site resident. The analysis supports the State's conclusion that disposal of large quantities of depleted uranium will not exceed the relevant regulatory performance requirements, thereby ensuring that any potential dose to members of the public from disposal of depleted uranium in the oxide form at Envirocare would be small. The NRC staff agrees that the impact from disposal of the oxide form of depleted uranium at the Envirocare site is SMALL.

Capacity Impacts

In a Memorandum and Order (CLI-05-05, Docket No. 70-3103-ML) dated January 18, 2005, the Commission concluded that depleted uranium is properly considered a form of low-level radioactive waste ("regardless of which form it may take," as stated in the Commission Order). Additionally, as described in 10 CFR § 61.55(a)(6), depleted uranium is Class A waste.

The quantity of depleted uranium potentially requiring disposition could affect the available disposal capacity for low-level waste. A June 2004 General Accounting Office report concluded there is sufficient disposal capacity for current volumes of Class A low-level radioactive waste to last for more than 20 years (GAO, 2004).

Further, access to the existing low-level waste disposal facilities is limited by certain agreements and is potentially subject to change. The Barnwell, South Carolina disposal facility currently accepts waste from all U.S. generators except those in Rocky Mountain and Northwest compacts. Beginning in 2008, however, the Barnwell facility will only accept waste from the Atlantic Compact States, which are limited to Connecticut, New Jersey, and South Carolina. The Richland, Washington disposal facility currently accepts waste only from the Northwest and Rocky Mountain Compacts, which together comprise Washington, Oregon, Idaho, Montana, Utah, Wyoming, Nevada, Colorado, New Mexico, Alaska, and Hawaii. Therefore, for the converted depleted uranium from the proposed ACP, the only viable existing disposal options are the Envirocare facility in Clive, Utah or the DOE-operated Nevada Test Site facility. The remaining estimated capacity for the Envirocare facility is approximately 2.1 million cubic meters (2.7 million cubic yards). Assuming a waste density 0.39 cubic meter per metric ton (0.46 cubic yard per ton), the total amount of depleted UF_6 estimated to be generated by the proposed ACP equates to approximately 222,485 cubic meters (291,000 cubic yards), which would take up approximately 11 percent of the remaining Envirocare capacity. Considering this small fraction, along with the fact that some of the proposed ACP's converted depleted uranium could go to the Nevada Test Site if needed, the impacts on available disposal capacity are expected to be SMALL.

Low-Level Radioactive Waste

Operation of the proposed ACP would result in generation of relatively small amounts of low-level radioactive waste in addition to the depleted uranium tails. These wastes include classified waste (failed centrifuges), heeled cylinders, and assorted other wastestreams. Much of this waste would be typically transferred to the XT-847 Facility, where the waste may be further sampled/measured to assist in determining the proper waste characterization and proper disposal/treatment. After containerization, characterization, labeling/marking, and other processing, the waste would be scheduled for off-reservation

disposal/treatment at a Treatment, Storage, Disposal, Recycling Facility. Such offsite facilities to be used by the proposed ACP include the Envirocare facility in Utah for low-level radioactive waste and the Nevada Test Site in Nevada for classified waste. These are licensed facilities for the type of waste intended to be shipped to them from the proposed ACP. Handling of low-level radioactive wastes will be by workers monitored as part of the site radiological control program.

Failed Centrifuges

Centrifuges that fail during operation would be maintained onsite to be crushed and disposed during decommissioning. The rate of centrifuge failures is expected to be very low, so this waste stream is expected to be small in volume (12-15 cubic meters per year [420-520 cubic feet per year]) (USEC, 2005a). The radiological activity in the failed centrifuge waste is expected to be low, since the centrifuges hold only a small amount of uranium at any given time.

The overall activity and volume of this waste would be small in comparison to the expected volume of decommissioning wastes. Storage of the failed centrifuges should present no significant hazard as the material is low in activity and relatively small in volume. The impact of managing and disposing the failed centrifuges is therefore expected to be SMALL.

Heeled Cylinders

Approximately 50 76-centimeter (30-inch) heel cylinders would be shipped to vendors monthly for cleaning and recertification or washing only; these cylinders would contain heel weights of less than 11 kilograms (25 pounds) (USEC, 2005a). The cleaning and recertification vendors would be Westinghouse in Columbia, South Carolina and Framatome in Richland, Washington. The 76-centimeter (30-inch) heel cylinders would be shipped in an array of 25 cylinders per shipment. Approximately 50 clean/recertified cylinders would be received in return at the proposed ACP monthly (USEC, 2005a).

The low numbers and small activities in the heeled cylinders represent no measurable risk to public health and safety. The impact of managing and disposing of the heeled cylinders is therefore expected to be SMALL.

Other Low-Level Radioactive Waste

The largest other low-level radioactive waste stream by volume expected to be generated by proposed ACP operations would be dry active waste, at between 170 to 340 cubic meters per year (6,000 to 12,000 cubic feet per year). This would include radioactively contaminated metal. Uranium concentrations in this waste would range from the lower limit of detection for the analytical method used up to approximately 200 parts per million total uranium. The maximum technetium-99 activity expected to be seen in this waste is 37,000 becquerels per kilogram (1,000 picocuries per gram).[8] Some small volume low-level radioactive waste streams with higher radionuclide concentrations would also be generated from operation of the alumina, magnesium, and sodium fluoride chemical traps. Total uranium in these small volume streams may approach 0.1 gram per gram, with technetium-99 activities up to 1 microcurie per gram.

[8] Technetium-99 is a fission product that has contaminated much of the fuel cycle as a result of past recycling of reprocessed uranium. It would not be newly generated as a contaminant from ACP operations.

Based on the quantities generated, the radiological characteristics of the waste, and the fact that the low-level radioactive waste would be ultimately treated and disposed in facilities licensed for that purpose, the impact of these wastes is expected to be SMALL.

Low-Level Mixed Waste

Examples of low-level mixed waste may include laboratory waste, decontamination solutions, and solvents that also contain radiological contaminants. Radiological contaminants in such wastes are expected to have concentrations similar to that in the dry active waste described above. Operation of the proposed ACP would generate small amounts of low-level mixed waste, about 8 to 11 cubic meters per year (300 to 400 cubic feet per year). USEC would manage low-level mixed waste generated by the proposed ACP, using workers monitored as part of the site radiological control program, in accordance with the requirements of 40 CFR Part 266, Subpart N and Ohio Administrative Code 3745-266. These regulations constrain the storage, handling, and treatment of low-level mixed waste in order to keep them segregated from other wastes and to minimize the potential for releases until their ultimate disposal. Mixed wastes that cannot be treated onsite would be stored until they can be shipped to a commercial treatment or disposal facility licensed under 10 CFR Part 61. The offsite mixed waste disposal facility proposed for the ACP is the Perma-Fix facility in Florida.

Based on the quantities generated, the characteristics of the waste, and the fact that low-level mixed waste would be ultimately treated and disposed in a facility licensed for that purpose, the impact of such waste management and disposal is expected to be SMALL.

Hazardous Waste

The proposed ACP would be categorized as a large-quantity generator of hazardous waste regulated under the *Resource Conservation and Recovery Act*. However, the proposed ACP would not be categorized as a greater than 90-day storage facility, and hazardous waste generated from facility operations would have to be transferred offsite to an approved greater than 90-day storage facility within 90 days of generation. Procedures and facilities for managing hazardous wastes generated from facility operations activities are described in Section 4.2.12.2, Section 2.1.4.3, and Section 3.14.

As shown in Table 2-6, up to approximately 3 cubic meters (110 cubic feet) of hazardous waste per year would be generated during facility operations. Onsite waste management capacity at the XT-847 Facility is adequate to manage this amount of waste, and this amount of waste would not exceed the capacity of permitted treatment, storage, and disposal facilities. Management procedures in place for hazardous wastes generated from existing operations, as described in the above-referenced sections, would also be used for newly generated wastes from proposed ACP operations. Such procedures would minimize the potential for onsite releases and ensure offsite treatment and disposal in accordance with applicable Federal and State requirements. Therefore, the impacts associated with the management and disposal of hazardous wastes from facility operation would be SMALL.

Recyclable Waste

Up to approximately 57 cubic meters per year (2,000 cubic feet per year) of recyclables would be generated from proposed ACP operations. This could include used oil, circuit boards, fluorescent bulbs, and lead-acid batteries. As described in Section 4.2.13.2, Section 2.1.4.3, and Section 3.14, recyclable wastes would generally be transferred offsite to local recycling firms. Management of the wastes would be unlikely to result in harmful releases to the environment and the offsite recycling firms are expected to have adequate capacity to manage the small additional volumes of material from the proposed ACP. Therefore, the impacts of managing recyclable waste from proposed ACP operations would be SMALL.

Classified/Sensitive Waste

Classified waste is waste that is classified because of its configuration, composition, contamination, or contained information. One classified wastestream – failed centrifuges – is discussed in the preceding section on low-level radioactive waste. In addition to those wastes, proposed ACP operations would generate another 8 to 11 cubic meters per year (300 to 400 cubic feet per year) of other "non-regulated" classified waste. Such non-regulated waste would be any discarded material that is excluded under the Ohio Administrative Code and does not exhibit a characteristic of a hazardous waste regulated under the *Resource Conservation and Recovery Act*. Such waste may remain on the reservation or transferred off-reservation to a classified disposal facility. The practices for managing the waste would be in accordance with all applicable Federal and State requirements, would follow standard operating procedures, and would minimize the potential for releases to the environment and for human exposures. Therefore, the impacts associated with these wastes from proposed ACP operations are expected to be SMALL.

Sanitary/Industrial Waste

Sanitary/industrial waste generated from proposed ACP operations would be disposed primarily at the Pike County Landfill, with the Rumpke Beach Hollow Landfill being available as an alternate. As shown in Table 2-6, approximately 227-272 metric tons per year (250-300 tons per year) of sanitary/industrial waste would be generated from facility operations, which would not significantly change the nature of wastes currently handled or affect the disposal capacity at the local landfills. Therefore the impact of sanitary/industrial waste generated from facility operations would be SMALL.

4.2.13.3 Ceasing Operations at Paducah

Cessation of enrichment plant operations at Paducah would reduce current waste generation and disposal activities. Upon shutdown, no additional uranium would be transported to the plant for enrichment, and no additional depleted uranium would be generated by enrichment operations. A variety of radioactive wastes would ultimately be generated as part of activities to prepare the plant for cold standy status (e.g., depleted uranium contained in process equipment would be purged from the equipment), but no such wastes would be generated by the simple act of ceasing operations. Therefore, radioactive waste management impacts associated with cessation of Paducah enrichment plant operations would be lower than that associated with existing plant operations.

Non-radiological waste management impacts would also be reduced by cessation of Paducah operations. Once the plant is shut down, non-radiological wastes would be reduced to essentially sanitary wastes from workers and routine maintenance activities. Preparing the plant for cold standby status would generate some non-radiological wastes, but those activities are not considered within the scope of this EIS (preparing the plant for cold standby status would be subject of a separate environmental review). Therefore, non-radiological waste management impacts associated with cessation of Paducah enrichment plant operations would be reduced compared to those from current plant operations.

4.2.14 Impacts from Centrifuge Manufacturing

As discussed in Section 2.1.4.2, the proposed action would include the manufacturing of centrifuge components and the assembly and testing of centrifuges to be used in the ACP. Most of the proposed machining and fabrication activities, and most of the specific parts to be manufactured, are typical of the precision machine shop and fabrication industry throughout the U.S., are not unique to the proposed action, and are not analyzed in this EIS. However, some parts are unique and would not be manufactured if not for the proposed ACP. The manufacturing and assembly process would be an ongoing activity through the production of approximately 24,000 machines for the 7 million SWU plant (USEC, 2005a).

The production rate capability would be developed to ramp up to approximately 16 completed centrifuges per day (USEC, 2005a).

USEC has not yet selected the location(s) for this proposed manufacturing, but is considering either onsite at the DOE reservation in Piketon, three existing manufacturing facilities located off the DOE reservation, or some combination of these locations. If onsite, the centrifuge manufacturing and assembly operation would be conducted in either the X-7725 building or another comparable site building. USEC is considering three alternate locations in different States for the offsite manufacturing. All options under consideration are existing manufacturing facilities and work would be conducted inside existing facilities (USEC, 2005d).

The following sections evaluate the potential environmental impacts of the proposed centrifuge manufacturing process, focusing on each of the 13 resource areas in the same order as discussed above. Because some of the manufacturing details are propriety and export controlled information, and because USEC has not yet selected the proposed manufacturing location(s), some aspects of the following analysis are more generalized than the analysis of proposed site preparation and construction activities and proposed ACP operations presented in prior sections.

4.2.14.1 Land Use Impacts

No new manufacturing facilities would have to be constructed to accommodate the proposed action, since all centrifuge manufacturing would occur inside existing buildings. The level and nature of activities within these buildings would change somewhat, but this would not affect existing land uses either onsite or in surrounding areas. Likewise, the increased truck and commuter traffic needed to move materials and workers in and out of the manufacturing site(s) would be accommodated on existing roadways, so no land would have to be taken for new road right-of-way. Because all the potential manufacturing locations are in industrial areas, the increased truck and commuter traffic would not preclude or affect the surrounding land uses. As discussed in more detail below, the proposed centrifuge manufacturing also would not result in substantially new or more hazardous airborne emissions or liquid or solid waste streams that could affect surrounding areas or local waste management capabilities. As a result, the land use impacts of the proposed centrifuge manufacturing activities are expected to be SMALL.

4.2.14.2 Historic and Cultural Impacts

If all the centrifuge manufacturing occurs onsite at the DOE reservation in Piketon, there should not be any greater impacts to historic and cultural resources than that described in Section 4.2.2 for the proposed site preparation and construction activities and proposed ACP operations. The manufacturing and assembly would take place in the existing X-7725 building or other comparable building, with no new excavation or soil disturbance. In consultation with the State Historic Preservation Officer, the NRC staff has determined that these manufacturing activities would have no effect on the Portsmouth Gaseous Diffusion Plant historic district (Epstein, 2004). The manufacturing activities also have little potential to indirectly affect the 14 potentially Register-eligible sites within the area of potential effect, since the increased workforce needed to support onsite manufacturing activities would be expected to remain within designated work areas and since the surface materials on these sites were recorded and portable artifacts were collected during prior study.

The NRC staff also believes that the potential for historic and cultural resource impacts would be low if manufacturing were to occur at one or more of the alternate offsite locations. There would not be any new ground-disturbing activities in areas that have not been previously disturbed, and there would not be any removal or external modification of buildings or structures, at any of these alternate sites. Moreover, all of the planned activities would occur within existing buildings and would be consistent with existing

site activities. For all of these reasons, the NRC staff would not expect the proposed offsite manufacturing to result in direct or indirect effects to historic properties, to the extent any such properties exist at these sites.

Based on this analysis, the impacts to historic and cultural resources of the proposed centrifuge manufacturing activities are expected to be SMALL.

4.2.14.3 Visual and Scenic Impacts

The visual and scenic impacts of the proposed centrifuge manufacturing are also expected to be SMALL. Since the manufacturing would occur entirely within existing buildings at existing manufacturing facilities, there will be no new construction or activities that will change existing views. There would be an increase in vehicle traffic around the manufacturing site(s), but it would all occur along existing roads and should not substantially change the present look and feel of the area(s).

4.2.14.4 Air Quality Impacts

Centrifuge manufacturing would include a filament winding process that requires a combination of resins, curing agents, or hardeners and filaments. Final curing of the resulting parts would occur in curing ovens or hoods. Solvents would be used to clean the produced parts and manufacturing equipment. Airborne emissions from these activities would be confined and captured by the use of hoods or local ventilation capture systems that vent the emissions. All emission sources would be permitted in accordance with Federal and State requirements (USEC, 2005d). Where required (e.g., for volatile organic vapors), emission control equipment would be used as part of the permitted emission vent system (USEC, 2005a). Airflow from the hoods would also be monitored to ensure adequate flow and alarm if a problem is detected so that operations can be curtailed (USEC, 2005a).

To assess potential air quality impacts for this EIS, the NRC staff modeled pollutant emissions from centrifuge manufacturing and their associated air quality impacts. This analysis assumed that all of the proposed manufacturing occurs at the reservation in Piketon, which may be conservative because some of the manufacturing could also occur at one or more of the alternate offsite locations. Assuming all of the manufacturing takes place at Piketon also allowed the NRC to use available site-specific details on meteorology and distances to fencelines and receptors in the modeling.

The modeling approach focused on solvents and the primary ingredients of proposed curing agents and resins, which would not be released to the air if it were not for the proposed centrifuge manufacturing activities. Because the specific identity of these chemicals is propriety and/or export controlled, those details are withheld from this summary but can be found in Appendix E (this appendix is being withheld pursuant to 10 CFR 2.390). Other emissions would consist of carbon dioxide and water, and these emissions were not assessed because the anticipated emission levels are well below existing levels in the ambient atmosphere. All production emissions were modeled as a point source from the center of the X-7725 building. Emissions were assumed to be vented to the atmosphere through a 3.3-meter (10-foot) stack above the roofline with a release velocity of 15 meters per second (3,000 feet per minute), in compliance with Occupational Safety and Health Administration Standards.

As presented in more detail in Appendix E, this analysis predicted property-boundary maximum air concentrations of air toxics that are several orders of magnitude below applicable Short-Term Exposure Limits and Permissible Exposure Limits established by the Occupational Safety and Health Administration. For one curing agent ingredient that does not have a Permissible Exposure Limit, the NRC's predicted maximum concentration at the property boundary was below a safe level recommended by the manufacturer.

The NRC believes that these modeled results for Piketon should reasonably represent the situation if manufacturing took place at one of the proposed offsite facilities. While these other sites are already conducting similar manufacturing activities that may release some of the same pollutants associated with centrifuge manufacturing, the incremental emissions and air quality impacts caused by the proposed centrifuge manufacturing for the ACP are estimated to be very small. The differences in site-specific meteorology and distances to property boundaries at these other sites versus those details at Piketon should not materially affect this conclusion.

In addition to the airborne emissions from the manufacturing process, there would be increased emissions from the new vehicle traffic associated with the manufacturing activities. For the purpose of this EIS, the NRC considered the air quality impacts associated with this additional traffic by conservatively assuming that all of the manufacturing activity took place at one of the candidate offsite locations, resulting in all the centrifuge components being shipped into Piketon by truck for assembly. This assumption maximizes the amount of vehicle traffic coming into Piketon. The manufacturing-related truck traffic was evaluated over a period that overlaps (at least in part) with the proposed site preparation and construction activities and ACP operations at Piketon, in order to consider the maximum cumulative traffic and associated air quality effects. The results of this analysis, presented in Section 4.2.12.1 in the section titled "Airborne Emissions from Routine Transportation," show that the added vehicle traffic is not likely to significantly degrade air quality or cause an exceedance of air quality standards. This manufacturing-related truck traffic was evaluated over a period that overlaps (at least in part) with the proposed site preparation and construction activities and ACP operations at Piketon, in order to consider the maximum cumulative traffic and associated air quality effects. The results of this analysis, presented in Section 4.2.12.1 in the section titled "Airborne Emissions from Routine Transportation," show that the added vehicle traffic is not likely to significantly degrade air quality or cause an exceedance of air quality standards.

Based on this analysis, the air quality impacts of the proposed centrifuge manufacturing activities are expected to be SMALL.

4.2.14.5 Geology and Soils Impacts

The geology and soils impacts associated with the proposed centrifuge manufacturing should be SMALL. There would not be any new excavation required or any other new disturbance of soils or the subsurface. All of the proposed activities would take place within existing buildings at existing manufacturing facilities.

4.2.14.6 Water Resources

The manufacturing process associated with the proposed action would require process water and suitable wastewater discharge capacity. All of the potential locations where manufacturing would occur are industrial manufacturing areas with suitable infrastructure (water supply and wastewater treatment capacity). The manufacturing process would not require the development of new water supply sources or the development of additional wastewater treatment capacity.

In addition, there would be no projected chemical liquid effluents discharged from the manufacturing process. Liquid effluents would be limited to once-through cooling water and a cleaning water that would contain small concentrations of an industrial detergent. According to USEC, neither of these wastewaters would qualify as hazardous waste and would be released to the local sanitary treatment system. Alternatively, the once-through cooling water may be released directly to natural waterways, if permitted under the National Pollutant Discharge Elimination System. (USEC, 2005d)

Based on this analysis, the impacts to water resources caused by the proposed centrifuge manufacturing activities are expected to be SMALL.

4.2.14.7 Ecological Impacts

The proposed centrifuge manufacturing is expected to cause SMALL ecological impacts. Because no new construction would be required and all manufacturing activities would be confined to existing industrial facilities, there would be no new direct impacts to flora and fauna; rare, threatened, and endangered species; or wetlands. The proposed manufacturing operations would result in minor and controlled increases in air emissions, liquid discharges, and solid waste disposal, all of which would add incrementally to existing levels at the candidate manufacturing sites without significant potential for ecological impacts.

4.2.14.8 Socioeconomic Impacts

In order to reasonably bound the potential socioeconomic impacts of the proposed action, the NRC assumed that all manufacturing and assembly activities would occur in the Piketon region of influence, even though some or all of the activities may actually occur at another site. This phase of the proposed action is estimated to cost $1.4 billion and would be completed between 2004 and 2013 (USEC, 2005a). Its potential impacts to regional employment, tax revenue, population characteristics, housing resources, community and social services, and public utilities are assessed in turn below.

Impacts to Regional Employment

In each year between 2004 and 2013, average annual employment as a result of centrifuge manufacturing and assembly activities is estimated at 2,130 full-time jobs. This estimate includes both direct and indirect employment. Thus, the total number of full-time worker-years of employment generated as a result of centrifuge manufacturing and assembly activities is estimated as the product of 2,130 full-time workers multiplied by a total of ten years, resulting in 21,300 full-time worker years of employment. USEC developed this estimate from the RIMS-II model using appropriate assumptions about the number of direct jobs created, construction-related expenditures, and regional input/output multipliers.

As a result of manufacturing and assembly activities, an average of 2,130 direct and indirect jobs per year are expected to be created between the years 2004 and 2013 (USEC, 2005a). USEC developed this estimate with the RIMS-II model using appropriate assumptions about the number of direct jobs created, manufacturing-related expenditures, and regional input-output multipliers.

The total number of persons employed in the four counties of the region of influence in the year 2000 was 96,347 (BEA, 2002b). The total number of persons employed in Pike County, where the proposed action would located, was 14,944 in the year 2000 (BEA, 2002b). The employment expected to be generated by the manufacture and assembly activities therefore represents 2.2 percent of the total employment in the region and 14.3 percent of Pike County employment at the year 2000 levels.

Based on these figures, the impacts to regional employment of the manufacturing phase may be considered MODERATE.

Impacts to Tax Revenue

Impacts to regional tax revenues were estimated by USEC using per capita income levels in the region of influence as an estimate of the average salary associated with jobs created by the manufacturing activities. USEC estimates that the region's per capita income in 2004 dollars is $25,317 (USEC, 2005a).

Ohio State income tax rates for incomes between $20,000 and $40,000 are structured as a flat payment of $445.80 plus 4.5 percent of income over $20,000 (Ohio Department of Taxation, 2003). The State income tax payable by a worker earning $25,317 (the per capita income in the region) at these rates would be $685. The proposed action would create 2,130 jobs each year during the manufacturing phase; this level of employment remunerated at the per capita income in the region of influence translates to State income tax revenues of $1.5 million per year for each year of the manufacturing phase. Ohio's cumulative individual State income tax revenues for fiscal year 2003 were $8.3 billion (Ohio Department of Taxation, 2003). Income tax revenues resulting from the incomes generated by the centrifuge manufacturing phase can therefore be expected to account for approximately 0.02 percent of Ohio's cumulative annual individual income tax receipts at fiscal year 2003 levels.

Ohio State sales tax revenues are estimated to rise by $2.4 million (2004 dollars) per year for the manufacturing phase of the proposed action, assuming a 6 percent rate of sales tax. The estimate is based on the assumption that 75 percent of earnings after State income taxes are spent in State. Federal income taxes are not considered in computing disposable income; if Federal income taxes were included, it is likely that sales tax revenues would be lower than estimated here. Ohio's cumulative State sales and use tax revenues for calendar year 2003 were $6.7 billion. Sales tax revenues resulting from incomes generated by the centrifuge manufacturing activities can therefore be expected to account for approximately 0.04 percent of Ohio's annual sales tax receipts at calendar year 2003 levels.

Pike County's annual sales tax revenues, derived from a 1 percent county sales tax rate, are expected to rise by approximately $262,000 as a result of the new employment generated by the manufacturing phase of the proposed action. This estimate is based on the assumption that half the after-tax income arising from jobs generated by the manufacturing phase is spent on transactions within Pike County. This amount represents less than 6 percent of Pike County's general fund budget in 2005 (Pike County Auditor, 2005).

As demonstrated above, it is unlikely that State income tax, State sales tax, and county-level tax revenues would significantly increase as a result of the centrifuge manufacturing phase of the proposed action. Overall, the impacts to regional tax revenues of the manufacturing activities may therefore be considered SMALL.

Impacts to Population Characteristics

Of the 2,130 estimated jobs that are expected to be created during the centrifuge manufacturing phase, a total of 30 direct jobs are expected to be filled by USEC employees transitioned from the Portsmouth Gaseous Diffusion Plant (these jobs are to conduct the centrifuge manufacturing activities). An estimated 45 indirect jobs are expected to support the 30 positions filled by transitioned USEC workers. Thus, a total of 75 jobs generated through manufacturing and assembly activities represent jobs that are a continuation of already existing jobs that would be filled from within the region.

Therefore, 2,055 new jobs (direct and indirect) are expected to be created through manufacturing-related activities between the years 2004 and 2013. Commonly, an average of 75 percent of construction-related employment derives from within the region of influence (DOE, 1999). If 25 percent of the 2,055 manufacturing-related jobs are filled from outside the region, a total of 514 workers may be expected to move into the region. If all workers are assumed to move in as family households, and the average national family household size is assumed to be 3.13 (U.S. Census Bureau, 2003), the population influx into the region would be 1,608 persons. This represents 0.76 percent of the region population in the year 2000 (U.S. Census Bureau, 2000).

The impacts to population characteristics of the manufacturing and assembly phase may therefore be considered SMALL.

Impacts to Area Housing Resources

The average rental vacancy rate in the region is 8.6 percent for rental property and there are approximately 22,824 rental units in all (USEC, 2005a). This equates to an availability of approximately 1,963 rental housing units, based upon 2000 census data. Of the additional 2,055 jobs created by the centrifuge manufacturing phase, only 25 percent are expected to be filled by migration from outside the community. Therefore, the manufacturing phase is likely to increase the demand for rental housing by only 514 units out of a total of 1,963 rental units. Even accounting for seasonal increases in the demand for housing created by recreational activities, the influx of workers during centrifuge manufacturing activities is not likely to cause housing shortages or increases in rental rates.

The impacts to area housing resources of the centrifuge manufacturing and assembly activities may therefore be considered SMALL.

Impacts to Community and Social Services

A total of 514 family households may be expected to migrate to the region as a result of employment opportunities generated in the manufacturing phase of the proposed action, as discussed above. According to the U.S. Census Bureau (2003), the average national family household size is 3.13 with an average of 0.95 individuals under the age of 18. Thus, the maximum influx of school-aged children is not expected to exceed 488, which represents 1.3 percent of the regional school population in the year 2000. The region contains 24 public school districts with a total of 95 schools serving approximately 37,000 students (Ohio Office of Strategic Research, 2003). The region student-to-teacher ratio stood at 15.3 in 2000 (Ohio Office of Strategic Research, 2003). This ratio would be 15.5 after the expected influx of school-age children into the region resulting from manufacturing-phase employment. The average student-to-teacher ratio in the State of Ohio was only slightly lower at 14.8 in the year 2000. The impacts to education services in the region of influence may therefore be considered SMALL.

Levels of service of fire, law enforcement, healthcare and administrative services in the region are lower than the State average, but are consistent with those typical in rural counties. The influx of 1,608 persons represents an augmentation of the region population of 0.76 percent and would have a minimal effect on fire, law enforcement, healthcare, and administrative levels of service. The impacts to community and social services may therefore be considered SMALL.

Impacts to Public Utilities

As described in Section 3.9.3.5, there has historically been very little overlap between utilities providing services to communities in the region of influence and those supporting the Portsmouth Gaseous Diffusion Plant. Dedicated utilities were constructed in the 1950s solely to support the needs of the Portsmouth Gaseous Diffusion Plant. The communities in the region have never had access to these utilities. Under the proposed action, utilities would continue to be procured through existing resources. With the exception of natural gas and landfill services, these dedicated utilities are expected to have more than adequate capacity to continue serving the ACP under the proposed action, including the proposed centrifuge manufacturing. Historically, the Gaseous Diffusion Plant has had no impact on availability or cost of these utilities to communities in the region. It is therefore unlikely that the proposed action would affect the cost or availability of public utility supplies in the region of influence.

With regard to natural gas usage, the proposed action would not require any more natural gas than can be supplied through the existing two-inch diameter supply line. The proposed action is expected to have no impact on the offsite availability or cost of natural gas.

The Pike County landfill would be the primary endpoint for sanitary/industrial waste disposal and the Rumpke Beach Hollow landfill is an alternative. The projected capacities and use of each are described in Section 3.9.3.5. As apparent from Table 2-3 and Table 3-23, industrial/sanitary wastes from the centrifuge manufacturing and assembly activities would account for a minor fraction of the capacity of these facilities.

Although the manufacturing phase of the proposed action may result in migration of people into the region, the level of migration is expected to be well below the rental vacancy rate in the area, as discussed in the preceding section on housing resources. Therefore, the population influx due to manufacturing phase jobs is not expected to affect either the pricing or availability of public utilities in the region.

Considering all these factors, the impacts to public utilities of the centrifuge manufacturing phase of the proposed action are expected to be SMALL.

4.2.14.9 Environmental Justice Impacts

As discussed in the other sections within Section 4.2.14, the proposed centrifuge manufacturing and assembly activities are expected to cause SMALL impacts to all of the resource areas considered, except for the potential impacts to regional employment, which may be as large as MODERATE. These impacts to regional employment are generally considered positive.

The overall transportation impacts at the Piketon site, due to centrifuge manufacturing combined with the proposed site preparation and construction activities and the proposed ACP operations, would also be MODERATE (see Section 4.2.11.1). These impacts, including an increase in traffic congestion and an increase in injuries due to traffic accidents on U.S. Route 23 and Ohio State Road 32, would equally affect all populations driving on those.

Based on this analysis, the environmental justice impacts of the proposed centrifuge manufacturing and assembly activities would be SMALL because the activities would not cause any disproportionately high and adverse impacts to minority or low-income populations.

4.2.14.10 Noise

Manufacturing of centrifuges would not involve any forging or impact noise. The main manufacturing activity would involve winding of magnetic coils, which will not produce substantial noise levels. Although actual noise estimates for the centrifuge manufacturing activities are not available, USEC asserts that they can be approximated by the noise levels around an automobile assembly plant. These noise levels are 55 to 60 dBA at about 60 meters (200 feet) from the plant property (USEC, 2005a). Given these low levels, the attenuation expected to be provided by the building facade and likely distance to receptors (over 900 meters or 3,000 feet to the nearest residence at Piketon), and the current background levels of noise at the proposed manufacturing sites, the noise impacts of the proposed centrifuge manufacturing are expected to be SMALL.

4.2.14.11 Transportation Impacts

The analysis of transportation impacts associated with the proposed site preparation and construction activities in Section 4.2.11.1 considers the impacts associated with the shipment of centrifuges and other

equipment into the site at Piketon, together with other transportation impacts associated with the proposed action. That analysis concludes that the cumulative transportation impacts at the site would be MODERATE. This includes a decrease in the level of service of U.S. Route 23 and Ohio State Road 32, as well as increase in injuries resulting from the increase in vehicle traffic (see Section 4.2.11.1).

4.2.14.12 Public and Occupational Health Impacts

The principal public health threat associated with the proposed centrifuge manufacturing is associated with the release of airborne pollutants that may migrate offsite to where people might be exposed. However, as discussed in Section 4.2.14.4 on air quality, modeling conducted by the NRC staff predicted property-boundary maximum air concentrations of air toxics that are several orders of magnitude below applicable Short-Term Exposure Limits and Permissible Exposure Limits established by the Occupational Safety and Health Administration. Therefore, the public health impacts are expected to be SMALL.

The occupational health impacts of the proposed centrifuge manufacturing are also expected to be SMALL. For the most part, the proposed manufacturing materials and process would be similar to those currently used at the candidate sites, so the centrifuge manufacturing would be adding only incrementally to existing worker risks. There is the potential for workspace air to be contaminated with volatile organic material from the curing operations, but these emissions are supposed to be confined and captured by the use of hoods to protect the workers. Similarly, certain component cleaning processes could emit solvent vapors, but these processes would be performed under hoods and/or in clean rooms to control worker exposures (USEC, 2005d). Finally, the filament winding process that is unique to centrifuge manufacturing would present some added risk for worker accidents and injuries, but it would not be much different or greater than that currently associated with the precision machine shop and fabrication industry.

4.2.14.13 Waste Management Impacts

Some *Resource Conservation and Recovery Act* hazardous waste would be generated from the solvents used to clean the produced centrifuge parts and manufacturing equipment. This waste would be in the form of excess spent solvents, rags, wipes, and other material that came into contact with the spent solvent. Excess fibers, reacted resins, and curing agents would be non-hazardous waste. (USEC, 2005d)

The impacts associated with the management and disposal of these waste streams are expected to be SMALL. Both the hazardous and non-hazardous wastes would be handled and disposed in accordance with all local, State, and Federal requirements. Releases of potentially harmful contaminants that could pose a significant public health or environmental threat are not expected, and the character and volume of wastes generated are not expected to pose a problem for existing waste management capabilities and capacities.

4.2.15 Decontamination and Decommissioning

At the end of useful plant life, the proposed ACP would be decontaminated and decommissioned such that the facilities would be returned to DOE in accordance with the requirements of the Lease Agreement with DOE and applicable NRC license termination requirements. The intent of these activities is to return the ACP site to a state that meets NRC requirements for release for unrestricted use. It is anticipated that at the end of the useful life of the plant, most of the buildings and outdoor areas of the plant would already meet NRC requirements for unrestricted use in accordance with 10 CFR § 20.1402. Buildings, outdoor areas, and equipment that do not meet these requirements would be decontaminated and decommissioned in accordance with the Decommissioning Plan for the site.

Overview of Decontamination and Decommissioning Activities and Process

Decontamination and decommissioning would involve the removal and disposal of all operating equipment and waste materials associated with the proposed ACP with the exception of the plant infrastructure and equipment that existed onsite at the time the initiation of the Lease Agreement with DOE. Enrichment equipment and associated plant equipment would be removed, leaving only the building shells of the leased facilities and the plant infrastructure, including equipment that existed when the Lease Agreement with DOE was initiated (e.g., rigid mast crane, plant utilities, etc.). Items removed from the ACP would be categorized as potentially reusable equipment or waste. Waste materials, including wastes remaining onsite when the ACP ceases operations and wastes generated during the decontamination and decommissioning process, would be removed from the site as part of the decommissioning process. Any remaining depleted UF_6 would be converted to a more stable form in the onsite DOE conversion facility and the disposed offsite, as described in Section 4.2.12.2. Facilities leased from DOE would be decontaminated to applicable NRC criteria for unrestricted use. Following decommissioning activities, the leased facilities would be returned to DOE in accordance with the requirements of the Lease Agreement. The Centrifuge Assembly Area within the X-7725 Facility would be used as the Decontamination Service Area throughout this process and would handle disassembly and decontamination of ACP equipment. The Decontamination Service Area would be configured into a disassembly area, buffer stock area, decontamination area, and scrap storage area.

Because these decontamination and decommissioning activities are anticipated to occur approximately 30 years in the future, only a general description of the activities that would be conducted for the proposed ACP can be developed at this time for the EIS. In accordance with 10 CFR § 70.38(d) and 10 CFR § 70.38(g)(1), the licensee would be required to prepare and submit a Decommissioning Plan to the NRC at least twelve months prior to the expiration of the NRC license, and would begin the decontamination and decommissioning activities upon approval of the final Decommissioning Plan by the NRC. Under 10 CFR § 70.38(g)(4), the Decommissioning Plan would include a description of the planned decommissioning activities, including: site characterization information and site remediation plan; a description of the methods us to ensure protection of workers and the environment against radiation hazards during decommissioning; a description of the planned final site radiation survey; an updated detailed cost estimate for the activities; and a description of the physical security plan and the material control and accounting plan for the decommissioning. The Decommissioning Plan would be subject to National Environmental Policy Act review, as applicable, at the time the Plan is submitted to the NRC.

Decontamination and decommissioning activities anticipated to be conducted for the proposed ACP are described in Section 10 of the USEC License Application. These activities include purging of equipment, dismantling and removal of equipment, decontamination of equipment and structures, salvage and sale of equipment, waste disposal, and final radiological survey. Decontamination and decommissioning activities are anticipated to begin 30 years after the commencement of operations and, for the purpose of this analysis, are estimated to occur over a period of six years from 2040 through 2045.

This section summarizes potential environmental impacts associated with the decontamination and decommissioning of the proposed ACP, addressing each of the different resource areas in the same order as discussed above. It does not assess potential impacts of decontaminating and decommissioning other parts of the reservation at Piketon or any part of the Paducah facility. Potential impacts of ceasing operations at the Paducah facility are discussed for the different resource areas in prior sections in Section

4.2. Potential impacts associated with the management of depleted uranium generated from proposed ACP operations, including any depleted uranium remaining onsite or contained within plant equipment at the time the proposed ACP ceases operations, are discussed in Section 4.2.13.2 (Waste Management), and are not discussed again here. Potential effects of ACP decontamination and decommissioning activities on the broader decontamination and decommissioning activities for other parts of the Piketon reservation are discussed in Section 4.3, Cumulative Impacts.

4.2.15.1 Land Use Impacts

Because the proposed ACP site within the Piketon reservation would be leased from DOE, the intent would be to return it to DOE control upon termination of the lease. It is anticipated that after decommissioning activities are completed, existing buildings and structures would remain onsite and the site would remain categorized for industrial use. Therefore, anticipated land use impacts from the decontamination and decommissioning of the proposed ACP would be SMALL.

At the time the reservation at Piketon as a whole is decommissioned, the categorization and control of the land formerly occupied by the ACP could change and the land use could change accordingly. Potential cumulative land use impacts from decommissioning the Piketon reservation as a whole are discussed in Section 4.3, Cumulative Impacts.

4.2.15.2 Historical and Cultural Resource Impacts

Decommissioning activities will be conducted in areas known to be devoid of cultural and historical resources; therefore, no projected impacts as a result of the decontamination and decommissioning are expected (USEC, 2005a). Any changes to or demolition of buildings or structures proposed to be conducted during decommissioning would be evaluated for historic and cultural resources impacts prior to any implementation. Therefore, anticipated impacts to historical and cultural resources from decontamination and decommissioning of the proposed ACP are SMALL.

4.2.15.3 Visual and Scenic Resource Impacts

Decontamination and decommissioning of the ACP is not anticipated to result in demolition of the buildings and structures leased from DOE. Therefore potential visual and scenic impacts associated with the site would be similar to those described in Section 4.2.3. Any changes to or demolition of buildings or structures that are proposed to be conducting during decommissioning would be evaluated for visual and scenic resource impacts prior to any implementation. Therefore, the anticipated visual impacts from decontamination and decommissioning of the proposed ACP would be SMALL.

4.2.15.4 Air Quality Impacts

Decontamination and decommissioning of the proposed ACP would involve operation of vehicles transporting workers, materials, and wastes, and operation of heavy construction equipment (e.g., cranes). Operation of such equipment would produce combustion (gasoline and diesel engine) exhaust emissions, including nitrogen oxides, sulfur oxides, carbon monoxide, and particulate matter. Combustion exhaust emissions from vehicle and equipment operations are anticipated to be lower in both quantity and duration than emissions from vehicle and equipment operations during construction of the proposed ACP.

Decontamination and decommissioning activities are also anticipated to generate fugitive dust from re-entrainment of dust from paved roads, potential excavation of surface soils, and transportation of wastes and materials. Dust suppression techniques would be used to control fugitive dust emissions from these activities during dry conditions. Overall, fugitive dust emissions during decontamination and

decommissioning are anticipated to be lower in both quantity and duration than those associated with construction of the proposed ACP.

The current state-of-the-art technologies in decontamination and decommissioning of radiologically contaminated equipment require the use of a limited amount of solvents to fully clean some metallic and nonmetallic equipment. The quantity of solvents required has dramatically reduced in recent years and, assuming a similar trend, should be minimized when the proposed ACP undergoes decontamination and decommissioning. Nevertheless, there is the potential for emission of solvents during the decontamination phase if solvent cleaning methods are used. These emissions would be of short duration (i.e., a few weeks).

Based on this analysis, the air quality impacts associated with decontamination and decommissioning are expected to be less than those impacts associated with site preparation and construction and proposed ACP operations, as described in Section 4.2.4. Therefore, the impacts would be SMALL.

4.2.15.5 Geology and Soils Impacts

Impacts to geology and soils associated with the decommissioning of the proposed ACP are not anticipated to exceed the geology and soils impacts associated with construction of the ACP (as discussed in Section 4.2.5). Building shells and plant infrastructure leased from DOE are anticipated to remain onsite after decommissioning is completed, so there should be a minimal amount of new soil disturbance or site excavation. Disturbed areas would be controlled through application of engineering controls and best management practices to minimize erosion and sediment runoff. Any such areas would also be restored upon completion of decommissioning, to the extent practicable. The floors of the proposed ACP process buildings and support facilities consist of troweled-surface and sealed concrete, and any spills that may occur during decommissioning would be subject to implementation of spill cleanup response and area decontamination protocols. Therefore, any radioactive material or hazardous material spills indoors are not anticipated to reach the underlying soils. As any spills that occur during plant operation would be remediated during plant operation, most outdoor areas of the proposed ACP site are anticipated to meet NRC unrestricted release requirements at the time the plant ceases operations. There is potential for additional removal of contaminated surface soils from the site during decontamination and decommissioning; however, any such surface removal is anticipated to be limited in scope and not anticipated to affect the site terrain or the subsurface. For all of these reasons, anticipated impacts to geology and soils from the decommissioning of the proposed ACP would be SMALL.

4.2.15.6 Water Resource Impacts

Although potable water use is expected to increase during part of the decommissioning phase due to the increased use of water for equipment decontamination and rinsing, the overall water use during decontamination and decommissioning would be less than or equal to water consumption during operations. As discussed in Section 4.2.6.2, the groundwater withdrawals needed to support proposed ACP operations would be well within permitted levels and would result in a small impact on the availability of groundwater. Therefore, even smaller withdrawals needed to support decontamination and decommissioning activities would also cause a SMALL impact.

Decontamination operations are anticipated to involve operation of degreasers, wet blast cabinets, citric acid baths, demineralized water baths, scrubbing facilities, and other equipment potentially generating radionuclide-containing wastewater requiring monitoring and discharge. Decontamination and decommissioning operations would also involve releases of sanitary wastewater and storm water runoff. The sanitary water and sewage treatment systems that would be used for the proposed ACP operations are existing plant infrastructure that would continue to operate throughout decontamination and

decommissioning. The plant infrastructure would be used to treat decontamination process wastewater and sanitary wastewater prior to discharge. Sanitary wastewater generated during decontamination and decommissioning would be discharged to the plant sanitary sewer system. It is not anticipated that any licensed materials would enter the sanitary sewer system during this phase. Storm water runoff from the ACP site during decontamination and decommissioning would continue to be managed through application of engineering controls and best management practices, and would continue to drain to the West Central Holding Pond (Permitted Outfall 012) and Southwest Holding Pond (Permitted Outfall 013). Automated samplers would continue to collect weekly composite samples from the holding ponds for radiological and National Pollutant Discharge Elimination System-mandated analyses, as described in Section 4.2.6. With all of these continued controls, the impacts associated with liquid discharges should remain SMALL during the decontamination and decommissioning phase.

Finally, precautions would also continue to be taken to avoid impacts from accidental releases of fuel, waste, sewage, or chemicals used during decontamination activities. These precautions would include the use of spill response plans, safety procedures, spill control and countermeasure plans, and spill response equipment, as described in Section 4.2.6. With these controls, the likelihood and severity of potential spills during decontamination and decommissioning would be minimized and any resulting impacts should be SMALL.

4.2.15.7 Ecological Impacts

Ecological impacts associated with ACP decommissioning are anticipated to be bounded by the ecological impacts associated with ACP site preparation and construction, which are described in Section 4.2.7.1. During operation of the proposed ACP, some of the vegetation may reestablish itself in areas that were cleared during construction but not paved. Areas of reestablished vegetation may need to be cleared during site decommissioning (e.g., to conduct surface soil removal for site remediation). Any areas cleared of vegetation during decommissioning are anticipated to be small and vegetation could reestablish itself in cleared unpaved areas after decommissioning activities are completed. Therefore, anticipated ecological impacts from the decommissioning of the proposed ACP would be SMALL.

4.2.15.8 Socioeconomic Impacts

The following sections evaluate potential impacts of the proposed decontamination and decommissioning activities to regional employment, tax revenue, population characteristics, area housing resources, community and social services, and public utilities.

Impacts to Regional Employment

After the cessation of operations, decontamination and decommissioning activities, will generate an average of 841 direct and indirect jobs per year. This estimate is derived from the RIMS-II model using appropriate assumptions about the number of direct jobs created, decontamination and decommissioning-related expenditures, and regional input-output multipliers.

The total number of persons employed in the four counties of the region of influence in the year 2000 was 96,347 (BEA, 2002a). The total number of persons employed in Pike County, where the proposed ACP would be located, in the year 2000 was 14,944 (BEA, 2002a). The employment expected to be generated by the decontamination and decommissioning phase of the proposed action therefore represents 0.9 percent of the total employment in the region and 5.6 percent of Pike County employment at the year 2000 levels.

Based on these figures, the impacts to regional employment of the decontamination and decommissioning phase may be considered SMALL.

Impacts to Tax Revenue

Impacts to regional tax revenues are calculated by using per capita income levels in the region of influence as an estimate of the average salary associated with jobs created by the decontamination and decommissioning phase of the proposed action. USEC estimates that the region's per capita income in 2004 dollars is $25,317 (USEC, 2005a).

Ohio State income tax rates for incomes between $20,000 and $40,000 are structured as a flat payment of $445.80 plus 4.5 percent of income over $20,000 (Ohio Department of Taxation, 2003). The State income tax payable by a worker earning $25,317 (the per capita income in the region) at these rates would be $685.07. The proposed action would create 841 jobs each year during the decontamination and decommissioning phase; this level of employment remunerated at the per capita income in the region translates to State income tax revenues of $576,000 per year for each year of the decontamination and decommissioning phase. Ohio's cumulative individual State income tax revenues for fiscal year 2003 were $8.3 billion (Ohio Department of Taxation, 2003). Income tax revenues resulting from the incomes generated by decontamination and decommissioning activities can therefore be expected to account for less than one percent of Ohio's cumulative annual individual income tax receipts at fiscal year 2003 levels.

Ohio State sales tax revenues are estimated to rise by $932,000 (2004 dollars) per year for the decontamination and decommissioning phase, assuming a six percent rate of sales tax. This estimate is based on the assumption that 75 percent of earnings after State income taxes are spent in State. Federal income taxes are not considered in computing disposable income; if Federal income taxes were included, it is likely that sales tax revenues would be lower than estimated here. Ohio's cumulative State sales and use tax revenues for calendar year 2003 were $6.7 billion. Sales tax revenues resulting from incomes generated by decontamination and decommissioning activities can therefore be expected to account for less than one percent of Ohio's annual sales tax receipts at calendar year 2003 levels.

Pike County's annual tax revenues are expected to rise by approximately $103,000 as a result of the new employment generated by decontamination and decommissioning activities, based on a county sales tax of one percent. This estimate is based on the assumption that half the after-tax income arising from jobs generated by the decontamination and decommissioning phase is spent on transactions within Pike County. This amount represents less than 2.5 percent of Pike County's general fund budget in 2005 (Pike County Auditor, 2005).

As demonstrated above, it is unlikely that State income tax, State sales tax, and county-level tax revenues would significantly increase as a result of the decontamination and decommissioning phase of the proposed action. The impacts to regional tax revenues are therefore considered SMALL.

Impacts to Population Characteristics

Of the 841 estimated jobs that are expected to be created during the decontamination and decommissioning phase (after the cessation of operations), a total of 148 direct jobs are expected to be filled by USEC employees transitioned from their positions at the proposed ACP; these jobs are to support management, design, licensing, planning, demolition, reuse, evaluation, quality assurance, nuclear and radiological safety, and operational readiness. An estimated 286 indirect jobs are expected to support the 148 positions filled by transitioned USEC workers. Thus, a total of 434 jobs generated

through decontamination and decommissioning activities represent jobs that are a continuation of already existing jobs that will be filled from within the region.

Based on these figures, a total of 407 new jobs (direct and indirect) per year is expected to be created through decontamination and decommissioning-related activities. Commonly, an average of 75 percent of construction-related employment derives from within the region of influence (DOE, 1999a). If 25 percent of the 407 jobs are filled from outside the region, a total of 102 workers may be expected to move into the region. If all workers are assumed to move in as family households, and the average national family household size is assumed to be 3.13 (U.S. Census Bureau, 2003), the population influx into the region would be 318 persons. This represents 0.15 percent of the region population in the year 2000 (U.S. Census Bureau, 2000). The impacts to population characteristics of the decontamination and decommissioning phase may therefore be considered SMALL.

Impacts to Area Housing Resources

The average rental vacancy rate in the region of influence is 8.6 percent for rental property and there are approximately 22,824 rental units in all. This equates to an availability of approximately 1,963 rental housing units, based upon 2000 Census data. Of the additional 407 jobs created by the decontamination and decommissioning phase, only 25 percent is expected to be filled by migration from outside the community. Therefore, the decontamination and decommissioning phase is likely to increase the demand for rental housing by only 102 units out of a total of 1,963 rental units. Even accounting for seasonal increases in the demand for housing created by recreational activities, the influx of workers during the decontamination and decommissioning phase is not likely to cause housing shortages or increases in rental rates. The impacts to area housing resources are therefore considered SMALL.

Impacts to Community and Social Services

Impacts to housing availability and community and social services have been estimated using baseline data from the year 2000. It is possible that these data may not be applicable during the decontamination and decommissioning period (2040 through 2045). However, the number of jobs created in this phase is small compared to the region of influence population; it is therefore likely that any effects on housing and community and social services would be proportionally SMALL.

As discussed above, a total of 102 family households may be expected to migrate to the region as a result of employment opportunities generated in the decontamination and decommissioning phase. According to the U.S. Census Bureau (2003), the average national family household size is 3.13 with an average of 0.95 individuals under the age of 18. Thus, the maximum influx of school-aged children is not expected to exceed 97, which is 0.26 percent of the regional school population in the year 2000. The region of influence contains 24 public school districts with a total of 95 schools serving approximately 37,000 students (ODOD, 2003). The student-to-teacher ratio stood at 15.3 in 2000 (ODOD, 2003). This ratio would not change after the expected influx of school-age children into the region resulting from decontamination and decommissioning employment. The average student-to-teacher ratio in the State of Ohio was only slightly lower at 14.8 in the year 2000. Based on this analysis, the impacts to education services in the region of influence would be SMALL.

Levels of service of fire, law enforcement, healthcare, and administrative services in the region of influence are lower than the state average, but are consistent with those typical in rural counties. The influx of 318 persons represents an augmentation of the region population of 0.15 percent and will have a SMALL effect on fire, law enforcement, healthcare, and administrative levels of service.

Impacts to Public Utilities

As described in Section 3.9.3.5, there has historically been very little overlap between utilities providing services to communities in the region of influence and those supporting the Portsmouth Gaseous Diffusion Plant. Dedicated utilities were constructed in the 1950s solely to support the needs of the Portsmouth Gaseous Diffusion Plant. The communities in the region have never had access to these utilities. Under the proposed action, utilities would continue to be procured through existing resources, with the exception of natural gas and landfill services. These dedicated utilities are expected to have more than adequate capacity to continue serving the ACP under the proposed action, including during the decontamination and decommissioning phase. Historically, the Gaseous Diffusion Plant has had no impact on availability or cost of these utilities to communities in the region. It is therefore unlikely that the proposed action would affect the cost or availability of public utility supplies in the region.

With regard to natural gas usage, the proposed action would not require any more natural gas than can be supplied through the existing two-inch diameter supply line. Decontamination and decommissioning are expected to have no impact on offsite availability or cost of natural gas.

The Pike County landfill would be the primary endpoint for sanitary/industrial waste disposal, with the Rumpke Beach Hollow landfill as an alternative. The projected capacities and use of each are described in Section 3.9.3.5. Given the substantial remaining capacities shown in Table 3-23 in that section, combined with the relatively small amount of sanitary/industrial waste expected to be generated from decontamination and decommissioning activities, a capacity shortfall is not expected.

Although the decontamination and decommissioning phase may result in migration into the region of influence, the level of migration is expected to be well below the rental vacancy rate in the area, as described above. Therefore, the population influx due to decontamination and decommissioning jobs is not expected to affect either the pricing or availability of public utilities in the region.

Based on this analysis, the impacts to public utilities of the decontamination and decommissioning phase would be SMALL.

4.2.15.9 Environmental Justice Impacts

Based on the potential impacts described above, there are no disproportionate high and adverse impacts to either low-income or minority populations associated with the decontamination and decommissioning of the proposed ACP. Therefore, the environmental justice impacts would be SMALL.

4.2.15.10 Noise Impacts

Noise during decommissioning would be generated from operation of heavy construction equipment and vehicles needed to move equipment, scrap metal, and waste. Noise levels generated during decommissioning are anticipated to be similar to those generated during construction of the proposed ACP. As described in Section 4.2.10, these levels are estimated to be around 73 to 94 decibels at 15 meters (50 feet), which would drop off to 58 decibels at the nearest residence or 53 day-night average noise level if decommissioning activities were limited to an eight-hour daytime shift. This noise level is within acceptable guidelines and would cause a SMALL impact.

4.2.15.11 Transportation Impacts

Transportation impacts associated with decontamination and decommissioning include impacts associated with transportation of the workforce to and from the site, transportation of materials to the site, and transportation of materials and wastes from the site.

The workforce for decontamination and decommissioning would average 287 employees at the site each year for a period of six years (USEC, 2005a). This can be compared to the average construction workforce of approximately 1,013 workers each year over a period of five years. Therefore, traffic associated with workforce transportation during decommissioning would be lower than workforce transportation impacts during construction. The amount of equipment and materials transported to the site during decommissioning also would be negligible compared to the quantities of equipment and materials transported to the site during construction. Therefore, traffic associated with materials and equipment transportation to the site would be much lower than that during site preparation and construction (as discussed in Section 4.2.11.1).

Decontamination and decommissioning would generate substantial quantities of wastes and other materials that would need to be transported offsite, not even counting the converted depleted uranium discussed in Section 4.2.13.2. This would include all 24,000 centrifuges; substantial quantities of piping, pumps, and other equipment; general trash; and citric cake, which consists of uranium and metallic compounds precipitated from citric acid decontamination solutions. Some of this waste may be crushed and subject to further volume reduction prior to disposal. The Environmental Report estimates that approximately 1.8 million cubic feet of radioactive waste would be generated during decontamination and decommissioning operations (USEC, 2005a). This would require almost 5,000 truck shipments for offsite disposal over the five-year decommissioning period, most of which are currently planned to go to the DOE facility at the Nevada Test Site or the Envirocare facility in Clive, Utah (USEC, 2005a). Because this volume of truck traffic is far less than the estimated 17,870 truck trips needed during the five-year proposed ACP construction period, the transportation impacts associated with the decommissioning truck traffic should be far less than that described for site preparation and construction in Section 4.2.11.1.

Based on this analysis, the amount vehicle traffic (including worker vehicles and trucks carrying materials and wastes) during decontamination and decommissioning would be lower than the amount of traffic during site preparation and construction. Since the transportation impacts associated with site preparation and construction are projected to be small, such impacts associated with decontamination and decommissioning should also be SMALL.

4.2.15.12 Public and Occupational Health Impacts

The current decontamination and decommissioning plans call for cleaning the structures and selected facilities to free-release levels and allowing them to remain in place for future use. Allowing the buildings to remain in place would reduce the potential number of workers required for decontamination and decommissioning, which would reduce the number of injured workers. If residual contamination is discovered, it would be decontaminated to free-release levels or removed from the site and disposed in a licensed low-level radioactive waste facility. Occupational exposures during onsite decontamination and decommissioning would be bounded by the potential exposures during operation (10 millisieverts [1,000 millirem] or less, as discussed in Section 4.2.12.3) because standard quantities of uranium (i.e., UF_6 in Type 48Y cylinders) could be handled, at least during the portion of the decontamination and decommissioning operations that purges the gas centrifuge cascades of UF_6. Once this decontamination operation is completed, the quantity of UF_6 would be residual amounts and significantly less than handled during operations. Because systems containing residual UF_6 would be opened, decontaminated (with the removed radioactive material processed and packaged for disposal), and dismantled, an active

environmental monitoring and dosimetry (external and internal) program would be conducted to maintain "As Low As Reasonably Achievable" doses and doses to individual members of the public as required by 10 CFR Part 20.

One aspect of the potential decontamination and decommissioning impacts that is not bounded by the above analysis of proposed ACP operations impacts is the potential public and occupational health impacts associated with the transport of radioactive materials generated during decontamination and decommissioning. For purposes of this analysis, it is assumed that there will be 5,100 shipments to the Nevada Test Site, 105 shipments to Clive, Utah, and 60 shipments to Kingston, Tennessee. The number of latent cancer fatalities, summarized in Table 4-23, from the transportation of all decontamination and decommissioning waste is estimated to be 0.3, including 0.005 deaths resulting from the release of radioactive material as a result of accidents.

Based on these analyses, the public and occupational health impacts associated with decontamination and decommissioning would be SMALL.

Table 4-23 Estimated Latent Cancer Fatalities from the Transportation of Decontamination and Decommissioning Waste

Material	Incident Free								Accidents
	General Population			Occupational Workers			Total	Maximally Exposed Individual	
	Off-Link	On-Link	Rest Stops	Crew	Inspection Stops	Loading Crew			
Classified[a]	5.1×10^{-3}	4.8×10^{-2}	1.2×10^{-1}	8.9×10^{-2}	3.1×10^{-2}	2.1×10^{-2}	3.1×10^{-1}	2.0×10^{-7}	4.7×10^{-3}
Unclassified	8.6×10^{-5}	7.4×10^{-4}	2.2×10^{-3}	1.4×10^{-3}	1.9×10^{-3}	4.7×10^{-4}	6.8×10^{-3}	4.1×10^{-9}	7.3×10^{-5}
Liquid	1.5×10^{-6}	1.0×10^{-5}	1.2×10^{-5}	2.7×10^{-5}	1.0×10^{-5}	1.1×10^{-4}	1.7×10^{-4}	1.8×10^{-10}	1.7×10^{-6}
Total	5.2×10^{-3}	4.9×10^{-2}	1.2×10^{-1}	9.1×10^{-2}	3.2×10^{-2}	2.1×10^{-2}	3.2×10^{-1}	2.0×10^{-7}	4.8×10^{-3}

Notes:
[a] A waste that is classified because of its configuration, composition, contamination, or contained information.

4.2.15.13 Waste Management Impacts

The waste management and recycling programs used during operations would apply to decontamination and decommissioning. Materials eligible for recycling would be sampled or surveyed to ensure that contamination levels would be below release limits. Staging and laydown areas would be segregated and managed to prevent contamination of the environment and creation of additional wastes. Therefore, the impacts would be SMALL.

4.3 Cumulative Impacts

Cumulative impacts are the impacts (effects) on the environment which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR § 1508.7). This section defines the resources that may be subject to cumulative impacts, defines the other past, present, and reasonably foreseeable future Federal and non-Federal actions that are considered pertinent, and presents an analysis of the cumulative impacts. Cumulative impacts encompass the following relative to this section:

- The action refers to the construction and operation of the proposed ACP on the DOE reservation.

- The direct and indirect impacts of the proposed action are a key criterion in determining if cumulative effects on localized and regional environmental and natural resources need to be addressed (e.g., if the proposed action has no effects on a given resource, it is not necessary to address the existing cumulative effects that have occurred with respect to that resource).

- For those cumulative effects that need to be addressed, it is necessary to consider the direct and indirect effects of past, present, and reasonably foreseeable future actions on the affected resources.

- Direct effects are those effects caused by the proposed action, past actions, present actions, or reasonably foreseeable future actions, that occur at the same time and place as the respective actions (40 CFR § 1508.8(a)); indirect effects are caused by the respective actions and are later in time or farther removed in distance, but are still reasonably foreseeable (indirect effects may include: growth-inducing effects; other effects related to induced changes in the pattern of land use, population density, or growth rate; and related effects on air, water, and other natural systems, including ecosystems) (40 CFR §1508.8(b)).

- The respective actions may have been, or would be, the result of decisions made by various governmental levels (Federal, State, or local) or the private sector; further, such actions may be on DOE reservation lands or offsite (the key is that a common resource is affected).

- Cumulative impacts need to be analyzed relative to a place-based perspective (the situation for activities occurring at the DOE reservation) as well as a national perspective (the situation for proposed centrifuge manufacturing activities) on the specific resources affected.

- Each affected resource, ecosystem, and human community must be analyzed for its sustainability and capacity to accommodate additional effects, based on its own time and space parameters (CEQ, 1997).

The affected environment, as described in Chapter 3, presents the baseline conditions against which the cumulative impacts will be reviewed. Chapter 3 incorporates the effects of past actions on the various

resources, as well as identifies trends (e.g., development, farming) that influences the various resources. Such effects and trends were considered in evaluating cumulative impacts. Sections 4.2 and 4.4 present the impacts associated with the proposed action and the no-action alternative, respectively, on each resource area.

As presented in Sections 4.2 and 4.4 of this EIS, implementation of the proposed action and no-action alternative would not result in additional cumulative impacts on cultural resources, visual and scenic resources, and noise. Under the proposed action and the no-action alternative, cultural resources would not be affected; therefore, there would be no additional cumulative impacts. Cumulative effects on visual and scenic resources and noise are not addressed because of the lack of visual intrusions from the facility in relation to its adjoining location on the DOE reservation, and the temporary and localized nature of the noise impacts. The proposed action and/or no-action alternative may affect the remaining resource areas described in Chapter 3 and Sections 4.2 and 4.4. The potential impacts are described in Sections 4.3.1 to 4.3.10.

To define the activities that would result in a cumulative impact on the various resources, other Federal and non-Federal activities were reviewed on a placed-based perspective. Several activities occurring on the DOE reservation as well as national activities were identified that may result in cumulative impacts on local and national resources. The local activities include: (1) environmental restoration activities (DOE, 2004b); (2) industrial reuse of portions of the DOE reservation (DOE, 2001a); and (3) the development of depleted UF_6 conversion facilities at the DOE reservations located in Piketon and Paducah (DOE, 2004a; DOE, 2004c). The national activities that may result in cumulative impacts on nationally-based resources include the operation of the proposed National Enrichment Facility in New Mexico (NRC, 2004), and the conversion of existing and future depleted UF_6 (DOE, 2004a; DOE, 2004c). Such activities would result in cumulatively more radioactive material being transported across the nation, and the generation of more U_3O_8 that would require disposal. Table 4-24 presents a description of the other activities considered in this cumulative impact analysis.

Table 4-24 Other Activities Considered for Cumulative Impacts

Activities	Description
Local (Place-based) Activities	
Environmental Restoration Activities	DOE and USEC are responsible for implementing environmental compliance activities at the DOE reservation. DOE is responsible for environmental restoration, waste management, uranium programs, and long-term stewardship of nonleased facilities at the Portsmouth Gaseous Diffusion Plant. USEC is responsible for cold standby operations, removal of uranium deposits from process equipment, and winterization of the process buildings. Under the Environmental Restoration Program inactive sites are remediated through the removal, containment, and treatment of contaminants. The DOE reservation has been divided into quadrants (Quadrants I, II, III, and IV) to facilitate the cleanup process. The Environmental Restoration Program was established to fulfill the requirements of the Ohio Consent Decree and U.S. EPA Administrative Consent Order, both issued in 1989. In addition to monitoring, other remedial actions include: • Actions required in Quadrant I for the X-749/X-120/PK Landfill and the Quadrant I Groundwater Investigation Area. • Remedial actions in Quadrant II in the X-701B area to address contaminated soil, installation of landfill caps, and groundwater (DOE, 2004b). Quadrant II also contains "deferred units" that cannot be remediated while the reservation is operational. Such areas must meet criteria that are protective of human health and the environment. DOE performs annual reviews of all deferred units to confirm that the status has not changed. • Remedial activities in Quadrant III including phytoremediation of the groundwater plume near the X-740 Waste Oil Handling Facility. No ongoing remedial actions (other than monitoring) occur in Quadrant IV (DOE, 2004b).
Reindustrialization Program	Under its Reindustrialization Program, DOE would transfer real property (i.e., underutilized, surplus, or excess DOE reservation land and facilities) by lease and/or disposal (e.g., sale, donation, transfer to another Federal agency, or exchange) to a community reuse organization, to other Federal agencies, or to other interested persons and entities. Such transfers would be subject to DOE and regulator approval. Approximately 526 hectares (1,300 acres) are currently available for transfer (DOE, 2001a). No current reindustrialization activities are under development or consideration for the DOE reservation.

Table 4-24 Other Activities Considered for Cumulative Impacts (continued)

Activities	Description
Development and Operation of a Depleted UF_6 Conversion Facility	Beginning in 2004, DOE began the construction of a conversion facility at the DOE reservation for conversion of the depleted UF_6 cylinders at Portsmouth and the East Tennessee Technology Park. DOE estimates that construction will last two years, the operational period will last 18 years, and that decommissioning and decontamination will last three years. The conversion facility will be located in the west-central portion of the reservation, and will encompass approximately 10 hectares (24 acres). Conversion is a continuous process in which depleted UF_6 is vaporized and converted to a mixture of uranium oxides (primarily U_3O_8) by reaction with steam and hydrogen in a fluidized-bed conversion unit. The resulting depleted U_3O_8 powder will be collected and packaged for disposition. Equipment will also be installed to collect the hydrogen fluoride co-product and process it into any combination of several marketable products (hydrofluoric acid or calcium fluoride) for storage, sale, or disposal in the future, if necessary. The conversion facility will be designed to convert 13,500 metric tons (15,000 tons) of depleted UF_6 per year.
National Activities	
Proposed National Enrichment Facility	The proposed National Enrichment Facility in New Mexico and the handling of its associated wastestream of depleted UF_6 cylinders, to include transportation to a conversion facility and the ultimate disposal of the U_3O_8.
Conversion of Existing and Future depleted UF_6 Cylinders	The existing depleted UF_6 cylinders are located at DOE facilities in Paducah, Kentucky, Portsmouth, Ohio, and the East Tennessee Technology Park. The potential future generation of depleted UF_6 cylinders would be from the continued operation of the Paducah Gaseous Diffusion Plant, the potential operation of the proposed National Enrichment Facility, or the potential operation of the proposed USEC ACP. The converted UF_6 will be disposed of at the Envirocare licensed disposal facility in Utah or the Nevada Test Site in Nevada. DOE has identified the Envirocare facility as the "primary" disposal facility, and the Nevada Test Site as the "secondary" disposal facility (DOE, 2004c).

Sources: DOE, 2001a; DOE, 2001b; DOE, 2004a; DOE, 2004b; DOE, 2004c; NRC, 2004.

The following sections present a discussion of the cumulative impacts, by resource. The discussion focuses on the cumulative impacts associated with the proposed action. The cumulative impacts associated with the no-action alternative would be less than the cumulative impacts on each resource under the proposed action, except for the socioeconomic impacts, as there would be fewer jobs created under the no action alternative. Therefore, except for socioeconomic impacts, the cumulative impacts associated with the no-action alternative are not discussed in detail.

4.3.1 Land Use

Existing industrial development occupies approximately 40 percent (600 hectares [1,483 acres]) of a total of 1,497 hectares (3,700 acres) of the DOE reservation. Implementation of all current and future actions, as described in Table 4-24, as well as the proposed ACP, would lead to the conversion of an additional 10 hectares (24 acres) to industrial use, resulting in a small cumulative impact on land use.

4.3.2 Climatology, Meteorology, and Air Quality

Site Preparation and Construction

Site preparation and construction activities associated with the depleted UF_6 conversion facility at the DOE reservation, the proposed ACP, and the ongoing environmental restoration program would result in a cumulative impact on ambient air quality. Fugitive dust emissions, as well as particulate emissions associated with construction vehicles and heavy equipment, would increase the concentrations of particulate matter with a mean diameter of 2.5 micrometers or less. As presented in Section 4.2.6, the DOE reservation is located in an attainment region, although measured concentrations for certain criteria pollutants (ozone and particulate matter with a mean diameter of 2.5 micrometers or less) have been above State and national air quality standards. The reservation is located in a county that is exempt from the restrictions on emissions for fugitive dust specified in Ohio Administrative Code 3745-17-08. Elevated ozone concentrations of regional concern are associated with high precursor emissions from the Ohio Valley region and long-range transport from southern States. Because ozone formation is a regional issue affected by emissions for an entire area, the small additional cumulative contribution to the county total would be unlikely to substantially alter the ozone levels of the county (DOE, 2004a).

For fugitive dust emissions, the site preparation and construction phase of the depleted UF_6 conversion facility and the proposed ACP would result in the most particulate emissions, with the majority arising from vehicle particulate emissions associated with the construction vehicles. Because the construction for each facility would not overlap (the construction vehicle emissions would not overlap), the cumulative impacts on air quality are anticipated to be MODERATE. To avoid nuisance conditions and particulate matter concerns, USEC has proposed to use dust suppression techniques to mitigate dust release during excavation under dry conditions.

Per the analysis in Section 4.2.4.1, the NRC-recommended mitigation measures to reduce the predicted impacts associated with particulate matter emissions also would reduce the cumulative impacts to SMALL. The combined use of use Tier 2 construction-related vehicles and ultra-low sulfur diesel fuel would reduce particulate matter emissions by about 60 percent.

Transportation

The cumulative impacts of long- and medium-haul trucks, and worker vehicle emissions would include increases in carbon monoxide and sulfur dioxide emissions in excess 19 percent of current 2004 county baseline, and emissions of nitrogen oxides and particulate matter with a mean diameter of 10 micrometers or less in excess of 10 percent of the current 2004 county baseline. These cumulative changes would likely be sufficiently large to be detected through ambient air quality monitoring. However, they would occur only temporarily during the construction phase (estimated to be five years), and would be unlikely to be large enough to exceed National Ambient Air Quality Standards. The potential ambient air quality impacts associated with increased emissions from construction-related traffic would be SMALL.

Cumulative impacts on ambient air quality during operation of the depleted UF_6 conversion facility and the proposed ACP, as well as the continued environmental restoration program, would not result in substantial emissions of criteria air pollutants.

The potential cumulative impacts of radiological air emissions from the depleted UF_6 conversion facility and the proposed ACP, which would be regulated by the U.S. EPA under 40 CFR Part 61, Subpart H (National Emissions Standards for Hazardous Air Pollutants) were also analyzed. Radiological releases to air from both facilities would be routinely monitored to ensure that releases are at, or below, the expected and regulated quantities. In addition, under the environmental restoration program, DOE

collects data from a monitoring network of 15 ambient air samplers—as described in the DOE site environmental report for 2003 (DOE, 2004b). The monitoring network is intended to assess whether the radiological air emissions from the DOE reservation, as a whole, affect air quality in the surrounding area. Data are collected both onsite and in the area surrounding the DOE reservation. A background ambient air monitoring station is located approximately 21 kilometers (13 miles) southwest of the site. Analytical results from air sampling stations closer to the plant were compared to background measurements (DOE, 2004b), and based on the predicted emission rates associated with the depleted UF_6 conversion facility and the proposed ACP, and the comprehensive site monitoring program, the cumulative radiological air emissions would result in a SMALL impact on air quality.

4.3.3 Geology and Soils

The proposed action and no action alternative would not impact geology; therefore, there would be a SMALL cumulative impact.

For soils, the primary cumulative impacts resulting from past and present actions has been disturbance in areas where the land use has been converted to industrial activities. Soil losses have occurred via erosion, and some soils on the DOE reservation have become radiologically contaminated. Environmental restoration activities would require some additional land disturbance, primarily in previously disturbed areas. Specifically, the environmental restoration program would require soil removal and capping activities associate with the X-749/X-120/PK Landfill in Quadrant I. Site preparation and construction of the depleted UF_6 conversion facility and the proposed ACP primarily would affect previously disturbed soils on the industrialized portions of the reservation. The proposed ACP would impact approximate 6 hectares (15 acres) of relatively undisturbed soil, while the depleted UF_6 conversion facility will be constructed entirely within the industrial area; therefore, the cumulative impact on soils would result in a SMALL cumulative impact.

4.3.4 Water Resources

Floodplains

Neither the proposed action or the no action alternative would affect any flood plains; therefore, there would be a SMALL cumulative impact.

Surface Water and Groundwater

Site preparation and construction of the depleted UF_6 conversion facility and the proposed ACP, as well as the continued environmental restoration program, would result in a MODERATE short-term cumulative impact on surface water quality. The cumulative construction time of the depleted UF_6 conversion facility and the proposed ACP would be approximately 5.5 years, which would result in increased erosion and storm water flows entering adjacent surface water features. The environmental restoration program will require soil removal and capping activities associated with the X-749/X-120/PK Landfill in Quadrant I, that may result in increased erosion and storm water flows entering adjacent surface water features. However, because the construction areas are greater than 2 hectares (5 acres), DOE and USEC would be required to obtain NPDES permits for storm water discharge from the construction sites, which would require the use of various best management practices to reduce or exclude sediment transport into the surface water features, as presented in Section 4.2.5, Geology and Soil Impacts. The cumulative impacts of the operational phases would be SMALL, as all discharges would meet EPA and State NPDES standards, as well as DOE and NRC standards, which are designed to protect human and environmental health.

Site preparation and construction, and operation of the depleted UF_6 conversion facility and the proposed ACP, as well as the continued environmental restoration program, would also result in a small long-term cumulative impact on groundwater. Table 4-25 presents the individual and cumulative withdrawal and discharge rates for the DOE reservation.

Table 4-25 Water Withdrawal and Discharge Rates [a]

Type of Water Withdrawal/ Discharge	Current [b]		Proposed ACP		Depleted UF_6 Conversion		Total		Percent Change Over Current and Total Rates
	m^3/day	gpd	m^3/day	gpd	m^3/day	gpd	m^3/day	gpd	
Construction									
Groundwater Withdrawal	20,819 [c] 75,708 [d]	5,500,000 [c] 20,000,000 [d]	814	215,000	21	5,472	835	220,472	4 27
Wastewater	909 [c] 2,275 [d]	240,000 [c] 601,000 [d]	814	215,000	21	5,472	835	220,472	92 77
Operation									
Groundwater Withdrawal	20,819 [c] 75,708 [d]	5,500,000 [c] 20,000,000 [d]	2461	650,000	342	90,411	2,803	740,411	13 31
Wastewater	909 [c] 2,275 [d]	240,000 [c] 601,000 [d]	361	95,400	30	8,000	391	103,400	43 57
Cooling Water Blowdown	4,603 [c]	1,216,000 [c]	273	72,000	87	23,000	360	95,000	8

Notes:
[a] m^3/day = cubic meters per day; gpd = gallons per day.
[b] Current withdrawals and discharges include those from the ongoing environmental restoration program.
[c] Values represent current withdrawal or discharge rates.
[d] Values represent capacity and permitted withdrawal or discharge rate.
Sources: DOE, 2004c; USEC, 2005a.

During construction, additional groundwater withdrawal and wastewater discharges of up to 835 cubic meters per day (220,472 gallons per day) would result in SMALL cumulative impacts. The wastewater would feed into the onsite sanitary treatment plant and even though the additional wastewater represents a 92 percent change over the current volume, it would only represent a 77 percent change to the total capacity of the facility. This additional wastewater would not affect the status or water quality criteria contained in the existing permit and would represent a SMALL cumulative impact on surface water quality. For groundwater, the additional withdrawal of 835 cubic meters (220,472 gallons) represents a four percent increase over the current withdrawal rate, and would bring the total withdrawal rate to 27 percent of system capacity.

During operation, the additional wastewater discharge (391 cubic meters per day [103,400 gallons per day]), groundwater withdrawal (2,803 cubic meters per day [740,411 gallons per day]), and cooling water blowdown (360 cubic meters per day [95,000 gallons per day]) would result in SMALL cumulative impacts. Wastewater would feed into the onsite sanitary treatment plant and even though the additional wastewater represents a 43 percent change over the current volume, it would only represent 57 percent of the total capacity of the facility. This additional wastewater would not affect the status or water quality criteria contained in the existing permit and would represent a SMALL cumulative impact on surface water quality. The additional groundwater withdrawal would represent a 13 percent increase over the current withdrawal rate, and would bring the total withdrawal rate to 31 percent of the system capacity. The associated tower water cooling system would discharge an additional 360 cubic meters per day (95,000 gallons per day) to the DOE reservation recirculating cooling water system, which discharges to the Scioto River. This represents an 8 percent increase over the current 4,603 cubic meters per day (1,216,000 gallons per day). This discharge would be non-contact cooling water and would not alter the properties or quality of the current discharge. The volume would be the only attribute of the wastewater that would be altered relative to the current recirculating cooling water system discharge. As such, the tower water cooling discharges would have a SMALL cumulative impact on surface water quantity and quality.

4.3.5 Ecology (Flora, Fauna, Wetlands, and Threatened and Endangered Species)

For wetlands and threatened and endangered species, the proposed action and the no-action alternative would not require the filling or dredging of any wetlands and would not affect any listed species; therefore, there would be SMALL cumulative impacts on such resources.

The construction of the depleted UF_6 conversion facility and the proposed ACP would result in a SMALL short-term cumulative impact on the flora and fauna within the DOE reservation. Such impacts would result from the increased human activity, dust associated with earth moving, noise from the operation of the construction vehicles, and the removal of vegetation that acts as a buffer between the developed areas and undisturbed forested and riparian areas of the reservation. Habitat disturbance would involve settings commonly found in this part of Ohio, in many cases previously disturbed. The cumulative impact would result in limited removal of undisturbed vegetation, less than 0.5 hectare (1 acre).

The operation of the depleted UF_6 conversion facility and the proposed ACP, as well as the continued environmental restoration program would result in a SMALL long-term cumulative impact on flora and fauna. The increased personnel and activities on the reservation associated with such operations and programs would preclude wildlife sensitive to human activities from utilizing the managed areas of the reservation.

4.3.6 Socioeconomic and Local Community Services

Site preparation and construction of the depleted UF_6 conversion facility and the proposed ACP would not overlap, and other than the prolonged construction activities that would occur on the DOE reservation, the construction jobs created would not result in an additional cumulative impact. The construction period and the associated increase in workforce would last from approximately 2005 to 2010. This would result in approximately 4,000 direct and indirect jobs. No employment increase or decrease is anticipated to be associated with the ongoing environmental restoration program. Based on the information presented in Section 4.2.10.2, such an increase, over 3.5 percent of the total employment in the region of influence and over 22.5 percent of Pike County employment at year 2000 levels, would result in a MODERATE positive cumulative impact. The 4,000 direct and indirect jobs would result in a SMALL cumulative impact on tax revenue, population characteristics, community and social services, and public utilities, as the cumulative effects would not substantially alter the existing tax or population characteristics and would not require any additional services.

The operation of the depleted UF_6 conversion facility and the proposed ACP would result in approximately 2,000 additional direct and indirect jobs. Based on the information presented in Section 4.2.10.3, such an increase, over 1.6 percent of the total employment in the region, and over 10 percent of Pike County employment at year 2000 levels, would result in a MODERATE cumulative impact. The 4,000 direct and indirect jobs would result in a SMALL cumulative impact on tax revenue, population characteristics, community and social services, and public utilities, as the cumulative effects would not substantially alter the existing tax or population characteristics and would not require any additional services.

Under the no-action alternative, the conversion facility would still be built, resulting in short-term (construction) and long-term (operations) SMALL cumulative socioeconomic impacts as presented above. However, because the proposed ACP would not be constructed or operated, the short-term and long-term employment opportunities would be less than those associated with the proposed action.

4.3.7 Environmental Justice

Although minority and low-income populations occur in the vicinity of the DOE reservation (see Section 4.2.9), construction and operation of the depleted UF_6 conversion facility and the proposed ACP, as well as the continued environmental restoration program, would not affect such populations. Accordingly, there would be no cumulative impacts on environmental justice populations.

4.3.8 Transportation

Site preparation and construction and operation of the depleted UF_6 conversion facility and the proposed ACP, as well as the continued environmental restoration program, would result in a MODERATE cumulative impact on transportation. Traffic associated with the ongoing environmental restoration program is part of the existing traffic flow and is not expected to increase or decrease. The construction periods of the depleted UF_6 conversion facility and the proposed ACP would not overlap; however, the level of increased construction worker commuter traffic would be extended. During site preparation and construction of the proposed ACP, the level of service for U.S. Route 23 would temporarily change from B (i.e., free flow of traffic) to C (i.e., the influence of traffic density on operations becomes marked, maneuverability is affected, and travel speeds are reduced). For State Road 32, site preparation and construction would temporarily change the level of service of the roadway from A to B, which is still uncongested roadway conditions. The Highway Capacity Manual notes that speed remains relatively constant across Levels of Service A through D.

Transportation associated with the operation of the depleted UF_6 conversion facility is estimated to be 12,300 truck shipments and 6,800 rail shipments over 18 years, which equates to approximately three truck shipments and two rail shipments per day (assuming a five-day work week). An estimated workforce of 160 at the conversion facility would result in up to 320 daily vehicle trips. The additional traffic associated with the operation of the depleted UF_6 conversion facility would not further degrade the level of service associated with the site preparation and construction activities of the proposed ACP; therefore, the traffic impacts would be SMALL.

Operation of the depleted UF_6 conversion facilities at Portsmouth, Ohio and Paducah, Kentucky, the proposed ACP, as well at the operation of the National Enrichment Facility in New Mexico, would result in some additional transportation of radioactive material. The cumulative impact from routine traffic accidents associated with the additional transportation would be SMALL, as the increase would be a fraction of one percent of the total truck volume in the U.S. Such a small increase in the overall truck volume would result in a negligible change in the number of routine traffic accidents. The cumulative impacts of non-routine traffic accidents associated with the transport of the radioactive material are presented under Section 4.3.9.

4.3.9 Public and Occupational Health

This section describes the cumulative impacts to public and occupational health associated with transportation to and from the DOE reservation, site preparation and construction activities on the DOE reservation, and operation of the existing, planned, and proposed facilities on the DOE reservation. The focus of the discussion is on radiological cumulative effects, and when appropriate, cumulative nonradiological effects are described.

4.3.9.1 Transportation

As presented in Section 4.3.2, transportation activities associated with the depleted UF_6 conversion facility and the proposed ACP, as well as the ongoing environmental restoration program, would result in additional air emissions.

The highest level of activity and emissions on the DOE reservation would occur during the cumulative construction phase. Emissions of National Ambient Air Quality Standard-regulated pollutants during this period would likely be small, and thus not cause an exceedance of the standard. Because the standards are designed to protect human health, the change in emissions would be unlikely to cause any adverse health impacts within the surrounding population. Therefore, the potential impacts on public and occupational health related to the emission of National Ambient Air Quality Standard-regulated pollutants would be SMALL.

The cumulative impacts of transporting radioactive material to and from the DOE reservation have been analyzed in other *National Environmental Policy Act* documents, specifically the:

- *Programmatic Environmental Impact Statement for the U.S. Department of Energy, Oak Ridge Operations Implementation of a Comprehensive Management Program for the Storage, Transportation, and Disposition of Potentially Reusable Uranium Materials* (DOE, 1999a);

- *Transportation Impact Assessment for Shipment of Uranium Hexafluoride (UF_6) Cylinders from the East Tennessee Technology Park to the Portsmouth and Paducah Gaseous Diffusion Plants* (ANL, 2001); and

- *Final Environmental Impact Statement for Construction and Operation of a Depleted Uranium Hexafluoride Conversion Facility at the Portsmouth, Ohio Site* (DOE, 2004a).

These previous studies did not identify any significant impacts to public and occupational health associated with transportation to and from the DOE reservation. The analysis of potential environmental impacts in Chapter 4, along with the results of these studies, indicates that the cumulative impacts on public and occupational health would not substantially vary from the estimated latent cancer fatalities presented in Section 4.2.11.1.

Ongoing and anticipated operations at the Padacah Gaseous Diffusion Plant involve truck and rail transportation of radioactive materials, including raw materials, products, and wastes. Such shipments would result in radiation dose to members of the public. Existing conditions at the Portsmouth Gaseous Diffusion Plant involve approximately 35 truck shipments per year of low-level waste, resulting in an estimated 7.4×10^{-6} millisieverts per year (7.4×10^{-4} millirem per year) dose to the maximum exposed individual (DOE, 2004a). Operation of the depleted UF_6 conversion facility would involve approximately 435 truck shipments per year, including shipments of depleted UF_6 from the East Tennessee Technology Park to the DOE reservation, resulting in an estimated 2.8×10^{-5} millisieverts per year (2.8×10^{-3} millirem per year) dose to the maximum exposed individual, and an estimated 18 rail shipments per year, resulting in an estimated 1.9×10^{-5} millisieverts per year (1.9×10^{-3} millirem per year) dose to the maximally-exposed individual (DOE, 2004a). Other ongoing and anticipated actions, including existing depleted UF_6 management operations, site remediation activities, and standby and reindustrialization of the Portsmouth Gaseous Diffusion Plant, would involve approximately 220 truck shipments per year and approximately 200 rail shipments per year, resulting in an estimated 8.5×10^{-5} millisieverts per year (8.5×10^{-3} millirem per year) dose to the maximum exposed individual. The total dose to the maximum exposed individual from transportation under existing conditions, ongoing operations, and anticipated actions other than the proposed ACP is 7.7×10^{-5} millisieverts per year (7.7×10^{-3} millirem per year) for truck transportation and 6.2×10^{-5} millisieverts per year (6.2×10^{-3} millirem per year) for rail transportation. (DOE, 2004a)

The dose to the maximum exposed individual from truck and rail transportation for proposed ACP facility operations would be 9.4×10^{-11} person-sievert per year (9.4×10^{-9} person-rem per year). Considering the overall dose from transportation conducted under existing conditions, and ongoing and anticipated operations, the cumulative radiological impacts to the public from transportation would be SMALL.

4.3.9.2 Site Preparation and Construction Activities

The cumulative impacts associated with site preparation and construction activities on public and occupational health would result from a longer construction period, up to six years, and the construction schedules for the facilities would not overlap. Some of the same workers may be involved in the site preparation and construction activities for the proposed ACP as for the depleted UF_6 conversion facility. However, the potential annual radiological exposure to an onsite worker (0.88 millisieverts per year [88 millirem per year]) would not exceed the applicable dose limits for the general public of 1 millisievert per year (100 millirem per year) limit listed at 10 CFR § 20.1301(a)(1). During the site preparation and construction activities, the potential dose to offsite personnel would not increase. The maximum exposure to offsite personnel would be less than 0.001 millisieverts per year (0.1 millirem per year) (see Appendix C).

4.3.9.3 Operations

The ongoing environmental restoration program at the DOE reservation would not result in development of new sources of radiation emission, therefore, the cumulative analysis focus on the depleted UF_6 conversion facility and the proposed ACP.

The estimated dose to involved workers at the depleted UF_6 conversion facility is 0.75 millisieverts per year (75 millirem per year), which is less than the applicable dose limits for the general public of 1 millisieverts per year (100 millirem per year) limit listed at 10 CFR § 20.1301(a)(1) and well below the 10 CFR § 20.1201 limit of 50 millisieverts (5,000 millirem) for involved workers (i.e., workers in radiologically controlled areas) (DOE, 2004b). The estimated dose to involved workers at the proposed ACP facility is up to 0.29 millisieverts per year (29 millirem per year), which is well below the regulatory thresholds. Because the workers at depleted UF_6 conversion facility and the proposed ACP would not be working at both facilities, there would not be a cumulative exposure and even considering the overall collective dose to workers from existing conditions, and ongoing and anticipated operations at the DOE reservation, the cumulative radiological impacts to workers from existing conditions and ongoing and anticipated site operations will be SMALL.

To assess the cumulative impacts on public health, the potential cumulative impacts of radiological air emissions from the depleted UF_6 conversion facility and the proposed ACP were analyzed. Radiological releases to air from both facilities would be routinely monitored to ensure that releases are at or below the expected and regulated quantities. In addition, under the environmental restoration program, DOE collects data from a monitoring network of 15 ambient air samplers (DOE, 2004b). The monitoring network is intended to assess whether the radiological air emissions from the DOE reservation, as a whole, affect air quality in the surrounding area. Data are collected both onsite and in the area surrounding the DOE reservation. A background ambient air monitoring station is located approximately 21 kilometers (13 miles) southwest of the site. The analytical results from air sampling stations closer to the plant are compared to background measurements (DOE, 2004b).

Based on the predicted emission rates associated with the depleted UF_6 conversion facility and the proposed ACP, and the comprehensive site monitoring program, the cumulative radiological emissions would result in a SMALL impact on air quality.

The cumulative effect of operating the depleted UF_6 conversion facility and the proposed ACP may result in the doubling of the radiation measured at the fence line of the DOE reservation. Current measurements indicate that the maximum value is approximately 0.001 millisieverts per year (0.1 millirem per year), and the operation of the depleted UF_6 conversion facility and the proposed ACP would introduce new sources of radiological emissions. The new emissions may increase to an average of 0.002 millisieverts per year (0.2 millirem per year). The value of 0.002 millisieverts per year (0.2 millirem per year) would be far less than the applicable dose limits for the general public of 1 millisievert per year (100 millirem per year) limit listed at 10 CFR § 20.1301(a)(1) and would result in a SMALL cumulative impact.

The probability for cumulative impacts on public and occupational health resulting from accidents was also analyzed. Such accidents could range from likely accidents (occurring an average of one or more times in 100 years) to extremely rare (occurring an average of less than one time in a million years). Such accidents are associated with the depleted UF_6 conversion facility and the proposed ACP. Because of the low probability of two accidents happening at the same time, the cumulative consequences of such an event were not analyzed. The probability of two likely accidents occurring at the same time is very low, the product of their individual probabilities being 0.0001. Moreover, in the event that two facility accidents from the likely category occurred at the same time, the consequences for the public would still be SMALL (DOE, 2004a).

4.3.10 Waste Management

Sanitary and industrial waste generated from all operations and activities at the DOE reservation would be disposed primarily at the Pike County Landfill, with the Rumpke Beach Hollow Landfill being available as an alternate. The wastes generated and transferred to the landfills would not substantially change the nature of wastes currently handled or affect the disposal capacity at the local landfills. Therefore the impact of sanitary and industrial waste generated from facility operations would be SMALL.

Hazardous wastes would be generated by the depleted UF_6 conversion facility, the Paducah Gaseous Diffusion Plant, the ongoing environmental restoration activities, and the proposed ACP facility. USEC would manage its wastes with the intent to store onsite only as a last resort. DOE is decreasing its permitted waste storage management areas in order to provide increased space available for USEC's advanced technology centrifuge program. United States Enrichment Corporation would continue to utilize DOE storage facilities for hazardous and mixed wastes that it must keep onsite for more than 90 days, but would continue to store its low-level waste independent of DOE, and ship as much of its waste as possible offsite for recycling, treatment, and disposal.

Potential cumulative effects from management of hazardous materials would be SMALL. The operation of the depleted UF_6 conversion facility and the proposed ACP, follow the same regulatory requirements, perform required inspections, and manage hazardous materials in a manner that is protective of the environment.

Section 3113(a) of the *USEC Privatization Act* (Public Law 104-134) requires DOE to accept low-level waste, including depleted uranium that has been determined to be low-level waste, for disposal upon the request and reimbursement of costs. DOE has stated that depleted uranium transferred under this provision of law in the future, would most likely be in the form of depleted UF_6, thus adding to the inventory of material needing conversion at a depleted UF_6 conversion facility. DOE stated that, "…it is reasonable to assume that the conversion facilities could be operated longer than specified in the current plans in order to convert this material" (DOE, 2004a).

To review the cumulative impacts on national waste disposal to include the conversion of depleted UF_6 and the ultimate disposal of U_3O_8 produced from the depleted UF_6 conversion facilities at Portsmouth, Ohio, and Paducah, Kentucky, this EIS analyzed the existing inventories of depleted UF_6 as presented in the *Portsmouth Annual Environmental Report for 2003* (DOE, 2004b) and *Final Environmental Impact Statement for Construction and Operation of a Depleted Uranium Hexafluoride Conversion Facility at the Paducah, Kentucky Site* (DOE, 2004c), and the production of depleted UF_6 from the proposed ACP and the proposed National Enrichment Facility in Lea County, New Mexico. For the purposes of this analysis, NRC assumed that ceasing operations at Paducah, resulting in no more depleted UF_6 generation at that site, and the start up of the proposed ACP and the resulting generation of depleted UF_6 would result in a "no-net increase" of depleted UF_6.

The existing DOE inventory of depleted UF_6 includes cylinders stored at the Paducah Site, the Portsmouth Site, and the East Tennessee Technology Park. Approximately 440,000 metric tons (485,017 tons) of depleted UF_6 are stored at the Paducah Site, 250,000 metric tons (275,578 tons) of depleted UF_6 are stored at the Portsmouth Site, and approximately 75,000 metric tons (82,673 tons) at the East Tennessee Technology Park (DOE, 2004b; DOE, 2004c). The proposed National Enrichment Facility would generate approximately 197,000 metric tons (217,155 tons) of depleted UF_6 (NRC, 2005). The proposed ACP would generate approximately 512,730 metric tons (535,200 tons) of depleted UF_6 (USEC, 2004c).

The design capacity of the Portsmouth conversion facility is 13,500 metric tons per year (14,881 tons per year) of depleted UF_6, and would require 18 years of operation to convert the amount of depleted UF_6 in the Portsmouth and East Tennessee Technology Park inventories (DOE, 2004a). The design capacity of the Paducah conversion facility is 18,000 metric tons per year (19,841 tons per year) of depleted UF_6, and would require 25 years of operation to convert the amount of depleted UF_6 in the Paducah inventory (DOE, 2004c).

The Paducah conversion facility would generate approximately 6,000 cubic meters or approximately 14,300 metric tons, (7,850 cubic yards or 15,763 tons) per year of depleted triuranium octaoxide over the 25-year license period from converting the depleted UF_6 that is stored at the Paducah Site (DOE, 2004c). The Portsmouth conversion facility would generate approximately 3,570 cubic meters or approximately 10,800 metric tons (4,700 cubic yards or 11,905 tons) per year of depleted triuranium octaoxide over the 18-year license period from converting the depleted UF_6 that is stored at the Portsmouth and East Tennessee Technology Park sites (DOE, 2004a). This amounts to a total of 214,725 cubic meters (280,850 cubic yards) of depleted triuranium octaoxide for disposal, representing approximately 10.3 percent of the available disposal capacity of the Envirocare facility.

The additional depleted UF_6 generated by the proposed ACP and National Enrichment Facility would generate an additional 707,730 metric tons (752,355 tons), which at the current processing rates would require both conversion facilities to operate for an additional 24 years.

All of the depleted triuranium octaoxide produced from the depleted UF_6 conversion facilities and all the depleted U_3O_8 produced from the depleted UF_6 that is stored at the Portsmouth and Paducah Sites could be disposed of at the Envirocare facility in Utah. The available disposal capacity of the Envirocare facility as of December 2002 was 2.07 million cubic meters (2.71 million cubic yards).

Overall the depleted triuranium octaoxide, that would be generated from converting the depleted UF_6 produced by the proposed ACP, the depleted UF_6 produced by the National Enrichment Facility, and the depleted UF_6 stored at the Portsmouth and Paducah sites would represent approximately 20 percent of the available disposal capacity of the Envirocare facility.

The depleted U_3O_8 from the conversion facilities would be generated over a period of several decades of operation, and over this period of time other licensees would also be generating low-level waste that would also be required to be disposed of at licensed facilities. Ultimately the entire existing 2.1 million cubic meters (2.7 million cubic yards) disposal capacity of the Envirocare facility would be utilized. The depleted U_3O_8 generated by the conversion facilities would contribute approximately 20 percent of the total capacity utilization. In order to address this circumstance, private entities could develop additional low-level waste disposal capacity during that time frame, or DOE could decide to dispose of the depleted U_3O_8 at the Nevada Test Site facility rather than at Envirocare. In either case, it is anticipated that the cumulative effect of the generation and disposal of depleted U_3O_8 on licensed low-level waste disposal capacity would be SMALL.

4.4 Impacts of the No-Action Alternative

As discussed in Section 2.2 of this EIS, the no-action alternative would consist of USEC not constructing, operating, or decommissioning the proposed ACP at Piketon. The buildings and land proposed to be used for the ACP at the DOE reservation in Piketon would therefore be available for some other use. At the same time, the uranium fuel fabrication facilities in the United States would continue to obtain low-enriched uranium from currently available sources, including the Paducah Gaseous Diffusion Plant, and the downblending of highly enriched uranium under the “Megatons to Megawatts” program. In order to meet growing demands for enriched uranium, additional domestic enrichment facilities

utilizing a more efficient technology in the future could be constructed. This could include the gas centrifuge facility proposed by Louisiana Energy Services near Eunice, New Mexico, as well as other possible facilities. The associated impacts associated with the existing uranium fuel cycle activities in the U.S. would continue as expected today if the proposed ACP is not constructed, operated, or decommissioned.

If any additional domestic enrichment facilities are proposed in the future, the environmental impacts at any alternate site(s) would have to be assessed in a separate *National Environmental Policy Act* review. Impacts at any such alternate site(s) may be larger than those associated with the proposed action involving the ACP if all the facilities need to be built from scratch (about half of the proposed ACP facilities already exist). The construction and operation of another enrichment facility in the United States, needed to fulfill growing demands, could result in more or less impacts than the proposed action, depending on the particulars of the proposed action and ecological conditions at any alternate site(s). However, those impacts would have to be evaluated in a separate National Environmental Policy Act review and would likely be avoided or mitigated to the point where they are considered SMALL. Assuming that review and associated consultations with preservation officials follow standard procedures, impacts to any resources of concern should be avoided or mitigated to the point of being SMALL. However, any alternative sites and facilities would be subject to a separate National Environmental Policy Act review that would endeavor to avoid or mitigate potential visual and scenic impacts to the point that they can be considered SMALL.

The following sections evaluate the potential impacts associated with this no-action alternative. Each of the same resource areas evaluated for the proposed action in Section 4.2 are briefly assessed here in the same order as above.

4.4.1 Land Use Impacts

Under the no-action alternative, the facilities currently leased to USEC for the ACP would remain leased to USEC. Some of these facilities would likely continue to be used for the Lead Cascade Demonstration Facility, which is currently scheduled to operate until the middle of 2008 in order to continue to provide a demonstration of the gas centrifuge enrichment process. Any future uses of the facilities currently proposed for the ACP would be up to USEC and DOE, but would be expected to include similar activities within the nuclear fuel cycle, consistent with USEC's and the reservation's history and mission.

If the buildings and grounds currently proposed for the ACP were in fact not used for that purpose, it is very unlikely that those buildings and grounds would be available for completely different uses. In a recent Environmental Assessment examining reindustrialization alternatives at Piketon (DOE, 2001a), DOE concluded that property currently under lease by USEC would not be available for reindustrialization, such as different kinds of light or heavy manufacturing.

Nevertheless, the current program for examining and implementing reindustrialization alternatives at the reservation would remain in place under the no-action alternative, and this program would likely lead to alternate uses of other property on the reservation just like it has in the past. Current and future reindustrialization activities would be coordinated through the Southern Ohio Diversification Initiative, the recognized community reuse organization for the DOE reservation at Piketon. DOE's Office of Worker and Community Transition established community reuse organizations to minimize the adverse effects of workforce restructuring at DOE facilities that have played an historic role in the nation's defense. These organizations provide assistance to the neighboring communities negatively affected by changes at these sites.

The Southern Ohio Diversification Initiative actively promotes the reuse of DOE property by private industry. The first lease between DOE and the Southern Ohio Diversification Initiative was signed on April 1, 1998, for 2.4 to 3.2 hectares (6 to 8 acres) of land on the north side of the DOE reservation property. The tract was used as a right-of-way for a railroad spur to connect with the existing DOE north rail spur. A portion of this property was then subleased by the Southern Ohio Diversification Initiative to the Mead Corporation for access to the rail line for a new wood grading operation. This action was covered under *National Environmental Policy Act* Categorical Exclusion Number CX-POR-522, completed in 1997. A second lease between DOE and the Southern Ohio Diversification Initiative was signed on October 13, 2000, for 4.9 hectares (12 acres) of land adjacent to the area of the first lease. This tract will be used for additional railroad spurs and use of existing rail facilities. This action was covered under *National Environmental Policy Act* Categorical Exclusion Number CX-PORTS-538. (DOE, 2001a)

Other alternate uses of reservation property that have been approved and implemented in the recent past include the following:

- Right-of-way easement for a waterline and sewer line;
- License for non-Federal use of property for concurrent road usage;
- Recreational license to Scioto Township for development of a community park;
- Greenway licenses to Scioto Township and Seal Township; and
- Lease/license (short-term) for use of parking lots by the Southern Ohio Diversification Initiative.

All of these efforts to find alternative uses of property on the Piketon reservation would continue under the no-action alternative, but they would not be broadened to include the facilities and grounds currently proposed for the ACP. The facilities and grounds proposed for the ACP are unavailable for reindustrialization and would be expected to be used in some other way related to uranium enrichment, if not used for the ACP. Therefore, the land use impacts of the no-action alternative would be SMALL.

4.4.2 Historic and Cultural Resources Impacts

The no-action alternative would involve no new construction or land disturbance activities that could threaten historic and cultural resources of interest in the area of potential effect. Any alternate proposal for additional domestic enrichment facilities would have to be examined to determine potential impacts to historic and cultural resources.

4.4.3 Visual and Scenic Impacts

Under the no-action alternative, the proposed ACP facilities would not be constructed, and the DOE reservation at Piketon would look just like it is presently planned to look. Any visual and scenic impacts would be transferred to the site(s) of additional enrichment facilities built elsewhere, and would likely be greater than those of the proposed action if that site is presently not as industrialized as the DOE reservation at Piketon.

4.4.4 Air Quality Impacts

Under the no-action alternative, air quality in the general area would remain at its current levels described in Section 3.5. The fugitive dust associated with the proposed ACP site preparation and construction activities and the resulting temporary increase in particulate matter concentrations would be avoided. The Paducah Gaseous Diffusion Plant would continue to operate at its current level with the existing emissions associated with the coal combustion needed to support that technology. Additional domestic enrichment facilities could be built at alternate sites in the future, with site-specific impacts that would

have to be assessed in a separate environmental review. Because it is likely that more construction would be needed at sites other than Piketon (since half the facilities needed at Piketon already exist), the air quality impacts associated with construction at alternate sites would likely be greater than those assessed for the proposed action. However, any such construction-related impacts would be temporary and subject to best management practices and air quality regulatory controls. Any air quality impacts associated with operations at alternate sites would likely be small, assuming the use of gas centrifuge technology, which does not emit substantial quantities of air pollutants. For these reasons, the air quality impacts of the no-action alternative are expected to be SMALL.

4.4.5 Geology and Soils Impacts

Under the no-action alternative, no major new construction would be undertaken by the United States Enrichment Corporation or USEC at the reservation in Piketon. Current industrial activities at the site would continue, with the same level of disturbance to the land and the same threat of soil contamination. The no-action alternative would not be expected to give rise to alternate activities at the reservation that would substantially increase the potential for geology or soils impacts at Piketon. If additional domestic enrichment facilities are built in the future, the geology and soils impacts at any alternate site(s) may be larger than those associated with the proposed action if all the facilities needed to be built from scratch (about half of the proposed ACP facilities already exist). However, even in this case, limited impacts to geology would be expected and any impacts to soils would likely be temporary and controlled. Therefore, the impacts of the no-action alternative on these resources would be SMALL.

4.4.6 Water Resource Impacts

Under the no-action alternative, the small impacts to surface water and groundwater caused by the proposed action would be avoided, and current activities at the reservation at Piketon and at the Paducah Gaseous Diffusion Plant would continue with their same level of impacts. Water usage rates and wastewater discharge rates at Piketon would continue to be well below system design capacities and historical operating levels. Additional domestic enrichment facilities could be built at alternate sites in the future, and the impacts to water resources would likely be similar to those described in this EIS for the proposed action. Therefore, the water resource impacts associated with the no-action alternative are expected to be SMALL.

4.4.7 Ecological Impacts

The no-action alternative would avoid the need to clear and grade the 10-hectare (24-acre) area needed for the X-745H Cylinder Storage Yard north of Perimeter Road, which has the potential for small impacts to the local habitat and water quality in nearby tributaries leading to Little Beaver Creek. All activities at Piketon would continue on their present course without any new or greater ecological impacts. If additional domestic enrichment facilities are built in the future, the ecological impacts at any alternate site(s) may be larger than those associated with the proposed action if all the facilities needed to be built from scratch (about half of the proposed ACP facilities already exist), and if the selected site(s) have more pristine or sensitive ecological features. However, even in this case, ecological impacts would be expected to be limited and mitigated. Therefore, the ecological impacts of the no-action alternative are expected to be SMALL.

4.4.8 Socioeconomic Impacts

Under the no-action alternative, UF_6 production would continue at the Paducah Gaseous Diffusion Plant, avoiding the impacts to the Paducah region of influence that would arise from cessation of enrichment operations at that site. The most significant avoided impact of the no-action alternative would be the

adverse effect to employment in the region surrounding Paducah, as described in Section 4.2.8.4. The level of activity at Paducah would remain temporarily constant under the no-action alternative and those jobs would not be lost.

On the other hand, the no-action alternative would also imply that none of the socioeconomic benefits associated with the proposed action, including increased employment, income, and tax revenues described in Sections 4.2.8.2 and 4.2.8.3, would accrue to the community in the Piketon region of influence. Adverse effects to the Piketon region of influence would include the loss of approximately 1,500 direct and indirect jobs during the 30-year operations phase, 3,362 direct and indirect jobs during the five-year construction phase, and 2,130 direct and indirect jobs during the 10-year manufacturing phase that would have been created by the proposed action.

Eventually, additional domestic enrichment facilities would likely be built in one or more other places in order to meet the nation's growing demand for enriched uranium. This would be expected to result in the same cessation of activities at Paducah as under the proposed action, and the same socioeconomic impacts of the proposed action but an alternate location. Therefore, the socioeconomic impacts of the no-action alternative are expected to be SMALL.

4.4.9 Environmental Justice Impacts

Since the no-action alternative would not be expected to cause any high and adverse impacts, it should not raise any environmental justice issues. Therefore, any impacts would be SMALL.

4.4.10 Noise Impacts

Under the no-action alternative, the nature and scale of existing activities at Piketon and Paducah, and their associated noise levels, would remain constant. Additional domestic enrichment facilities could be constructed in the future. Depending on the construction methods and design of these facilities, the likely noise impact would be similar to that described for the proposed action. Therefore, noise impacts would be expected to be SMALL.

4.4.11 Transportation Impacts

Under the no-action alternative, traffic volumes and patterns would remain the same as described in Sections 3.12 and 4.2.11. Transportation of materials to, from, and between the Paducah and Portsmouth Gaseous Diffusion Plants would continue at present levels. Wastes resulting from United States Enrichment Corporation activities at Piketon would continue to be shipped off the reservation to treatment and disposal facilities, at rates and along routes similar to the current pattern. Additional domestic enrichment facilities could be constructed in the future, with transportation impacts likely to be similar to those described here for the proposed action. Overall, the transportation impacts of the no-action alternative would be expected to be SMALL.

4.4.12 Public and Occupational Health Impacts

Under the no-action alternative, there would not be any new activities that would pose a risk of worker injuries and illnesses and no new releases of non-radiological or radiological contaminants that could result in greater public exposures and health risks. All levels of activities, releases, and health impacts would remain constant and the subject of ongoing monitoring and assessment programs. The public and occupational health impacts of any other domestic enrichment facilities that would need to be built instead of the proposed ACP would also be expected to be appropriately controlled through engineering

design, best management practices, and regulatory controls. Therefore, the public and occupational health impacts of the no-action alternative would be expected to be SMALL.

4.4.13 Waste Management Impacts

Under the no-action alternative, new wastes, including sanitary, hazardous, low-level radioactive, and low-level mixed wastes, would not be generated, managed, and disposed. Additional domestic enrichment facilities could be constructed in the future. Depending on the construction methods, the design, and the location of these facilities relative to suitable waste management facilities, the likely waste management impacts would be similar to the proposed action. A significant difference could exist if another enrichment facility is not co-located with a depleted uranium conversion facility, like the ACP is adjacent to the new DOE conversion facility at Piketon. This would create additional requirements to transport the tails from the enrichment facility to a suitable conversion facility. That added transportation, however, would be subject to all NRC and Department of Transportation requirements and should pose only a small risk to workers and the public. Therefore, the impacts from waste management would likely be SMALL.

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(USEC, 2005c) USEC Inc. "Submittal of Additional Information Regarding the Environmental Report for the American Centrifuge Plant (TAC No. L32308)." AET 05-0059. Docket No. 70-7004. July 18, 2005.

(USEC, 2005d) USEC Inc. "Response to Request for Additional Information Regarding the Environmental Report and Reference Documents (TAC No. L32307) – Proprietary and Export Controlled Information." AET-05-0013. Docket Number 70-7004. April 15, 2005.

(WRAP, 2004) Western Regional Air Partnership. "WRAP Fugitive Dust Handbook." Prepared by Countess Environmental, Westlake Village, CA. 2004. <http://www.ndep.nv.gov/baqp/WRAP/INDEX.html> (Accessed 6/20/2005).

(Yost, 2005) Yost, Kevin, (Pike Soil and Water Conservation District). Personal communication, RE: Prime Farmlands on the DOE Reservation. June 17, 2005.

5. MITIGATION

This chapter addresses potential means to mitigate adverse environmental impacts from the proposed action as required by Appendix A of Title 10, Part 51, of the *Code of Federal Regulations* (10 CFR Part 51). Under Council on Environmental Quality regulation 40 CFR 1500.2(f), Federal agencies shall to the fullest extent possible "use all practicable means consistent with the requirements of the *National Environmental Policy Act* and other essential considerations of national policy to restore and enhance the quality of the human environment and avoid or minimize any possible adverse effects of their actions on the quality of the human environment." The Council on Environmental Quality regulations define mitigation to include activities that (1) avoid the impact altogether by not taking a certain action or parts of an action; (2) minimize impacts by limiting the degree or magnitude of the action and its implementation; (3) repair, rehabilitate, or restore the affected environment; (4) reduce or eliminate impacts over time by preservation or maintenance operations during the life of the action; or (5) compensate for the impact by replacing or substituting resources or environments. This definition has been used in identifying potential mitigation measures. As such, mitigation measures are those actions or processes (e.g., process controls and management plans) that would be implemented to control and minimize potential impacts from construction and operation activities for the proposed American Centrifuge Plant (ACP).

USEC Inc. (USEC) must comply with applicable laws and regulations, including obtaining all appropriate construction and operating permits. A complete discussion of applicable laws and regulations is included in Chapter 1 of this Environmental Impact Statement (EIS). The mitigation measures proposed by USEC, many of which are compliance related are discussed in Section 5.1.

Based on the potential impacts identified in Chapter 4 (Environmental Impacts), the U.S. Nuclear Regulatory Commission (NRC) staff has identified additional potential mitigation for the proposed ACP. These mitigation measures are described in Section 5.2.

The proposed mitigation measures provided in this chapter do not include environmental monitoring activities. Environmental monitoring activities are described in Chapter 6 of this Environmental Impact Statement.

5.1 Mitigation Measures Proposed by USEC

USEC identified mitigation measures in the Environmental Report (USEC, 2005a) that would reduce the environmental impacts associated with the proposed action. Table 5-1 lists the mitigation measures impact areas for the construction phase of the proposed action. Table 5-2 lists the mitigation measures impact areas for operations.

Table 5-1 Summary of Preliminary Mitigation Measures Proposed by USEC for Construction

Impact Area	Activity	Proposed Mitigation Measures
Geology and Soils	Soil disturbance	Use best management and construction practices to minimize the extent of excavation.
		Install physical barriers such as silt fences and straw bales, and re-seed disturbed areas to minimize erosion and sediment runoff.
	Soil contamination	Implement a Spill Prevention, Control, and Countermeasures Plan (SPCC).
		Sample, analyze and manage contaminated soils in accordance with NRC, State and other Federal requirements.
Water Resources	Runoff	Install physical barriers such as silt fences and straw bales, and re-seed disturbed areas to minimize erosion and sediment runoff.
		Use engineering controls, and best management and construction practices to minimize the extent of excavation.
		Implement an SPCC.
		Outside areas and the building roofs drain to the storm sewer.
	Water use	Implement a Pollution Prevention Plan to reduce or eliminate discharge of waste.
	Groundwater	Implement an SPCC.
		Sample, analyze and manage contaminated soils in accordance with NRC, State and other Federal requirements.
Ecological Resources	Wetlands disturbance	Maintain a buffer near adjacent wetlands during construction and place temporary lay-down areas on previously disturbed areas.
		Institute compensatory mitigation if impacts to wetlands are unavoidable.
Air Quality	Fugitive dust	Use dust suppression techniques to reduce release of dust during excavation under dry conditions.

Source: USEC, 2005a.

Table 5-2 Summary of Preliminary Mitigation Measures Proposed by USEC for Operations

Impact Area	Activity	Proposed Mitigation Measures
Geology and Soils	Cylinder storage	Implement an SPCC.
		Conduct routine visual inspections and preventive maintenance.
		In the case of release of liquid effluent, use absorbent spill equipment adjacent to the perimeter of the cylinder storage yards. Excavation of affected soils and implement confirmatory sampling to verify that there is no residual contamination. Use clean fill soils in the excavated areas.
	Aboveground storage	Implement an SPCC.
		Conduct routine visual inspections and preventive maintenance.
		Construct above ground storage tanks of appropriate materials.
		Sample accumulated water in tanks and manage according to analytical results.
		Use secondary containment for tanks storing petroleum products.
		Maintain spill cleanup materials in the areas of fuel line and tank hose connections.
		Sample, analyze and manage contaminated soils in accordance with NRC, State and other Federal requirements.
Water Resources	Runoff	Implement an SPCC.
		Conduct routine visual inspections and preventive maintenance of tanks, impoundment dikes.
		Use trained professionals to respond to any spills within process buildings.
	Water use	No wastewater would be discharged from the liquid effluent tanks.
	Groundwater	Implement a Pollution Prevention Plan to reduce or eliminate discharge of waste.
		Implement an SPCC.
		Conduct routine visual inspections and preventive maintenance.
		Sample, analyze and manage contaminated soils in accordance with NRC, State and other Federal requirements.
		Sample accumulated water in tanks and manage according to analytical results.
Public and Occupational Health	Generation of hazardous wastes	Implement a Hazardous Materials Policy to ensure proper identification of hazardous materials provide training on job-specific hazards, emergency procedures, incident management, medical surveillance, and decontamination.
Air Quality	Accidental gaseous releases	Use alumina traps to collect solidified uranyl fluoride.
Waste Management	Generation of industrial, hazardous, radiological, and mixed wastes	Implement an SPCC.
		Implement a Hazardous Materials Policy to eliminate or reduce to levels as low as reasonably achievable, generation of hazardous wastes.
		Implement a Pollution Prevention Program to reduce or eliminate pollution.

Source: USEC, 2005a.

No mitigation measures were identified for the resource areas of:

- Land Use;
- Transportation;
- Noise;
- Historical and Cultural Resources;
- Visual/Scenic Resources;
- Socioeconomics;
- Public and Occupational Health; and
- Environmental Justice.

5.2 Potential Mitigation Measures Identified by NRC

The U.S. Nuclear Regulatory Commission (NRC) staff has reviewed the mitigation measures proposed by USEC for the proposed ACP and has identified additional potential mitigation measures in addition to those proposed by USEC. Additional potential mitigation measures were only identified for environmental resource areas for which analyses identified a potential for impacts and where the measure would be sufficiently beneficial as to warrant implementation. Potential mitigation measures in addition to those proposed by USEC were identified for air quality (Table 5-3). Because the percentage reduction in particulate matter emissions due to implementation of this measure is expected to be small, and because the site is located in an area that is exempt from restrictions on emissions from fugitive dust, the NRC staff does not believe inclusion of this mitigation measure as a license condition for the proposed ACP is warranted.

Table 5-3 Summary of Potential Mitigation Measures Identified by NRC for Construction

Impact Area	Activity	Proposed Mitigation Measures
Air Quality	Particulate Matter	Use Tier 2 construction-related vehicles (2000 to 2005-model year equipment depending on engine horsepower rating) to reduce diesel emissions. Use ultra-low sulfur diesel.

No additional mitigation measures were identified by NRC staff for facility operations or decommissioning the proposed ACP.

5.3 References

(USEC, 2005a) USEC Inc. “Environmental Report for the American Centrifuge Plant in Piketon, Ohio.” Revision 6. NRC Docket No. 70-7004. November 2005.

(USEC, 2005b) United States Enrichment Corporation. “POEF-EW-16, Revision 3, Best Management Practices for the United States Enrichment Corporation, March 4.” Responses to Request for Additional Information on the Environmental Report, AET 05-0013. April 15, 2005.

6. ENVIRONMENTAL MEASUREMENT AND MONITORING PROGRAMS

This chapter describes the proposed environmental measurements and monitoring program proposed to characterize the effects of potential radiological and nonradiological releases from the proposed American Centrifuge Plant (ACP) in Piketon, Ohio on human health and the environment. Measurement and monitoring programs include direct monitoring of radiological and physiochemical gaseous and liquid effluents from facility operations, and monitoring and measurement of ambient air, surface water, sediment, groundwater, soils, biota, and direct [gamma] radiation in the vicinity of the proposed ACP.

The proposed ACP would be located contiguous to an existing uranium enrichment plant, the Portsmouth Gaseous Diffusion Plant, at which uranium and UF_6 have been managed for approximately 50 years. The Portsmouth Gaseous Diffusion Plant was operated by the United States Enrichment Corporation, a subsidiary of USEC, from 1993 until it was placed in cold standby in 2002, and by predecessor organizations of the United States Enrichment Corporation prior to 1993. The environmental monitoring system for the proposed ACP is based on the experience and data accumulated at the Portsmouth Gaseous Diffusion Plant.

6.1 Radiological Measurements and Monitoring Program

The radiological monitoring and measurement program for the proposed ACP was developed in accordance with NRC Regulatory Guidelines (see Table 6-1). The NRC requires that a radiological monitoring program be established for the proposed ACP to monitor and report the release of radiological air and liquid effluents to the environment.

Table 6-1 Guidance Documents that Apply to the Radiological Monitoring Program

Document	Applicable Guidance
Regulatory Guide 4.15[1]	"Quality Assurance for Radiological Monitoring Programs (Normal Operations) - Effluent Streams and the Environment." This guide describes a method acceptable to the NRC for designing a program to ensure the quality of the results of measurements for radioactive materials in the effluents and the environment outside of nuclear facilities during normal operations.
Regulatory Guide 4.16[2]	"AMonitoring and Reporting Radioactivity in Releases of Radioactive Materials in Liquid and Gaseous Effluents from Nuclear Fuel Processing and Fabrication Plants and Uranium Hexafluoride Production Plants." This guide describes a method acceptable to the NRC for submitting semiannual reports that specify the quantity of each principal radionuclide released to unrestricted areas to estimate the maximum potential annual dose to the public resulting from effluent releases.

Notes:
[1] NRC, 1985.
[2] NRC, 1979.

Compliance with Title 10, "Energy,"of the *U.S. Code of Federal Regulations* (10 CFR) §20.1301 would be demonstrated using a calculation of the total effective dose equivalent to the individual who would likely receive the highest dose in accordance with 10 CFR § 20.1302(b)(1). Regulatory Guide 1.109, "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I" describes the methodology for determining the total effective dose equivalent to the maximum exposed individual (NRC, 1977). Administrative action levels would be established for air emissions and wastewater effluent samples and monitoring instrumentation based on normal background radionuclide concentrations, existing administrative limits, and regulatory limits.

Table 6-2 provides a summary of the environmental measurement and monitoring program sampling locations, parameters, and frequency proposed for the ACP.

Table 6-2 Radiological Environmental Measurement and Monitoring Program Sampling Locations, Parameters, and Frequency

Media	Sampling Locations	Parameters	Frequency
Surface Water	RW-2, RW-3, RW-5, RW-7, RW-12, RW-13, RW-33, RW-10N, RW-10S, RW-10E, RW-10W	Total uranium, technicium-99, gross alpha/beta	Monthly
	RW-1, RW-6, RW-8	Total uranium, technicium-99, gross alpha/beta, fluoride, phosphorous-total	Weekly
Sediments	RM-6, RM-1, RM-12, RM-11, RM-7, RM-8, RM-5, RM-13, RM-33, RM-3, RM-2, RM-9, RM-10, RM-10N, RM-10E, RM-10S, RM-10W	Metals (Al, Sb, As, Ba, Be, Cd, Ca, Cr, Cu, Fe, Pb, Mg, Mn, Ni, K, Se, Si, Tl, Zn), Hg, Ag, PCBs, total uranium, technicium-99, gross alpha/beta	Semi-annually
Soils	(RIS-1, 3, 5, 12, 15, 17, 19, 22, 25, 26, 32, 33, 34, 35, 36) (SAS-1, 2, 3, 4, 6, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29) (RS-10N, 10S, 10E, 10W)	Total uranium, technicium-99, gross alpha/beta	Semi-annually
Vegetation	(RIV-1, 3, 5, 12, 15, 17, 19, 22, 25, 26, 32, 33, 34, 35, 36) (SAV-1, 2, 3, 4, 6, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29) (RV-10N, 10S, 10E, 10W)	Total uranium, technicium-99, gross alpha (if total uranium >0.1 ug/g), fluoride, gross alpha/beta	Semi-annually
Biota (fish)	RW-1, RW-2, RW-6, RW-8	Total uranium, technicium-99, gross alpha/beta, PCBs and Cr	Annually
Wildlife (deer)	Onsite	Total uranium, technicium-99, gross alpha/beta, fluoride, PCBs (fat, fetus)	Annually
Crops	5 to 6 locations	Total uranium, technicium-99, gross alpha (if total uranium >0.1 ug/g)	Annually

Notes:
ug/g = micrograms per gram.
Source: USEC, 2005.

Sampling and monitoring for radiological air emissions and ambient air quality are described in sections 6.1.1 and 6.1.2. Sampling and monitoring for radiological wastewater emissions and surface water and sediment are described in sections 6.1.3 and 6.1.4. Groundwater monitoring (conducted by the U.S. Department of Energy (DOE)), soils and vegetation sampling, and direct radiation monitoring are described in sections 6.1.5, 6.1.6, and 6.1.7, and laboratory standards for the monitoring and measurement program are described in Section 6.1.8.

6.1.1 Air Emissions Monitoring

Potentially radioactive airborne releases from the proposed ACP would be discharged through monitored discharge points, including:

- X-3346 Feed and Customer Services Building;
- X-3001, X-3002, X-3003,and X-3004 Process Buildings;
- X-3356 and X-3366 Product and Tails Withdrawal Building;
- X-3012 Process Support Building;
- X-7725 Recycle/Assembly Facility;
- X-7726 Centrifuge Training and Test Facility; and
- X-7727H Interplant Transfer Corridor.

Airborne release monitoring procedures for these sources would be designed in a manner to determine the quantities and concentrations of radionuclides discharged to the environment, in accordance with 10 CFR Part 70. Uranium isotopes anticipated to be released as airborne emissions would include uranium-234, uranium-235, uranium-236, and uranium-238. Specific compounds would include depleted hexavalent chromium, triuranium octaoxide (U_3O_8) and uranyl fluoride (UO_2F_2). Ventilation air emissions from the process buildings would be monitored under the Radiation Protection Program. Environmental Compliance personnel would review summaries of the monitoring data at least quarterly to verify that ventilation exhausts are insignificant as defined in NUREG-1520, *Standard Review Plan for the Review of a License Application for a Fuel Cycle Facility*, i.e., less than 1.1×10^{-8} becquerels per milliliter (3×10^{-13} microcuries per milliliter) uranium (NRC, 2002).

Vent samples (i.e., activated alumina) would be analyzed for uranium isotopes (uranium-234, uranium-235, and uranium-238) and technicium-99. Uranium isotope concentrations are determined using either alpha spectrometry or inductively coupled plasma/mass spectrometry. Technetium concentrations would be determined using liquid scintillation counting. Analytical results would be reported in micrograms of analyte per gram of alumina. These results would then be converted to grams released using recorded flow data and the measured weight of alumina in the sampler and to activity using published specific activities for individual isotopes. Gaseous effluents equivalent to an annual public dose of less than 1.0×10^{-06} sievert (0.1 millirem) are anticipated. Since the airborne concentrations in 10 CFR Part 20, Appendix B, Table 2 are equivalent to an annual dose of 0.0005 sievert (50 millirem), the minimum detectible activity of these methods would be equivalent to less than 0.2 percent of the 10 CFR Part 20, Appendix B, Table 2 values.

Airborne release monitoring for proposed ACP air emissions sources would include the following buildings:

X-3346 Feed and Customer Services Building

The Feed Area of this building sublimes uranium hexafluoride (UF_6) for feed to the enrichment process, and contains a variety of potential sources for radioactive air emissions, both as gaseous UF_6 and particulate uranyl fluoride. These sources would be vented to the atmosphere through an evacuation system, which has separate sub-systems to control gaseous and airborne particulate emissions. Both sub-systems exhaust to a continuously monitored combined vent. The Customer Services Area of this building would liquefy UF_6 for quality control sampling and transfer of UF_6 material to customer cylinders for shipment. This area also would contain multiple potential sources for radioactive air emissions, both as gaseous UF_6 and particulate UF_2. These emissions sources would vent through a similar evacuation system with another continuously monitored combined vent. Each vent would be equipped with continuous gas flow monitoring instrumentation with local readout as well as the analytical

instrumentation required to continuously sample, monitor, and to alarm UF_6 breakthrough in the vent gas stream.

X-3001, X-3002, X-3003, and X-3004 Process Buildings

The X-3001, X-3002, X-3003, and X-3004 process buildings would house the operating centrifuge machines that separate the UF_6 into enriched product and depleted tails, and contain a limited variety of potential sources for radioactive air emissions, primarily as gaseous UF_6. These sources would be vented to the atmosphere through either the purge vacuum or evacuation vacuum systems, discharged through the X-3001 process vent. Both systems would exhaust to a common continuously monitored vent. Each process building vent would be equipped with continuous gas flow monitoring instrumentation with local readout, as well as analytical instrumentation to continuously sample, monitor, and alarm UF_6 breakthrough in the vent gas stream.

A continuous vent sampler using alumina media would be used to monitor the purge vacuum and evacuation vacuum system vents for UF_6. Weekly primary sample traps would be analyzed for uranium-234, uranium-235, uranium-238, and technetium-99. A secondary trap would be replaced quarterly. USEC does not expect to detect technetium-99 in the proposed ACP, but all vent samplers at the Portsmouth Gaseous Diffusion Plant, including those to be used at the proposed ACP, would be analyzed for technetium-99. Uranium isotope concentrations would be determined using either alpha spectroscopy or inductively coupled plasma/mass spectrometry, with minimum detectable activity of less than 0.2 percent of the 10 CFR 20, Appendix B, Table 2, values. A representative sample of air effluent would be collected using an isokinetic probe and monitoring of both vent and sampler air flows.

X-3356 and X-3366 Product and Tails Withdrawal Building

The X-3356 and X-3366 buildings would withdraw and desublime both the product and tail streams from the enrichment process, and would contain a variety of potential sources for radioactive air emissions, both as gaseous UF_6 and particulate uranyl fluoride. These sources would be vented to the atmosphere through evacuation systems similar to the X-3346 building. There would be separate evacuation systems, with separate monitored vents, for the tails withdrawal and the product withdrawal areas. The effluents from both sub-systems would be combined and vented to the atmosphere through a common vent after each sub-system has removed the uranium. Each vent would be equipped with continuous gas flow monitoring instrumentation with local readout as well as the analytical instrumentation required to continuously sample, monitor and to alarm UF_6 breakthrough in the vent gas stream.

X-3012 Process Support Building

The X-3012 building provides process control functions and maintenance support. Contaminated components may be serviced in the maintenance shops in the X-3012 building. Components requiring repair or examination that have been in service will be opened using appropriate personnel protective equipment, and may also include engineered local ventilation systems to capture any residual uranium ventilation air in the X-3012 building would be monitored under the Radiation Protection Program.

X-7725 Recycle/Assembly Facility; X-7726 Centrifuge Training and Test Facility; and X-7727H Interplant Transfer Corridor

Centrifuges would be assembled and may be disassembled for repair or inspection in either the X-7725 or X-7726 facilities. Assembled equipment may be tested in Gas Test Stands. Exhaust from the test stands would pass through alumina traps to a continuously monitored vent. The vent would be equipped with continuous gas flow monitoring instrumentation with local readout, as well as the analytical

instrumentation required to continuously sample, monitor, and to alarm UF_6 breakthrough in the vent gas stream. Ventilation air in both the X-7725 and X-7726 facilities would be monitored under a Radiation Protection Program.

Fugitive emissions from the X-7726 static stand would be captured by local ventilation systems. USEC does not expect measurable emissions from the X-7726 static stand as a result of opening centrifuges that have operated on UF_6 gas.

6.1.2 Ambient Air Quality Monitoring

Between 1980 and 2002, annual gaseous uranium air emissions from the Portsmouth Gaseous Diffusion Plant ranged between 3.59×10^{10} and 1.9×10^{8} becquerel per year (0.97 and 0.005 curies per year). Ambient air samples collected over this period by the Portsmouth Gaseous Diffusion Plant operators showed that these levels of air emissions do not produce a quantifiable difference in ambient air concentrations in unrestricted areas. Facility operations at the proposed ACP are not expected to exceed the levels of gaseous uranium air emissions monitored for the Portsmouth Gaseous Diffusion Plant between 1980 and 2002 (USEC, 2005).

In addition, experience at the Portsmouth Gaseous Diffusion Plant has shown that any unplanned air emissions release of uranium large enough to produce high or intermediate consequences to human health or the environment would first produce a large and very visible cloud of white smoke at the point of release. USEC has written a procedure for the proposed ACP for dealing with unplanned releases that includes immediate reporting of observed releases to the shift manager and evaluation by the environmental professionals of available information concerning potential consequences of the release (USEC, 2005). This approach is consistent with the guidance in NUREG-1520 (NRC, 2002). Ambient air quality impacts of proposed ACP facility operations, including action levels, will be based on gaseous air emissions monitoring of process vent emissions and other information and atmospheric dispersion modeling.

The United States Enrichment Corporation ceased sampling ambient air and returned the Portsmouth Gaseous Diffusion Plant's network of permanent air samplers to DOE in 1999, which upgraded the samplers for DOE use for ambient air quality monitoring. Based on the DOE annual environmental reports published since 1999, average airborne uranium concentrations have been 1.1×10^{-15} micrograms per milliliter (1.5×10^{-19} ounces per gallon) onsite (i.e., within the DOE reservation), 7.4×10^{-16} micrograms per milliliter (9.9×10^{-20} ounces per gallon) in unrestricted areas offsite, and 5.5×10^{-16} micrograms per milliliter (7.4×10^{-20} ounces per gallon) at the DOE background station (USEC, 2005). These results are a minimum of three orders of magnitude less than the applicable discharge limits for uranium isotopes in 10 CFR Part 20, Appendix B. Therefore, USEC does not anticipate conducting any ambient air quality monitoring in addition to that conducted by DOE and reported in DOE annual environmental reports.

The United States Enrichment Corporation maintains a meteorological tower that is located on the southern section of the DOE reservation. The tower is equipped with instruments at the ground, 10-, 30-, and 60-meter (32.8-, 98.4-, and 196.9-foot) levels. Among the parameters measured are air temperature, wind speed, wind direction, relative humidity, solar radiation, barometric pressure, precipitation, and soil temperature. Data from the National Weather Service or other local sources may be used in lieu of, or to supplement, onsite data. The air emissions source monitoring data and meteorological data would be used to calculate the environmental impacts of airborne emissions from the proposed ACP using U.S. EPA-approved dispersion models.

6.1.3 Wastewater and Stormwater Discharge Monitoring

There are four principal potential sources of radioactivity discharges to surface water from the proposed ACP facility operations, including: (1) the X-6619 Sewage Treatment Plant identified as permitted outfall 003; (2) the Portsmouth Gaseous Diffusion Plant Recirculating Cooling Water System identified as permitted outfall 004; (3) the X-2230N West Holding Pond identified as permitted outfall 013; and (4) the X-2230M Southwest Holding Pond identified as permitted outfall 012 (see Figure 6-1). The X-2230M and X-2230N holding pond discharges would be equipped with automated samplers and continuous flow measurement. The combined discharge of the recirculating cooling water system, the DOE reservation sewage treatment plant discharge, and other reservation holding ponds would be also equipped with automated samplers and continuous flow measurement. Outfalls with intermittent flows would be monitored with grab samplers during periods of outfall flow. Water samples from the permitted outfalls would be analyzed for gross alpha and gross beta activity, technetium beta activity, and total uranium concentration. The gross activities would be determined by proportional counter and the technetium activity by liquid scintillation.

The minimum detectable activities for water samples are 1.85×10^{-4} becquerels per milliliter (5×10^{-9} microcuries per milliliter) for gross alpha, 5.55×10^{-4} becquerels per milliliter (1.5×10^{-8} microcuries per milliliter) for gross beta, 7.4×10^{-4} becquerels per milliliter (2×10^{-8} microcuries per milliliter) for technetium beta. The total uranium concentration would be determined by inductively coupled plasma/mass spectrometry, with a minimum detectable concentration of 0.001 micrograms per milliliter (1.35×10^{-7} ounces per gallon). The isotopic distribution of the total uranium would be estimated to match the calculated uranium alpha activity to the measured gross alpha activity. The values for liquid releases are .0111 becquerels per milliliter (3×10^{-7} microcuries per milliliter) for each of the uranium isotopes and 2.22 becquerels per milliliter (6×10^{-5} microcuries per milliliter) for technetium. Consequently, the Minimum Detectable Activities for liquid effluents would be less than two percent of the applicable 10 CFR Part 20, Appendix B, Table 2 values.

The only underground tanks at the proposed ACP used to collect material that might contain radionuclides are the liquid effluent control underground tanks located south of the X-3001 Process Building. The liquid effluent control system consists of a set of drains and collection tanks primarily for collecting leaks and spills of chemically treated water. The drains are located throughout the process buildings. The tanks have a capacity of 2,082 liters (550 gallons) each. Liquid level gauges mounted above grade on pipe stands monitor the tanks. Routine monitoring of the tanks' contents would be based on observing and tracking the levels indicated on the gauges. USEC would use level gauges to detect any unplanned releases to groundwater or soil from the liquid effluent control system inventory tracking would be relied on to indicate any leaks from the tanks. The contents of the liquid effluent control system will be sampled and analyzed for the same parameters as the continuous permitted outfalls prior to disposal.

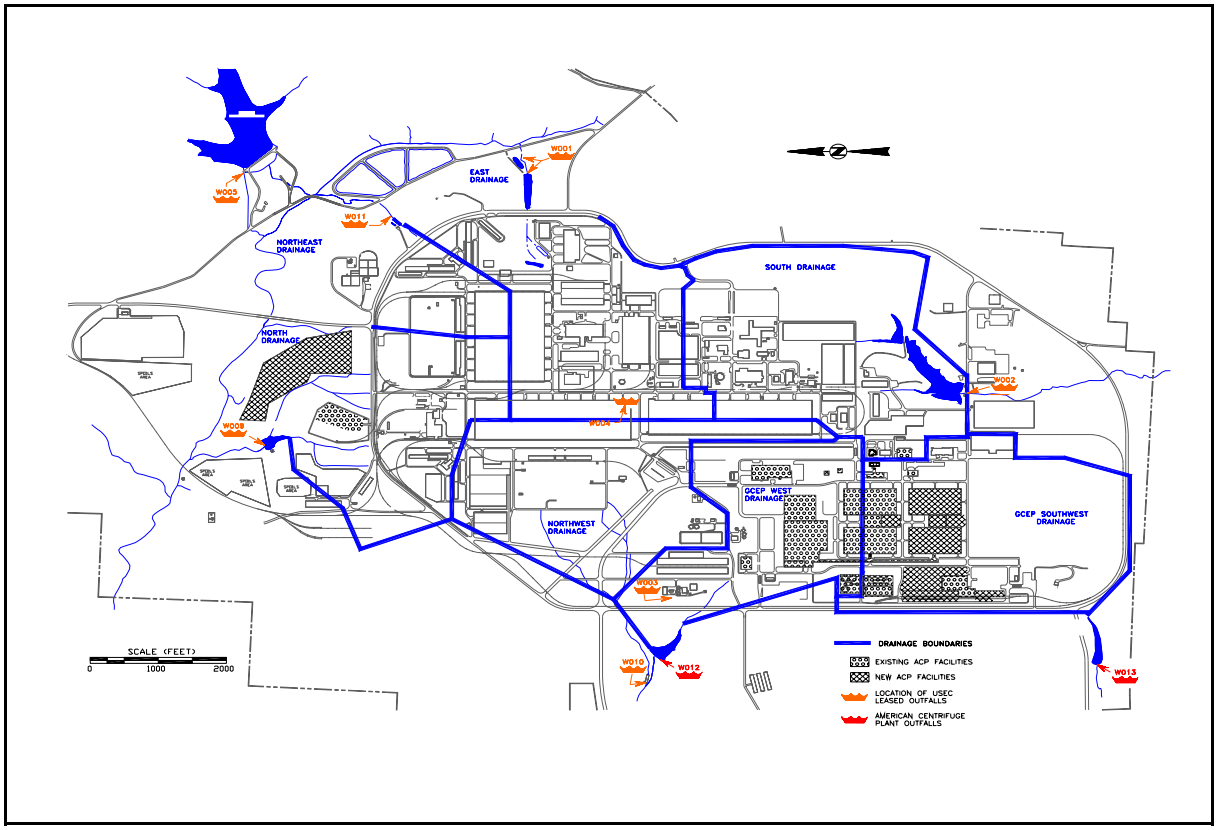

Figure 6-1 United States Enrichment Corporation National Pollutant Discharge Elimination System Outfalls at the DOE Reservation at Piketon (USEC, 2005)

6.1.4 Surface Water and Sediment Monitoring

Between 1980 and 2002, annual radiological wastewater discharges to surface water from the Portsmouth Gaseous Diffusion Plant have ranged between 2.63×10^{10} and 9.92×10^{8} becquerel per year (0.71 and 0.026 curies per year) (USEC, 2005). Surface water samples collected over this period by Portsmouth Gaseous Diffusion Plant operators show that these levels of wastewater discharges do not produce a statistically significant difference in radionuclide concentrations in the Scioto River (USEC, 2005). Facility operations at the proposed ACP are not expected to exceed the levels of wastewater discharge monitored for the Portsmouth Gaseous Diffusion Plant between 1980 and 2002. Impacts to local receiving waters from proposed ACP facility operation wastewater discharges, including action levels, will be based on discharge monitoring (described above) and pathways modeling.

United States Enrichment Corporation maintains a surface water monitoring program designed to assess the impacts to local receiving waters of wastewater discharges from DOE environmental remediation projects or historical contamination. Radiological analyses would be performed on grab samples from upstream and downstream locations in Little Beaver Creek, Big Beaver Creek, Big Run Creek, and the Scioto River (see Figure 6-2). Surface water samples would be collected weekly from the Scioto River and one location (RW8) in Little Beaver Creek. Other locations would be sampled monthly.

Analysis of sediment samples collected between 1980 and 2002 by Portsmouth Gaseous Diffusion Plant operators show that wastewater and stormwater discharges do not produce a statistically significant difference in sediment radionuclide concentrations in the Scioto River (USEC, 2005). Impacts of facility operations at the proposed ACP on sediment radionuclide concentrations in local receiving waters, including action levels, will be based on wastewater discharge monitoring pathways modeling.

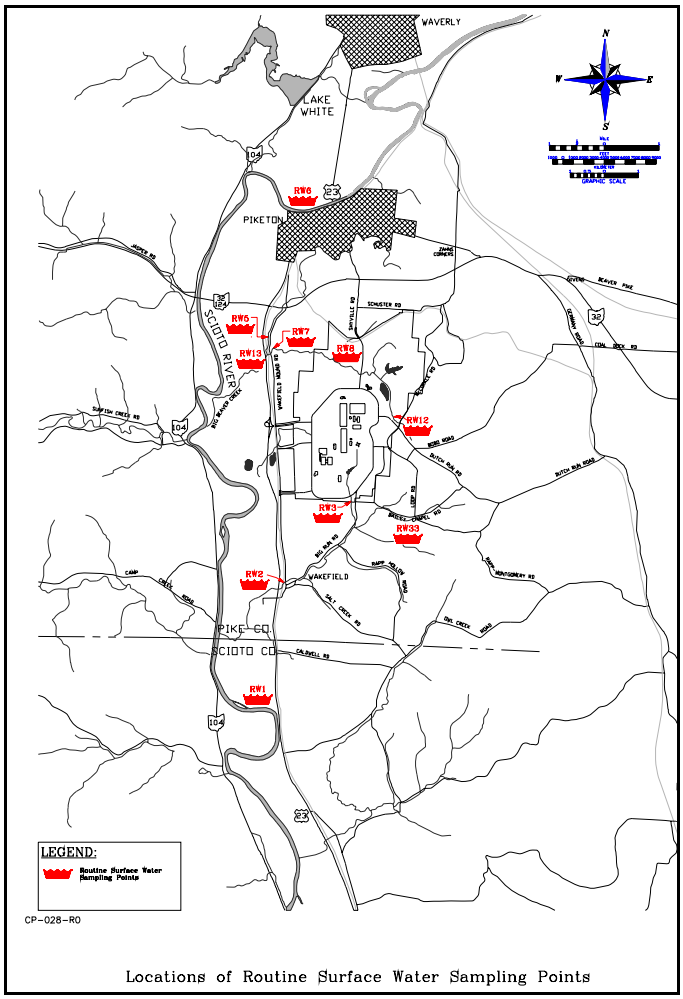

Figure 6-2 Locations of Routine Surface Water Sampling Locations (USEC, 2005)

Sediment sampling around the site would be conducted semiannually to assess potential radionuclide accumulation in the surrounding receiving streams. The sediment sampling locations include both upstream and downstream locations. Sample locations are described in Figure 6-3. Sediment sample analyses include gross alpha activity, gross beta activity, technetium beta activity, and total uranium concentration.

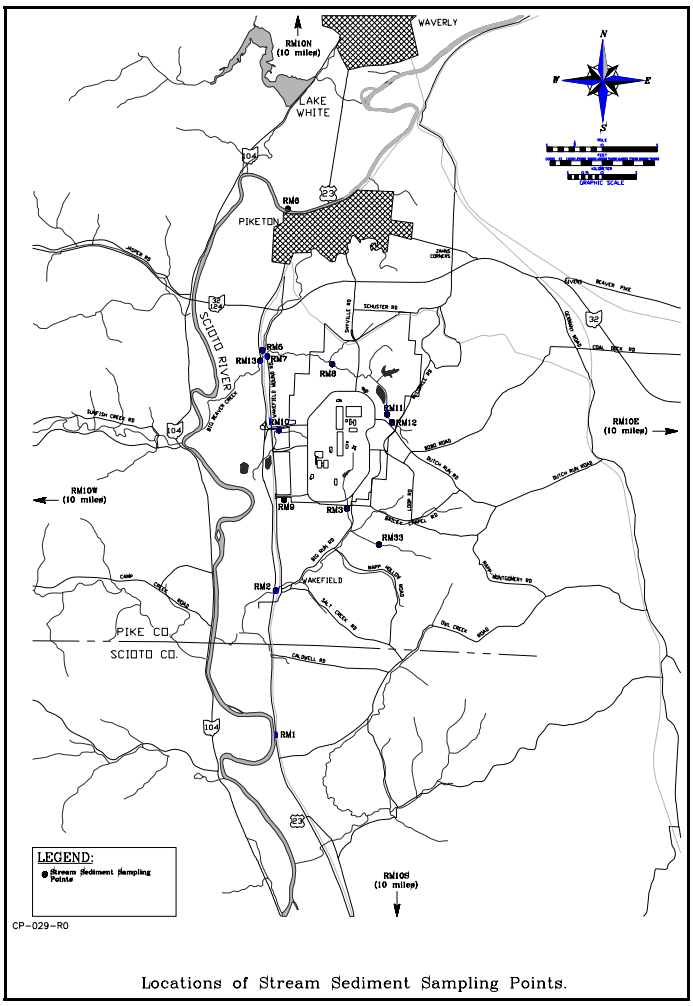

Figure 6-3 Locations of Stream Sediment Sampling Points (USEC, 2005)

6.1.5 Groundwater Monitoring

Due to historical operations, the DOE reservation has multiple plumes of groundwater contamination. The primary contaminant in the plumes is the halogenated solvent trichloroethylene, but limited areas of technetium contamination also exist. DOE is conducting groundwater monitoring as part of a site-wide environmental remediation program under an Agreed Order with the State of Ohio (USEC, 2005).

Groundwater monitoring data are reported as part of DOE's Annual Environmental Report for the DOE reservation. All groundwater monitoring conducted on the site is under the control of the DOE. United States Enrichment Corporation does not conduct a separate groundwater monitoring program.

6.1.6 Soil and Vegetation (Biota) Sampling

Between 1980 and 2002, annual uranium air emissions from the Portsmouth Gaseous Diffusion Plant have ranged between 3.59×10^{10} and 1.85×10^{8} becquerel per year (0.97 and 0.005 curies per year) (USEC, 2005). Soil and vegetation samples collected over this period by Portsmouth Gaseous Diffusion Plant operators show that these levels of air emissions do not produce a statistically significant difference in soil and vegetation concentrations in unrestricted areas. Wastewater and stormwater discharges from

the DOE reservation do not have a direct impact on soil and terrestrial vegetation around the DOE reservation. Facility Operations at the proposed ACP are not expected to exceed the levels of air emissions measured between 1980 and 2002. Therefore, impacts to soil and vegetation from ACP facility operation, including action levels, will be based on air emissions monitoring and atmospheric dispersion modeling.

United States Enrichment Corporation maintains a soil and vegetation monitoring program to assess the long-term impacts of air emissions from proposed ACP facility operations and from DOE environmental remediation projects, and to assess the impact of a high or intermediate consequence release that has already been detected and controlled (USEC, 2005). Soil and vegetation (wide-blade grass, typical of local cattle forage) samples would be collected semiannually. The sampling networks completely surround the DOE reservation, including the predominant downwind directions, and would be administratively divided into onsite, off-reservation (up to 5 kilometers [3.1 miles]) and remote (5 to 16 kilometers [3.1 to 10 miles] off-reservation). Figure 6-4 describes the sampling locations. Soil samples would be analyzed for gross alpha activity, gross beta activity, technetium beta activity, and total uranium concentration. Vegetation samples would be analyzed for technetium beta activity and total uranium concentration.

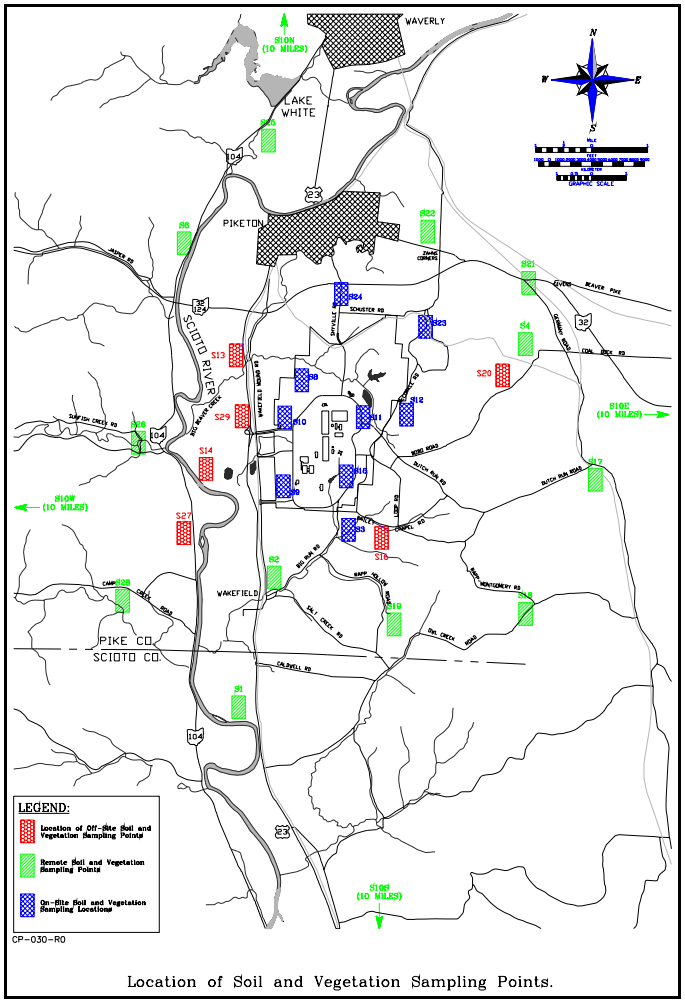

Figure 6-4 Locations of Soil and Vegetation Sampling Points (USEC, 2005)

In addition to the semiannual vegetation samples, United States Enrichment Corporation also collects annual crop samples from local gardeners and farmers on a voluntary basis. Because of the voluntary nature of these samples, the sampling locations change from year to year. Crop samples would normally be analyzed for technetium beta activity and total uranium concentration only. The analytical methods would be the same as for the vegetation samples.

6.1.7 Direct Gamma Radiation Monitoring

The only significant sources of environmental gamma radiation on site are the uranium isotope uranium-235 and the short-lived uranium-238 daughters. There would be small amounts of other gamma emitters present on site as sealed sources and laboratory standards, but direct radiation from these sources would benot detectable at any significant distance from the sources. Gamma radiation levels in unrestricted areas around the proposed ACP are dominated by naturally occurring radioactive materials.

United States Enrichment Corporation conducts external gamma radiation monitoring consisting of lithium fluoride thermoluminescence dosimeters positioned at various site locations and at locations off-reservation. There are nine dosimeters spaced around the perimeter of the limited area of the DOE reservation including cylinder storage areas; eight dosimeters spaced around the DOE reservation boundary; and two dosimeters located off-reservation. These dosimeters are collected and analyzed quarterly. Processing and evaluation are performed by a processor holding current accreditation from the National Voluntary Laboratory Accreditation Program of the National Institute of Standards and Technology.

6.1.8 Laboratory Standards

A National Voluntary Laboratory Accreditation Program-certified vendor processes the environmental thermoluminescence dosimeters. A laboratory licensed by the NRC or an Agreement State provides other radiological and chemical analyses for the monitoring and measurement program. The following description is based on current services provided by the onsite X-710 building laboratory, which is licensed by the State of Ohio and certified by the NRC, but is not part of the proposed ACP or operated by USEC. Off-reservation vendors providing analytical services for the proposed ACP will be required to meet the equivalent standards as part of the contract.

Environmental samples would be analyzed for gross activities by proportional counter and technetium activity by liquid scintillation. To accommodate a data sharing agreement with DOE, uranium concentrations in environmental samples would be determined by alpha spectrometry. The minimum detectable activities/concentrations would be comparable to those for effluent samples.

Laboratory quality control includes the use of a dedicated Chain of Custody system, formal written procedures, National Institute of Standards and Technology-traceable standards, matrix spikes, duplicate, and replicate samples, check samples, and blind and double-blind quality control samples.

Any laboratory providing analytical services to the proposed ACP will be required to participate in at least one laboratory intercomparison program covering each type of analysis contracted for. Intercomparison programs that the X-710 building laboratory currently participates in include:

- U.S. EPA Discharge Monitoring Report Study;
- National Institute of Occupational Safety and Health Proficiency Analytical Testing Program;
- U.S. EPA Water Pollution Performance Evaluation Study;
- U.S. EPA Water Supply Study;

- National Institute of Occupational Safety and Health Environmental Lead Proficiency Analytical Testing Program;
- Proficiency Environmental Testing program, a commercial program sponsored by the Analytical Products Department of Belpre, Ohio;
- DOE Environmental Measurements Laboratory Radionuclide Quality Assessment Program; and
- DOE's Mixed Analyte Performance Evaluation Program.

6.2 Nonradiological Measurements and Monitoring Program

As discussed in this chapter and summarized in Chapter 4, nonradiological impacts to the environment from the construction and operation of the proposed ACP are expected to be minimal. Consequently, non-radiological environmental monitoring prescribed through the various environmental permits for the construction and operation of the proposed ACP are expected to be sufficient to evaluate any nonradiological environmental impacts.

6.3 References

(NRC, 1985) U.S. Nuclear Regulatory Commission. "Monitoring and Reporting Radioactivity in Releases of Radioactive Materials in Liquid and Gaseous Effluents from Nuclear Fuel Processing and Fabrication Plants and Uranium Hexafluoride Production Plants." Regulatory Guide 4.16, Revision 1, 1985.

(NRC, 1979) U.S. Nuclear Regulatory Commission. "Quality Assurance for Radiological Monitoring Programs (Normal Operations) – Effluent Streams and the Environment." Regulatory Guide 4.15, Revision 1, 1979.

(NRC, 1977) U.S. Nuclear Regulatory Commission. "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purposes of Evaluating Compliance with 10 CFR Part 50, Appendix I." Regulatory Guide 1.109, Revision 1, ML 003740384, October 1977.

(NRC, 2002) U.S. Nuclear Regulatory Commission. NUREG-1520, "Standard Review Plan for the Review of a License Application for a Fuel Cycle Facility." May 2002.

(USEC, 2005) USEC Inc. "Environmental Report for the American Centrifuge Plant in Piketon, Ohio." Revision 6. Docket No. 70-7004. November 2005.

7. COST BENEFIT ANALYSIS

The potential environmental impacts of constructing and operating the proposed ACP at Piketon, Ohio are discussed in Chapter 4 of this EIS. This chapter summarizes those impacts along with other costs and benefits associated with the proposed action and the no-action alternative. The economic costs and benefits provided by USEC in its License Application and Environmental Report are presented and supplemented as necessary with additional assessments by the NRC staff.

Cost benefit analysis, also known as value impact analysis, provides a rationale for deciding whether an industrial project is likely to have a net positive economic impact by aggregating each of the costs and benefits resulting from the project. Cost benefit analysis may be used to compare alternative processes for achieving the same goals and for developing an objective rationale for choosing between competing processes. Cost benefit analysis involves valuing the benefits and negative impacts associated with a project in monetary terms, to the extent possible. The project with the highest net present value in discounted dollar terms is usually considered the best option. Alternatively, cost benefit analyses may rely entirely or partially on qualitative or ordinal scales to rate impacts and values for each attribute or impact area of concern (i.e., data can be ranked). Different weights may then be assigned to various attributes or impact areas consistent with stakeholder preferences to determine the optimal project alternative. The methodology employed for a cost benefit analysis usually depends on the specific issues involved in a project.

To support the NRC's decisionmaking this chapter compares costs and benefits both quantitatively, in monetary terms, and qualitatively. Section 7.1 weighs the costs and benefits associated with the proposed action. Section 7.2 then compares the costs and benefits for the proposed action relative to those of the no-action alternative. Section 7.3 combines these other two sections into overall conclusions. All of these sections draw heavily on the impacts discussion in Chapter 4 of this EIS and in particular the socioeconomic impact analyses in Sections 4.2.10 and 4.4.10. Alternatives that have previously been ruled out for failing to meet the project's technical and policy objectives are described in Section 2.2.4 and are not revisited in this chapter.

7.1 Costs and Benefits of the Proposed Action

This section describes the costs and benefits of each life-cycle stage of the proposed action. Quantitative estimates (in terms of dollars) are provided where possible. Other costs and benefits are described in qualitative terms.

7.1.1 Costs of the Proposed Action

The direct costs associated with the proposed action may be categorized by the following life-cycle stages.

- Site preparation and construction (including refurbishment of existing facilities);
- Centrifuge manufacturing and equipment assembly;
- Facility operation; and
- Decontamination and decommissioning.

Table 7-1 presents the direct costs associated with each of these life-cycle stages. Pursuant to 10 CFR 2.390, the cost associated with facility operation is withheld.

Table 7-1 Direct Costs Associated with Proposed Action Life-cycle Stages

Life-cycle Stage of the Proposed Action	Cost
Site preparation and construction	$1.4 billion (nominal dollars[a]) between calendar years 2006 and 2010
Centrifuge manufacture and equipment assembly	$1.4 billion (nominal dollars) between calendar years 2004 and 2013
Facility operation	Costs accrue between calendar years 2010 and 2040; operations costs are considered proprietary
Decontamination and decommissioning	$435 million (2004$[b]) between calendar years 2040 and 2045
Tails Disposition	$1.8 billion[c]

Notes:
[a] Nominal dollars are not adjusted for inflation.
[B] Dollars stated in year 2004 price levels.
[C] Tails disposition costs are not included in the comparative cost-benefit analysis in any way because under the No Action alternative, the Paducah facility is assumed to generate the same amount of tails as the ACP for an equivalent level of SWU production.
Source: USEC, 2005a.

The proposed action would also result in indirect costs to the economy. The socioeconomic impacts in the region of influence would include impacts to area housing resources, community and social services, and public utilities. As a result of the proposed action, the population in the region of influence is expected to grow. With this population growth, there would be an expected increased demand for housing, school populations may grow, and demand may increase for community services like fire protection, law enforcement, and healthcare. As discussed in Section 4.2.10, these impacts are estimated to be small.

Finally, the proposed action would result in impacts to various resource areas, which can also be considered "costs" for the purpose of this analysis. The resource areas and corresponding impacts are summarized below and described in more detail in Chapter 4 of this EIS. The impact of the proposed action is estimated to be small for all resource areas except air quality and transportation, which may have small to moderate impacts.

- **Land use** - The impact of the proposed action on land use and values is expected to be small. Site preparation and construction activities would occur on approximately 22 hectares (55 acres) of land, which comprises about 1 percent of the total 1,500 hectare (3,700 acre)- DOE reservation. The changes would occur on previously disturbed land that is not considered prime farmland, and would be consistent with current land use.

- **Historical and cultural resources** - The impact of the proposed action on historical and cultural resources is expected to be small. There would be no adverse indirect or direct effect on the 14 sites potentially eligible for the National Register of Historic Places within the area of potential effect of the project. Also, construction of new buildings and refurbishment of existing buildings would result in buildings of design, size, and function similar to the existing buildings, and therefore would not alter the historic setting of the existing Gaseous Diffusion Plant.

- **Visual and scenic resources** - The impact of the proposed action on visual and scenic resources is expected to be small. The Bureau of Land Management Visual Resources Management rating system

classifies the proposed ACP site as Class III or IV, meaning it has moderate to little scenic value. Construction of the ACP would not alter the site's classification. No scenic rivers, nature preserves, or unique visual resources exist in the project area.

- **Air quality** - The impact of the proposed action on air quality is expected to be small to moderate. Airborne emissions from site preparation and construction should not result in exceedances of air quality standards, with the possible exception of short-term increases in particulate matter. Radiological releases from soil disturbances and decommissioning of the Gas Centrifuge Enrichment Plant would be small and controlled. Emissions from diesel generators would not cause air quality problems and maximum predicted concentrations of hydrogen fluoride resulting from ACP operations are below safe levels. Based on the maximum radiological emission rates for the ACP and the comprehensive site monitoring program, the expected impact to air quality from the plant's radiological emissions is also expected to be small.

- **Geology and soils** - The impact of the proposed action on site geology and soils is expected to be small. Most of the site is an existing industrial facility with altered natural soils. The soils are cohesive and over-consolidated and have low potential for liquefaction. There is little likelihood of impact from soil compaction or subsidence. The flat terrain where the ACP buildings would be located, and the dense soil, low moisture content, and vegetative cover in the area of a new large cylinder storage yard (X-745H) make landslides unlikely. Construction activities would not alter current drainage and would not disturb any soils that qualify for protection as prime farmland. There would be a potential for increased erosion and siltation of streams near the construction site of the new large cylinder storage yard, but both of these potential impacts should be minimized by the use of standard best management practices.

- **Water resources** - The impact of the proposed action on local water resources is expected to be small. Potential stream sedimentation from construction activities would be minimized by the use of silt fences and other best management practices. Any impacts to stream water quality would be of short duration. None of the proposed site preparation and construction activities would occur within a 100-year floodplain. Groundwater withdrawals would increase by 10 percent over current usage rates, but would still be only 31 percent of the total design capacity of the site's well fields, would not affect groundwater availability, and would not pose an increased risk of subsidence. Wastewater would continue to discharge from permitted NPDES outfalls and discharge rates, though increased above current levels, would represent only 75 percent of the existing system's design capacity. USEC does not anticipate any liquid discharges of radioactive materials from the proposed ACP (i.e., from cooling water, storm water runoff, or sanitary water). The potential for leaks or spills that could contaminate water resources would be limited by an approved Spill Prevention Control and Countermeasures Plan.

- **Ecological resources** - The impact of the proposed action on ecological resources is expected to be small. Construction of the X-745H Cylinder Storage Yard would result in increased erosion, stormwater runoff, and loss of 24 acres of vegetation, but would result in small impacts to the flora and fauna in and around the tributaries of Little Beaver Creek. That same cylinder storage yard would also be located within 500 meters of suitable summer habitat for the endangered Indiana bat, although studies have not documented the presence of this bat species on the DOE reservation. None of the site construction activities would occur in wetlands. However, some construction would occur adjacent to small wetlands, and standard erosion control measures would be used to limit sedimentation in these areas.

- **Environmental justice** - Within an 80-km (50-mile) radius around the proposed ACP site, there are 18 Census tracts that have populations qualifying as low-income and two Census tracts that have

populations qualifying as minority. The closest of these tracts is 28 km (17 miles) from the proposed site. The proposed action would not result in disproportionately high or adverse impacts to any of these populations.

- **Noise** - Estimated construction noise levels at the site are below acceptable guidelines. No adverse noise impacts from ACP operations are expected at the closest residence due to low operational noise, the attenuation provided by the building façade, and distance attenuation of over 900 meters (3,000 feet). For these reasons, noise impacts are expected to be small.

- **Transportation** - Increased truck and vehicle traffic should result in small changes in current levels of congestion and delays on U.S. Route 23 and Ohio State Road 32, small increases in the number of traffic accidents resulting in injuries or fatalities, and small increases in vehicle emissions that should not degrade local air quality. Radiation exposures resulting from the planned shipments of radioactive materials are estimated to cause 0.02 latent cancer fatalities per year of operation or about one cancer fatality over thirty years of operation. The probability of a severe transportation accident that releases sufficient quantities of UF_6 that could pose a health risk is low, but the consequences of such an accident, should it occur, are high. Weighing all of these considerations together, the transportation impacts of the proposed action are expected to be small to moderate.

- **Public and occupational health** - The proposed action would result in small increases in the current number of occupational injuries and illnesses at the site, though still less than historical levels. Construction and process areas would be segregated, and personnel monitoring programs would be implemented, to minimize worker exposures to annual radiation doses of less than the 10 CFR § 20.1201 limit of 50 millisieverts (5,000 millirem). All routine radiation exposures to members of the public are expected to be significantly below the 10 CFR Part 20 regulatory limit of 1 millisievert (100 millirem) and 40 CFR Part 190 regulatory limit of 0.25 millisieverts (25 millirem) for uranium fuel-cycle facilities. Analytical results also indicate that plausible radiological accidents at the proposed ACP pose acceptably low risks. In addition, public and occupational exposures to non-radiological contaminants are projected to be less than applicable limits. Therefore, these impacts associated with the proposed action are expected to be small.

- **Waste management** - Site preparation, construction, and operations would generate varying amounts of low-level radioactive, low-level mixed, hazardous, sanitary/industrial, and recyclable wastes. All of these wastes would be managed in accordance with existing procedures for controlling contaminant releases and exposures. With the exception of the depleted uranium, all of the wastes would also be generated at volumes that are well within existing management capacities. The ACP would generate approximately 41,105 cylinders of depleted UF_6, containing approximately 512,730 metric tons (535,200 tons) of material. All of this depleted UF_6 could be converted to a more stable form at the new DOE conversion facility at Piketon, which would require DOE to significantly extend the life of this facility. The converted material would then be shipped by rail to a licensed western disposal site, where sufficient capacity exists and where the disposal impacts should be small.

7.1.2 Benefits of the Proposed Action

The proposed action would result in the production of 3.5-7 million SWUs of enriched uranium between 2010 and 2040. As discussed in Section 1.3 of this EIS, this level of production would represent an augmentation of the domestic supply of enriched uranium and would meet the following needs:

- The need for enriched uranium to fulfill domestic electricity requirements and replace the shortfall in supply created by the end of the Megatons-to-Megawatts program planned in 2013;

- The need for increased domestic supplies of enriched uranium for national energy security; and

- The need for upgraded uranium enrichment technology in the United States to replace the existing aging and less efficient gaseous diffusion plants.

The proposed action would also result in small positive socioeconomic impacts in the region around Piketon, as described in Section 4.2.10. Table 7-2 presents the employment and tax revenue benefits associated with the proposed action. In each year between 2006 and 2010, average annual employment as a result of site preparation, refurbishment, and construction activities is estimated at 3,362 full-time jobs. In addition, state income tax revenues would increase by an estimated $2.3 million per year. State sales tax receipts are estimated to increase by $3.7 million during site preparation and construction. Pike County would also benefit from increased sales tax revenues. These revenues are estimated to increase by $414,000.

During the ACP operations phase between 2010 and 2040, 1,500 jobs would be created in the region of influence. The State would benefit from $1.8 million and $2.4 million in additional income and sales tax receipts, respectively. Pike County would receive an estimated $263,000 in additional sales tax revenues.

The decontamination and decommissioning phase of the proposed action is expected to create a total of 841 annual, full-time jobs between 2040 and 2045, of which 407 would be new (the others would be filled by transitioned USEC workers). The State would raise income and sales tax revenues by $576,000 and $932,000, respectively. Pike County's sales tax revenues would increase by an estimated $103,000.

Table 7-2 Socioeconomic Benefits Associated with the Proposed Action

Life-cycle Stage of the Proposed Action	Direct and Indirect Jobs Created (Annual, Full-Time Jobs)	State Income Tax Revenues per Year	State Sales Tax Revenues per Year	Pike County Sales Tax Revenues per Year
Site preparation and construction	3,362	$2.3 million (2004$)	$3.7 million (2004$)	$414,000 (2004$)
Centrifuge Manufacturing	2,130	$1.5 million (2004$)	$2.4 million (2004$)	$262,000 (2004$)
Facility operation	1,500	$1.8 million (2013$)	$2.4 million (2013$)	$263,000 (2013$)
Decontamination and decommissioning	841	$576,000 (2004$)	$932,000 (2004$)	$103,000 (2004$)

Source: USEC, 2005a.

7.1.3 Conclusions Regarding the Proposed Action

This analysis demonstrates that there are significant economic and national energy benefits associated with the proposed action. There are also employment benefits that would result in increases to State and local tax revenues. In terms of costs, there are direct costs associated with the construction and operation phases of the proposed action, as well as indirect costs resulting from impacts associated with the proposed action on various resource areas. However, these impacts are estimated to be small in magnitude and small in comparison to the benefits of the proposed action. Therefore, the benefits of the proposed action are believed to outweigh the costs of the proposed action.

7.2 Comparative Cost Benefit Analysis of Proposed Action Relative to No-Action Alternative

This section compares the costs and benefits of the proposed action to those of the no-action alternative. This comparison focuses on the tradeoffs between the proposed ACP at Piketon versus continued operation of the Paducah Gaseous Diffusion Plant, since these are the main features that distinguish the proposed action from the no-action alternative. Other possible actions involving other domestic and foreign uranium enrichment suppliers are likely to be similar under the two alternatives and are therefore not considered in the comparison.

7.2.1 Methodology

The proposed action and the no-action alternative are first assessed in Section 7.2.2 for compliance with various policy and technical objectives articulated by DOE. The proposed action and the no-action alternative are then analyzed in Section 7.2.3 for impacts and values across the following impact areas or attributes:

- Construction and manufacturing costs;
- Operating costs;
- Decommissioning costs; and
- Environmental and public and occupational health impacts.

The other indirect cost areas described in Section 7.1.1 are not included as part of this comparison because the effect of these impacts is assumed to be either: (1) approximately equal for the proposed action and the no-action alternative as defined above; or (2) too small a differential impact to materially affect the comparative cost benefit analysis.

The NRC staff assessed impacts and values for these criteria using either: (1) estimated dollars; or (2) ordinal ratings based on expert judgment where quantification is regarded as inappropriate or unnecessary. This approach is consistent with NRC guidance and is well suited to the current analysis.

This analysis does not attempt dynamic general equilibrium modeling of the economic effects of a cheaper source of enriched uranium for nuclear power plants. No attempt is made to model the effects of reduced enriched uranium prices on the ratio of nuclear and non-nuclear power in the domestic economy, on overall power demand and price, and on the potential economic benefits to consumers and suppliers. Instead, the analysis focuses on estimating the economic savings to society from replacing Paducah Gaseous Diffusion Plant production by a cheaper and less resource-intensive source based on centrifuge technology.

In addition, this analysis does not consider the costs and benefits associated with actions pertaining to the Portsmouth Gaseous Diffusion Plant. The Portsmouth Gaseous Diffusion Plant was closed in May 2001 to reduce operating costs. The NRC staff does not believe that there has been any significant change in the factors that were considered by USEC in its decision to cease uranium enrichment at Portsmouth. For the purposes of this cost benefit analysis, actions pertaining to the Portsmouth Gaseous Diffusion Plant, such as decontamination and decommissioning, are considered unrelated to the no-action alternative and the proposed action.

7.2.2 Compliance with Policy and Technical Objectives

As stated in correspondence with the NRC and in an agreement with USEC (DOE, 2002 and USEC, 2005a), and as described in Section 1.3 of this EIS, DOE has the following policy and technical objectives that are relevant to the choice of an enrichment technology:

- The need for enriched uranium to fulfill domestic electricity requirements;

- The need for domestic supplies of enriched uranium for national energy security; and

- The need for upgraded uranium enrichment technology in the United States.

The following sections compare the proposed action and the no-action alternative in terms of how well they meet each of these objectives.

7.2.2.1 Meeting Future Demand

Currently, the demand for enriched uranium in the United States is met from three categories of sources:

- Domestic production of enriched uranium;
- The Megatons-to-Megawatts program; and
- Other foreign sources.

The current U.S. demand for enriched uranium is 12 million SWUs per year (EIA, 2004). Annually, the United States Enrichment Corporation produces approximately 10.5 million SWUs, of which 6.7 million SWUs is sold for use in the U.S. and 3.8 million SWUs is exported (USEC, 2005). That means that the United States Enrichment Corporation currently fulfills approximately 56 percent of the U.S. demand (USEC, 2005). Of the amount sold for use in the U.S., 1.7 million SWUs (14 percent of U.S. demand) comes from the Paducah Gaseous Diffusion Plant (EIA, 2004a) and 5 million SWUs (42 percent of U.S. demand) from the Megatons-to-Megawatts program (USEC, 2005), which is dependent on deliveries from Russia. Therefore, up to 86 percent of the U.S. demand is currently supplied by foreign sources. However, the United States Enrichment Corporation produces approximately 5 million SWUs (which constitutes 42 percent of U.S. demand) at the Paducah Gaseous Diffusion Plant (USEC, 2005). Theoretically, this enrichment capacity could be sold only to the U.S. market, thus reducing the overall foreign dependence to approximately 7 million SWUs (58 percent of U.S. demand).

The proposed action is therefore better able to meet the objective of fulfilling the increased demand for enriched uranium than the no-action alternative.

7.2.2.2 National Energy Security

Currently, foreign sources supply as much as 86 percent of the U.S. demand for enriched uranium. All of the domestic production of enriched uranium currently takes place at a single plant – the aging Paducah Gaseous Diffusion Plant. The heavy dependence on foreign sources and the lack of diversification of domestic sources of enriched uranium represents a potential reliability risk for the domestic nuclear energy industry, which supplies 20 percent of national energy requirements. Interagency discussions led by the National Security Council have concluded that the United States should maintain a viable and competitive domestic uranium enrichment industry for the foreseeable future. DOE has noted the importance of promoting the development of additional domestic enrichment capacity to achieve this objective (DOE, 2002).

In this context, the proposed action offers a means of increasing domestic uranium enrichment capacity beyond existing levels. Furthermore, in combination with other new facilities, such as the 3 million SWU per year enrichment plant proposed by Louisiana Energy Services, the proposed action represents a significant diversification of domestic sources. As noted in the previous section, the no-action alternative does not offer much scope for increasing production levels and presents some degree of reliability risk.

The proposed action is therefore better able to meet the objective of national energy security than the no-action alternative.

7.2.2.3 Technology Upgrade

A DOE-USEC agreement in 2002 intended to "facilitate the deployment of new, cost effective advanced treatment technology in the U.S. on a rapid scale" (USEC, 2005a). In this context, the proposed action represents the implementation of a technology that is contemporary, cost-effective, and reliable. The no-action alternative would involve continuation of a technology that is over 50 years old and that is, in comparison, highly resource-intensive. Continued operation of the Paducah Gaseous Diffusion Plant would involve high energy costs and high levels of water and Freon gas consumption (these differences in operating costs and resource consumption are described in the following sections).

The proposed action is therefore better able to meet the objective of domestic uranium enrichment technology upgrade than the no-action alternative.

7.2.3 Impacts and Value Analysis

This section compares the impacts and values of the proposed action and the no-action alternative over the following cost and impact categories:

- Construction and manufacturing costs;
- Operating costs;
- Decommissioning costs; and
- Environmental and public and occupational health impacts.

Appendix G presents a quantitative net present value analysis of the two alternatives integrating construction, manufacturing, operation, and decommissioning costs. Environmental and public and occupational health impacts have been considered qualitatively.

7.2.3.1 Construction and Manufacturing Costs

The site preparation and construction phase of the proposed action is estimated to incur costs of $1,449 million (nominal dollars) between calendar years 2006 and 2010 (USEC, 2005a). The manufacturing phase of the proposed action is estimated to cost $1,423 million (nominal dollars) between calendar years 2004 and 2013 (USEC, 2005a). These costs are for a plant capacity of 7 million SWUs per year and are consistent with those used by USEC to estimate employment and other socioeconomic impacts. By comparison, no construction costs are assumed to be associated with the no-action alternative.

7.2.3.2 Operating Costs

The operating costs per SWU associated with the proposed action and the no-action alternative are discussed in Appendix G. These estimates, which are not presented here in order to preserve proprietary information (pursuant to 10 CFR 2.390), are based on the Paducah Gaseous Diffusion Plant 2005 budget and the proposed ACP estimated operation costs were provided by USEC (USEC, 2005b).

For the proposed action, the overall operating costs per SWU are approximately 20 percent of the operating costs per SWU of the no-action alternative. The large difference in operating costs derives from the lower resource consumption of the proposed action. The proposed action consumes only 5 percent as much electricity per SWU, 3 percent as much water per SWU, and 3.3 percent as much natural gas per SWU as the no-action alternative. The proposed action has a slightly higher oil consumption per SWU compared to the no-action alternative, but, unlike the no-action alternative, does not consume any coal.

While many of the benefits of lower resource consumption are captured in the differential operating cost estimates of the two alternatives, it is likely that significant potential benefits to the environment and to public health – which can also be characterized as positive externalities – are not fully accounted for in the cost estimates. This issue is discussed in Section 7.2.3.4. Therefore, the overall operating cost savings of the proposed action may be even higher from a social perspective than estimated here.

7.2.3.3 Decommissioning Costs

The decontamination and decommissioning phase of the proposed action (with a plant capacity of 7 million SWUs per year) is estimated to incur costs of $435 million (2004$) over a period of six years (USEC, 2005a). Decontamination and decommissioning activities are expected to begin 30 years after the commencement of operations at the plant and are estimated in this analysis to occur from 2040 through 2045. The NRC evaluated the adequacy of USEC's proposed funding for these activities in the Safety Evaluation Report on the proposed ACP.

The decommissioning schedule and costs of the no-action alternative are considered independent of the proposed action and are not part of this analysis. Similarly, the decommissioning schedule and costs of the Portsmouth Gaseous Diffusion Plant are considered independent of the proposed action and are not part of this analysis.

The comparative cost benefit analysis also does not factor in costs associated with tails disposition. It is assumed that for a given production level, the amount of tails generated by the ACP would be roughly equivalent to the amount of tails that would have been generated using the Paducah Gaseous Diffusion Plant (USEC, 2005a). Therefore, no incremental costs result from the proposed action relative to the no-action alternative.

7.2.3.4 Environmental and Public and Occupational Health Impacts

Both the proposed action and the no-action alternative present limited environmental and public and occupational health impacts resulting from radiological and nonradiological releases.

The proposed action is likely to have much lower radiological releases than the no-action alternative because the amount of piping and pumping is significantly smaller and there are consequently fewer components that may leak. The smaller plant associated with the proposed action is likely to require less maintenance, which implies lower dose to workers, and a cleaner plant means less ambient worker exposure fewer radiation control areas.

The largest relative environmental and health impact is likely to derive from the much lower power requirement for the proposed ACP compared to the Paducah Gaseous Diffusion Plant. As previously mentioned, the proposed ACP is expected to consume only 4 percent as much electricity per SWU and 3.3 percent as much natural gas per SWU as the Paducah Gaseous Diffusion Plant. The proposed ACP would not consume any coal. This implies significantly lower emissions of gases associated with fossil fuel combustion, some of which are known to have substantial environmental and public health impacts.

Therefore, the proposed action is likely to have a much lower environmental and public health impact than the no-action alternative.

7.2.4 Conclusions Regarding the Proposed Action Versus the No-Action Alternative

Based on these considerations, the proposed action is preferable relative to the no-action alternative in the following respects:

- The proposed action better satisfies DOE's policy and technical objectives for meeting future demand, national energy security, and technological upgrades, relative to the no-action alternative.

- The proposed action would result in significant savings to the national economy, relative to the no-action alternative, even after accounting for the costs incurred during the construction, manufacturing, and decommissioning phases. These savings have been quantitatively estimated for different scenarios in Appendix G.

- The proposed action would have a significantly lower public and occupational health impact relative to the no-action alternative.

- The proposed action would have positive impacts on local employment, income and tax revenues during the construction, manufacturing, and decommissioning phases, as discussed in Sections 4.2.8 and 4.2.14.8.

This analysis therefore concludes that the proposed action definitively outranks the no-action alternative on all substantive impact areas.

7.3 Overall Cost Benefit Conclusions

The analysis in Section 7.1 demonstrated that there are significant economic and national energy benefits associated with the proposed action. There are also direct costs associated with the construction and operation phases of the proposed action, as well as indirect costs resulting from impacts associated with the proposed action on various resource areas. However, these impacts are estimated to be small in magnitude and small in comparison to the benefits of the proposed action.

The analysis in Section 7.2 illustrated the significant net benefits of the proposed action in comparison to the no-action alternative, in which there is continued uranium enrichment at the Paducah Gaesous Diffusion Plant. The proposed action better satisfies DOE's policy and technical objectives for meeting future demand for enriched uranium, improved national energy security, and desired technological upgrades, relative to the no-action alternative.

It is therefore apparent that, either considered on its own or in comparison to the no-action alternative, the proposed action is associated with significant net positive benefits.

7.4 References

(DOE, 2002) U.S. Department of Energy. Letter from W.D. Magwood to M. Virgilio, U.S. Nuclear Regulatory Commission. Uranium Enrichment. July 25, 2002.

(USEC, 2005a) USEC Inc. "Environmental Report for the American Centrifuge Plant in Piketon, Ohio." Revision 6. Docket No. 70-7004. November 2005.

(USEC, 2005b) United States Enrichment Corporation. "Additional Responses to Request for Additional Information Regarding the Environmental Report (TAC No. L32307) - Proprietary Information." Dated April 21, 2005.

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8. SUMMARY OF ENVIRONMENTAL CONSEQUENCES

8.1 Unavoidable Adverse Environmental Impacts

Information on the adverse impacts to the affected environment at the proposed ACP that cannot be avoided for this proposed action is provided in Chapter 4 of this EIS. The environmental impacts from the proposed action are generally small and would, in most cases, be mitigated by methods described in Chapter 5. Monitoring methods are described in Chapter 6. Table 2-8 compares the potential impacts from the proposed action to those of the no-action alternative. Detailed analysis of the potential impacts on public health and safety is provided in the safety evaluation report prepared by the NRC. Following is a summary of the impacts presented in Chapter 4.

- **Land Use** - Site preparation and construction would physically change approximately 22 hectares (55 acres) of land on the DOE reservation. These physical changes would be minor because: (1) the area to be occupied by the proposed ACP would be only a small portion of the 1,500-hectare (3,700-acre) reservation; (2) the majority of the proposed land has been previously disturbed; (3) no prime farmland would be affected; and (4) site preparation and construction would not affect or preclude any existing land uses on the property that surrounds the DOE reservation. The changes would simply convert the land use on the DOE reservation from managed lawns, fields, and limited forest buffer to developed areas, resulting in an overall SMALL impact.

- **Historic and Cultural Resources** - There would be no indirect or direct effect on the 14 sites potentially eligible for the National Register of Historic Places within the area of potential effect of the project. Also, construction of new buildings and refurbishment of existing buildings would result in buildings of design, size, and function similar to the existing buildings, and would not alter the historic setting of the existing Gaseous Diffusion Plant. Therefore, impacts on historic and cultural resources should be SMALL.

- **Visual and Scenic Resources** - The Bureau of Land Management Visual Resources Management rating system classifies the proposed ACP site as Class III or IV, meaning it has moderate to little scenic value. Construction of the ACP would not alter the site's classification. No scenic rivers, nature preserves, or unique visual resources exist in the project area. Therefore, impacts of the proposed action on visual and scenic resources are expected to be SMALL.

- **Air Quality** - Airborne emissions from site preparation and construction should not result in exceedances of air quality standards, with the possible exception of short-term increases in particulate matter. Radiological releases from soil disturbances and decommissioning of the Gas Centrifuge Enrichment Plant would be small and controlled. Emissions from diesel generators would not cause air quality problems and maximum predicted concentrations of hydrogen fluoride resulting from ACP operations are below safe levels. Based on the maximum radiological emission rates for the ACP and the comprehensive site monitoring program, the expected impact to air quality from the plant's radiological emissions is also expected to be small. Considering all of these factors together, the air quality impacts would be SMALL in every respect, except for potential short-term increases in particulate matter during the site preparation and construction phase, which would result in MODERATE impacts.

- **Geology and Soils** - Most of the site is an existing industrial facility with altered natural soils. The soils are cohesive and over-consolidated and have low potential for liquefaction. There is little likelihood of impact from soil compaction or subsidence. The flat terrain where the ACP buildings would be located, and the dense soil, low moisture content, and vegetative cover in the area of a new large cylinder storage yard (X-745H) make landslides unlikely. Construction activities would not alter current drainage and would not disturb any soils that qualify for protection as prime farmland. There would be a potential for increased erosion and siltation of streams near the construction site of the new large cylinder storage yard, but both of these potential impacts should be minimized by the use of standard best management practices. For these reasons, the impacts to geology and soil are expected to be SMALL.

- **Water Resources** - Potential stream sedimentation from construction activities would be minimized by the use of silt fences and other best management practices. Any impacts to stream water quality would be of short duration. None of the proposed site preparation and construction activities would occur within a 100-year floodplain. Groundwater withdrawals would increase by 10 percent over current usage rates, but would still be only 31 percent of the total design capacity of the site's well fields, would not affect groundwater availability, and would not pose an increased risk of subsidence. Wastewater would continue to discharge from permitted NPDES outfalls and discharge rates, though increased above current levels, would represent only 75 percent of the existing system's design capacity. USEC does not anticipate any liquid discharges of radioactive materials from the proposed ACP (i.e., from cooling water, storm water runoff, or sanitary water). The potential for leaks or spills that could contaminate water resources would be limited by an approved Spill Prevention Control and Countermeasures Plan. Therefore, impacts to water resources should be SMALL.

- **Ecological Resources** - Construction of the X-745H Cylinder Storage Yard would result in increased erosion, stormwater runoff, and loss of 24 acres of vegetation, but with planned mitigation measures, would result in small impacts to the flora and fauna in and around the tributaries of Little Beaver Creek. That same cylinder storage yard would also be located within 500 meters of suitable summer habitat for the endangered Indiana bat, although studies have not documented the presence of this bat species on the DOE reservation. None of the site construction activities would occur in wetlands. However, some construction would occur adjacent to small wetlands, and standard erosion control measures would be used to limit sedimentation in these areas. For these reasons, impacts to ecological resources are expected to be SMALL.

- **Socioeconomics** - ACP construction and operation would result in a moderate increase in regional employment and a small increase in regional tax revenues (these impacts, however, are generally considered positive, not adverse). Impacts to population characteristics, housing resources, community and social services, and public utilities are projected to be small. Therefore, the socioeconomic impacts of the proposed action are expected to range from SMALL to MODERATE.

- **Environmental Justice** - Within an 80-kilometer (50-mile) radius around the proposed ACP site, there are 18 Census tracts that have populations qualifying as low-income and two Census tracts that have populations qualifying as minority. The closest of these tracts is 28 km (17 miles) from the proposed site. The proposed action would not result in disproportionately high or adverse impacts to any of these populations. Therefore, the environmental justice impacts of the proposed action would be SMALL.

- **Noise** - Estimated construction noise levels at the site are below acceptable guidelines. No adverse noise impacts from ACP operations are expected at the closest residence due to low operational noise, the attenuation provided by the building façade, and distance attenuation of over 900 meters (3,000 feet). Therefore, noise impacts of the proposed action would be SMALL.

- **Transportation** - Increased truck and vehicle traffic should result in small changes in current levels of congestion and delays on U.S. Route 23 and Ohio State Road 32, small increases in the number of traffic accidents resulting in injuries or fatalities, and small increases in vehicle emissions that should not degrade local air quality. Radiation exposures resulting from the planned shipments of radioactive materials are estimated to cause 0.02 latent cancer fatalities per year of operation or about one cancer fatality over thirty years of operation. The probability of a severe transportation accident that releases sufficient quantities of UF_6 that could pose a health risk is low, but the consequences of such an accident, should it occur, are high (resulting in an overall moderate rating). Considering all of these factors together, the transportation impacts of the proposed action are expected to be SMALL to MODERATE.

- **Public and Occupational Health** - The proposed action would result in small increases in the current number of occupational injuries and illnesses at the site, though still less than historical levels. Construction and process areas would be segregated, and personnel monitoring programs would be implemented, to minimize worker exposures to annual radiation doses of less than the 10 CFR § 20.1201 limit of 50 millisieverts (5,000 millirem). The maximum does to members of the public resulting from routine radiation exposures is estimated to be 0.01 millisieverts (1 millirem) per year, for a hypothetical person living on the northern boundary of the DOE reservation. This predicted dose is significantly below the 10 CFR Part 20 regulatory limit of 1 millisievert (100 millirem) and 40 CFR Part 190 regulatory limit of 0.25 millisieverts (25 millirem) for uranium fuel-cycle facilities. Analytical results also indicate that plausible radiological accidents at the proposed ACP pose acceptably low risks. In addition, public and occupational exposures to non-radiological contaminants are projected to be less than applicable limits. Therefore, these impacts associated with the proposed action are expected to be SMALL.

- **Waste Management** - Site preparation, construction, and operations would generate varying amounts of low-level radioactive, low-level mixed, hazardous, sanitary/industrial, and recyclable wastes. All of these wastes would be managed in accordance with existing procedures for controlling contaminant releases and exposures. With the exception of the depleted uranium, all of the wastes would also be generated at volumes that are well within existing management capacities. The ACP would generate approximately 41,105 cylinders of depleted UF_6, containing approximately 512,730 metric tons of material. All of this UF_6 would be converted to a more stable form at the new DOE conversion facility at Piketon, which would require DOE to significantly extend the life of this facility. The converted material would then be shipped by rail to a licensed western disposal site, where sufficient capacity exists and where the disposal impacts should be small. Based on this analysis, the waste management impacts of the proposed action are expected to be SMALL.

8.2 Relationship Between Local Short-Term Uses of the Environment and the Maintenance and Enhancement of Long-Term Productivity

The construction and operation of the proposed ACP would involve the short-term commitment of resource and would permanently commit certain resources (e.g., land, water, electricity, fuel, other construction raw materials) to the facility's construction and operation. The short-term use of such

resources would result in long-term socioeconomic benefits to the local area and the region through continued (and increased) employment and expenditures, as described in Section 4.2.10. Long-term productivity would be facilitated by investments in dependent businesses in the local area and region and would provide further socioeconomic benefits to the local area and region.

8.3 Irreversible and Irretrievable Commitment of Resources

Irreversible and irretrievable commitment of resources for the proposed ACP would include the commitment of land, water, energy, raw materials, and other resources for the construction and operation of the ACP. The impacts of commitment of such resources would be SMALL.

Existing structures at the DOE reservation would be refurbished to accommodate the proposed ACP operations. Proposed changes made to existing facilities would be conducted on land that is already used for industrial purposes. These include the X-3001, X-3002, X2232C, X-7726, X-7727H, X-3012, and X-3346 buildings and facilities. Land in proximity to the X-3001 and X-3002 buildings would be disturbed to construct two additional process buildings and associated support structures. These include two new process buildings (each approximately 304,000 ft^2); new roads and parking areas (108,000 ft^2); and several new cylinder storage yards (totaling approximately 2,268,400 ft^2). (USEC, 2005)

Construction of the proposed ACP would use approximately 814 cubic meters per day (215,000 gallons per day) of water, and operation of the proposed ACP would use up to 1,995 cubic meters per day (527,000 gallons per day) of water (USEC, 2005). This water would be drawn from three existing well fields in the Scioto River Valley Aquifer, which presently serve the DOE reservation, and most of it would then be discharged through NPDES-permitted outfalls that eventually lead to the Scioto River. The projected peak water usage rates represent an increase of approximately 10 percent over current water use at the DOE reservation. Counting the new water demands created by the ACP together with the reservation's current water usage rate, the combined new demand for water would represent only 31 percent of the permitted withdrawal volume from the three well fields.

Energy would be expended in constructing and operating the proposed ACP, including diesel and gasoline fuel for vehicles to transport workers and construction materials to the site during site preparation and construction. Approximately 3,200,000 gallons of diesel fuel and 327,000 gallons of gasoline would be used in constructing the proposed ACP (USEC, 2005). NRC estimates that less than 650,000 gallons of diesel fuel would be used annually in facility operation.

Energy expended would also include electricity consumption for site preparation and construction and for facility operation. Approximately 650,000 megawatt hours of electricity would be consumed during facility operation (USEC, 2005).

The proposed ACP would generate recyclable and non-recyclable waste streams and depleted uranium, as described in Sections 2.1.4 and 4.2.12 of this EIS. Disposal of these wastes would require irreversible and irretrievable commitment of land resources, fuel, and materials.

Additional resources anticipated to be consumed in site preparation and construction include 97,000 yards of concrete, 1,000 yards of asphalt, 15,000 yards of gravel, and 34,000 yards of steel products (USEC, 2005).

8.4 References

(USEC, 2005) USEC Inc. "Environmental Report for the American Centrifuge Plant in Piketon, Ohio." Revision 6. Docket No. 70-7004. November 2005.

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9. AGENCIES AND PERSONS CONSULTED

The following sections list the agencies and persons consulted for information and data for use in the preparation of this Draft Environmental Impact Statement (Draft EIS):

9.1 Federal Agencies

Advisory Council on Historic Preservation, Office of Federal Agency Programs. Mr. Don Klima, Director

U.S. Department of the Interior, U.S. Fish and Wildlife Service, Ecological Services, Reynoldsberg, Ohio. Mr. Jeromy Applegate

U.S. Department of the Interior, National Park Service. Mr. Tim McKeown, Archeologist

9.2 State Agencies

Ohio Historic Preservation Office, Resource Protection and Review, Columbus, Ohio. Mr. Mark Epstein and Mr. David Snyder

Ohio Environmental Protection Agency, Division of Ground Waters and Community Drinking Water, Pike County. Mr. Randy Smith

Ohio Environmental Protection Agency, Portsmouth Reservation Inspector. Mr. Eric Hart

9.3 Local Agencies

Pike County Commissioners, Waverly, Ohio. President James Brushart

9.4 Indian Tribes

Absentee Shawnee Tribe of Oklahoma, Shawnee, Oklahoma. Tribal Secretary Kenneth Daughtery.

Cayuga Nation, Versailles, New York. Chief James Leaffe

Cherokee Nation of Oklahoma, Ada, Oklahoma.

Citizen Potawatomi Nation, Shawnee, Oklahoma. Chairperson John A. Barret

Delaware Tribe of Western Oklahoma, Anardarko, Oklahoma. President Bruce Gonzales

Eastern Shawnee Tribe of Oklahoma, Seneca, Missouri. Chief Charles D. Enyart

Forest County Potawatomi, Crandon, Wisconsin. Chairperson Harold Frank

Loyal Shawnee Tribe, Jay, Oklahoma. Mr. James Squirrel

Miami Tribe of Oklahoma, Miami, Oklahoma. Mr. John Pryor

Ottawa Tribe of Oklahoma, Miami, Oklahoma. Chief Charles Todd

Peoria Tribe of Oklahoma, Miami Oklahoma. Chief John P. Froman

Prairie Band of Potawatomi Nation, Mayyetta, Kansas. Mr. Ray Kitchkumme

Seneca-Cayuga Tribe of Oklahoma, Miami, Oklahoma. Chief Jerry Dilliner

Seneca Nation of Indians, Salamanca, New York. President Calvin John

Shawnee Nation, United Remnant Band. Chief Hawk Pope

Shawnee Tribe, Miami, Oklahoma. Mr. Ron Sparkman

Turtle Mountain Band of Chippewa Indians, Belcourt, North Dakota. Mr. Kade M. Ferris

Wyandotte Nation, Wyandotte, Oklahoma. Chief Leaford Bearskin

10. LIST OF PREPARERS

10.1 U.S. Nuclear Regulatory Commission (NRC) Contributors

Matthew Blevins: EIS Project Manager
M.S., Environmental Systems Engineering, Clemson University, 1995
B.S., Chemistry, West Virginia University, 1993
Years of Experience: 10

Yawar H. Faraz: Licensing Project Manager
B.S., Nuclear Engineering, University of Maryland, 1982
Years of Experience: 23

F. Stanley Echols: Senior Project Manager
Ph.D., Environmental Engineering, University of Florida, 1973
J.D., Law, Georgetown University, 1978
B.S., Nuclear Engineering, University of Florida, 1969
Years of Experience: 30

Ron C. Linton: Project Manager
M.S., Geology, West Virginia University, 1992
B.S., Geology, James Madison University, 1984
Years of Experience: 17

B. Jennifer Davis: Environmental Review Section Chief
M.S., Materials Engineering, University of Maryland, 1995
B.S., Materials Engineering, Virginia Polytechnic Institute and State University, 1986
Years of Experience: 19

Cynthia S. Barr: Transportation Project Manager
M.S., Environmental Systems Engineering, Clemson University, 1998
B.S., Mathematics, College of Charleston, 1991
B.A., Political Science, College of Charleston, 1991
Years of Experience: 7

Alicia Mullins: Environmental Reviewer
B.A., Biology, Gallaudet University, 1990
Years of Experience: 14

10.2 ICF Consulting Contributors

Steve Wyngarden: ICF Consulting Project Manager
M.S., Environmental Management, Duke University, 1982
B.S., Applied Biology, Georgia Institute of Technology, 1980
Years of Experience: 23

Don Hammer: ICF Consulting Deputy Project Manager
B.S., Geology, Colorado State University, 1983
Years of Experience: 22

Lisa Bendixen: Transportation
M.S., Operations Research, Massachusetts Institute of Technology, 1980
B.S., Applied Mathematics, Massachusetts Institute of Technology, 1979
Years of Experience: 20

Mark Bethoney: Graphics
Somerville High School, 1986
Years of Experience: 13

Ed Carr: Air Quality
M.S., Atmospheric Science, University of Washington,1983
B.S., Meteorology, California State University, 1979
Years of Experience: 19

David Coate: Noise
M.S., Energy Technology, Massachusetts Institute of Technology, 1980
B.A., Mathematics, Westminster College, 1978
B.A., Physics, Westminster College, 1978
B.A., Chemistry, Westminster College, 1978
Years of Experience: 27

Ted Coogan: Environmental Justice, Graphics
B.S., Environmental Earth Science, Eastern Connecticut State University, 1986
Years of Experience: 22

Brenda Girod: Comment Resolution
B.S., Journalism, University of Kansas, 1988
B.A., Personnel Administration, University of Kansas, 1988
Years of Experience: 16

Elizabeth Gormsen: Cost-Benefit
M.P.P., Goldman School of Public Policy, University of California, Berkeley, 2002
B.A., Economics with Honors, Colgate University, 1998
Years of Experience: 7

Lesley Jantarasami: Alternatives
B.A., Environmental Science and Policy, Duke University, 2004
Years of Experience: 1

Robert Lanza: Waste Management, Decontamination and Decommissioning, Public and Occupational Health
M.Eng., Chemical Engineering, Cornell University, 1982
B.S., Chemical Engineering, Cornell University, 1980
Years of Experience: 25

Jim Oliver: Public and Occupational Health
M.S., Nuclear Engineering, Georgia Institute of Technology, 1992
B.S., Mechanical Engineering, Georgia Institute of Technology, 1990
Years of Experience: 11

Larry O'Rourke: Transportation
M.A., Government, Johns Hopkins University, 1997
B.A., Political Science, Johns Hopkins University, 1992
Years of Experience: 8

Polly Quick: Historic and Cultural Resources
Ph.D., Anthropology, Harvard University, 1976
M.A., Anthropology, Harvard University, 1970
B.A., Anthropology, Radcliffe College, 1968
Years of Experience: 30

Jim Rice: Geology and Soils, Water Resources
M.S., Geology, New Mexico Institute of Mining and Technology, 1985
B.S., Geology, New Mexico Institute of Mining and Technology, 1981
Years of Experience: 19

Maribelle Rodriguez: Purpose and Need, Affected Environment
M.S., Environmental Engineering, Johns Hopkins University, 1995
B.S., Chemical Engineering, Massachusetts Institute of Technology, 1994
Years of Experience: 10

Todd Stribley: Ecological Resources, Land Use, Historic and Cultural Resources
B.S., Biology, St. Lawrence University, 1992
Years of Experience: 12

David Stuenkel: Transportation
Ph.D., Nuclear Engineering, University of Michigan, 1997
M.S., Nuclear Engineering, University of Michigan, 1994
B.S., Nuclear Engineering, University of Illinois, 1992
Years of Experience: 5

Alan Summerville: Deputy Project Manager
M.A., City Planning, University of Pennsylvania, 1988
B.A., Economics and Political Science, University of Vermont, 1985
Years of Experience: 16

Arun Varghese: Socioeconomics, Cost-Benefit
M.Eng., Civil and Environmental Engineering, Massachusetts Institute of Technology, 2002
M.P.A., Economics and Public Policy, Princeton University, 2001
B.Eng., Chemical Engineering, Bombay University, 1994
Years of Experience: 8

Raymond Wood: Public and Occupational Health, Waste Management
Ph.D., Nuclear/Radiological Engineering, University of Cincinnati, 1994
B.S., Nuclear Engineering, University of Cincinnati, 1980
Years of Experience: 14

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APPENDIX A
ENVIRONMENTAL SCOPING SUMMARY REPORT

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Docket No. 70-7004

ENVIRONMENTAL IMPACT STATEMENT SCOPING PROCESS

ENVIRONMENTAL SCOPING SUMMARY REPORT

Proposed USEC Inc.
American Centrifuge Plant
Piketon, Ohio

April 2005

U.S. Nuclear Regulatory Commission
Rockville, MD

1. INTRODUCTION

On August 23, 2004, USEC Inc. (USEC) submitted an application to the U.S. Nuclear Regulatory Commission (NRC) for a license to construct, operate, and decommission the American Centrifuge Plant (ACP), a gas centrifuge uranium enrichment facility located on the U.S. Department of Energy (DOE) reservation in Piketon, Ohio. The ACP, if licensed, would enrich uranium for use in commercial nuclear fuel for power reactors. Feed material would be comprised of non-enriched uranium hexafluoride (UF_6). USEC proposes to use centrifuge technology to enrich the isotope uranium-235 in the UF_6 up to 10 percent. The initial license application is for a 3.5 million separative work unit (SWU)[1] facility. Because USEC indicated the potential for future expansion to 7.0 million SWU per year, the environmental review will look at the impacts from a 7.0 million SWU per year facility.

In accordance with NRC regulations in 10 CFR Part 51, and the National Environmental Policy Act (NEPA), the NRC is preparing an Environmental Impact Statement (EIS) for the proposed facility as part of its decision-making process. The proposed action is the issuance of an NRC license for USEC to possess and use special nuclear material, source material, and byproduct material at the proposed ACP. The activities to be conducted under the license would include the construction, operation and decommissioning of the proposed ACP. The EIS will examine the potential environmental impacts associated with the proposed ACP in parallel with the review of the license application. The EIS will be prepared by NRC staff with technical assistance from ICF Consulting Inc. and Trinity Engineering Associates. The NRC has not identified any cooperating agencies for the preparation of this EIS. In addition to the EIS, the NRC will prepare a Safety Evaluation Report (SER) which will document the staff's review of safety and security issues.

The NRC plans to operate on a 30-month licensing schedule with 19 months allocated for the environmental review. The current schedule for publication of the draft EIS is in August 2005, with a public meeting scheduled in September 2005 after publication of the draft EIS. The final EIS is tentatively scheduled for publication in March, 2006.

As part of the NRC's environmental review, and to comply with 10 CFR 51.26 and 51.27, scoping was initiated on October 15, 2004, with the publication in the *Federal Register* of a Notice of Intent to prepare an EIS and to conduct a scoping process (69 *Fed. Reg.* 61268). Scoping is an early and open part of the NEPA process designed to help determine the range of actions, alternatives, and potential impacts to be considered in the EIS, and identify significant issues related to the proposed action. The NRC solicits input from the public and other agencies in order to focus on issues of genuine concern.

On January 18, 2005, the NRC staff held a public scoping meeting in Piketon, Ohio, to receive both oral and written comments from interested parties. The public scoping meeting began with NRC staff providing a description of the NRC's role, responsibilities, and mission. A brief overview of the safety review process was followed by a description of the environmental review process and a discussion of how the public can effectively participate. The majority of the meeting was reserved for attendees to ask questions and make comments on the scope of the environmental review. The NRC postponed the originally scheduled public scoping meeting in Piketon, Ohio from November 15, 2004 until January 18, 2005 after removal of public

[1] SWU relates to a measure of the work used to enrich uranium.

documents from the NRC public reading room and website for several weeks in November 2004 due to security concerns. Due to this delay, the public scoping comment period was extended from December 6, 2004 until February 1, 2005.

As part of the environmental review, NRC has begun a consultation process with the Ohio State Historic Preservation Officer (SHPO) as required by Section 106 of the National Historic Preservation Act. In accordance with 36 CFR 800.3(f), NRC will consult with Native American Tribal members identified by the SHPO and will consult with representatives of the Pike County Commission. Other consultations will include the Fish and Wildlife Service as required by Section 7 of the Endangered Species Act.

This report has been prepared to summarize the determinations and conclusions reached in the scoping process as required in 10 CFR 51.29(b). After publication of the draft EIS, the public will be invited to submit additional comments. Availability of the draft EIS, the dates of the public comment period, and information about a public meeting to be held to discuss the draft EIS will be announced in the *Federal Register*, on NRC's website (http://www.nrc.gov/materials/fuel-cycle-fac/usecfacility.html), and in the local news media when the draft EIS is distributed. After evaluating comments on the draft EIS, the NRC staff will issue a final EIS that will serve as the basis for the NRC's consideration of environmental impacts in its decision on the proposed ACP.

This report is organized into four main sections. Section 1 provides an introduction and background information on the environmental review process. Section 2 summarizes the comments and concerns expressed by government officials, agencies, and the public. Section 3 identifies the issues that the draft EIS will address and Section 4 describes those issues that are not within the scope of the draft EIS. Where appropriate, Section 4 also identifies other places in the decision-making process where issues that are outside the scope of the draft EIS may be considered.

2. ISSUES RAISED DURING THE SCOPING PROCESS

2.1 OVERVIEW

Approximately 80 individuals not affiliated with the NRC attended the January 18, 2005 public scoping meeting concerning the USEC license application for the ACP. During the meeting, five individuals asked specific questions about the scoping process. Sixteen individuals offered specific oral comments related to the proposed ACP. In addition, 24 written comments, including 1 duplicate, were received from various individuals during the public scoping period, which ended on February 1, 2005. The scoping meeting transcript (ML050590321) and the 24 written comments received by the NRC are available on the NRC website, electronic reading room, at http://www.nrc.gov/reading-rm/adams/web-based.html.

The active participation of the public in the scoping process is an important component in determining the major issues that the NRC should address in the draft EIS. Individuals providing oral and written comments addressed several subject areas related to the proposed USEC facility and the draft EIS development. In addition to private citizens, the various commenters included:

- A representative of the Governor of Ohio.
- A local official from the Village of Piketon.
- Pike and Scioto County Commissioners.
- Representatives of the Pike County Chamber of Commerce and the Chillicothe/Ross County Chamber of Commerce.
- Representatives of State of Ohio agencies or departments.
- Representatives of local businesses.
- Representatives of other organizations including:
  - Public Citizen
  - Portsmouth/Piketon Residents for Environmental Safety
  - National Nuclear Workers for Justice
  - Paper, Allied-Industrial, Chemical and Energy Workers International Union
  - Sierra Club, Central Ohio Group and Appalachian Ohio Section
  - Southern Ohio Diversification Initiative

The following general topics categorize the comments received during the public scoping period:

- NEPA and public participation.
- Need for the proposed facility.
- Land use.
- Alternatives.
- Ecology, air quality, soil and water resources.
- Socioeconomics.
- Transportation.
- Waste management.
- Historic and cultural resources.
- Cumulative impacts.
- Decommissioning.
- Safety and risk.
- Nuclear nonproliferation and security.
- Terrorism.
- Credibility.

In addition to raising important issues about the potential environmental impacts of the proposed facility, some commenters offered opinions and concerns that typically would not be included in the subject matter of an EIS - these include general opinions about nuclear proliferation and the use of nuclear energy. Comments of this type do not fall within the scope of environmental issues to be analyzed. Other statements may be relevant to the proposed action, but they have no direct bearing on the evaluation of alternatives or on the decision-making process involved in the proposed action. For instance, general statements of support for or opposition to the proposed action fall into this category. Again, comments of this type have been noted but are not used in defining the scope and content of the draft EIS.

Section 2.2 summarizes the comments received during the public scoping period. Most of the issues raised have a direct bearing on the NRC's analysis of potential environmental impacts.

2.2 SUMMARY OF ISSUES RAISED

As noted above, a number of commenters expressed support for the facility. Several individuals, on the other hand, raised concerns regarding the construction and operation of the proposed ACP. The following summary groups the comments received during the scoping period by technical area and issue.

2.2.1 NEPA and public participation

Several commenters expressed general support for the ACP stating that the facility would be beneficial to the economy. One commenter questioned the role of members of the public not located in the Piketon area and their possible impact on the decision-making process. The commenter stated that the focus of public participation should be on those members of the public most directly affected by the proposed facility. However, another commenter disagreed, stating that because materials, including wastes, would be shipped from the facility to various points around the country, everyone who is potentially affected by the facility should be included in the public participation process.

A number of commenters requested an extension of the time period for submitting comments on the scope of the draft EIS. These commenters cited several reasons for the extension request, but the reason cited most often was the lack of availability of documents on NRC's website because of security concerns. Two commenters noted that the public was not made aware of a public meeting on November 9, 2004, where USEC's record of accidents and contamination releases was discussed. Several commenters also noted that some of the information on NRC's website is not accessible, including information on reportable events such as releases from the plant. One commenter also noted that answers to questions that she submitted to the NRC on December 2, 2004 had not yet been answered.

Several commenters raised concerns regarding the availability of information contained in the license application and the Environmental Report. One commenter stated that some of the information related to the application has been classified as confidential for security purposes and therefore the public does not have access to it. Another commenter stated that the public should have access to all the information it may reasonably be expected to have known about. This commenter requested that NRC make all redactions in the ER available to the public, including Appendices B, D, and E. If not, the commenter requested an explanation as to why the information was redacted. Another commenter stated that restricting the public from information for reasons other than security protection constitutes an infringement on the democratic involvement of the people in the actions of its government. One commenter noted that an EIS had been completed for the Piketon site in the past, and that this document should be reviewed to determine if any information contained in that report is relevant to the proposed ACP.

Other comments included one person who indicated that she is entitled to a full copy of the license application. Another commenter stated that scoping should include perspective of those outside of the local community. A commenter also thought that it is important that impacts and alternatives must be assessed before an action is taken, not to justify a decision already made. Another commenter stated that it is expected that NRC will provide regulatory guidelines that will allow USEC to operate a plant efficiently with protection for both workers and the community.

A commenter specifically stated that the draft EIS should carry out a comprehensive evaluation that honestly takes into account the long-term environmental impacts of the proposed project. This commenter noted that this type of evaluation is especially relevant to facilities involved in the production of fuel for nuclear reactors because of the length of time the waste material is dangerous and the need for containment and monitoring for the duration of that time. Finally, two commenters requested waivers of fees for documents related to the licensing action.

2.2.2 Need for the proposed facility

A number of commenters raised concerns about the need for a uranium enrichment facility. One commenter argued that the public must agree on the need for the facility. Several commenters stated that the draft EIS must analyze the need for the proposed facility given the existing enriched uranium stockpiles that could meet the needs for nuclear energy for several years. A commenter also stated that the draft EIS should consider that the proposed LES facility in New Mexico could actually start operations first, lessening the need for the ACP. Commenters indicated that the potential for an international moratorium on uranium enrichment exists, and the ramifications of this action should be accounted for in the analysis. Other commenters indicated that recent budget cuts and uncertainty in energy policy lessen the need for additional enriched uranium production. Specifically, one commenter stated that the draft EIS should evaluate the potential for a pause in production of nuclear fuel, which would allow the NRC and other agencies to focus resources in other areas such as cleaning up existing contamination, developing safe and permanent waste disposal options, lowering transportation risks, better documenting releases and events, and encouraging development of clean, safe, well-paying jobs.

Another commenter stated, however, that there will be an increase in demand for electricity in the future and that nuclear power will be critical to ensuring this supply and promoting energy independence. The commenter noted that the ACP would play a key role in providing that energy.

Other commenters stated that the draft EIS should evaluate the development of other less expensive, renewable energy resources with less significant environmental impacts. Commenters also suggested that material from disassembled nuclear weapons could be used as an alternate source for uranium enrichment.

A commenter stated that the draft EIS should address whether the operation of the ACP will have a negative impact on the “Megatons to Megawatts” program, in which highly enriched uranium from dismantled Russian nuclear weapons is down-blended and used as fuel in U.S. nuclear power plants. Another commenter requested an explanation as to why USEC requires a license for 10 percent assay when the license application states that USEC believes its customers only require 5 percent assay UF_6.

2.2.3 Land use

A commenter expressed concern that the increased safety and security restrictions accompanying the proposed ACP would limit alternative use of the site. In addition, a commenter stated that the proposed ACP would eliminate the opportunities for cleanup and reuse of certain facilities on DOE’s Portsmouth Reservation, beyond the scope of the USEC license. Another commenter asked whether the existing contamination cleanup at the site is far

enough along to ensure protection of site workers. The commenter wondered whether existing contamination could be cleaned up prior to the start of operations at the ACP. Another commenter was concerned that the ACP would restrict the possibility of public use of undeveloped parts of the site. Another commenter asked how the proposed ACP will affect farmland.

2.2.4 Alternatives

Several commenters noted that the draft EIS needs to address the full range of "reasonable alternatives." Commenters stated that alternative uses for the site, including private leasing and other governmental uses, must be developed and considered in the draft EIS. A commenter also stated that the reasonable alternatives must encompass not only the centrifuge buildings, but a "multiplicity of other uses" for other parts of the site. A commenter suggested instituting accelerated site cleanup as an alternative to allow the facility to be used for nonnuclear industry development. Another commenter suggested specifically that the draft EIS should analyze the Southern Ohio Diversification Initiative suggestion to locate a truck manufacturing company in one of the buildings. A commenter also suggested that the X-326 building could be entombed as a National Monument. A commenter stated that the draft EIS should consider expanding the "Megatons to Megawatts" program as an alternative to licensing the ACP. This commenter also stated that a reasonable alternative would be to consider reviving the Atomic Vapor Laser Isotope Separation process because the centrifuge technology concentrates uranium-234. A commenter suggested moving the environmental cleanup research program located at Oak Ridge National Laboratory to Piketon since the site will be the subject of ongoing environmental cleanup.

Another commenter stated that the cultural value of the Piketon site and the potential adverse impacts to these resources that have not been studied indicates two alternatives that should be considered including (1) moving the ACP to the Paducah site, and (2) opening part of the Piketon site as a cultural resource park with restoration of the earthworks.

Commenters also suggested that the draft EIS should analyze scenarios under which the ACP fails or the project is cancelled. A number of commenters stated that if the plant proceeds and becomes operational, this will preclude the site from any future use because of security restrictions and contamination, and will change or eliminate possibilities for reuse of certain facilities. A commenter stated that the impacts of the no-action alternative should be considered in terms of the site, not USEC's commitments to DOE to provide enriched uranium for nuclear fuel.

Another commenter stated that the draft EIS should focus on evaluating the impacts of a 3.5 million SWU per year plant and that any evaluation of impacts for a 7.0 million SWU per year plant should be done separately under a different licensing action.

2.2.5 Ecology, air quality, soil and water resources

Ecology: Several commenters stated that the wildlife of the region, including deer and fish, has been shown to be contaminated with radioactivity and expressed concern about the migration of wildlife in and out of the plant boundaries. One commenter suggested that procedures be put into place to ensure that wildlife that travel outside the plant boundaries will not carry additional contamination into the greater community. Another commenter was

concerned with the protection of birds and other animal species from future contamination. One commenter expressed general concern over the impact of air and water emissions on wildlife. Another commenter expressed the specific concern that chemical and radioactive leakage from DUF_6 cylinders might adversely affect fish downstream in the Scioto and Ohio rivers.

Air Quality and Soil: A number of commenters were concerned about the release of radioactive materials into air and soil. One commenter asked for a list of the kinds of air emissions likely to be released from the plant and another thought that emissions should be monitored by an independent agency.

Water Resources: A number of commenters were concerned with the plant's water usage, specifically the source of water and estimated volumes that will be used. Many commenters were concerned that chemical and radioactive leakage from plant operations and waste, including DUF_6 cylinders, might adversely affect the groundwater and surface water quality of the region. Several commenters asked for information about the kinds of contaminants likely to be released into the water and about current and future stream protection measures. Another stated that stream sediments have been found to have radioactivity five times the natural levels as well as increased levels of arsenic, cadmium, chromium, and mercury. The same commenter stated that Little Beaver Creek has a total uranium level nearly twice the level at which corrective action would be required at civilian nuclear plants. A commenter asked for the location of discharge points, any associated discharge standards (especially for radioactive contaminants), and the consequences for exceeding release limits. Another commenter requested information about radioactive concentration limits for discharges, and asked who was responsible for monitoring water discharges. One commenter recommended that an independent agency be in charge. A commenter recommended that storm-water analysis include scenarios of extreme climate conditions (i.e., flooding, tornados, earthquakes) that may be expected to occur over the projected lifetime of the plant. Another commenter stated that as an alternative to releases in streams and rivers, USEC should consider a "closed lid" system for managing effluents from plant operations.

2.2.6 Socioeconomics

A number of commenters expressed their support for the approximately 500 permanent high-paying, high-tech jobs and the hundreds of construction jobs that USEC expects to bring to the region. One commenter was in support of USEC's "long-term commitment to provide jobs to this region" and thought that "the plant represents an investment in the future of southern Ohio." Another expressed the desire to have future job opportunities in the area for his children and grandchildren. Many commenters stated their belief that having a new $1.5 billion plant will help boost the local economy. One commenter stated that the presence of a uranium enrichment facility has not depressed land values or resulted in a decrease in population in Pike County, like some have claimed. The commenter pointed to the existence of expensive property values and a 12.5 percent population increase in the last decade.

One commenter stated that the proposed plant would be bad for the local economy. Another said that the proposed ACP will inhibit the creation of thousands of jobs because a similar investment of $1.5 billion by any other company should generate 7,000 or 8,000 jobs instead of the 500 expected for the proposed facility.

2.2.7 Transportation

A commenter expressed satisfaction with current transportation regulations and specifications for the materials, construction, and procedures for containerizing/packaging contaminated material. The commenter stated that it would be "virtually impossible in a derailment scenario for contaminated material to get out." Another commenter expressed no confidence that USEC will actually meet the U.S. Department of Transportation's safety requirements when shipping radioactive materials. Several commenters had concerns about the safety of road conditions along the routes across Ohio and to other States like Tennessee, especially in regard to the transport of radioactive waste. They asked for information regarding evaluations of the roads for trucks and rail systems for trains and the standard procedures for transporting materials to and from the facility.

2.2.8 Waste management

General Waste Management: Several commenters stated that waste management must be analyzed in detail in the draft EIS. A commenter expressed concern that the Piketon site is already a nuclear waste disposal site and that the ACP will only add to the problem. Another commenter stated that DOE has already been shipping wastes to Piketon from other sites including Fernald, Oak Ridge, and Paducah and that the transfers would not happen if the ACP were not licensed. The commenter stated that there is a need to identify all the wastes that have been shipped to the site and what will ultimately happen to these wastes. Another commenter stated that all "newly generated" waste streams associated with the ACP should be fully characterized in the draft EIS.

Depleted UF_6 Storage and Disposal: An issue raised by numerous commenters concerned the plans for management of the DUF_6 tails currently stored onsite from past operations, similar wastes from other sites, and those tails expected to be generated as part of the ACP operations. These commenters stated that the draft EIS must address how much waste will be generated by the ACP, where the tails will ultimately go, and whether they could potentially be left onsite for long-term storage. Several commenters indicated that long-term storage of DUF_6 onsite at Piketon is not a reasonable waste management alternative. Two commenters noted that the possible conversion of DUF_6 by the DOE could take years (possibly up to 25 years), with the material being stored onsite in the meantime. A commenter stated that there are currently thousands of these waste cylinders at Piketon and they present a higher risk of radiation contamination to the environment. Another commenter noted that the ACP will only add to the amount of existing DUF_6 that needs to be converted or disposed.

Commenters also stated that, prior to licensing, a contract should be in place describing how and where DUF_6 tails will be disposed. A commenter recommended that the draft EIS describe in detail how much tails disposal will cost and consider the cost of disposal on USEC's ability to pay for the ACP (including decommissioning). Another commenter asked what limitations would be placed on the onsite storage of DUF_6 and whether any fines for noncompliance would be sufficient to motivate USEC to remove the wastes from the site for disposal.

2.2.9 Historic and cultural resources

Two commenters stated support for NRC to conduct a separate cultural resources assessment under Sections 106 and 110 of the National Historical Preservation Act (NHPA) at the Piketon site. These commenters indicated that DOE, which owns the site, has failed to conduct such

reviews previously. One commenter indicated that DOE has never attempted to identify properties that qualify for historic preservation on or near its land in Piketon.

A commenter stated that NRC must consider that in failing to conduct its own Section 106 review properly, DOE may have undermined the legal basis of its agreement with USEC to turn over its facilities for USEC's use.

One commenter stated that omissions of known archaeological sites in the DOE "Risk-Based End-State" report has allowed DOE to avoid its obligation of conducting a thorough cultural resource impact assessment of the site.

These same commenters indicated that the Piketon site has tremendous historical and prehistorical value that has never been studied. One commenter indicated that Pike County has two prehistoric sites (the Piketon Works and the Scioto Township Works), one on DOE's property and the other extending onto it. The commenter noted a third site (the Barnes Home) borders the proposed plant and once included land underneath the existing centrifuge plant. The commenter stated that the Barnes Home is currently under consideration for listing on the National Register of Historic Places, which qualifies it for full protection.

One commenter stated that the Piketon Works (National Register site 74001599) is located in the area where DOE uses earthen embankments to shield its water wells, which provide water to the site. The commenter indicated that pumping from these wells would resume with the operation of the ACP, but the possible effects of the pumping on the Piketon Works have not been studied. This same commenter stated that there has not been a recent survey of the Scioto Township Works (National Register site 74001600).

A commenter stated that DOE should make public a report that was used by USEC to support its contention that no important cultural resources survive on the site, so that the public can evaluate its contents.

One commenter argued that claims by DOE, USEC, and NRC that responsibility for adverse impacts extends only as far as the footprint of the proposed centrifuge plant is incorrect. This commenter stated that DOE and NRC, as Federal agencies, have the following responsibilities at the Piketon site:

- To assess the broad range of potential impacts of major Federal actions on cultural resources as part of the environmental review under NEPA;

- To assess and mitigate adverse impacts of major federal actions on sites that qualify for the National Register of Historic Places under Section 106 of the NHPA; and

- To protect and steward any historic or prehistoric resources on federal land under Section 110 of the NHPA.

The commenter went on to state that NRC must greatly expand the scope of its cultural resource impact analysis as part of the draft EIS and must conduct its own Section 106 review in compliance with NHPA. The commenter indicated that a review of the environmental impacts under NEPA is not a substitute for a Section 106 review unless the agency follows the

requirements of 36 CFR 800.8(c) regarding notifications, identification of historic properties and effects, consultation, and resolution of adverse comments. The commenter requested that NRC include in its review all kinds of effects on all kinds of properties, not simply direct effects on historic buildings or specific archaeological sites. The commenter noted that it may also be important for NRC to consider the possible need to address impacts on Native American graves and cultural items under the Native American Graves Protection and Repatriation Act; archaeological, historic, and scientific resources under the Archaeological and Historic Preservation Act; and cultural resources under NEPA.

2.2.10 Cumulative impacts

A commenter expressed concern over the cumulative effect and long-term public health impacts of building another uranium enrichment facility on the site of a retired one and stated that the draft EIS should consider this issue with increased scrutiny. Another commenter asked if the impact analysis considers that the site has existing contamination and that workers and community members have already had exposure.

2.2.11 Decommissioning

Several commenters expressed concern over USEC's financial standing and whether or not there was a funding plan for the plant's decontamination and decommissioning. There was concern that if USEC goes bankrupt, by default, DOE and taxpayer money would be utilized. Several commenters pointed out the fact that in 2004, DOE spent almost $300 million in taxpayer money for cleanup and that the same is projected for 2005. The commenters recommend that NRC require USEC to create a performance bond, escrow account, or similar fund sufficient to cover the facility's cleanup prior to issuing a license. One commenter suggested that Pike County should possibly play a role in paying for the cleanup of the facility. Others recommended that cleanup costs should be paid by USEC up-front. Commenters also recommended that a study be done to assess total cleanup, waste storage, and decommissioning costs. One commenter asked about the existence of monitoring plans for radioactive landfills when the plant decommissions. The commenter recommended some kind of written agreement in advance to ensure that the DOE reservation does not become a waste dump.

Another commenter requested a detailed account of how Paducah decontamination and decommissioning operations would impact USEC's ability to pay for the development and operation of the ACP.

2.2.12 Safety and risk

Plant Safety: A number of commenters expressed confidence in the safety of the ACP, citing USEC's skilled, highly trained employees, strong employee safety programs and past safety record, and formalized programs to mitigate potential impacts in the event of emergencies. One commenter also noted that the likelihood of an accident that could affect the public is extremely low. Another commenter expressed confidence that USEC will continue to coordinate with the Ohio Environmental Protection Agency and the NRC, and will continue to utilize the most sophisticated tools available to assure the safety of its workers and the community. Another commenter requested information on noncritical, nonexplosive, and

accidental events that are apparently not contained in USEC's Environmental Report. The commenter indicated that information on the source of the contamination and cleanup actions for these releases should be made available and reviewed. The commenter also asked for an explanation of an apparent increase in worker exposure to UF_6 over time as seen from the Contaminated Feed Cleanup Project Dose Trend described in the Environmental Report.

One commenter noted that safety violations in earlier years were due in part to an incomplete understanding of the technology, putting workers at unnecessary risk. As a result, the community has taken a stronger interest in the safe operation of the plant. The commenter noted that it is believed that centrifuge technology is a "much safer and more efficient technology." Several commenters highlighted the great improvement in plant safety and efforts by both union and management working together as a team to ensure that workers and the public are protected. One person commented that "this plant is one of the safest in the country."

One commenter requested further information about the extent of personnel training to validate USEC's statement that "continuing education of employees and a closer monitoring by management can be used to help alleviate incidents." The commenter also asked about the procedure for a public alert after accidental releases. Another commenter recommended that NRC consider the effects of fire and ruptures in process piping in its safety analysis. A commenter also requested that the draft EIS investigate the claim by USEC that no regulated substances will be stored on the site in excess of threshold levels.

One commenter suggested that USEC's training programs should be reviewed because they are inadequate to the point where the plant would be unable to operate safely. The commenter referred to a management culture that "drags its heels to cover up mistakes."

Worker Health and Safety: Several commenters expressed concern over the general health of employees on the site. One commenter asked about the extent of worker monitoring programs and if monitoring will be done by an independent entity. Another commenter stated that "health issues and premature deaths are not being considered." Another questioned how occupational health and safety will be guaranteed and how it will be different from what was previously done during operation of the gaseous diffusion plant. The commenter expressed concern that USEC needs to be forthcoming and honest about the chemicals and substances the workers will be exposed to. One commenter suggested that NRC take into account a 1985 General Accounting Office report that the Portsmouth Gaseous Diffusion Plant workers had the highest exposure of any other gaseous diffusion plant. One commenter wanted assurance from NRC that USEC will always use the latest technology to enure best possible safety practices to protect workers and the community.

A commenter also questioned the role of the Ohio Army National Guard workers at the site. The commenter asked for information on how many of these workers are at the site, where they are located, and what their role is, if any, in relation to the operation of the ACP.

2.2.13 Nuclear nonproliferation and security

Several commenters stated that operation of the ACP could have nonproliferation impacts. One of these commenters noted that the implications of the proposed ACP are international in scope. Another commenter indicated that the Carnegie report, "A Strategy for Nuclear

Security" states that production of even lower levels of enriched uranium than proposed at ACP could have a destabilizing effect on nuclear treaties and initiate a stepped-up arms race. Similarly, two commenters stated that initiatives such as operation of new uranium enrichment facilities might actually risk rather than enhance our national security by encouraging other countries' nuclear weapons initiatives.

In a separate but related comment, one person indicated that the draft EIS should model the effect of security breaches by USEC.

2.2.14 Terrorism

Two commenters expressed concern that the ACP would present a significant risk as a terrorist target, leading to increased terror alerts. Several commenters recommended studies to consider scenarios involving terrorist attacks and to assess security and terrorist risks. A commenter requested information about measures that will be taken to increase security and keep unauthorized people away from the plant.

2.2.15 Credibility

Several commenters indicated that USEC has a good record as a corporate citizen and a good safety record, and people trust that the licensing process is fair and open. These commenters stated that they believe the ACP will be operated in a safe manner, protective of public health and the environment. One commenter noted that an important factor is USEC meeting expectations. One commenter stated, however, that USEC has 16 violation notices, more than any other NRC materials licensee. The commenter noted that USEC has been ordered by NRC to pay civil penalties totaling $378,000. The commenter stated that these past violations warrant exceptional scrutiny of the license application. A commenter stated that the draft EIS should model the impacts associated with uranium enrichment in excess of 10 percent, given USEC's previous enforcement actions for exceeding its possession limit for such material. Commenters also questioned the viability of USEC to see the project through to completion. Other commenters stated that the draft EIS should critically examine the relationship between DOE and USEC.

Other commenters questioned the credibility of past operators of the site, and indicated that this lack of credibility should be considered when making a licensing decision. A few commenters described the past practices at the site as an indication that safety during past operations was a significant issue. For example, one commenter noted plutonium contamination at the site from past operations, which resulted in monetary compensation for plant workers. Another commenter noted that a 1985 GAO report states that workers at the Piketon Gaseous Diffusion Plant had the highest exposures of all the gaseous diffusion plants. Another commenter indicated that there had been several instances when apparent releases occurred at the site, but no notification was made to the public regarding these releases. One commenter stated that all indications point toward the operation failing and that USEC's promises will not be fulfilled.

3. SCOPE OF THE ENVIRONMENTAL IMPACT STATEMENT

The NEPA (Public Law 91-190, as amended), and the NRC's Implementing Regulations for NEPA (10 CFR Part 51), specify in general terms what should be included in an EIS prepared by the NRC staff. Regulations established by the Council on Environmental Quality (40 CFR

Parts 1500-1508), while not binding on NRC staff, provide useful guidance. Additional guidance for meeting NEPA requirements associated with licensing actions can be found in NUREG-1748, "Environmental Review Guidance for Licensing Actions Associated with Office of Nuclear Material Safety and Safeguards (NMSS) Programs."

Pursuant to 10 CFR 51.71(a), in addition to public comments received during the scoping process, the contents of the draft EIS will also address the matters discussed in the USEC Environmental Report. In accordance with 10 CFR 51.71(b), the draft EIS will consider major points of view and objections concerning the environmental impacts of the proposed action raised by other Federal, State, and local agencies, by any affected Indian tribes, and by other interested persons. Pursuant to 10 CFR 51.71(c), the draft EIS will list all Federal permits, licenses, approvals, and other entitlements that must be obtained in implementing the proposed action, and will describe the status of compliance with these requirements. Any uncertainty as to the applicability of these requirements will be addressed in the draft EIS.

Pursuant to 10 CFR 51.71(d), the draft EIS will include a preliminary analysis that considers and weighs the environmental effects of the proposed action; the environmental impacts of alternatives to the proposed action; and alternatives available for reducing or avoiding adverse environmental effects. In the draft analysis, due consideration will be given to compliance with environmental quality standards and regulations that have been imposed by Federal, State, regional, and local agencies having responsibilities for environmental protection. The environmental impact of the proposed action will be evaluated in the draft EIS with respect to matters covered by such standards and requirements, regardless of whether a certification or license from the appropriate authority has been obtained. Compliance with applicable environmental quality standards and requirements does not negate the requirement for NRC to weigh all environmental effects of the proposed action, including the degradation, if any, of water quality, and to consider alternatives to the proposed action that are available for reducing adverse effects. While satisfaction of NRC standards and criteria pertaining to radiological effects will be necessary to meet the licensing requirements of the Atomic Energy Act, the draft EIS will also, for the purposes of NEPA, consider the radiological and nonradiological effects of the proposed action and alternatives.

The following documents are environmental assessments and other EISs which have been prepared that are related to the action under consideration. The following list is not intended to be a comprehensive list:

- Programmatic EIS for Alternative Strategies for the Long-Term Management and Use of Depleted Uranium Hexafluoride (DOE/EIS-0269, March 1999)

- Environmental Assessment of the USEC Inc. American Centrifuge Lead Cascade Facility at Piketon, Ohio (DOE/EA-1495, January 2004)

- Environmental Impact Statement for Construction and Operation of a Depleted Uranium Hexafluoride Conversion Facility at the Paducah, Kentucky, Site (DOE/EIS-0359, December 2003)

- Environmental Impact Statement for Construction and Operation of a Depleted Uranium Hexafluoride Conversion Facility at Portsmouth, Ohio Site (DOE/EIS-0360, December 2003)

Pursuant to 10 CFR 51.71(e), the draft EIS will include a preliminary recommendation by the NRC staff with respect to the proposed action. Any such recommendation would be reached after considering the environmental effects of the proposed action and reasonable alternatives, and after weighing the costs and benefits of the proposed action.

The scoping process summarized in this report will help determine the scope of the draft EIS for the proposed facility. The draft EIS will contain a discussion of the cumulative impacts of the proposed action as referenced in NUREG-1748. The development of the draft EIS will be closely coordinated with the SER prepared by the NRC staff to evaluate the health and safety impacts of the proposed action.

One goal in writing the draft EIS is to present the impact analyses in a manner that makes it easy for the public to understand. This draft EIS will provide the basis for the NRC decision with regard to potential environmental impacts. Significant impacts will be discussed in greater detail in the draft EIS, and explanations will be provided for determining the level of detail for different impacts. This should allow readers of the draft EIS to focus on issues that were determined to be important in reaching the conclusions supported by the draft EIS. The following topical areas and issues will be contained within the draft EIS.

- *Alternatives.* The draft EIS will describe and assess the no-action alternative and other reasonable alternatives to the proposed action. Other alternatives may include alternative sites, enrichment sources, or technological alternatives to the proposed centrifuge technology.

- *Need for the Facility.* The draft EIS will provide a discussion of the need for the proposed ACP.

- *Compliance with Applicable Regulations.* The draft EIS will present a listing of the relevant permits and regulations that are believed to apply to the proposed ACP. These would include air, water, and solid waste regulations and disposal permits.

- *Land Use.* The draft EIS will discuss the potential land use impacts associated with the proposed construction, manufacturing, and operating activities.

- *Transportation.* The draft EIS will discuss the impacts associated with the transportation of construction materials, centrifuge parts, feed material, product, and waste tails during both normal transportation and under credible accident scenarios. The impacts on local transportation routes due to workers, delivery vehicles, and waste removal vehicles will be evaluated.

- *Geology and Soils*. The draft EIS will assess the potential impacts to the geology and soils of the proposed ACP site due to soil compaction, erosion, contamination, landslides, and disruption of natural drainage patterns. Evaluation of the potential for

earthquakes or any other major ground motion considerations will be addressed mainly in the SER and only in terms of possible environmental impacts in the draft EIS.

- *Water Resources.* The draft EIS will assess the potential impacts on surface water and groundwater quality and water use due to the proposed action and alternatives.

- *Ecological Resources.* The draft EIS will assess the potential environmental impacts on ecological resources including plant and animal species. Threatened and endangered species and critical habitats will also be discussed, along with the appropriate consultation as required by Section 7 of the Endangered Species Act (16 USC Section 1536(a)(2)). As appropriate, the assessment will include an analysis of mitigation measures to address potential adverse impacts.

- *Air Quality*. The draft EIS will make determinations concerning the meteorological conditions of the site location, the ambient air quality, and the contribution of other sources. In addition, the draft EIS will assess the impacts of the ACP's refurbishment, construction, and operation on local air quality.

- *Noise.* The draft EIS will discuss potential impacts associated with noise levels generated from refurbishment, construction, and operation of the proposed ACP.

- *Historic and Cultural Resources.* The draft EIS will address the potential impacts of the proposed ACP on the historic and archaeological resources of the area. Additionally, as described in a letter dated December 28, 2004 to the Ohio State Historic Preservation Officer, the EIS will also be used to fulfill NHPA Section 106 (36 CFR Part 800) requirements. Potential impacts to the overall visual and scenic character of the facility may also be addressed.

- *Socioeconomics.* The draft EIS will address the demography, economic base, labor pool, housing, utilities, public services, education, and recreation as impacted by the proposed action and alternatives. The hiring of new workers from the outside area could lead to impacts on the regional housing, public infrastructure, and economic resources. Population changes leading to changes to the housing market and demands on the public infrastructure will be assessed.

- *Costs and Benefits.* The draft EIS will address the potential cost/benefits of constructing and operating the ACP, and will discuss the cost/benefits of tails disposition options.

- *Resource Commitments.* The draft EIS will identify the unavoidable adverse impacts and irreversible and irretrievable commitments of resources. It will also address the relationship between local, short-term uses of the environment and the maintenance and enhancement of long-term productivity. Associated mitigative measures and environmental monitoring will be presented, if applicable.

- *Public and Occupational Health.* The draft EIS will include a determination of potentially adverse effects on human health that result from chronic and acute exposures to ionizing radiation and hazardous chemicals as well as from physical safety hazards. These potentially adverse effects on human health might occur during facility refurbishment, construction, or operation. Impacts associated with the implementation

of the proposed action will be assessed under normal operation and credible accident scenarios.

- *Waste Management.* The draft EIS will discuss the management of wastes, including by-product materials, generated from the refurbishment, construction, and operation of the ACP to assess the impacts of generation, storage, and disposal. Onsite storage of wastes will also be included in the assessment.

- *Depleted Uranium Disposal.* The draft EIS will discuss the DUF_6 material, or tails, that results from the enrichment operation over the lifetime of the proposed plant's operation. These concerns include the safe and secure storage and ultimate removal of the material from the site, and the potential conversion of the DUF_6 to U_3O_8 and ultimate disposition.

- *Decommissioning.* The draft EIS will include a discussion of facility decommissioning and associated impacts.

- *Cumulative Impacts.* The draft EIS will address the potential cumulative impacts from past, present, and reasonably foreseeable activities at and near the site

- *Environmental Justice.* The draft EIS will address environmental impacts of the proposed ACP on low-income or minority populations if disproportionately high and if low-income or minority populations are identified. The impacts that could be evaluated include health, ecological (including water quality), social, cultural, and economic resources.

4. ISSUES CONSIDERED TO BE OUTSIDE THE SCOPE OF THE ENVIRONMENTAL IMPACT STATEMENT

The purpose of an EIS is to assess the potential environmental impacts of a proposed action in order to assist in an agency's decision-making process – in this case, NRC's licensing decision. As noted in Section 2.2, some issues and concerns raised during the scoping process are not relevant to the draft EIS because they are not directly related to the assessment of potential impacts or to the decision-making process. The lack of in-depth discussion in the draft EIS, however, does not mean that an issue or concern lacks value. Issues beyond the scope of the draft EIS either may not yet be at the point where they can be resolved, or are more appropriately discussed and decided in other venues.

Some of the issues raised during the public scoping process (e.g., the Carnegie Report, the "Hobson Doctrine," and the "Megatons to Megawatts" program) will not be addressed in the draft EIS. Other issue areas including nonproliferation concerns, security and safety issues (e.g., the domino effect, tornado effects due to climate change), and credibility are also beyond the scope of the EIS. In *The Matter of Private Fuel Storage, LLC* (Independent Spent Fuel Storage Installation), 56 NRC 340 (2002), the Commission held that NRC staff is not required to consider terrorism in its EISs. The Commission indicated, "the possibility of a terrorist attack...is speculative and simply too far removed from the natural or expected consequences of agency action to require a study under NEPA."

Some of the issues raised during the public scoping process for the proposed facility are outside the scope of the draft EIS, but they will be analyzed in the SER. For example, health

and safety issues will be considered in detail in the SER prepared by NRC staff for the proposed action and will be summarized in the EIS. The draft EIS and the SER are related in that they may cover the same topics and may contain similar information, but the analysis in the draft EIS is limited to an assessment of potential environmental impacts. In contrast, the SER primarily deals with safety evaluations and procedural requirements or license conditions to ensure the health and safety of workers and the general public. The SER also covers other aspects of the proposed action such as demonstrating that the applicant will provide adequate funding for the proposed facility in compliance with NRC's financial assurance regulations.

APPENDIX B
SUMMARY OF SECTION 106 CONSULTATION CORRESPONDENCE

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APPENDIX B
SUMMARY OF SECTION 106 CONSULTATION CORRESPONDENCE

This appendix provides a chronological list of Section 106 related correspondence and information broken down by government organizations, Tribal organizations, consulting parties, and interested members of the public. Section B.1 (beginning on page B-3) lists information related to Federal, State, and local government agencies. Section B.2 (beginning on page B-55) lists information related to Tribal governments, and Section B.3 (beginning on page B-161) lists information related to consulting parties and interested members of the public. All of this correspondence can be found on NRC's website at the following link: http://www.nrc.gov/materials/fuel-cycle-fac/summ-section-106.html.

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B.1 COMMUNICATIONS TO/FROM FEDERAL, STATE, AND LOCAL GOVERNMENT AGENCIES

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NRC FORM 699 (9-2003) — U.S. NUCLEAR REGULATORY COMMISSION

CONVERSATION RECORD

DATE: 11/23/2004

TIME:

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU: David Snyder

TELEPHONE NO.: 6142982000

ORGANIZATION: Ohio Historic Preservation Office (OHPO)

SUBJECT: USEC

TYPE OF CONVERSATION
- ☐ VISIT
- ☐ CONFERENCE
- ☑ TELEPHONE
  - ☐ INCOMING
  - ☑ OUTGOING

SUMMARY *(Continue on Page 2)*

Brief conversation w/ David Snyder of OHPO indicating that NRC is planning to send out a Section 106 consultation letter to Mark Epstein regarding information on historic resources. Clarified to Mr. Snyder that mutual consultations were done by USEC and not on NRC's behalf - NRC needs to confirm that information is correct and complete.

Continue on Page 2

ACTION REQUIRED

NONE

NAME OF PERSON DOCUMENTING CONVERSATION	SIGNATURE	DATE
Ron C. Linton NOV 23 2004	Ron C. Linton	

ACTION TAKEN

TITLE OF PERSON TAKING ACTION	SIGNATURE OF PERSON TAKING ACTION	DATE

December 28, 2004

Mr. Mark Epstein, Department Head
Ohio Historic Preservation Office
Resource Protection and Review
567 East Hudson Street
Columbus, OH 43211-1030

SUBJECT: INITIATION OF THE NATIONAL HISTORIC PRESERVATION ACT SECTION 106 PROCESS FOR THE PROPOSED AMERICAN CENTRIFUGE COMMERCIAL PLANT, PIKE COUNTY, OHIO

Dear Mr. Epstein:

The United States Nuclear Regulatory Commission (NRC) has received a license application from USEC, Inc. (USEC) for the construction, operation, and decommissioning of a gas centrifuge uranium enrichment facility known as the American Centrifuge Plant (ACP). The NRC is in the initial stages of developing an Environmental Impact Statement (EIS) for the proposed facility to be located at the Department of Energy (DOE) reservation in Piketon, Ohio. USEC's license application contained an Environmental Report (ER) that will be used to support the NRC's development of an EIS for the ACP. The proposed facility will use gas centrifuge technology to enrich the isotope Uranium -235 in uranium hexaflouride (UF6), up to 10-weight percent. The proposed ACP will have a design capacity of seven million separative work units. The forthcoming EIS will document the impacts associated with the construction, operation, and decommissioning of the facility.

Two preliminary phase I archaeological surveys and one draft cultural resource report have been completed for the DOE reservation. Archaeological surveys and the cultural report results are discussed section 3.8 of the ER (enclosed). Historical and cultural resource impacts are discussed in section 4.8 of the ER (enclosed).

As required by 36 CFR 800.3 (f), the NRC is requesting any information you may have regarding other parties that may be entitled to be consulting parties by this action. As required by 36 CFR 800.4(a), the NRC is requesting the views of the State Historic Preservation Officer and your office on further actions to identify historic properties that may be affected by the proposed ACP.

As part of the EIS preparation, the NRC will be hosting a public scoping meeting on Tuesday, January 18, 2005, at the Zahns Corner Middle School in Piketon from 7:00 - 9:45. The meeting will include NRC staff presentations on the environmental review process, after which members of the public will be given the opportunity to present their comments. This scoping information, along with any information you provide, and material provided by USEC in the ER, will be used to document affects in accordance with 36 CFR 800.4 and 800.5. Additionally, we intend to use the EIS process for Section 106 purposes as described in 36 CFR 800.8.

If you any questions or comments, or need additional information, please contact Ron Linton at (301) 415-7777.

Sincerely,

/RA/

B. Jennifer Davis, Chief
Environmental and Performance
Assessment Branch
Division of Waste Management
and Environmental Protection
Office of Nuclear Material Safety
and Safeguards

Docket No.: 70-7004

cc: USEC Service List

Enclosure: Section 3.8 and 4.8 Environmental Report

As part of the EIS preparation, the NRC will be hosting a public scoping meeting on Tuesday, January 18, 2005, at the Zahns Corner Middle School in Piketon from 7:00 - 9:45. The meeting will include NRC staff presentations on the environmental review process, after which members of the public will be given the opportunity to present their comments. This scoping information, along with any information you provide, and material provided by USEC in the ER, will be used to document affects in accordance with 36 CFR 800.4 and 800.5. Additionally, we intend to use the EIS process for Section 106 purposes as described in 36 CFR 800.8.

If you any questions or comments, or need additional information, please contact Ron Linton at (301) 415-7777.

Sincerely,

/RA/

B. Jennifer Davis, Chief
Environmental and Performance
Assessment Branch
Division of Waste Management
and Environmental Protection
Office of Nuclear Material Safety
and Safeguards

Docket No.: 70-7004

cc: USEC Service List

Enclosure: Section 3.8 and 4.8 Environmental Report

DISTRIBUTION: EPAD r/f

Log No.: 04-126

ML043550032

OFC	DWMEP		DWMEP	
NAME	RLinton		JDavis	
DATE	12/21/04		12/28/04	

USEC Service List

cc:

William Szymanski
U.S. Department of Energy
1000 Independence Ave, SW
Washington, DC 20585

Michael Marriott
Nuclear Information and resource Service,
1424 16th St., NW
Washington, DC 20036

The Honorable Robert W. Ney
Member, United States House of Representatives
2438 Rayburn HOB
Washington, DC 20515

The Honorable George V. Voinovich
United States Senator
317 Hart Senate Office Building
Washington, DC 20510

The Honorable Rob Portman
Member, United States House of Representatives
238 Cannon House Office Building
Washington, DC 20515

The Honorable Mike DeWine
United States Senator
140 Russell Senate Office Building
Washington, DC 20410

The Honorable Bob Taft
Governor of Ohio
77 South High Street
30th Floor
Columbus, Ohio 43215-6117

Ms. Mary Glasgow
601 Chillicothe Street
Portsmouth, Ohio 45662

Mr. Teddy L. Wheeler
Pike County Auditor
Pike County Government Center
230 Weaverly Plaza, Suite 200
Weaverly, Ohio 45690-1289

Mr. Harry Rioer
Pike County Commissioner
230 Weaverly Plaza Suite 1000
Weaverly, Ohio 45690

Mr. Larry E. Scaggs
Township Trustee
230 Weaverly Plaza Suite 1400
Weaverly, Ohio 45690

Kara Willis
16 North Paint St.,Suite 102
Chillicothe, Ohio 45601

Jim Brushart
Pike Co.Comm. Chair
230 Weaverly Plaza Suite 1000
Weaverly, Ohio 45690

Mr. Gary Hager
ATTN: Mailstop-4025
P.O.Box 628
Piketon, Ohio 45661

Mr. Blaine Beekman
Executive Director
Pike County Chamber of Commerce
P.O. Box 107
Weaverly, Ohio 45696

Billy Spencer, Mayor of Piketon
Mayor of Piketon
P. O. Box 547
Piketon, Ohio 45661

Rocky Brown, Mayor of Beaver
7677 State sr335
Beaver, Ohio 45613

Mr. Peter J.Miner, Director
Regulatory and Quality Assurance
USEC Inc.
6903 Rockledge Drive
Bethesda, MD 20817

Randall Devault, Regulatory Oversight Manager
Department of Energy - Oak Ridge
P.O. Box 2001
Oak Ridge, TN 37831-8651

Dan Minter
Southern Ohio Development Initiative,
P.O.Box 467
Piketon, OH 45661

Mr.James R. Curtiss, Winston & Strawn,
1400 L Street, NW
Washington, DC. 20005-3502

Teddy West
2170 Wakefield Mound Road
Piketon, OH 45661

Carol O'Claire, Supervisor
Radiological Branch
Ohio Emergency Management Ag ency
2855 West Dublin-Granville Road
Columbus, OH 43235-2206

Rod Krich, Vice President
Licensing Projects
Exelon Generation Co.
4300 Winfield Road
Warrenville, IL 60555

Ohio Historic Preservation Office

567 East Hudson Street
Columbus, Ohio 43211-1030
614/ 298-2000 Fax: 614/ 298-2037

Visit us at www.ohiohistory.org

OHIO HISTORICAL SOCIETY
SINCE 1885

February 2, 2005

Ron Linton
Environmental and Performance Assessment Branch
Nuclear Regulatory Commission
Washington, DC 20555-0001

Re: Docket No. 70-7004, American Centrifuge Commercial Plant
Portsmouth Gaseous Diffusion Plant (PORTS), Pike County, Ohio

Dear Mr. Linton,

This is in response to correspondence from your office dated December 28, 2004 (received January 3) regarding the above referenced project. The comments of the Ohio Historic Preservation Office (OHPO) are submitted in accordance with provisions of the National Historic Preservation Act of 1966, as amended (16 U.S.C. 470 [36 CFR 800]); the Department of Energy serves as the lead federal agency.

Your correspondence initiates consultation by the Nuclear Regulatory Commission (NRC) for the above referenced project. We acknowledge that the NRC will be following regulations at 36 CFR 800.8 in the review process integrating the Section 106 review with the development of the Environmental Report (ER) for this project. Your correspondence also requests information on consulting parties.

This office has previously reviewed information on the proposed project and has responded to the position that the proposed new construction will include buildings of similar design and size to the nearby buildings and that there will be similar functions carried out in these new buildings. Given the available information on the size, design, and function of the existing and the proposed buildings, we were able to offer our opinion that the proposed project will not adversely affect the Portsmouth Gaseous Diffusion Plant historic property.

As you are aware, private citizens have raised concerns about the potential for this project to affect historic properties, including prehistoric archaeological sites. The National Historic Preservation Act encourages federal agencies to include comments and concerns from the public throughout the Section 106 review process.

In addition to other consulting parties that your agency may have identified, we recommend that you consider notifying Native American Federally-Recognized Tribal authorities that are historically associated with south-central Ohio and may have information on historic properties in this area. Attached please find a partial list of Tribes with historical ties to Ohio. We believe that this list may be helpful in finalizing your list of potential consulting parties to whom you will be providing notification of the project.

I think that it is important for you to clearly convey to consulting parties and to the public the extent of the efforts to identify historic properties and to assess the potential for the project to adversely affect historic properties. I am concerned that the discussions in your correspondence and in the attached sections from the draft ER should be clearer and more precise. For example, the archaeological surveys were not preliminary, but their conclusions are preliminary and we are still working at interpreting the results and developing a consensus on the findings. In some cases it might be appropriate to describe an archaeological survey as preliminary, especially when the primary objective of the work for a survey is to

lay the ground work for the next phase of an intended and expected survey. The predictive model work that you reference might be described as preliminary but it also provides important information on the distribution of known sites in the vicinity of the Portsmouth Gaseous Diffusion Plant. Also, at least one additional archaeological study has been conducted within the facility at archaeological site 33-PK-210. This study may not be relevant to this project, but language in the draft ER might lead some to conclude that all of the previous archaeological work is referenced rather than only a portion of the previously completed work. The survey methods employed in the predictive model work are likely quite different from the survey methods employed in identification efforts.

I think that it would be more helpful to describe the conclusions of the Schweikart 1997 archaeological survey as recommendations, not as determinations. In the past we have encountered some confusion in descriptions of known archaeological sites both within and in the general area surrounding the facility. For example, not all archaeological sites with prehistoric components are burial grounds and many archaeological sites are quite small, less than 100 square meters.

Similar kinds of concerns could also be raised concerning the presentation of the information on architectural properties in the Environmental Report.

In summary, it would be helpful for the documentation to provide greater clarity and to provide greater precision to facilitate the integration the discussions on archaeological sites, architectural properties, and other kinds of cultural resources within the overall assessment of effects.

Any questions concerning this matter should be addressed to David Snyder at (614) 298-2000, between the hours of 8 am. to 5 pm. Thank you for your cooperation.

Sincerely,

David Snyder

David Snyder, Archaeology Reviews Manager
Resource Protection and Review

DMS/ds (OHPO Serial Number 105834)

Enclosure

To assist you in the event that consultation with federally recognized tribal authorities is needed, OHPO maintains a list of federally recognized tribal authorities including listings from the Bureau of Indian's Affairs' Tribal Leaders Directory. This list is not all-inclusive; it represents a first step in developing procedures to address issues of disposition and repatriation. There are currently no federally recognized tribal authorities in Ohio since Ohio does not have any Native American Reservations or Land. However, there are many active Native American groups and organizations in Ohio. Also, in some cases, the Ohio Historic Preservation Office may be able to assist agencies and individuals contact individuals who have expressed an interest in the issues involving reburial. If the need develops we can provide assistance to get you started in compiling a list of interested parties.

Endnote. For further information, you may wish to contact the following:

Tim McKeown, National Center for Cultural Resources, National Park Service, P.O. Box 37127, Washington, D.C. 20013-7127, (202) 343-1142

Francis McManamon, National Center for Cultural Resources, National Park Service, P.O. Box 37127, Washington, D.C. 20013-7127, (202) 343-4101

The following are representatives of Federally-recognized Tribal Authorities of some tribes having historic connections to Ohio (based on the Tribal Leaders Directory, Bureau of Indian Affairs, Division of Tribal Government Services, January 1992 - for more information phone: 202/208-4400):

Mr. James Leaffe, Chief
Cayuga Nation
P.O. Box 11
Versailles, NY 14168
Attn: Mr. Clint Halftown, THPO Representative
Telephone: 716-532-4847

Cherokee Nation of Oklahoma
P.O. Box 948
Ada, OK 74820

Turtle Mountain Band of Chippewa Indians
P.O. Box 900
Belcourt, ND 58316
Attn: Mr. Kade M. Ferris, Tribal Historic Preservation Officer, Office of Archaeology and Historic Preservation
THPO: Mr. Kade M. Ferris

Mr. Bruce Gonzales, President
Delaware Tribe of Western Oklahoma
P.O. Box 825
Anardarko, OK 73005
Attn: Ms. Tamara Francis, Delaware Nation NAGPRA Office
Telephone: 405-247-2448
FAX: 405-247-9393
Email: aapanahkih@westerndelaware.nsn.us

Mr. John Pryor, Executive Officer
Miami Tribe of Oklahoma
P.O. Box 1326
202 South Eight Tribes Trail
Miami, OK 74355
Attn: Ms. Julie Olds, THPO
THPO: Ms. Julie Olds
Telephone: 918-542-1445 X16 (Olds)
FAX: 918-542-7260
Email: jolds@miamination.com

Mr. Charles Todd, Chief
Ottawa Tribe of Oklahoma
P.O. Box 110
Miami, OK 74355
Attn: Mr. Roy Ross
Telephone: 918-540-1536
FAX: 918-542-3214

Mr. John P. Froman, Chief
Peoria Tribe of Oklahoma
P.O. Box 1527
118 S. Eight Tribes Trail
Miami, OK 74355
Attn: Mr. Bud Ellis, Repatriation Committee Chairman
Telephone: 918-540-2535
FAX: 918-540-2538

Mr. Harold Frank, Chairperson
Forest County Potawatomi
P.O. Box 340
Community of Wisconsin Potawatomi
Crandon, WI 54520
Attn: Ms. Clarice M. Werle, NAGPRA Contact
Telephone: 715-478-7381 (Werle)
FAX: 715-478-7385

Mr. John A. Barrett, Jr., Chairperson
Citizen Potawatomi Nation
1601 S. Gordon Cooper Drive
Shawnee, OK 74801
Attn: Mr. Jeremy Finch
Telephone: 405-275-3121
FAX: 405-275-0198
800 Number: 800-880-9880

Mr. Calvin John, President
Seneca Nation of Indians
P.O. Box 231
Salamanca, NY 14779
Attn: Ms. Kathleen Mitchell, THPO
THPO: Ms. Kathleen Mitchell
Telephone: 716-945-9427
FAX: 716-945-1989
Email: snithpo@netscape.net

Mr. Jerry Dilliner, Chief
Seneca-Cayuga Tribe of Oklahoma
P.O. Box 1283
R2301 E. Steve Owens Blvd.
Miami, OK 74355
Attn: Mr. Paul Barton
Telephone: 918-542-6609
FAX: 918-542-3684
Email: maimit5@onenet.net

Mr. Charles D. Enyart, Chief
Eastern Shawnee Tribe of Oklahoma
P.O. Box 350
Seneca, MO 64865
Attn: R.C. Kissee
Telephone: 918-666-2435 X241
FAX: 918-666-3325
Email: estochief@hotmail.com

Mr. James Squirrel
Loyal Shawnee Tribe
Route 4, Box 30
Jay, OK 74346

Mr. Kenneth Daugherty, Tribal Secretary
Absentee-Shawnee Tribe of Oklahoma
2025 S. Gordon Cooper Drive
Shawnee, OK 74801-9381
Attn: Ms. Karen Kaniatobe
Telephone: 405-275-4030 X124
FAX: 405-275-1922
Email: jenniferm@astribe.com

Mr. Leaford Bearskin, Chief
Wyandotte Nation
P.O. Box 250
Wyandotte, OK 74370
Attn: Ms. Sherri Clemons

From: Ron Linton
To: Matthew Blevins
Date: 3/10/05 4:13PM
Subject: USEC sect 106 tribal consultation, NPS contact

Matt:
I put together a short memo (see attached) about my conversation with Tim McKeown of the NPS regarding Indian tribes with historical connections to the south-central Ohio area.
Ron

Mail Envelope Properties (4230B861.750 : 22 : 21859)

Subject:	USEC sect 106 tribal consultation, NPS contact
Creation Date:	3/10/05 4:13PM
From:	Ron Linton
Created By:	rcl1@nrc.gov

Recipients	**Action**	**Date & Time**
nrc.gov		
twf4_po.TWFN_DO	Delivered	03/10/05 04:13PM
MXB6 (Matthew Blevins)	Opened	03/10/05 04:13PM

Post Office	**Delivered**	**Route**
twf4_po.TWFN_DO	03/10/05 04:13PM	nrc.gov

Files	**Size**	**Date & Time**
MESSAGE	601	03/10/05 04:13PM
MemotoMXB-NPS contact McKeown.wpd	5680	03/10/05 04:05PM

Options

Auto Delete:	No
Expiration Date:	None
Notify Recipients:	Yes
Priority:	Standard
Reply Requested:	No
Return Notification:	

Send Notification when Opened

Concealed Subject:	No
Security:	Standard
To Be Delivered:	Immediate
Status Tracking:	Delivered & Opened

Memorandum

To: Matthew Blevins, Senior Project Manager

From: Ron Linton, Project Manager

Date: March 10, 2005

Subject: USEC American Centrifuge Plant, National Historic Preservation Act (NHPA) Section 106 consultation process and American Indian Tribes identified with historical connections to south-central Ohio

By letter dated February 2, 2005, David Snyder, Archaeology Reviews Manager, Ohio Historical Society (Ohio State Historical Preservation Office) responded to our letter requesting assistance with identifying other consulting parties under the NHPA Section 106 process. In his letter, he identified 15 Native American Federally-recognized tribal authorities that are historically associated with south-central Ohio and may have information on historic properties in the area. He also indicated that more information may be obtained on Native American Federally-recognized tribal authorities by contacting individuals with the National Park Service.

On March 7, 2005, I contacted Mr. Tim McKeown, Archeologist, with the National Park Service, to discuss tribal authorities that are historically associated with south-central Ohio. Mr. McKeown was very helpful and indicated that all of the State of Ohio was secured from Native American Indian tribes via several treaties. While on the phone together, we concurrently visited several web sites to determine what tribes were involved in treaties with the United States in Ohio. We were able to determine that all of south-central Ohio was obtained by the United States on August 3, 1795 after the signing of the Treaty of Greenville. The Treaty of Greenville was signed by Chiefs of the Wyandot, Delaware, Shawnee, Ottawa, Miami, Eel River, Wea, Chippewa, Potawatomi, Kickapoo, Piankashaw, and Kaskaskia Indians. After determining what tribes were involved with the treaty we went to the Native American Consultation Database (NACD) at http://cast.uark.edu/other/nps/nacd/ which is a tool for identifying consultation contacts for Indian tribes and other Native-American organizations. The NACD database is one database under the National Native American Graves Protection and Repatriation Act Online Databases of the National Park Service. At that point, Mr. McKeown indicated that I could query the database using the tribes we identified as being involved in the Treaty of Greenville.

I queried the database for the 12 tribes identified as signors of the treaty and printed out the results. After review, I determined contact names for Federally-recognized Indian tribes with land claims in Ohio. Nine of the tribal contact names suppled by Mr. Snyder were on the lists. Six of the tribal contact names supplied by Mr. Snyder were not on the lists. Two additional tribal contact names were identified that were not supplied by Mr. Snyder. I have sent Section 106 consultation letters to the 15 tribal contacts listed by Mr. Snyder (9 of which were on the NACD database) as well as the two additional tribal contacts identified through the NACD search, for a total of 17 tribal consultation letters. The consultation letters request any known information on historical or cultural resources at the DOE reservation at Piketon, Ohio.

NRC FORM 699 (9-2003) U.S. NUCLEAR REGULATORY COMMISSION

CONVERSATION RECORD

DATE: 3/7/05
TIME: 2:45 pm.

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU: Mr. Tim McKeown
TELEPHONE NO.: 202-354-2206
ORGANIZATION: NPS
SUBJECT: TPHO contacts

TYPE OF CONVERSATION
- [ ] VISIT
- [ ] CONFERENCE
- [x] TELEPHONE
  - [ ] INCOMING
  - [x] OUTGOING

SUMMARY (Continue on Page 2)

Treaty of Greenville, Aug 3, 1795
Treaty #11
Aug 3, 1795 - the following tribes - Wyandot, Delaware, Shawnee, Ottawa, Chippewa (Chippewa), Potawatomi, Miami, EEL River, Wea, Kickapoo, Piankishaw, Kaskaskia - (Peoria (Wea) Piank. Kaskask.)

http://www.cast.uark.edu/other/nps/nacd/

Spoke @ length w/ Tim McKeown. We searched several databases. He found that land in central + southern Ohio was subject to the Treaty of Greeneville, Aug 3, 1795 and involved the tribes listed above. I downloaded and searched NPS database for context w/ historical land claims to OH. All noted that I found were already identified by Ohio SHPO - as well as several others. Seems the OHIO SHPO list is comprehensive of those tribes w/ historical claims and connections w/ Southern + central Ohio.

Continue on Page 2

ACTION REQUIRED
NONE

NAME OF PERSON DOCUMENTING CONVERSATION	SIGNATURE	DATE
KEN LINTON	KL	3/7/05

ACTION TAKEN

TITLE OF PERSON TAKING ACTION	SIGNATURE OF PERSON TAKING ACTION	DATE

March 14, 2005

Mr. James Brushart
President, Pike County Commissioners
230 Waverly Plaza, Suite 1000
Waverly, Ohio 45690

SUBJECT: INITIATION OF THE NATIONAL HISTORIC PRESERVATION ACT SECTION 106 CONSULTATION PROCESS FOR THE PROPOSED AMERICAN CENTRIFUGE COMMERCIAL PLANT, PIKE COUNTY, OHIO

Dear Mr. Brushart:

The United States Nuclear Regulatory Commission (NRC) has received a license application from USEC, Inc. (USEC) for the construction, operation, and decommissioning of a gas centrifuge uranium enrichment facility known as the American Centrifuge Plant (ACP). The NRC is in the initial stages of developing an Environmental Impact Statement (EIS) for the proposed facility to be located at the Department of Energy (DOE) reservation in Piketon, Ohio. USEC's license application contained an Environmental Report (ER) that will be used to support the NRC's development of an EIS for the ACP. The proposed facility will use gas centrifuge technology to enrich the isotope Uranium-235 in uranium hexaflouride (UF6), up to 10-weight percent. The proposed ACP will have a design capacity of seven million separative work units. The forthcoming EIS will document the impacts associated with the construction, operation, and decommissioning of the facility.

Two phase I archaeological surveys and one draft cultural resource report have been completed for the DOE reservation. Archaeological surveys and the cultural report results are discussed section 3.8 of the ER (enclosed). Historical and cultural resource impacts are discussed in section 4.8 of the ER (enclosed). The Area of Potential Effects (APE) is defined as the DOE reservation in Piketon, Ohio.

As required by 36 CFR 800.3 (f), the NRC is requesting any information you may have regarding historic sites or cultural resources within the APE. The NRC is interested in knowing if you have specific knowledge of any sites that you believe have traditional religious and cultural significance. In addition, we are interested in knowing if you are aware of or are concerned for any site, or object, eligible for inclusion on the National Register of Historic Places. This will assure appropriate consideration in the Section 106 process.

Any information you provide may be used to document affects in accordance with 36 CFR 800.4 and 800.5. Additionally, we intend to use the EIS process for Section 106 purposes as described in 36 CFR 800.8.

If you any questions or comments, or need additional information, please contact Ron Linton at (301) 415-7777.

Sincerely,

/RA/

B. Jennifer Davis, Section Chief
Environmental and Low-Level
Waste Section
Division of Waste Management
and Environmental Protection
Office of Nuclear Material Safety
and Safeguards

Docket No.: 70-7004

cc: USEC Service List

Enclosure: Section 3.8 and 4.8 Environmental Report

From: Ron Linton
To: Matthew Blevins
Date: 3/24/05 3:15PM
Subject: USEC ACP, Scioto Township Works I and Piketon Mounds

Matt:
Memo to you of my conversation with David Snyder, Ohio SHPO, clarifying the Scioto Township Works I and the Piketon Mounds that are listed on the National Register in Piketon, Ohio. Hope this is helpful.

Ron C. Linton
Project Manager
U.S. Nuclear Regulatory Commission
Office of Nuclear Material Safety and Safeguards
Mail Stop T7 J08
Washington, DC 20555-0001
301-415-7777 phone
301-415-5397 fax
rcl1@nrc.gov

CC: Marian Zobler

Mail Envelope Properties (42431FF9.AD8 : 22 : 16483)

Subject:	USEC ACP, Scioto Township Works I and Piketon Mounds
Creation Date:	3/24/05 3:15PM
From:	Ron Linton
Created By:	RCL1@nrc.gov

Recipients	**Action**	**Date & Time**
owf5_po.OWFN_DO	Delivered	03/24/05 03:15PM
MLZ CC (Marian Zobler)	Opened	03/24/05 03:19PM
nrc.gov		
twf4_po.TWFN_DO	Delivered	03/24/05 03:15PM
MXB6 (Matthew Blevins)	Opened	03/24/05 06:23PM

Post Office	**Delivered**	**Route**
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twf4_po.TWFN_DO	03/24/05 03:15PM	nrc.gov

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Memorandum

To: Matthew Blevins, Senior Project Manager

From: Ron Linton, Project Manager

Date: March 24, 2005

Subject: Discussion with David Snyder, Archaeology Reviews Manager, Resource Protection and Review, Ohio Historic Preservation Office, concerning the Scioto Township Works I and Piketon Mounds listed on the *National Register* in Piketon, Ohio

On March 24, 2005, I contacted Mr. David Snyder to discuss the prehistoric earthworks that are in proximity to the proposed American Centrifuge Plant (ACP). These earthworks were discussed by Mr. Geoffrey Sea in written comments received by the NRC during the scoping period and in a subsequent contention in Mr. Sea's petition to intervene.

Mr. Snyder relayed to me that the earthworks referenced on the *National Register* as the Scioto Township Works I (74001600) comprise the square and circle connected by a linear feature, and several other smaller features, as depicted by Squier and Davis, 1846. This circle, square, connecting linear feature and several other smaller features are reproduced by Mr. Sea from Squier and Davis, 1846, and are included in Mr. Sea's scoping statement. This is also depicted by Mr. Sea as exhibit A in his list of contentions attached to his petition to intervene filed February 28, 2005. In both his petition to intervene and in his scoping statement, Mr. Sea has depicted a much larger circle encompassing the square (see exhibit A of his petition to intervene). He has noted in his petition that the larger circle has not been professionally surveyed. Mr. Snyder indicated that there is no archeological evidence at this time to make any conclusions about the larger circle identified by Mr. Sea. Mr. Snyder indicated that approximately 90% of the Scioto Township Works I have been obliterated over the years by a sand/gravel/quarry operation and other construction.

Additionally, the earthworks depicted by Mr. Sea near the DOE water-supply wells, referenced by Mr. Sea as "section of Piketon Works", were referred to by Mr. Snyder as a "graded way" that may be isolated from the Scioto Township Works I. Mr. Snyder indicated that to make the connection between the "graded way" earthworks by the DOE water-supply wells and the Scioto Township Works I would take further study by a professional archeologist. I confirmed that the Piketon Mounds (74001599) listed on the *National Register* are not to the west of the DOE reservation and are not the "graded way" referenced by Mr. Snyder near the DOE water-supply wells. This may cause some confusion in the future as the Piketon Mounds on the *National Register* are also known as "Piketon Mounds and Graded Way". Mr. Snyder indicated that a linear feature is often referred to as a "graded way" and that this is a very generic term.

Mr. Snyder indicted that there are earthworks every few miles along the Scioto River from Portsmouth to Circleville, Ohio which is approximately 75 miles.

NRC FORM 699 (9-2003)

U.S. NUCLEAR REGULATORY COMMISSION

CONVERSATION RECORD

DATE: 3/24/05

TIME:

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU: David Snyder

TELEPHONE NO.: 614-298-2000

ORGANIZATION: Ohio SHPO

SUBJECT: USEC

TYPE OF CONVERSATION:
- [ ] VISIT
- [ ] CONFERENCE
- [x] TELEPHONE
  - [ ] INCOMING
  - [x] OUTGOING

SUMMARY (Continue on Page 2)

DAVID SNYDER
Thrall. West of South access road
Known @ Scioto Township Work 1
Works every few miles along the River
75 miles from Portsmouth to Circleville - along that
Stretch - 1820 - Atwater -
Complexes are very big -
90% - obliterated by Sand/gravel ~~gravel~~ (quarry) operation
"graded way" - by wells - may be isolated - hard to make the
Connection -
no archeological evidence @ this point to
Wellfield to development - could be helpful - understanding access road -
helpful

Continue on Page 2

ACTION REQUIRED: NONE

NAME OF PERSON DOCUMENTING CONVERSATION: Ron Linton

SIGNATURE: Ron C Linton

DATE: 3/24/05

ACTION TAKEN:

TITLE OF PERSON TAKING ACTION:

SIGNATURE OF PERSON TAKING ACTION:

DATE:

May 20, 2005

ACHP, Office of Federal Agency Programs
Attention: Don Klima, Director
1100 Pennsylvania Avenue NW, Suite 809
Washington, D.C. 20004

SUBJECT: COORDINATION OF NATIONAL HISTORIC PRESERVATION ACT SECTION 106 REQUIREMENTS AND NATIONAL ENVIRONMENTAL POLICY ACT REVIEW FOR THE PROPOSED AMERICAN CENTRIFUGE PLANT, PIKE COUNTY, OHIO

Mr. Klima:

The United States Nuclear Regulatory Commission (NRC) has received a license application from USEC, Inc. (USEC) for the construction, operation, and decommissioning of a gas centrifuge uranium enrichment facility known as the American Centrifuge Plant (ACP). The proposed facility is to be located at the Department of Energy (DOE) reservation in Piketon, Ohio. USEC's license application contained an Environmental Report (ER) that will be used to support the NRC's development of an environmental impact statement (EIS) as required by the NRC's National Environmental Policy Act (NEPA) implementing regulations. The proposed facility will use gas centrifuge technology to enrich the isotope uranium-235 in uranium hexaflouride (UF_6), up to 10-weight percent. The proposed ACP will have a design capacity of seven million separative work units. The forthcoming EIS will document the impacts associated with the construction, operation, and decommissioning of the proposed facility.

Two preliminary phase I archaeological surveys and one draft cultural resource report have been completed for the DOE reservation. Archaeological surveys and the cultural report results are discussed in section 3.8 of USEC's ER (enclosed). Historical and cultural resource impacts are discussed in section 4.8 of USEC's ER (enclosed).

As described in 36 CFR 800.8 we are notifying you that we intend to use the NRC's NEPA review process for Section 106 purposes. In using the NRC's NEPA process in lieu of the procedures set forth in 36 CFR 800.3 through 800.6 we will ensure the standards set forth in 800.8(c)(1) through 800.8(c)(5) are met.

We have previously notified the Ohio State Historical Preservation Officer of our intent to utilize the NRC's NEPA review process to comply with Section 106 requirements in a letter dated December 28, 2004 (enclosed). Additionally, we have solicited information from 17 Indian tribes and one local official in letters dated March 14, 2005 and March 18, 2005. Also, as part of our NEPA review process, we hosted a NEPA public scoping meeting on January 18, 2005, in Piketon, Ohio. At this meeting, we solicited information on cultural and historic properties. A full transcript of this meeting as well as all project related correspondence is available at the NRC's public web site: http://www.nrc.gov/reading-rm/adams.html.

We plan to a issue the draft EIS in September 2005 and will include you in our distribution. If you any questions or comments, or need additional information, please contact Ron Linton at (301) 415-7777.

Sincerely,

/**RA**/

B. Jennifer Davis, Section Chief
Environmental Review Section
Division of Waste Management
and Environmental Protection
Office of Nuclear Material Safety
and Safeguards

Docket No.: 70-7004

cc: USEC Service List

Enclosures:
1. Section 3.8 and Section 4.8 of USEC's Environmental Report (ML043550029)
2. December 28, 2004 letter to Ohio SHPO (ML043520095)

We plan to a issue the draft EIS in September 2005 and will include you in our distribution. If you any questions or comments, or need additional information, please contact Ron Linton at (301) 415-7777.

Sincerely,

/RA/

B. Jennifer Davis, Section Chief
Environmental Review Section
Division of Waste Management
and Environmental Protection
Office of Nuclear Material Safety
and Safeguards

Docket No.: 70-7004

cc: USEC Service List

Enclosures:
1. Section 3.8 and Section 4.8 of USEC's Environmental Report (ML043550029)
2. December 28, 2004 letter to Ohio SHPO (ML043520095)

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USEC Service List cc:
William Szymanski
U.S. Department of Energy
1000 Independence Ave, SW
Washington, DC 20585

Michael Marriott
Nuclear Information and resource Service,
1424 16th St., NW
Washington, DC 20036

The Honorable Robert W. Ney
Member, United States House of Representatives
2438 Rayburn HOB
Washington, DC 20515

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The Honorable Bob Taft
Governor of Ohio
77 South High Street
30th Floor
Columbus, Ohio 43215-6117

Ms. Mary Glasgow
601 Chillicothe Street
Portsmouth, Ohio 45662

Mr. Teddy L. Wheeler
Pike County Auditor
Pike County Government Center
230 Weaverly Plaza, Suite 200
Weaverly, Ohio 45690-1289

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Weaverly, Ohio 45690

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Weaverly, Ohio 45690

Kara Willis
16 North Paint St.,Suite 102
Chillicothe, Ohio 45601

Jim Brushart
Pike Co.Comm. Chair
230 Weaverly Plaza Suite 1000
Weaverly, Ohio 45690

Mr. Gary Hager
ATTN: Mailstop-4025
P.O.Box 628
Piketon, Ohio 45661

Mr. Blaine Beekman
Executive Director
Pike County Chamber of Commerce
P.O. Box 107
Weaverly, Ohio 45696

Billy Spencer, Mayor of Piketon
Mayor of Piketon
P. O. Box 547
Piketon, Ohio 45661

Rocky Brown, Mayor of Beaver
7677 State sr335
Beaver, Ohio 45613

Mr. Geoffrey Sea
340 Haven Ave. Apt. 3C
New York, NY 10033

Ms. Vina K. Colley, President PRESS
3706 McDermott Pond Creek
McDermott, Ohio 45652

Mr. Peter J. Miner, Director
Regulatory and Quality Assurance
USEC Inc.
6903 Rockledge Drive
Bethesda, MD 20817

Randall Devault, Regulatory Oversight Manager
Department of Energy - Oak Ridge
P.O. Box 2001
Oak Ridge, TN 37831-8651

Dan Minter
Southern Ohio Development Initiative
P.O.Box 467
Piketon, OH 45661

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1400 L Street, NW
Washington, DC. 20005-3502

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Radiological Branch
Ohio Emergency Management Ag ency
2855 West Dublin-Granville Road
Columbus, OH 43235-2206

Rod Krich, Vice President
Licensing Projects
Exelon Generation Co.
4300 Winfield Road
Warrenville, IL 60555

Patricia Marida
Central Ohio Sierra Club
1710 Dorsetshire Rd.
Columbus, OH 4322

Elisa Young
48360 Carmel Road
Racine, Ohio 45771

NRC FORM 699 (9-2003) — U.S. NUCLEAR REGULATORY COMMISSION

CONVERSATION RECORD

DATE: 6/6/2005

TIME: 3:00 pm

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU: David Snyder - Archaeology Reviews Manager. | TELEPHONE NO.: 614 298-2000

ORGANIZATION: Ohio Historic Preservation Office

SUBJECT: Section 106 consults ACP - USCE

TYPE OF CONVERSATION: ☐ VISIT ☐ CONFERENCE ☑ TELEPHONE ☐ INCOMING ☑ OUTGOING

SUMMARY *(Continue on Page 2)*

Discussed sandy drafts of Chapter 3 + 4 (DCTS) to see if we have clarified information for consulting parties. Discussed w/ him on ongoing informal consultations w/ Tribes and formal consultation w/ Absentee Shawnee. We are looking for info from Shawnee on cultural attributes of Scioto Township Works and why important to them, comments on findings of Id efforts + evaluation efforts, comment on proposed determination of effect on Scioto T.W. Should we ask for informal review from him on DCTS sects 3 + 4 or can we proceed w/ formal report even though we are still consulting w/ A-Shawnee. He is ok either way. Ok to ask for formal concurrence of determinations if convinced your findings and determinations will hold - speeds up adv ok. Try are not shy about their opinions in Ohio and will tell us if problems or not.

Continue on Page 2

ACTION REQUIRED

None

NAME OF PERSON DOCUMENTING CONVERSATION	SIGNATURE	DATE
Ron Linton	Ron Linton	6/6/05

ACTION TAKEN

TITLE OF PERSON TAKING ACTION	SIGNATURE OF PERSON TAKING ACTION	DATE

September 6, 2005

ACHP, Office of Federal Agency Programs
Attention: Don Klima, Director
1100 Pennsylvania Avenue NW, Suite 809
Washington, D.C. 20004

SUBJECT: TRANSMITTAL OF DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE PROPOSED AMERICAN CENTRIFUGE PLANT IN PIKETON, OHIO IN ACCORDANCE WITH NATIONAL HISTORIC PRESERVATION ACT SECTION 106 COORDINATION REQUIREMENTS

Dear Mr. Klima,

This letter follows a letter of May 20, 2005, in which the Nuclear Regulatory Commission (NRC) indicated that we were using the NRC's National Environmental Policy Act review process for Section 106 requirements of the National Historic Preservation Act in our review of USEC Inc.'s proposal to build the American Centrifuge Plant in Piketon, OH.

As required under Section 106, the NRC has undertaken the steps of identifying and evaluating historic properties that may be affected by construction and operation of the proposed American Centrifuge Plant. The NRC found that there have been surveys conducted previously to find archaeological and historic sites in the area of the proposed project.

Enclosed is the "Environmental Impact Statement for the Proposed American Centrifuge Plant in Piketon, Ohio, Draft Report for Comment." Section 3.3, "Historic and Cultural Resources," provides a description of the identification and evaluation process. Section 4.2.2 "Historic and Cultural Resource Impacts," presents the NRC's preliminary findings related to this undertaking, including a description of the "area of potential effects" and preliminary determinations of project effect.

In accordance with 36 CFR 800.8(c)(2) we are providing copies of the draft Environmental Impact Statement to the State Historic Preservation Officer, interested Indian tribes, consulting parties, and members of the public. We will hold a public meeting in Piketon, OH on September 29, 2005, during which we will solicit additional comments on the draft Environmental Impact Statement.

If you any questions or comments, or need additional information, please contact Ron Linton by phone at 301-415-7777 or e-mail at RCL1@nrc.gov.

Sincerely,

/**RA**/

B. Jennifer Davis, Chief
Environmental Review Section
Division of Waste Management
and Environmental Protection
Office of Nuclear Material Safety
and Safeguards

Docket No.: 70-7004

Enclosures: As stated

cc: w/o enclosure, see attached list

If you any questions or comments, or need additional information, please contact Ron Linton by phone at 301-415-7777 or e-mail at RCL1@nrc.gov.

Sincerely,

/RA/

B. Jennifer Davis, Chief
Environmental Review Section
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Docket No.: 70-7004

Enclosures: As stated

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NAME	MBlevins	BJDavis	MZobler
DATE	8/30/05	9/02/05	8/31/05

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USEC Service List

cc:

William Szymanski
U.S. Department of Energy
1000 Independence Ave, SW
Washington, DC 20585

Michael Marriott
Nuclear Information and Resource Service,
1424 16th St., NW
Washington, DC 20036

The Honorable Robert W. Ney
Member, United States House of Representatives
2438 Rayburn HOB
Washington, DC 20515

The Honorable George V. Voinovich
United States Senator
317 Hart Senate Office Building
Washington, DC 20510

The Honorable Rob Portman
Member, United States House of Representatives
238 Cannon House Office Building
Washington, DC 20515

The Honorable Mike DeWine
United States Senator
140 Russell Senate Office Building
Washington, DC 20410

The Honorable Bob Taft
Governor of Ohio
77 South High Street
30th Floor
Columbus, Ohio 43215-6117

Ms. Mary Glasgow
601 Chillicothe Street
Portsmouth, Ohio 45662

Mr. Teddy L. Wheeler
Pike County Auditor
Pike County Government Center
230 Waverly Plaza, Suite 200
Waverly, Ohio 45690-1289

Mr. Harry Rioer
Pike County Commissioner
230 Waverly Plaza Suite 1000
Waverly, Ohio 45690

Mr. Larry E. Scaggs
Township Trustee
230 Waverly Plaza Suite 1400
Waverly, Ohio 45690

Kara Willis
16 North Paint St.,Suite 102
Chillicothe, Ohio 45601

Jim Brushart
Pike County Comm. Chair
230 Waverly Plaza Suite 1000
Waverly, Ohio 45690

Mr. Gary Hager
ATTN: Mailstop-4025
P.O. Box 628
Piketon, Ohio 45661

Mr. Blaine Beekman
Executive Director
Pike County Chamber of Commerce
P.O. Box 107
Waverly, Ohio 45696

Billy Spencer, Mayor of Piketon
P.O. Box 547
Piketon, Ohio 45661

Rocky Brown, Mayor of Beaver
7677 State Route 335
Beaver, Ohio 45613

Mr. Geoffrey Sea
1832 Wakefield Mound Road
Piketon OH 45661

Ms. Vina K. Colley, President PRESS
3706 McDermott Pond Creek
McDermott, Ohio 45652

Mr. Peter J. Miner, Director
Regulatory and Quality Assurance
USEC Inc.
6903 Rockledge Drive
Bethesda, MD 20817

Randall Devault, Regulatory Oversight Manager
Department of Energy - Oak Ridge
P.O. Box 2001
Oak Ridge, TN 37831-8651

Dan Minter
Southern Ohio Development Initiative
P.O. Box 467
Piketon, OH 45661

Mr. James R. Curtiss, Winston & Strawn
1400 L Street, NW
Washington, DC. 20005-3502

Teddy West
2170 Wakefield Mound Road
Piketon, OH 45661

Carol O'Claire, Supervisor
Radiological Branch
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2855 West Dublin-Granville Road
Columbus, OH 43235-2206

Rod Krich, Vice President
Licensing Projects
Exelon Generation Co.
4300 Winfield Road
Warrenville, IL 60555

Lindsay A. Lovejoy, Jr.
NIRS
618 Paseo de Peralta, Unit B
Santa Fe, NM 87501

Robert Huff, President and CEO
Portsmouth Area Chamber of Commerce
324 Chillicothe St.
P.O. Box 509
Portsmouth, OH 45662

Roger L. Suppes
Chief, Bureau of Radiation Protection
Ohio Dept. of Health
35 East Chestnut Street
Columbus, OH 43266

Donald J. Silverman
Morgan, Lewis & Bockius
1111 Pennsylvania Ave. N.W.
Washington, DC 20004

September 6, 2005

Mr. Mark Epstein, Department Head
Ohio Historic Preservation Office
Resource Protection and Review
567 East Hudson Street
Columbus, OH 43211-1030

SUBJECT: TRANSMITTAL OF DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE PROPOSED AMERICAN CENTRIFUGE PLANT IN PIKETON, OHIO IN ACCORDANCE WITH NATIONAL HISTORIC PRESERVATION ACT SECTION 106 COORDINATION REQUIREMENTS

Dear Mr. Epstein:

This letter follows a letter of December 28, 2004, in which the Nuclear Regulatory Commission (NRC) indicated that we were using the NRC's National Environmental Policy Act review process for Section 106 requirements of the National Historic Preservation Act in our review of USEC Inc.'s proposal to build the American Centrifuge Plant in Piketon, OH.

As required under Section 106, the NRC has undertaken the steps of identifying and evaluating historic properties that may be affected by construction and operation of the proposed American Centrifuge Plant. The NRC found that there have been surveys conducted previously to find archaeological and historic sites in the area of the proposed project.

Enclosed is the "Environmental Impact Statement for the Proposed American Centrifuge Plant in Piketon, Ohio, Draft Report for Comment." Section 3.3, "Historic and Cultural Resources," provides a description of the identification and evaluation process. Section 4.2.2 "Historic and Cultural Resource Impacts," presents the NRC's preliminary findings related to this undertaking, including a description of the "area of potential effects" and preliminary determinations of project effect.

In accordance with 36 CFR 800.8(c)(2) we are providing copies of the draft Environmental Impact Statement to the Advisory Council on Historic Preservation, interested Indian tribes, consulting parties, and members of the public. We will hold a public meeting in Piketon, OH on September 29, 2005, during which we will solicit additional comments on the draft Environmental Impact Statement.

If you any questions or comments, or need additional information, please contact Ron Linton by phone at 301-415-7777 or e-mail at RCL1@nrc.gov.

Sincerely,

/**RA**/

B. Jennifer Davis, Chief
Environmental Review Section
Division of Waste Management
and Environmental Protection
Office of Nuclear Material Safety
and Safeguards

Docket No.: 70-7004

Enclosures: As stated

cc: w/o Enclosure, see attached list

If you any questions or comments, or need additional information, please contact Ron Linton by phone at 301-415-7777 or e-mail at RCL1@nrc.gov.

Sincerely,

/RA/

B. Jennifer Davis, Chief
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Docket No.: 70-7004

Enclosures: As stated

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NAME	MBlevins	BJDavis	MZobler
DATE	8/30/05	9/02/05	8/31/05

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USEC Service List

cc:

William Szymanski
U.S. Department of Energy
1000 Independence Ave, SW
Washington, DC 20585

Michael Marriott
Nuclear Information and Resource Service,
1424 16th St., NW
Washington, DC 20036

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Chief, Bureau of Radiation Protection
Ohio Dept. of Health
35 East Chestnut Street
Columbus, OH 43266

Donald J. Silverman
Morgan, Lewis & Bockius
1111 Pennsylvania Ave. N.W.
Washington, DC 20004

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October 5, 2005

Ron Linton
Environmental and Performance Assessment Branch
Nuclear Regulatory Commission
Washington, DC 20555-0001

Re: Draft Environmental Impact Statement, Docket No. 70-7004, American Centrifuge Commercial Plant Portsmouth Gaseous Diffusion Plant (PORTS), Pike County, Ohio

Dear Mr. Linton,

This is in response to correspondence from your office dated September 6, 2005 (received September 9) providing a copy of the Environmental Impact Statement for the Proposed American Centrifuge Plant in Piketon, Ohio, Draft Report for Comment, U.S. Nuclear Regulatory Commission, dated August 2005, regarding the above referenced project. The comments of the Ohio Historic Preservation Office (OHPO) are submitted in accordance with provisions of the National Historic Preservation Act of 1966, as amended (16 U.S.C. 470 [36 CFR 800]); the Department of Energy serves as the lead federal agency.

The draft Report provides detailed discussions of many factors under consideration during the review for the proposed project. Our comments are intended to provide some clarification regarding the discussions of cultural resources. We are substantially in agreement regarding consideration of cultural resources. The differences in phrasing and interpretation, and clarification recommended, should not be interpreted as disagreement.

Throughout the discussions of cultural resources and consultation with the Ohio Historic Preservation Office, the Report offers the impression that there is concurrence that there will be no historic properties affected by the proposed and cumulative project development. The inset table on Page xxii defines "Small" as "...effects that are not detectable or are so minor that they would neither destabilize nor noticeably alter any important attribute of the resource." In Table 2-7 (Page 2-38), the report presents the finding that the impacts to historic and cultural resources would be small. This finding is repeated in Table 2-8 (Page 2-50). On Pages 4-5 and 4-6, the report states that there is concurrence with this office on a finding of "no effect" for the undertaking and that the impacts would be "SMALL". It was the intent of our correspondence, specifically our letter dated May 20, 2004, to set forth as part of ongoing consultation our interpretation that the proposed project would not adversely affect historic properties. That is, there are historic properties in the Area of Potential Effects, but the proposed project will not diminish the qualities and characteristics that make them significant. We believe that the changes will be noticeable. In some ways we feel that the immediate impacts from the proposed undertaking are perhaps more along the lines of MODERATE as compared to SMALL impacts. From a philosophical perspective, as the Gaseous Diffusion technology is replaced there will be changes to the Cold War buildings but since science is not static we shouldn't expect our recognition of significance based on science and technology to require static preservation.

E-RIDS = ADM-03
Cc = M. Blevins (MXB6)

SISP Review Complete

OHIO HISTORICAL SOCIETY
Ohio Historic Preservation Office
567 East Hudson Street, Columbus, Ohio 43211-1030 ph: 614.298.2000 fx: 614.298.2037
www.ohiohistory.org

Template = ADM-013

Also, here are some additional points for consideration. On Page 2-42, the Report states that Alternate Locations B and C within the Reservation were graded during construction of the Gaseous Diffusion facility. From my limited understanding of this area, it appears to me that the majority of both of these areas lie outside of the area that was severely disturbed by previous construction. In my opinion, the lack of severe disturbance throughout the entirety of Alternate Locations B and C increases concerns for historic preservation, and likely for other factors as well, and thus the lack of severe disturbance further supports your selection of Location A as the preferred site for the undertaking.

The Report provides information on the size of the Reservation in several places and it appeared to me that the numbers aren't always the same. For instance, on Page 2-2 the Reservation is described as encompassing 3,700 acres with 1,300 acres inside the perimeter loop road while on Page 3-1 (and also see Page 3-5) the report states that within the Reservation there are 750 security-fenced acres with 550 acres in the central area surrounded by the Perimeter Road.

On Page 3-7, the Report states that an initial archaeological survey of the DOE reservation was completed in 1952 and reportedly found no evidence of archaeological materials with reference to a 1977 Environmental Impact Statement. Is it possible to obtain a copy of relevant portions of this 1977 document? It might be helpful to include copies of selected portions in the final EIS report for this undertaking. It can be difficult to compare meaningfully work completed in 1952 when there was no authority to take into account affects of undertakings on historic properties with work being conducted today (and since 1986) under authority of the National Historic Preservation Act of 1966, as amended, and its implementing regulations at 36 CFR 800.

There are several places where the Report refers to sites, buildings, structures, and districts with potential National Register eligibility. For instance, the Report states that identified archaeological sites that have not yet been fully evaluated for National Register eligibility (and refers to them as potentially eligible) be treated as eligible for inclusion in the National Register (Page 4-5 – inset text box). There are also references to the potentially eligible Barnes House and potentially contributing elements within the historic district. We believe that there is a slight and subtle shift in the meaning of the word potential differentiating potential effects and potential impacts from potential significance and potential eligibility, and that this shift in meaning could lead to some confusion if not clarified. Regarding the 14 identified archaeological sites that have not been fully evaluated for National Register eligibility, we suggest that you consider language that establishes the specific measures that will be taken to protect the sites from effects during this undertaking until such time as sufficient information is available to complete the evaluation. That is, treat them as archaeological sites that are being protected not as historic properties that are being protected. For the Barnes House, and for the listed Scioto Township Works I archaeological site, assess the potential for the undertaking to have effects based on those qualities and characteristics that are known and understood to contribute to the importance of these properties recognizing that we may have a better understanding of these properties in the future.

The Report carefully considers the use of existing wells and finds that this will not result in changes to the ground around the wells and will not result in increased maintenance activities around the wells that has the potential to adversely affect historic properties. If the wells immediately west of the Reservation are on an embankment that is part of an earthwork complex dating to some 2,000 years ago and if this archaeological site meets National Register criteria, we would agree with your inclusion of this area with the project's finding, that the use of the existing wells will not adversely affect historic properties, provided that sufficient safeguards and conditions are in place to continue consultation if future work is proposed

around these wells, or becomes necessary around these wells, that would have the potential to adversely affect historic properties. We recommend that you develop appropriate conditions to provide for preservation the areas around the wells until such time as these areas can be more fully evaluated.

The Report carefully considers the potential impacts from increased vehicular traffic and finds that the increased traffic will be small and will not introduce adverse effects. Within the limits defined in the Report, we agree with this finding provided that appropriate conditions are developed to reopen consultation if vehicular traffic increases above this level or if new construction of roads or railroads becomes necessary as a direct and foreseeable consequence of the development of this project.

In general we are in agreement the conclusions and findings presented in the Report. Within the integrated National Environmental Policy Act review process, this reaffirms our interpretation that the proposed American Centrifuge Plant undertaking will not adversely affect historic properties. There are some places in the Report where it would be helpful for the documentation to provide greater clarity and to provide greater precision to facilitate the integration the discussions on archaeological sites, architectural properties, and other kinds of cultural resources within the overall assessment of effects. It would also be helpful to reinforce language that establishes conditions to restrain effects from rising to adverse levels.

Any questions concerning this matter should be addressed to David Snyder at (614) 298-2000, between the hours of 8 am. to 5 pm. Thank you for your cooperation.

Sincerely,

David Snyder

David Snyder, Archaeology Reviews Manager
Resource Protection and Review

DMS/ds (OHPO Serial Number 1002038)

Enclosed: OHPO letter dated May 20, 2004
OHPO letter dated November 17, 2003

xc: Geoffrey Sea, 1832 Wakefield Mound Road, Piketon, OH 45662
Karen Kanlatobe, Absentee Shawnee Tribe of Oklahoma, 2025 S. Gordon Cooper Drive, Shownee, OK 74801-9381

Ohio Historic Preservation Office

567 East Hudson Street
Columbus, Ohio 43211-1030
614/ 298-2000 Fax: 614/ 298-2037

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OHIO HISTORICAL SOCIETY
SINCE 1885

May 20, 2004

Peter J. Miner
USEC, Inc.
6903 Rockledge Drive
Bethesda, MD 20817-1818

Re: Installation and Operation of the American Centrifuge Commercial Plant
Portsmouth Gaseous Diffusion Plant (PORTS), Pike County, Ohio

Dear Mr. Miner,

This is in response to correspondence from your office dated March 2, 2004 (received March 5) regarding the above referenced project. The comments of the Ohio Historic Preservation Office (OHPO) are submitted in accordance with provisions of the National Historic Preservation Act of 1966, as amended (16 U.S.C. 470 [36 CFR 800]); the Department of Energy serves as the lead federal agency.

Your correspondence offers the position that the proposed new construction will include buildings of similar design and size to the nearby buildings and that there will be similar functions carried out in these new buildings. Although not specifically stated in your correspondence, it appears that your discussion is to conclude that the qualities and characteristics that make PORTS significant will not be diminished by the proposed new construction. While we believe that clarification of those qualities that make PORTS significant would be helpful, given the available information on the size, design, and function of the existing and the proposed buildings, we are able to offer our opinion that the proposed project will not adversely affect the Portsmouth Gaseous Diffusion Plant historic property.

As you are aware, private citizens have raised concerns about the potential for this project to affect historic properties, including prehistoric archaeological sites. The National Historic Preservation Act strongly encourages federal agencies to include comments and concerns from the public throughout the Section 106 review process. It is our understanding the area of proposed new construction has been previously severely disturbed by previous construction, that the topsoil in this area was removed to a depth well into the subsoil and the contours were completed regraded during previous construction. However, we believe that it is an important responsibility to listen carefully to public concerns and to provide thoughtful and sensitive responses.

Any questions concerning this matter should be addressed to David Snyder at (614) 298-2000, between the hours of 8 am. to 5 pm. Thank you for your cooperation.

Sincerely,

Mark J. Epstein, Department Head
Resource Protection and Review

MJE:DMS/ds (OHPO Serial Number 100903)

xc: Gary S. Hartman, DOE - Oak Ridge, P.O. Box 2001, Oak Ridge, TN 37831

-- Ohio Historic Preservation Office

567 East Hudson Street
Columbus, Ohio 43211-1030
614/ 298-2000 Fax: 614/ 298-2037

Visit us at www.ohiohistory.org

OHIO HISTORICAL SOCIETY
SINCE 1885

November 17, 2003

Russell J. Vranicar, Acting Site Manager
U.S. Department of Energy, PORTS
Portsmouth Site Office
P.O. Box 700
Piketon, OH 45661-0700

Re: Review of report, Testing at site 33-PK-210
Portsmouth Gaseous Diffusion Plant, Scioto Township, Pike County, Ohio

Dear Mr. Vranicar,

This is in response to correspondence from your office dated September 19, 2003 (received September 24) transmitting the report titled "Phase II Archaeological Testing at Site 33PK210, Scioto Township, Pike County, Ohio" by Christopher M. Hazel, July 2003. The comments of the Ohio Historic Preservation Office (OHPO) are submitted in accordance with provisions of the National Historic Preservation Act of 1966, as amended (16 U.S.C. 470 [36 CFR 800]); the Department of Energy serves as the lead federal agency.

The archaeological testing was restricted to the portion of site 33-PK-210 on Department of Energy property. It appears that more than half of the site extends south of Department of Energy property. The testing included background review, pedestrian walk-over, and shovel testing. Although the extent of site exposed through a combination of shovel testing, excavation units, and auger testing was quite small, we agree that the research design was sufficient to identify any pattern of artifacts or features within the tested portion of the site. We agree with the conclusions that no sensitive archaeological deposits were identified in the tested portion of site 33-PK-210 and that no further archaeological investigations are warranted within this portion of the site. We do not concur that sufficient testing has been conducted to conclude that the entire site doesn't meet the criteria for National Register eligibility. Given the modest assemblage recovered from site 33-PK-210 we do not believe that additional testing at this site is a preservation priority. Assuming that all development within PORTS takes place north of the fence line marking the southern boundary of the tested portion of the site, we concur that no further archaeological testing at site 33-PK-210 is necessary and that no further coordination with this office is necessary for this site.

Any questions concerning this matter should be addressed to David Snyder at (614) 298-2000, between the hours of 8 am. to 5 pm. Thank you for your cooperation.

Sincerely,

David Snyder

David Snyder, Archaeology Reviews Manager
Resource Protection and Review

DMS:ds

xc: Gary Hartman, DOE - Oak Ridge, P.O. Box 2001, Oak Ridge, TN 37831
Kristi Wiehle, DOE – PORTS, P.O. Box 700, Piketon, OH 45661-0700

January 27, 2006

ACHP, Office of Federal Agency Programs
Attention: Don Klima, Director
1100 Pennsylvania Avenue NW, Suite 809
Washington, D.C. 20004

SUBJECT: SECTION 106 CONSULTATION REFERRAL FOR THE PROPOSED AMERICAN CENTRIFUGE PLANT, PIKE COUNTY, OHIO

Dear Mr. Klima:

The U.S. Nuclear Regulatory Commission (NRC) is providing additional information relevant to the Section 106 consultation for USEC Inc.'s proposed American Centrifuge Plant (ACP). The NRC informed the Council by letter dated May 20, 2005, of its intent to use the National Historic Preservation Act (NEPA) process to fulfill NRC responsibilities under Section 106 of the NEPA. We subsequently transmitted a copy of the draft environmental impact statement (DEIS) by letter dated September 6, 2005.

This letter is submitted in fulfillment of 36 CFR 800.8(c)(2)(ii), to refer to you objections by a consulting party on the NRC's compliance with Section 106 through use of its NEPA process and of the NRC's findings of no effect on historic properties that were presented in the DEIS.

Enclosed is a complete chronological listing of Section 106 correspondence regarding the proposed undertaking that is directly available at the NRC's website: http://www.nrc.gov/materials/fuel-cycle-fac/summ-section-106.html. Table 1 provides a listing of all correspondence to and from Federal, state, and local government organizations. Table 2 provides a listing of all correspondence to and from Indian tribes. Table 3 provides a listing of all correspondence to and from the objecting party, Mr. Geoffrey Sea. The documents listed in Table 3 include Mr. Sea's scoping comments, his pleadings as an intervenor, his oral comments at a public meeting, email communications, and the appendices to his promised written comments submitted on the DEIS. The actual comments were not received by th NRC as Mr. Sea indicated that he would be providing them directly to the Council. Finally, Table 4 provides a listing of publicly available cultural resource surveys and related information. Additionally, the NRC is maintaining a public website, http://www.nrc.gov/materials/fuel-cycle-fac/usecfacility.html, that provides access to information concerning the NRC's safety and environmental review for the proposed ACP, and includes a link to the DEIS.

In the DEIS, the NRC staff presents a discussion of historic resources in Chapter 3 on pages 3-5 to 3-11. Subsequently, the staff presents a discussion of impacts to historic resources in Chapter 4 of the DEIS on pages 4-4 to 4-7. On page 4-5 of the DEIS, the NRC staff identifies historic properties and other properties that may be eligible for the National Register within the area of potential effects (APE) of the project. After consideration of the construction and operations activities that might affect these properties, the DEIS concludes that the project will have no effect on historic properties or potentially Register-eligible properties within the APE.

Because of Mr. Sea's concerns about effects on his house, known as The Barnes Home, which is adjacent to the APE, a structure that is likely Register-eligible under Criteria A and C, the DEIS also considered potential effects on this property. Similarly, because of the concerns of Mr. Sea and those of two Native American tribes about the possible project effects on the Scioto Township Works (approximately 1 kilometer from the proposed ACP), a prehistoric earthworks listed on the National Register for Criterion D values, the NRC also considered possible effects on this property. The visual setting, noise levels, and traffic levels around these properties are unlikely to change significantly from current conditions as a result of the project. Consequently, in both cases, the DEIS analysis on pages 4-5 to 4-7 found that activities associated with construction and operation of the American Centrifuge Plant would have no effect on the attributes that contribute to historic significance of the properties. The NRC's evaluation of effects on the Scioto Township works presumed that Native American concerns related to attributes under Criterion A. The NRC has asked the Native American tribes to provide more information about the values of concern associated with the Scioto Township works, but has received no information from the tribes beyond what is provided in the enclosed referenced materials.

Mr. Sea has also indicated concerns about what appeared to be prehistoric earthworks at one of the well fields that will supply water for the proposed ACP. The DEIS presents a discussion of impacts from the well field in question on page 4-7 and the NRC's findings that there would be no effect on these apparent earthworks. Subsequent to publication of the DEIS, the NRC received a statement from Mr. Blaine Bleekman (see Table 4 in enclosure), a local resident, who described construction of three levies along the Scioto River after a 1959 flood, including the levy that Mr. Sea is concerned about. While it appears most likely that these structures are recently constructed flood control levies, it is still the NRC's position that there will be no effect on these structures from continued pumping at this U.S. Department of Energy (DOE) well field

Mr. Sea is also concerned about several other properties, including the Rittenour Home, the Sargent Home, and the location where the last passenger pigeon was killed, but these are further from the proposed ACP than the Barnes House or Scioto Township Works and so were not considered in the DEIS analysis.

Finally, Mr. Sea believes that we have not properly carried out the Section 106 consultation requirements nor have we properly incorporated Section 106 compliance into the NRC's NEPA process as described in 36 CFR 800.8.

While you will be able to review the materials, it appears to the NRC that Mr. Sea believes there is a historic landscape linking the prehistoric Scioto Township Works; the historic Barnes Home, Rittenour Home, Sargents Home, and the passenger pigeon kill site; and the Portsmouth Gaseous Diffusion Plant Historic District. He disagrees that NRC has adequately identified historic properties because the NRC's analysis has not considered this historic landscape. Mr. Sea has a vision of promoting tourism to this landscape to enable public appreciation of the history represented on this landscape. He feels that NRC's action in approving the license for the ACP will lead to future operations on a DOE site that he believes would otherwise be closed. He believes that continuing operations at the DOE site would diminish the opportunity for public appreciation of the historic values in the landscape. He finds this to be an effect on those historic properties and cultural resources.

Additionally, the NRC has received comments from the Ohio Historic Preservation Office that suggest the usage of “small” to characterize impacts in the NEPA document following description of findings of “no effect on historic properties” may be confusing, and that there may be some observable impacts that are better described as “moderate” in level although these impacts do not extend to attributes that contribute to the properties’ National Register eligibility. The NRC will clarify this language in the DEIS.

The NRC believes that it has met its Section 106 obligations including the identification of consulting parties, identification of historic properties within and beyond the APE, and that its assessment of project effects are correct. We welcome the Council’s review of Mr. Sea’s objections and look forward to learning of the Council’s findings.

If you have any questions about this information or wish to provide any other additional information please feel free to respond in writing or to contact Matthew Blevins by phone at 301-415-7684 or by e-mail at MXB6@nrc.gov. Mr. Blevins will be happy to set up a meeting or telephone conference to facilitate the consultation.

Sincerely,

/RA/

B. Jennifer Davis, Chief
Environmental Review Section
Division of Waste Management
and Environmental Protection
Office of Nuclear Material Safety
and Safeguards

Docket No.: 70-7004

Enclosures: As stated

cc: w/o enclosures, see attached list

Additionally, the NRC has received comments from the Ohio Historic Preservation Office that suggest the usage of “small” to characterize impacts in the NEPA document following description of findings of “no effect on historic properties” may be confusing, and that there may be some observable impacts that are better described as “moderate” in level although these impacts do not extend to attributes that contribute to the properties’ National Register eligibility. The NRC will clarify this language in the DEIS.

The NRC believes that it has met its Section 106 obligations including the identification of consulting parties, identification of historic properties within and beyond the APE, and that its assessment of project effects are correct. We welcome the Council’s review of Mr. Sea’s objections and look forward to learning of the Council’s findings.

If you have any questions about this information or wish to provide any other additional information please feel free to respond in writing or to contact Matthew Blevins by phone at 301-415-7684 or by e-mail at MXB6@nrc.gov. Mr. Blevins will be happy to set up a meeting or telephone conference to facilitate the consultation.

Sincerely,

/RA/

B. Jennifer Davis, Chief
Environmental Review Section
Division of Waste Management
and Environmental Protection
Office of Nuclear Material Safety
and Safeguards

Docket No.: 70-7004

Enclosures: As stated

cc: w/o enclosures, see attached list

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NAME	MBlevins	BJDavis	LClark	
DATE	01/23/06	01/27/06	01/17/06	

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USEC Service List

cc:

William Szymanski
U.S. Department of Energy
1000 Independence Ave, SW
Washington, DC 20585

Michael Marriotte
Nuclear Information and Resource Service
1424 16th St., NW
Washington, DC 20036

The Honorable Robert Ney
Congressman
c/o Carrie Mytinger
51 E Second Street
Chillicothe, OH 45601

The Honorable George V. Voinovich
United States Senator
524 Hart Senate Office Building
Washington, DC 20510

Mr. Marvin Jones
President and CEO
Chillicothe Chamber of Commerce
165 South Paint Street
Chillicothe, OH 45601

The Honorable Mike DeWine
United States Senator
140 Russell Senate Office Building
Washington, DC 20410

The Honorable Bob Taft
Governor of Ohio
77 South High Street
30th Floor
Columbus, Ohio 43215-6117

Ms. Mary Glasgow
601 Chillicothe Street
Portsmouth, Ohio 45662

Mr. Teddy L. Wheeler
Pike County Auditor
Pike County Government Center
230 Waverly Plaza, Suite 200
Waverly, Ohio 45690-1289

Mr. Harry Rioer
Pike County Commissioner
230 Waverly Plaza, Suite 1000
Waverly, Ohio 45690

Mr. Larry E. Scaggs
Township Trustee
230 Waverly Plaza, Suite 1000
Waverly, Ohio 45690

Kara Willis
16 North Paint St., Suite 102
Chillicothe, Ohio 45601

Jim Brushart
Pike County Commission Chair
230 Waverly Plaza Suite 1000
Waverly, Ohio 45690

Mr. David Bowe
ATTN: Mail Stop 4025
P.O. Box 628
Piketon, OH 45661

Mr. Blaine Beekman
Executive Director
Pike County Chamber of Commerce
12455 State Route 104
Waverly, OH 45690

Billy Spencer
Mayor of Piketon
P. O. Box 547
Piketon, Ohio 45661

Rocky Brown, Mayor of Beaver
7677 State sr335
Beaver, Ohio 45613

Mr. Geoffrey Sea
The Barnes Home
1832 Wakefield Mound Road
Piketon, OH 45661

Ms. Vina K. Colley, President PRESS
3706 McDermott Pond Creek
McDermott, Ohio 45652

Mr. Peter J. Miner, Licensing Manager
USEC, Inc.
6903 Rockledge Drive
Bethesda, MD 20817

Mr. Randall De Vault
U.S. Department of Energy
P.O. Box 2001
Oak Ridge, TN 37831

Mr. Dan Minter
Southern Ohio Development Initiative
P.O. Box 467
Piketon, OH 45661

Mr. James R. Curtiss
Winston & Strawn,
1700 K Street, NW
Washington, DC. 20006

Mr. Teddy West
2170 Wakefield Mound Road
Piketon, OH 45661

Ms. Carol O'Claire, Supervisor
Radiological Branch
Ohio Emergency Management Agency
2855 West Dublin-Granville Road
Columbus, OH 43235-2206

Mr. Rod Krich, Vice President
Licensing Projects
Exelon Generation Co.
4300 Winfield Road
Warrenville, IL 60555

Mr. Lindsay A. Lovejoy, Jr.
Nuclear Information and Resource Service
618 Paseo de Peralta, Unit B
Santa Fe, NM 87501

Mr. Robert Huff, President and CEO
Portsmouth Area Chamber of Commerce
324 Chillicothe St.
P.O. Box 509
Portsmouth, OH 45662

Robert E. Owen
Chief, Bureau of Radiation Protection
Ohio Dept. Of Health
35 East Chestnut Street
Columbus, OH 43215

Donald J. Silverman
Morgan, Lewis and Bockius
1111 Pennsylvania Ave, NW
Washington D.C. 20004

Ewan Todd
403 E. Oakland Avenue
Columbus, OH 43202

Ms. MarJean Kennedy
Regional Representative
Governor's Office
of Economic Development
15 N. Paint St., Suite 102
Chillicothe, OH 45601

Ms. Joyce Leeth
Pike County Recorder
230 Waverly Plaza, Suite 500
Waverly, OH 45690

Mr. Dwight Massie
c/o The First National Bank
P.O. Box 147
Waverly, OH 45690-0147

Mr. Marvin Jones
President and CEO
Chillicothe Chamber of Commerce
165 South Paint Street
Chillicothe, OH 45601

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B.2 COMMUNICATIONS TO/FROM TRIBAL ORGANIZATIONS

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EXHIBIT N

Absentee Shawnee Tribe of Oklahoma

2025 S. Gordon Cooper

Shawnee, Oklahoma 74801-9381

(405) 275-4030 Fax: 405-878-4533

Cultural/Historic
Preservation Department

February 24, 2005

RE: Support of Geoffrey Sea's intervention in the USEC American Centrifuge Plant Licensing Action

To the Commissioners, Secretary and Atomic Safety and Licensing Board of the US Nuclear Regulatory Commission and to Whom it May Concern:

I am writing in support of the intervention of Geoffrey Sea in the USEC American Centrifuge Plant licensing action. I am the Tribal Historic Preservation Officer for the Absentee Shawnee Tribe. Our interest in supporting Mr. Sea's is based on the fact that Ohio is part of our ancestral homelands. Through historical research we have identified a number of village sites in the Ohio Valley. In fact, quite a few are located along the Scioto River. Furthermore, if you look at a map, you will notice that the names of towns, cities and counties reflect the Shawnee's historical presence within the state of Ohio.

We are part of the Algonquian family of Native American peoples, and the Algonquian tribes of the Ohio/Great Lakes region are collectively believed to be descended from the culture called Ft Ancient. In turn the Ft Ancient are considered descendants of the Hopewell culture. The people of the Hopewell Culture built the many astounding geometric earthworks, including those called the Barnes Works in Scioto Township.

All of the historic and prehistoric sites in the region of Scioto Township have great meaning and significance. The Barnes Works, being one of the largest and most beautiful prehistoric architectural works in North America, is a site that has already suffered desecration and destruction--but what remains can be saved.

Many more historic sites may exist in the area, remaining to be found for lack of extensive survey. Surveys to find such sites should be conducted as part of any 106 review for the ACP.

The American Centrifuge Project may impact all these sites in many ways that have not been studied or considered. Physical destruction caused by new buildings is only one concern. We also need to consider potential destruction of earthworks along the river caused by additional water pumping, the impacts of herbicides used to defoliate a security zone around the DOE site perimeter, the impacts of keeping the area under national-security restriction, rather than opening the area to study and tourism, and the aesthetic impacts of marring a sacred area with security fences, more roads, and shipments of radioactive fuel and waste.

Absentee Shawnee Tribe of Oklahoma

2025 S. Gordon Cooper

Shawnee, Oklahoma 74801-9381

(405) 275-4030 Fax: 405-878-4533

Cultural/Historic
Preservation Department

Our tribe has not been contacted by DOE about the American Centrifuge Project for consultation. We first learned about the American Centrifuge Project from Geoffrey Sea. Please note that we count on being included as a consulting party in future 106 and 110 reviews at the Piketon site.

We understand that the NRC has initiated a section 106 review as part of its licensing process. That is good. However this is an important test for preservation law. If a major federal nuclear project involving two different federal agencies can proceed without any consideration of one of the largest sacred sites in North America next door, then it means that the provisions of the National Historic Preservation Act have become meaningless.

Many alternatives to the proposed action deserve full study and consideration. USEC's environmental report mentions the possible alternatives of moving ACP to the north side of the Piketon site or moving it from Piketon to Paducah, Kentucky. Since the current site at the southwest corner of the DOE reservation involves many potential impacts, those alternatives among others need careful review.

Respectfully,

Karen Kaniatobe

Karen Kaniatobe
Tribal Historic Preservation Officer

March 14, 2005

Mr. James Leaffe, Chief
Cayuga Nation
P.O. Box 11
Versailles, NY 14168
Attn: Mr. Halftown, THPO
Representative

SUBJECT: INITIATION OF THE NATIONAL HISTORIC PRESERVATION ACT SECTION 106 CONSULTATION PROCESS FOR THE PROPOSED AMERICAN CENTRIFUGE COMMERCIAL PLANT, PIKE COUNTY, OHIO

Dear Mr. Leaffe:

The United States Nuclear Regulatory Commission (NRC) has received a license application from USEC, Inc. (USEC) for the construction, operation, and decommissioning of a gas centrifuge uranium enrichment facility known as the American Centrifuge Plant (ACP). The NRC is in the initial stages of developing an Environmental Impact Statement (EIS) for the proposed facility to be located at the Department of Energy (DOE) reservation in Piketon, Ohio. USEC's license application contained an Environmental Report (ER) that will be used to support the NRC's development of an EIS for the ACP. The proposed facility will use gas centrifuge technology to enrich the isotope Uranium-235 in uranium hexaflouride (UF6), up to 10-weight percent. The proposed ACP will have a design capacity of seven million separative work units. The forthcoming EIS will document the impacts associated with the construction, operation, and decommissioning of the facility.

Two phase I archaeological surveys and one draft cultural resource report have been completed for the DOE reservation. Archaeological surveys and the cultural report results are discussed section 3.8 of the ER (enclosed). Historical and cultural resource impacts are discussed in section 4.8 of the ER (enclosed). The Area of Potential Effects (APE) is defined as the DOE reservation in Piketon, Ohio.

As required by 36 CFR 800.3 (f), the NRC is requesting any information you may have regarding historic sites or cultural resources within the APE. The NRC is interested in knowing if you have specific knowledge of any sites that you believe have traditional religious and cultural significance. In addition, we are interested in knowing if you are aware of or are concerned for any site, or object, eligible for inclusion on the National Register of Historic Places. This will assure appropriate consideration in the Section 106 process.

Any information you provide may be used to document affects in accordance with 36 CFR 800.4 and 800.5. Additionally, we intend to use the EIS process for Section 106 purposes as described in 36 CFR 800.8.

If you any questions or comments, or need additional information, please contact Ron Linton at (301) 415-7777.

Sincerely,

/RA/

B. Jennifer Davis, Section Chief
Environmental and Low-Level
Waste Section
Division of Waste Management
and Environmental Protection
Office of Nuclear Material Safety
and Safeguards

Docket No.: 70-7004

cc: USEC Service List

Enclosure: Section 3.8 and 4.8 Environmental Report

March 14, 2005

Cherokee Nation of Oklahoma
P.O. Box 948
Ada, OK 74820

SUBJECT: INITIATION OF THE NATIONAL HISTORIC PRESERVATION ACT SECTION 106 CONSULTATION PROCESS FOR THE PROPOSED AMERICAN CENTRIFUGE COMMERCIAL PLANT, PIKE COUNTY, OHIO

Dear Cherokee Nation of Oklahoma:

The United States Nuclear Regulatory Commission (NRC) has received a license application from USEC, Inc. (USEC) for the construction, operation, and decommissioning of a gas centrifuge uranium enrichment facility known as the American Centrifuge Plant (ACP). The NRC is in the initial stages of developing an Environmental Impact Statement (EIS) for the proposed facility to be located at the Department of Energy (DOE) reservation in Piketon, Ohio. USEC's license application contained an Environmental Report (ER) that will be used to support the NRC's development of an EIS for the ACP. The proposed facility will use gas centrifuge technology to enrich the isotope Uranium-235 in uranium hexaflouride (UF6), up to 10-weight percent. The proposed ACP will have a design capacity of seven million separative work units. The forthcoming EIS will document the impacts associated with the construction, operation, and decommissioning of the facility.

Two phase I archaeological surveys and one draft cultural resource report have been completed for the DOE reservation. Archaeological surveys and the cultural report results are discussed section 3.8 of the ER (enclosed). Historical and cultural resource impacts are discussed in section 4.8 of the ER (enclosed). The Area of Potential Effects (APE) is defined as the DOE reservation in Piketon, Ohio.

As required by 36 CFR 800.3 (f), the NRC is requesting any information you may have regarding historic sites or cultural resources within the APE. The NRC is interested in knowing if you have specific knowledge of any sites that you believe have traditional religious and cultural significance. In addition, we are interested in knowing if you are aware of or are concerned for any site, or object, eligible for inclusion on the National Register of Historic Places. This will assure appropriate consideration in the Section 106 process.

Any information you provide may be used to document affects in accordance with 36 CFR 800.4 and 800.5. Additionally, we intend to use the EIS process for Section 106 purposes as described in 36 CFR 800.8.

If you any questions or comments, or need additional information, please contact Ron Linton at (301) 415-7777.

Sincerely,

/RA/

B. Jennifer Davis, Section Chief
Environmental and Low-Level
Waste Section
Division of Waste Management
and Environmental Protection
Office of Nuclear Material Safety
and Safeguards

Docket No.: 70-7004

cc: USEC Service List

Enclosure: Section 3.8 and 4.8 Environmental Report

March 14, 2005

Turtle Mountain Band
of Chippewa Indians
Attn: Mr. Kade M. Ferris
Tribal Historic Preservation Officer
Office of Archaeology
and Historic Preservation
P.O. Box 900
Belcourt, ND 58316

SUBJECT: INITIATION OF THE NATIONAL HISTORIC PRESERVATION ACT SECTION 106 CONSULTATION PROCESS FOR THE PROPOSED AMERICAN CENTRIFUGE COMMERCIAL PLANT, PIKE COUNTY, OHIO

Dear Mr. Ferris:

The United States Nuclear Regulatory Commission (NRC) has received a license application from USEC, Inc. (USEC) for the construction, operation, and decommissioning of a gas centrifuge uranium enrichment facility known as the American Centrifuge Plant (ACP). The NRC is in the initial stages of developing an Environmental Impact Statement (EIS) for the proposed facility to be located at the Department of Energy (DOE) reservation in Piketon, Ohio. USEC's license application contained an Environmental Report (ER) that will be used to support the NRC's development of an EIS for the ACP. The proposed facility will use gas centrifuge technology to enrich the isotope Uranium-235 in uranium hexaflouride (UF6), up to 10-weight percent. The proposed ACP will have a design capacity of seven million separative work units. The forthcoming EIS will document the impacts associated with the construction, operation, and decommissioning of the facility.

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Sincerely,

/RA/

B. Jennifer Davis, Section Chief
Environmental and Low-Level
Waste Section
Division of Waste Management
and Environmental Protection
Office of Nuclear Material Safety
and Safeguards

Docket No.: 70-7004

cc: USEC Service List

Enclosure: Section 3.8 and 4.8 Environmental Report

March 14, 2005

Mr. Bruce Gonzales, President
Delaware Tribe of Western Oklahoma
P.O. Box 825
Anardarko, OK 73005
Attn: Ms. Tamara Francis, Delaware
Nation NAGPRA Office

SUBJECT: INITIATION OF THE NATIONAL HISTORIC PRESERVATION ACT SECTION 106 CONSULTATION PROCESS FOR THE PROPOSED AMERICAN CENTRIFUGE COMMERCIAL PLANT, PIKE COUNTY, OHIO

Dear Mr. Gonzales:

The United States Nuclear Regulatory Commission (NRC) has received a license application from USEC, Inc. (USEC) for the construction, operation, and decommissioning of a gas centrifuge uranium enrichment facility known as the American Centrifuge Plant (ACP). The NRC is in the initial stages of developing an Environmental Impact Statement (EIS) for the proposed facility to be located at the Department of Energy (DOE) reservation in Piketon, Ohio. USEC's license application contained an Environmental Report (ER) that will be used to support the NRC's development of an EIS for the ACP. The proposed facility will use gas centrifuge technology to enrich the isotope Uranium-235 in uranium hexaflouride (UF6), up to 10-weight percent. The proposed ACP will have a design capacity of seven million separative work units. The forthcoming EIS will document the impacts associated with the construction, operation, and decommissioning of the facility.

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Sincerely,

/RA/

B. Jennifer Davis, Section Chief
Environmental and Low-Level
Waste Section
Division of Waste Management
and Environmental Protection
Office of Nuclear Material Safety
and Safeguards

Docket No.: 70-7004

cc: USEC Service List

Enclosure: Section 3.8 and 4.8 Environmental Report

March 14, 2005

Mr. John Pryor, Executive Officer
Miami Tribe of Oklahoma
P.O. Box 1326
202 South Eight Tribes Trail
Miami, OK 74355
Attn: Ms. Julie Olds, THPO

SUBJECT: INITIATION OF THE NATIONAL HISTORIC PRESERVATION ACT SECTION 106 CONSULTATION PROCESS FOR THE PROPOSED AMERICAN CENTRIFUGE COMMERCIAL PLANT, PIKE COUNTY, OHIO

Dear Mr. Pryor:

The United States Nuclear Regulatory Commission (NRC) has received a license application from USEC, Inc. (USEC) for the construction, operation, and decommissioning of a gas centrifuge uranium enrichment facility known as the American Centrifuge Plant (ACP). The NRC is in the initial stages of developing an Environmental Impact Statement (EIS) for the proposed facility to be located at the Department of Energy (DOE) reservation in Piketon, Ohio. USEC's license application contained an Environmental Report (ER) that will be used to support the NRC's development of an EIS for the ACP. The proposed facility will use gas centrifuge technology to enrich the isotope Uranium-235 in uranium hexaflouride (UF6), up to 10-weight percent. The proposed ACP will have a design capacity of seven million separative work units. The forthcoming EIS will document the impacts associated with the construction, operation, and decommissioning of the facility.

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/RA/

B. Jennifer Davis, Section Chief
Environmental and Low-Level
Waste Section
Division of Waste Management
and Environmental Protection
Office of Nuclear Material Safety
and Safeguards

Docket No.: 70-7004

cc: USEC Service List

Enclosure: Section 3.8 and 4.8 Environmental Report

March 14, 2005

Mr. Charles Todd, Chief
Ottawa Tribe of Oklahoma
P.O. Box 110
Miami, OK 74355
Attn: Mr. Roy Ross

SUBJECT: INITIATION OF THE NATIONAL HISTORIC PRESERVATION ACT SECTION 106 CONSULTATION PROCESS FOR THE PROPOSED AMERICAN CENTRIFUGE COMMERCIAL PLANT, PIKE COUNTY, OHIO

Dear Mr. Todd:

The United States Nuclear Regulatory Commission (NRC) has received a license application from USEC, Inc. (USEC) for the construction, operation, and decommissioning of a gas centrifuge uranium enrichment facility known as the American Centrifuge Plant (ACP). The NRC is in the initial stages of developing an Environmental Impact Statement (EIS) for the proposed facility to be located at the Department of Energy (DOE) reservation in Piketon, Ohio. USEC's license application contained an Environmental Report (ER) that will be used to support the NRC's development of an EIS for the ACP. The proposed facility will use gas centrifuge technology to enrich the isotope Uranium-235 in uranium hexaflouride (UF6), up to 10-weight percent. The proposed ACP will have a design capacity of seven million separative work units. The forthcoming EIS will document the impacts associated with the construction, operation, and decommissioning of the facility.

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Sincerely,

/RA/

B. Jennifer Davis, Section Chief
Environmental and Low-Level
Waste Section
Division of Waste Management
and Environmental Protection
Office of Nuclear Material Safety
and Safeguards

Docket No.: 70-7004

cc: USEC Service List

Enclosure: Section 3.8 and 4.8 Environmental Report

March 14, 2005

Mr. John P. Froman, Chief
Peoria Tribe of Oklahoma
P.O. Box 1527
118 S. Eight Tribes Trail
Miami, OK 74355
Attn: Mr. Bud Ellis, Repatriation
Committee Chairman

SUBJECT: INITIATION OF THE NATIONAL HISTORIC PRESERVATION ACT SECTION 106 CONSULTATION PROCESS FOR THE PROPOSED AMERICAN CENTRIFUGE COMMERCIAL PLANT, PIKE COUNTY, OHIO

Dear Mr. Froman:

The United States Nuclear Regulatory Commission (NRC) has received a license application from USEC, Inc. (USEC) for the construction, operation, and decommissioning of a gas centrifuge uranium enrichment facility known as the American Centrifuge Plant (ACP). The NRC is in the initial stages of developing an Environmental Impact Statement (EIS) for the proposed facility to be located at the Department of Energy (DOE) reservation in Piketon, Ohio. USEC's license application contained an Environmental Report (ER) that will be used to support the NRC's development of an EIS for the ACP. The proposed facility will use gas centrifuge technology to enrich the isotope Uranium-235 in uranium hexaflouride (UF6), up to 10-weight percent. The proposed ACP will have a design capacity of seven million separative work units. The forthcoming EIS will document the impacts associated with the construction, operation, and decommissioning of the facility.

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Sincerely,

/RA/

B. Jennifer Davis, Section Chief
Environmental and Low-Level
Waste Section
Division of Waste Management
and Environmental Protection
Office of Nuclear Material Safety
and Safeguards

Docket No.: 70-7004

cc: USEC Service List

Enclosure: Section 3.8 and 4.8 Environmental Report

March 14, 2005

Mr. Harold Frank, Chairperson
Forest County Potawtomi
P.O. Box 340
Community of Wisconsin Potawtomi
Crandon, WI 54520
Attn: Ms. Clarice M. Werle, NAGPRA
Contact

SUBJECT: INITIATION OF THE NATIONAL HISTORIC PRESERVATION ACT SECTION 106 CONSULTATION PROCESS FOR THE PROPOSED AMERICAN CENTRIFUGE COMMERCIAL PLANT, PIKE COUNTY, OHIO

Dear Mr. Frank:

The United States Nuclear Regulatory Commission (NRC) has received a license application from USEC, Inc. (USEC) for the construction, operation, and decommissioning of a gas centrifuge uranium enrichment facility known as the American Centrifuge Plant (ACP). The NRC is in the initial stages of developing an Environmental Impact Statement (EIS) for the proposed facility to be located at the Department of Energy (DOE) reservation in Piketon, Ohio. USEC's license application contained an Environmental Report (ER) that will be used to support the NRC's development of an EIS for the ACP. The proposed facility will use gas centrifuge technology to enrich the isotope Uranium-235 in uranium hexaflouride (UF6), up to 10-weight percent. The proposed ACP will have a design capacity of seven million separative work units. The forthcoming EIS will document the impacts associated with the construction, operation, and decommissioning of the facility.

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Sincerely,

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B. Jennifer Davis, Section Chief
Environmental and Low-Level
Waste Section
Division of Waste Management
and Environmental Protection
Office of Nuclear Material Safety
and Safeguards

Docket No.: 70-7004

cc: USEC Service List

Enclosure: Section 3.8 and 4.8 Environmental Report

March 14, 2005

Mr. John A. Barret, Jr., Chairperson
Citizen Potawatomi Nation
1601 S. Gordon Cooper Drive
Shawnee, OK 74801
Attn: Mr. Jeremy Finch

SUBJECT: INITIATION OF THE NATIONAL HISTORIC PRESERVATION ACT SECTION 106 CONSULTATION PROCESS FOR THE PROPOSED AMERICAN CENTRIFUGE COMMERCIAL PLANT, PIKE COUNTY, OHIO

Dear Mr. Barrett:

The United States Nuclear Regulatory Commission (NRC) has received a license application from USEC, Inc. (USEC) for the construction, operation, and decommissioning of a gas centrifuge uranium enrichment facility known as the American Centrifuge Plant (ACP). The NRC is in the initial stages of developing an Environmental Impact Statement (EIS) for the proposed facility to be located at the Department of Energy (DOE) reservation in Piketon, Ohio. USEC's license application contained an Environmental Report (ER) that will be used to support the NRC's development of an EIS for the ACP. The proposed facility will use gas centrifuge technology to enrich the isotope Uranium-235 in uranium hexaflouride (UF6), up to 10-weight percent. The proposed ACP will have a design capacity of seven million separative work units. The forthcoming EIS will document the impacts associated with the construction, operation, and decommissioning of the facility.

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Sincerely,

/RA/

B. Jennifer Davis, Section Chief
Environmental and Low-Level
Waste Section
Division of Waste Management
and Environmental Protection
Office of Nuclear Material Safety
and Safeguards

Docket No.: 70-7004

cc: USEC Service List

Enclosure: Section 3.8 and 4.8 Environmental Report

March 16, 2005

Mr. Calvin John, President
Seneca Nation of Indians
P.O. Box 231
Salamanca, NY 14779
Attn: Ms. Kathlenn Mitchell, THPO

SUBJECT: INITIATION OF THE NATIONAL HISTORIC PRESERVATION ACT SECTION 106 CONSULTATION PROCESS FOR THE PROPOSED AMERICAN CENTRIFUGE COMMERCIAL PLANT, PIKE COUNTY, OHIO

Dear Mr. John:

The United States Nuclear Regulatory Commission (NRC) has received a license application from USEC, Inc. (USEC) for the construction, operation, and decommissioning of a gas centrifuge uranium enrichment facility known as the American Centrifuge Plant (ACP). The NRC is in the initial stages of developing an Environmental Impact Statement (EIS) for the proposed facility to be located at the Department of Energy (DOE) reservation in Piketon, Ohio. USEC's license application contained an Environmental Report (ER) that will be used to support the NRC's development of an EIS for the ACP. The proposed facility will use gas centrifuge technology to enrich the isotope Uranium-235 in uranium hexaflouride (UF6), up to 10-weight percent. The proposed ACP will have a design capacity of seven million separative work units. The forthcoming EIS will document the impacts associated with the construction, operation, and decommissioning of the facility.

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Sincerely,

/RA/

B. Jennifer Davis, Section Chief
Environmental and Low-Level
Waste Section
Division of Waste Management
and Environmental Protection
Office of Nuclear Material Safety
and Safeguards

Docket No.: 70-7004

cc: USEC Service List

Enclosure: Section 3.8 and 4.8 Environmental Report

March 14, 2005

Mr. Jerry Dilliner, Chief
Seneca-Cayuga Tribe of Oklahoma
P.O. Box 1283
R2301 E. Steve Owens Blvd.
Miami, OK 74355
Attn: Mr. Paul Barton

SUBJECT: INITIATION OF THE NATIONAL HISTORIC PRESERVATION ACT SECTION 106 CONSULTATION PROCESS FOR THE PROPOSED AMERICAN CENTRIFUGE COMMERCIAL PLANT, PIKE COUNTY, OHIO

Dear Mr. Dilliner:

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B. Jennifer Davis, Section Chief
Environmental and Low-Level
Waste Section
Division of Waste Management
and Environmental Protection
Office of Nuclear Material Safety
and Safeguards

Docket No.: 70-7004

cc: USEC Service List

Enclosure: Section 3.8 and 4.8 Environmental Report

March 14, 2005

Mr. Charles D. Enyart, Chief
Eastern Shawnee Tribe of Oklahoma
P.O. Box 350
Seneca, MO 64865
Attn: R.C. Kissee

SUBJECT: INITIATION OF THE NATIONAL HISTORIC PRESERVATION ACT SECTION 106 CONSULTATION PROCESS FOR THE PROPOSED AMERICAN CENTRIFUGE COMMERCIAL PLANT, PIKE COUNTY, OHIO

Dear Mr. Enyart:

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B. Jennifer Davis, Section Chief
Environmental and Low-Level
Waste Section
Division of Waste Management
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Office of Nuclear Material Safety
and Safeguards

Docket No.: 70-7004

cc: USEC Service List

Enclosure: Section 3.8 and 4.8 Environmental Report

March 14, 2005

Mr. Kenneth Daughtery, Tribal Secretary
Absentee-Shawnee Tribe of Oklahoma
2025 S. Gordon Cooper Drive
Shawnee, OK 74801-9381
Attn: Ms. Karen Kaniatobe

SUBJECT: INITIATION OF THE NATIONAL HISTORIC PRESERVATION ACT SECTION 106 CONSULTATION PROCESS FOR THE PROPOSED AMERICAN CENTRIFUGE COMMERCIAL PLANT, PIKE COUNTY, OHIO

Dear Mr. Daughtery:

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Environmental and Low-Level
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Docket No.: 70-7004

cc: USEC Service List

Enclosure: Section 3.8 and 4.8 Environmental Report

March 14, 2005

Mr. James Brushart
President, Pike County Commissioners
230 Waverly Plaza, Suite 1000
Waverly, Ohio 45690

SUBJECT: INITIATION OF THE NATIONAL HISTORIC PRESERVATION ACT SECTION 106 CONSULTATION PROCESS FOR THE PROPOSED AMERICAN CENTRIFUGE COMMERCIAL PLANT, PIKE COUNTY, OHIO

Dear Mr. Brushart:

The United States Nuclear Regulatory Commission (NRC) has received a license application from USEC, Inc. (USEC) for the construction, operation, and decommissioning of a gas centrifuge uranium enrichment facility known as the American Centrifuge Plant (ACP). The NRC is in the initial stages of developing an Environmental Impact Statement (EIS) for the proposed facility to be located at the Department of Energy (DOE) reservation in Piketon, Ohio. USEC's license application contained an Environmental Report (ER) that will be used to support the NRC's development of an EIS for the ACP. The proposed facility will use gas centrifuge technology to enrich the isotope Uranium-235 in uranium hexaflouride (UF6), up to 10-weight percent. The proposed ACP will have a design capacity of seven million separative work units. The forthcoming EIS will document the impacts associated with the construction, operation, and decommissioning of the facility.

Two phase I archaeological surveys and one draft cultural resource report have been completed for the DOE reservation. Archaeological surveys and the cultural report results are discussed section 3.8 of the ER (enclosed). Historical and cultural resource impacts are discussed in section 4.8 of the ER (enclosed). The Area of Potential Effects (APE) is defined as the DOE reservation in Piketon, Ohio.

As required by 36 CFR 800.3 (f), the NRC is requesting any information you may have regarding historic sites or cultural resources within the APE. The NRC is interested in knowing if you have specific knowledge of any sites that you believe have traditional religious and cultural significance. In addition, we are interested in knowing if you are aware of or are concerned for any site, or object, eligible for inclusion on the National Register of Historic Places. This will assure appropriate consideration in the Section 106 process.

Any information you provide may be used to document affects in accordance with 36 CFR 800.4 and 800.5. Additionally, we intend to use the EIS process for Section 106 purposes as described in 36 CFR 800.8.

If you any questions or comments, or need additional information, please contact Ron Linton at (301) 415-7777.

Sincerely,

/RA/

B. Jennifer Davis, Section Chief
Environmental and Low-Level
Waste Section
Division of Waste Management
and Environmental Protection
Office of Nuclear Material Safety
and Safeguards

Docket No.: 70-7004

cc: USEC Service List

Enclosure: Section 3.8 and 4.8 Environmental Report

March 14, 2005

Mr. Leaford Bearskin, Chief
Wyandotte Nation
P.O. Box 250
Wyandotte, OK 74370
Attn: Ms. Sherri Clemons

SUBJECT: INITIATION OF THE NATIONAL HISTORIC PRESERVATION ACT SECTION 106 CONSULTATION PROCESS FOR THE PROPOSED AMERICAN CENTRIFUGE COMMERCIAL PLANT, PIKE COUNTY, OHIO

Dear Mr. Bearskin:

The United States Nuclear Regulatory Commission (NRC) has received a license application from USEC, Inc. (USEC) for the construction, operation, and decommissioning of a gas centrifuge uranium enrichment facility known as the American Centrifuge Plant (ACP). The NRC is in the initial stages of developing an Environmental Impact Statement (EIS) for the proposed facility to be located at the Department of Energy (DOE) reservation in Piketon, Ohio. USEC's license application contained an Environmental Report (ER) that will be used to support the NRC's development of an EIS for the ACP. The proposed facility will use gas centrifuge technology to enrich the isotope Uranium-235 in uranium hexaflouride (UF6), up to 10-weight percent. The proposed ACP will have a design capacity of seven million separative work units. The forthcoming EIS will document the impacts associated with the construction, operation, and decommissioning of the facility.

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As required by 36 CFR 800.3 (f), the NRC is requesting any information you may have regarding historic sites or cultural resources within the APE. The NRC is interested in knowing if you have specific knowledge of any sites that you believe have traditional religious and cultural significance. In addition, we are interested in knowing if you are aware of or are concerned for any site, or object, eligible for inclusion on the National Register of Historic Places. This will assure appropriate consideration in the Section 106 process.

Any information you provide may be used to document affects in accordance with 36 CFR 800.4 and 800.5. Additionally, we intend to use the EIS process for Section 106 purposes as described in 36 CFR 800.8.

If you any questions or comments, or need additional information, please contact Ron Linton at (301) 415-7777.

Sincerely,

/RA/

B. Jennifer Davis, Section Chief
Environmental and Low-Level
Waste Section
Division of Waste Management
and Environmental Protection
Office of Nuclear Material Safety
and Safeguards

Docket No.: 70-7004

cc: USEC Service List

Enclosure: Section 3.8 and 4.8 Environmental Report

March 14, 2005

Mr. James Squirrel
Loyal Shawnee Tribe
Route 4, Box 30
Jay, OK 74346

SUBJECT: INITIATION OF THE NATIONAL HISTORIC PRESERVATION ACT SECTION 106 CONSULTATION PROCESS FOR THE PROPOSED AMERICAN CENTRIFUGE COMMERCIAL PLANT, PIKE COUNTY, OHIO

Dear Mr. Squirrel:

The United States Nuclear Regulatory Commission (NRC) has received a license application from USEC, Inc. (USEC) for the construction, operation, and decommissioning of a gas centrifuge uranium enrichment facility known as the American Centrifuge Plant (ACP). The NRC is in the initial stages of developing an Environmental Impact Statement (EIS) for the proposed facility to be located at the Department of Energy (DOE) reservation in Piketon, Ohio. USEC's license application contained an Environmental Report (ER) that will be used to support the NRC's development of an EIS for the ACP. The proposed facility will use gas centrifuge technology to enrich the isotope Uranium-235 in uranium hexaflouride (UF6), up to 10-weight percent. The proposed ACP will have a design capacity of seven million separative work units. The forthcoming EIS will document the impacts associated with the construction, operation, and decommissioning of the facility.

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Any information you provide may be used to document affects in accordance with 36 CFR 800.4 and 800.5. Additionally, we intend to use the EIS process for Section 106 purposes as described in 36 CFR 800.8.

If you any questions or comments, or need additional information, please contact Ron Linton at (301) 415-7777.

Sincerely,

/RA/

B. Jennifer Davis, Section Chief
Environmental and Low-Level
Waste Section
Division of Waste Management
and Environmental Protection
Office of Nuclear Material Safety
and Safeguards

Docket No.: 70-7004

cc: USEC Service List

Enclosure: Section 3.8 and 4.8 Environmental Report

If you any questions or comments, or need additional information, please contact Ron Linton at (301) 415-7777.

Sincerely,

/RA/

B. Jennifer Davis, Section Chief
Environmental and Low-Level
Waste Section
Division of Waste Management
and Environmental Protection
Office of Nuclear Material Safety
and Safeguards

Docket No.: 70-7004

cc: USEC Service List

Enclosure: Section 3.8 and 4.8 Environmental Report

DISTRIBUTION: EPAD r/f
ML050670006

OFC	DWMEP		DWMEP			
NAME	RLinton		JDavis			
DATE	03/09/05		03/14/05			

March 18, 2005

Mr. Ron Sparkman
Shawnee Tribe
P.O. Box 189
Miami, OK 74355

SUBJECT: INITIATION OF THE NATIONAL HISTORIC PRESERVATION ACT SECTION 106 CONSULTATION PROCESS FOR THE PROPOSED AMERICAN CENTRIFUGE COMMERCIAL PLANT, PIKE COUNTY, OHIO

Dear Mr. Sparkman:

The United States Nuclear Regulatory Commission (NRC) has received a license application from USEC, Inc. (USEC) for the construction, operation, and decommissioning of a gas centrifuge uranium enrichment facility known as the American Centrifuge Plant (ACP). The NRC is in the initial stages of developing an Environmental Impact Statement (EIS) for the proposed facility to be located at the Department of Energy (DOE) reservation in Piketon, Ohio. USEC's license application contained an Environmental Report (ER) that will be used to support the NRC's development of an EIS for the ACP. The proposed facility will use gas centrifuge technology to enrich the isotope Uranium-235 in uranium hexaflouride (UF6), up to 10-weight percent. The proposed ACP will have a design capacity of seven million separative work units. The forthcoming EIS will document the impacts associated with the construction, operation, and decommissioning of the facility.

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As required by 36 CFR 800.3 (f), the NRC is requesting any information you may have regarding historic sites or cultural resources within the APE. The NRC is interested in knowing if you have specific knowledge of any sites that you believe have traditional religious and cultural significance. In addition, we are interested in knowing if you are aware of or are concerned for any site, or object, eligible for inclusion on the National Register of Historic Places. This will assure appropriate consideration in the Section 106 process.

Any information you provide may be used to document affects in accordance with 36 CFR 800.4 and 800.5. Additionally, we intend to use the EIS process for Section 106 purposes as described in 36 CFR 800.8.

If you any questions or comments, or need additional information, please contact Ron Linton at (301) 415-7777.

Sincerely,

/RA/

B. Jennifer Davis, Section Chief
Environmental and Low-Level
Waste Section
Division of Waste Management
and Environmental Protection
Office of Nuclear Material Safety
and Safeguards

Docket No.: 70-7004

cc: USEC Service List

Enclosure: Section 3.8 and 4.8 Environmental Report

March 18, 2005

Mr. Rey Kitchkumme
Prairie Band of Potawatomi Nation
16277 Q Road
Mayetta, KS 66509-8970

SUBJECT: INITIATION OF THE NATIONAL HISTORIC PRESERVATION ACT SECTION 106 CONSULTATION PROCESS FOR THE PROPOSED AMERICAN CENTRIFUGE COMMERCIAL PLANT, PIKE COUNTY, OHIO

Dear Mr. Kitchkumme:

The United States Nuclear Regulatory Commission (NRC) has received a license application from USEC, Inc. (USEC) for the construction, operation, and decommissioning of a gas centrifuge uranium enrichment facility known as the American Centrifuge Plant (ACP). The NRC is in the initial stages of developing an Environmental Impact Statement (EIS) for the proposed facility to be located at the Department of Energy (DOE) reservation in Piketon, Ohio. USEC's license application contained an Environmental Report (ER) that will be used to support the NRC's development of an EIS for the ACP. The proposed facility will use gas centrifuge technology to enrich the isotope Uranium-235 in uranium hexaflouride (UF6), up to 10-weight percent. The proposed ACP will have a design capacity of seven million separative work units. The forthcoming EIS will document the impacts associated with the construction, operation, and decommissioning of the facility.

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Any information you provide may be used to document affects in accordance with 36 CFR 800.4 and 800.5. Additionally, we intend to use the EIS process for Section 106 purposes as described in 36 CFR 800.8.

If you any questions or comments, or need additional information, please contact Ron Linton at (301) 415-7777.

Sincerely,

/**RA**/

B. Jennifer Davis, Section Chief
Environmental and Low-Level
Waste Section
Division of Waste Management
and Environmental Protection
Office of Nuclear Material Safety
and Safeguards

Docket No.: 70-7004

cc: USEC Service List

Enclosure: Section 3.8 and 4.8 Environmental Report

If you any questions or comments, or need additional information, please contact Ron Linton at (301) 415-7777.

Sincerely,

/**RA**/

B. Jennifer Davis, Section Chief
Environmental and Low-Level
Waste Section
Division of Waste Management
and Environmental Protection
Office of Nuclear Material Safety
and Safeguards

Docket No.: 70-7004

cc: USEC Service List

Enclosure: Section 3.8 and 4.8 Environmental Report

DISTRIBUTION: EPAD r/f
ML050750405 *See previous concurrence

OFC	DWMEP		DWMEP*			
NAME	RLinton		JDavis			
DATE	03/09/05		03/18/05			

Rec'd 3/29/05
RDB

PEORIA TRIBE OF INDIANS OF OKLAHOMA
118 S. Eight Tribes Trail (918) 540-2535 FAX (918) 540-2538
P.O. Box 1527
MIAMI, OKLAHOMA 74355

CHIEF
John P. Froman

SECOND CHIEF
Joe Goforth

12/29/04
69FR 78058
(1)

March 23, 2005

Chief, Rules and Directives Branch
Division of Administrative Services
Mail Stop T-6 D59
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

RE: Initiation of the National Historic Reservation Act Section 106 Consultation Process for the Proposed American Centrifuge Commercial Plant, Pike County, Ohio

Thank you for notice of the referenced project. The Peoria Tribe of Indians of Oklahoma is currently unaware of any documentation directly linking Indian Religious Sites to the proposed construction. In the event any items falling under the Native American Graves Protection and Repatriation Act (NAGPRA) are discovered during construction, the Peoria Tribe request notification and further consultation.

The Peoria Tribe has no objection to the proposed construction. However, if any human skeletal remains and/or any objects falling under NAGPRA are uncovered during construction, the construction should stop immediately, and the appropriate persons, including state and tribal NAGPRA representatives contacted.

John P. Froman
Chief

xc: Bud Ellis, Repatriation/NAGPRA Committee Chairman

SISP Review Complete

E-RIDS = ADM-03
Code = M. Blevins (MXB6)

Template = ADM-013

Y. Faiaz (YHF)

NRC FORM 699 (9-2003) U.S. NUCLEAR REGULATORY COMMISSION

CONVERSATION RECORD

DATE: 3/28/05
TIME: 12:25

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU: Rebecca Hawkins
TELEPHONE NO.: 918-542-2441
ORGANIZATION: Shawnee Tribe - THPO
SUBJECT: USEZ

TYPE OF CONVERSATION
- ☐ VISIT
- ☐ CONFERENCE
- ☑ TELEPHONE
  - ☑ INCOMING
  - ☐ OUTGOING

SUMMARY *(Continue on Page 2)*

Not sure if Hopewell are direct decendants of Hopewell. Specifically no use to NRC - but from general word, they are interested in preservation of archeological features. She has been in contact w/ Dave Snyder - Ohio SHPO - she indicated she was comfortable that NRC + Ohio SHPO was aware and was doing due diligence about Scioto Township Works.

Some groups in Ohio - claim to be Shawnee - but not really Indians - try to get standing - be aware that they may try to interrupt or intervene. Video - Ohio Historical Society - good + interesting watch of S. Ohio History "Searching for the Great Hopewell Road" - Talks about Gravel Ways and extensive earthworks in S. Ohio.

Continue on Page 2

ACTION REQUIRED

NONE - She will follow-up w/ Letter to NRC.

NAME OF PERSON DOCUMENTING CONVERSATION	SIGNATURE	DATE
Ron Linton		3/28/05

ACTION TAKEN

TITLE OF PERSON TAKING ACTION	SIGNATURE OF PERSON TAKING ACTION	DATE

Seneca Nation Tribal Historic Preservation

467 Center St. Salamanca, NY 14779
Phone: (716) 945-9427 ▪ Fax: (716) 945-0351
E-mail: snithpo@nycountry.com

Kathleen J. Mitchell
Officer

Lana K. Watt
Cultural Resource Tech.

April 5, 2005

Attention: Mr. Ron Linton
MS T7 J08
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

RE: Proposed American Centrifuge Commercial Plant, Pike County, Ohio

Dear Mr. Linton,

Our office has completed a review of submitted information regarding the above referenced project proposal. In order to further facilitate our review of the project we are requesting that copies of the Phase I Archaeological/Cultural Reports, along with any completed Phase II reports, be forwarded to our office at your earliest convenience.

These comments are offered to assist in compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (36 CFR 80).

Respectfully,

Kathleen Mitchell

Kathleen Mitchell
Tribal Historic Preservation Officer

NRC FORM 699 (9-2003) — U.S. NUCLEAR REGULATORY COMMISSION

CONVERSATION RECORD

DATE: 6/1/05

TIME: 4:10

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU: Mr. Paul Barton

TELEPHONE NO.: 918-542-6609

ORGANIZATION: Seneca-Cayuga Tribe of OK

SUBJECT: ACP Sect 106 Consultation Process

TYPE OF CONVERSATION
- ☐ VISIT
- ☐ CONFERENCE
- ☑ TELEPHONE
  - ☐ INCOMING
  - ☑ OUTGOING

SUMMARY *(Continue on Page 2)*

Discussed ACP w/ Mr. Paul Barton. He had not seen the letter, but found it as we were discussing on the phone. He will look over and respond or call back with questions.

Continue on Page 2

ACTION REQUIRED

NAME OF PERSON DOCUMENTING CONVERSATION	SIGNATURE	DATE
Ron Linton		6/1/05

ACTION TAKEN

TITLE OF PERSON TAKING ACTION	SIGNATURE OF PERSON TAKING ACTION	DATE

NRC FORM 699 (9-2003) — U.S. NUCLEAR REGULATORY COMMISSION

CONVERSATION RECORD

DATE: 6/1/05

TIME: 12:40

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU: Ms. Julie Olds

TELEPHONE NO.: 918-542-1445

ORGANIZATION: Miami Tribe of Oklahoma

SUBJECT: Sect 106 consultation process

TYPE OF CONVERSATION: ☐ VISIT ☐ CONFERENCE ☑ TELEPHONE ☐ INCOMING ☑ OUTGOING

SUMMARY *(Continue on Page 2)*

She had no seen letter directed to Mr. John Pryor. I gave her the ML# for the 15 letters sent to Tribes on 3/14/05, and told her the letter to Miami Tribe was about 4th on the list. I directed her to www.nrc.gov → reading room – ADAMS web based search → ML#. Also gave her the ML#s for ACP EIR, Phase II Archeological Survey, and told her we should be getting the Schmukant phase I publication on ADAMS soon. If she needed to see it, to please contact me and I would provide ML# or copy. She may respond by mail, or by e-mail to me. I gave her my [redacted] e-mail address.

Continue on Page 2

ACTION REQUIRED

NAME OF PERSON DOCUMENTING CONVERSATION	SIGNATURE	DATE
RON LINTON		6/1/05

ACTION TAKEN

TITLE OF PERSON TAKING ACTION	SIGNATURE OF PERSON TAKING ACTION	DATE

NRC FORM 699 (9-2003) U.S. NUCLEAR REGULATORY COMMISSION

CONVERSATION RECORD

DATE: 6/1/05

TIME: 12:22 pm

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU: Tamara Francis,

TELEPHONE NO.: 405-247-2448

ORGANIZATION: Delaware Tribe of Western Oklahoma

SUBJECT: Sect 106 consultation - ACP

TYPE OF CONVERSATION
- [ ] VISIT
- [ ] CONFERENCE
- [x] TELEPHONE
  - [ ] INCOMING
  - [x] OUTGOING

SUMMARY *(Continue on Page 2)*

Have no interests in Pike County, Ohio.

Spoke briefly w/ Ms. Tamara Francis, tribal contact, the Delaware have no interests in Pike County, Ohio. I explained I sent letter to Delaware b/c they were listed on Ohio SHPO letter dated 2/2/05 as a possible consulting tribe. She again reiterated that the Delaware of Western Ok have no interests in Pike Co, Ohio, and that's probably why they did not respond.

Continue on Page 2

ACTION REQUIRED

NONE

NAME OF PERSON DOCUMENTING CONVERSATION	SIGNATURE	DATE
Ron Linton		6/1/2005

ACTION TAKEN

TITLE OF PERSON TAKING ACTION	SIGNATURE OF PERSON TAKING ACTION	DATE

From: Ron Linton
To: Matthew Blevins
Date: 10/14/05 10:57AM
Subject: Status: Section 106 Tribal consultations for USEC ACP, to date

Matt:
This is the status, to date, of the Section 106 Tribal consultations for the USEC ACP.

A list of 15 Tribes with historical ties to Ohio was provided by the Ohio Historic Preservation Office (SHPO) on February 2, 2005. An additional 2 tribes with historical ties to Ohio were identified with the assistance of the National Park Service. Initial 106 consultation letters were sent to 15 Tribes in letters dated March 14, 2005 and to two Tribes in letters dated March 18, 2005. Consultation letters were sent to both the Loyal Shawnee Tribe (March 14) and the Shawnee Tribe (March 18). In correspondence received later from the Shawnee Tribe, they clarified that the Loyal Shawnee Tribe name was changed to Shawnee Tribe several years ago. Therefore, a total of 16 tribes were contacted in total. To date, we have received written or verbal comments or replies from ten Tribes. These replies have been documented and are docketed in ADAMS. The following provides the attempts made to elicit comments from the additional six Tribes.

Cayuga Nation - The initial Section 106 consultation letter was sent to Mr. James Leaffe, Chief dated March 14, 2005. I followed up with phone calls to the Cayuga Nation on June 1 and June 2, 2005 and left messages to contact me in reference to the March 14, 2005 letter. I was not contacted. On August 24, 2005 I phoned the Cayuga Nation and spoke with a staff member who asked me to fax a copy of the March 14, 2005 letter. I faxed the March 14, 2005 letter to the tribe on August 25, 2005. To date, NRC has not received comments from the Cayuga Nation.

Cherokee Nation of Oklahoma - The initial Section 106 consultation letter was sent to the Cherokee Nation dated March 14, 2005. I did not have a phone number for the Cherokee Nation. In June 2005, I had attempted to find the Cherokee Nation in Ada, Oklahoma, as identified by the SHPO, through an Internet search. I could not locate the Cherokee Nation in Ada, Oklahoma. On August 25, 2005, I again tried an Internet search to identify the Cherokee Nation. I did identify the Cherokee Nation in Tahlequah, Oklahoma. On August 25, 2005, I contacted a general phone number and was referred to the cultural center. I was told by a Mr. David Rabon that the Tribe did not have a tribal historic preservation officer. I was given a phone number of a Dr. Richard Allen who might be able to assist with our consultation. I called Dr. Allen on August 25, 2005 and left a voice mail message. I did not hear back from him. To date, NRC has not received comments from the Cherokee Nation.

Forest County Potawatomi - The initial Section 106 consultation letter was sent to the Forest County Potawatomi dated March 14, 2005. I attempted to call Ms. Clarice Werle, the contact identified by the SHPO, but the number did not go through. I did an Internet search and called the Forest County Potawatomi and was told that Mr. Mike Alloway, Sr was the contact. I called an left a message on June 2, 2005 for Mr. Mike Alloway, Sr,. I again called on August 25, 2005 and left a message for Mr. Alloway. To date, NRC has not received comments from the Forest County Potawatomi.

Citizen Potawatomi Nation - The initial Section 106 consultation letter was sent to the Citizen Potawatomi Nation dated March 14, 2005. I called and left a message on June 1 and June 2, 2005 for Mr. Jeremy Finch. I again called on August 25, 2005 and left a message for Mr. Finch. To date, NRC has not received comments from the Citizen Potawatomi Nation.

Seneca Nation of Indians - The initial Section 106 consultation letter was sent to the Seneca Nation of Indians dated March 14, 2005. The Seneca Nation of Indians responded in a letter dated April 5, 2005 requesting copies of Phase I and Phase II archaeological/cultural reports. The reports were forwarded to the Tribe in an e-mail to Kathleen Mitchell dated August 25, 2005. A copy of the Draft Environmental Impact Statement (DEIS) was also sent to the Seneca Nation of Indians after it was published. To date, NRC has not received comments from the Seneca Nation of Indians.

Absentee-Shawnee Tribe of Oklahoma - The initial Section 106 consultation letter was sent to the Absentee-Shawnee Tribe of Oklahoma dated March 14, 2005. The Absentee-Shawnee tribe had commented earlier in correspondence sent to the ASLB. I called and left a message on June 1 or 2, 2005, but I don"t have a record of leaving a message. I know I called because I was pronouncing Ms. Kaniatobie's name wrong after listening to the message on her voice mail. I call again on August 24, 2005 and left a message. A copy of the DEIS was also sent to the Seneca Nation of Indians after publication. To date, NRC has not received comments from the Absentee-Shawnee Tribe of Oklahoma other than those that were previously sent to the ASLB.

Let me know if you need any other information.
Ron

CC: Jennifer Davis

Mail Envelope Properties (434FC74C.A78 : 8 : 1314)

Subject:	Status: Section 106 Tribal consultations for USEC ACP, to date
Creation Date:	10/14/05 10:57AM
From:	Ron Linton
Created By:	RCL1@nrc.gov

Recipients

nrc.gov
- twf4_po.TWFN_DO
  - BJD1 CC (Jennifer Davis)
  - MXB6 (Matthew Blevins)

Post Office	Route
twf4_po.TWFN_DO	nrc.gov

Files	Size	Date & Time
MESSAGE	5910	10/14/05 10:57AM

Options

Expiration Date:	None
Priority:	Standard
Reply Requested:	No
Return Notification:	

Send Notification when Opened

Concealed Subject:	No
Security:	Standard

NRC FORM 699 (9-2003) U.S. NUCLEAR REGULATORY COMMISSION

CONVERSATION RECORD

DATE: 6/2/05

TIME: 4:10 pm

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU: Jo Ann ~~Eaton~~ Beckham

TELEPHONE NO. X234 918-666-2435

ORGANIZATION: Eastern Shawnee Tribe of OK - Admin Asst / NAG-PRA contact

SUBJECT: Section 106 Consultation

TYPE OF CONVERSATION: ☐ VISIT ☐ CONFERENCE ☑ TELEPHONE ☐ INCOMING ☑ OUTGOING

SUMMARY *(Continue on Page 2)*

Called and spoke w/ Ms. Jo Ann Beckham about 106 Consultation letter 3/14/05. I directed her to our web site and ADAMS search. She found the letter to Mr. Charles Enyart and downloaded a copy of letter. Also directed her to the USGS GIS and Cultural Resource Sections in Section 3 and 4. She will contact me if she needs any other information and will research if thy have or know of any sites in Pike Co near the ACP.

Continue on Page 2

ACTION REQUIRED: NONE

NAME OF PERSON DOCUMENTING CONVERSATION	SIGNATURE	DATE
RON LINTON	RL	6/2/2005

ACTION TAKEN

TITLE OF PERSON TAKING ACTION	SIGNATURE OF PERSON TAKING ACTION	DATE

NRC FORM 699 (9-2003) — U.S. NUCLEAR REGULATORY COMMISSION

CONVERSATION RECORD

DATE: 6/2/2005

TIME:

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU: Sherri Clemons

TELEPHONE NO.: 918-678-2298

ORGANIZATION: Wyandotte Nation

SUBJECT: Section 106 consultation - ACP

TYPE OF CONVERSATION: ☐ VISIT ☐ CONFERENCE ☐ TELEPHONE ☐ INCOMING ☐ OUTGOING

SUMMARY (Continue on Page 2)

Wyandotte doesn't show a presence in Pike County, Ohio. Tribe requests that "go with idea that you may find something" Show respect and notify tribes if burial grounds are found.

No other information is needed @ this time to go forward with the APE.

I gave her the USGS Docket # 07007004 and several urls USGS ER + Phase II Archeological Study - also let her know Schmidt would be available soon.

She indicated she did not need any further information, but if graves were found, would like to be contacted.

Continue on Page 2

ACTION REQUIRED: NONE

NAME OF PERSON DOCUMENTING CONVERSATION: Ron Linton

SIGNATURE:

DATE: 6/2/2005

ACTION TAKEN

TITLE OF PERSON TAKING ACTION

SIGNATURE OF PERSON TAKING ACTION

DATE

NRC FORM 699 (9-2003) U.S. NUCLEAR REGULATORY COMMISSION

CONVERSATION RECORD

DATE: 6/2/05

TIME: 12:16 pm

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU: Rhonda Dixon

TELEPHONE NO.: 918-540-1536

ORGANIZATION: Ottawa Tribe of Oklahoma

SUBJECT: Sect 106 Consultation ACP

TYPE OF CONVERSATION: ☐ VISIT ☐ CONFERENCE ☑ TELEPHONE ☑ INCOMING ☐ OUTGOING

SUMMARY *(Continue on Page 2)*

No ties with Southern Ohio - all ties or presence is along Lake Erie in Northern Ohio. No further information is needed.

Mr. Roy Ross returned an earlier message - transferred me to tribal historian, Rhonda Dixon, who gave me info that tribe is connected to N. Ohio along the Lake Erie, and not S. Ohio or Pike County. She indicated she did have copy of 3/14/05 letter, but had not responded.

Continue on Page 2

ACTION REQUIRED: NONE

NAME OF PERSON DOCUMENTING CONVERSATION	SIGNATURE	DATE
RON LINTON		6/2/2005

ACTION TAKEN

TITLE OF PERSON TAKING ACTION	SIGNATURE OF PERSON TAKING ACTION	DATE

From: "Eastern Shawnee Tribe Chief Enyart" <estochief@hotmail.com>
To: <rcl1@nrc.gov>
Date: 6/3/05 4:52PM
Subject: 106 Consultation

June 3, 2005

RE: PROPOSED AMERICAN CENTRIFUGE COMMERCIAL PLANT, PIKE COUNTY, OH

To Whom It May Concern:

Thank you for notice of the referenced project(s). The Eastern Shawnee Tribe of Oklahoma is currently unaware of any documentation directly linking Indian Religious Sites to the proposed construction. In the event any items falling under the Native American Graves Protection and Repatriation Act (NAGPRA) are discovered during construction, the Eastern Shawnee Tribe request notification and further consultation.

The Eastern Shawnee Tribe has no objection to the proposed construction. However, if any human skeletal remains and/or any objects falling under NAGPRA are uncovered during construction, the construction should stop immediately, and the appropriate persons, including state and tribal NAGPRA representatives contacted.

Sincerely,
Jo Ann Beckham, Administrative Assistant
Eastern Shawnee Tribe of Oklahoma

Mail Envelope Properties (42A0C2FB.7FB : 12 : 47099)

Subject:	106 Consultation
Creation Date:	6/3/05 4:51PM
From:	"Eastern Shawnee Tribe Chief Enyart" <estochief@hotmail.com>
Created By:	estochief@hotmail.com

Recipients
nrc.gov
twf4_po.TWFN_DO
RCL1 (Ron Linton)

Post Office	Route
twf4_po.TWFN_DO	nrc.gov

Files	Size	Date & Time
MESSAGE	945	06/03/05 04:51PM
Mime.822	1946	

Options

Expiration Date:	None
Priority:	Standard
Reply Requested:	No
Return Notification:	None
Concealed Subject:	No
Security:	Standard

NRC FORM 699 (9-2003) — U.S. NUCLEAR REGULATORY COMMISSION

CONVERSATION RECORD

DATE: 6/7/05

TIME: 10:55 am

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU: Mr. Rey Kitchkumme

TELEPHONE NO.: 785-966-2255

ORGANIZATION: Prairie Band of Potawatomi Nation

SUBJECT: Section 106 consult - ACP

TYPE OF CONVERSATION: [ ] VISIT [ ] CONFERENCE [✓] TELEPHONE [✓] INCOMING [ ] OUTGOING

SUMMARY *(Continue on Page 2)*

They are not aware of cultural or historical sits in that area - fine with the project. Come across inadvertant discovers, please notify. No site aware of. For record - they were primarily located along the Lake - Lake Erie - and not in Southern Ohio. I indicated that we would most likely not contact him again since their presence was along the Lake and near the lake. He was ok with that. I told him we had several other tribes that we could/would contact if needed do to inadvertant discovers or remains. Gave him a brief description of the project and how/why he was contacted ([redacted] Potawatomi chief signature on Treaty of Greenville in 1794).

Continue on Page 2

ACTION REQUIRED: NONE

NAME OF PERSON DOCUMENTING CONVERSATION: KEN LINTON

SIGNATURE: [signature]

DATE: 6/7/05

ACTION TAKEN

TITLE OF PERSON TAKING ACTION

SIGNATURE OF PERSON TAKING ACTION

DATE

NRC FORM 699 (9-2003) — U.S. NUCLEAR REGULATORY COMMISSION

CONVERSATION RECORD

DATE: 8/24/2005

TIME: 4:45 pm

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU: Mr. Brady Grant

TELEPHONE NO.: 701-477-2600

ORGANIZATION: Turtle Mountain Band of Chippewa Indians

SUBJECT: Section 106 consultations, USEC ACP

TYPE OF CONVERSATION: ☐ VISIT ☐ CONFERENCE ☑ TELEPHONE ☐ INCOMING ☑ OUTGOING

SUMMARY *(Continue on Page 2)*

Brady Grant - Section 106 - If don't respond - not concerned with, Mr. Grant is very short staffed, he indicated the way he is working now with Section 106 consultations is that if he doesn't respond within a short period of time, he is not interested, or doesn't have the time to respond. He said that projects in Ohio he would not be responding to. I told him that if anything came up, please contact us and that we know alot about historic resources / cultural resources around and @ the site, but we were looking for the unknown. He then indicated that he was not, not interested, just doesn't have time to respond to issues in Ohio.

Continue on Page 2

ACTION REQUIRED: NONE

NAME OF PERSON DOCUMENTING CONVERSATION	SIGNATURE	DATE
RON LINTON	Ron Linton	8/24/2005

ACTION TAKEN

TITLE OF PERSON TAKING ACTION	SIGNATURE OF PERSON TAKING ACTION	DATE

NRC FORM 699 (9-2003) U.S. NUCLEAR REGULATORY COMMISSION

CONVERSATION RECORD

DATE: 8/24/2005
TIME: 4:20 pm

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU: Mr. Paul Barton
TELEPHONE NO.: 918-542-6609
ORGANIZATION: Seneca-Cayuga Tribe of OK
SUBJECT: Section 106 Consultation, USCE NRP

TYPE OF CONVERSATION
- [ ] VISIT
- [ ] CONFERENCE
- [x] TELEPHONE
  - [ ] INCOMING
  - [x] OUTGOING

SUMMARY *(Continue on Page 2)*

No Comments - If during construction - any funeral objects or inadvertant discovers, remains, please contact. Seneca-Cayuga - Nothern Part of the State primarily Logan County, etc. Not much in southern Ohio. Really don't know of any connection. I told him we were looking for the unknown, what we don't know. We know of Hopewell sites along Scioto River + on the National Register, info from the Phase I's and Phase II Cultural Report, but we are looking for culturally significant sites, etc, we don't know about. He was not aware of any or any persons that had any association w/ Pike County, Ohio.

Continue on Page 2

ACTION REQUIRED: NONE

NAME OF PERSON DOCUMENTING CONVERSATION	SIGNATURE	DATE
Ron Linton	Ron Linton	8/24/2005

ACTION TAKEN

TITLE OF PERSON TAKING ACTION	SIGNATURE OF PERSON TAKING ACTION	DATE

NRC FORM 699 (9-2003) — U.S. NUCLEAR REGULATORY COMMISSION

CONVERSATION RECORD

DATE: 8/24/05

TIME: 4:30 pm

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU: Unknown - Cayuga Nation

TELEPHONE NO.: 716-532-4847

ORGANIZATION: Cayuga Nation

SUBJECT: Section 106 Consult, USCG ACP

TYPE OF CONVERSATION: ☐ VISIT ☐ CONFERENCE ☑ TELEPHONE ☐ INCOMING ☑ OUTGOING

SUMMARY *(Continue on Page 2)*

Didnt get name - they were not aware of letter. asked to refax @ 716-337-0268 Attn: Mr. Clint Halftown

Continue on Page 2

ACTION REQUIRED

~~Refax~~ FAX 3/14/05 letter

NAME OF PERSON DOCUMENTING CONVERSATION	SIGNATURE	DATE
RON LINTON	Ron C Linton	8/24/05

ACTION TAKEN

FAXED 3/14/05 ltr to Mr. Halftown. 8/25/05

TITLE OF PERSON TAKING ACTION	SIGNATURE OF PERSON TAKING ACTION	DATE
R-LINTON	RL	8/25/2005

********** -COMM. JOURNAL- ********** DATE AUG-25-2005 ***** TIME 09:07 *** P.01

MODE = MEMORY TRANSMISSION START=AUG-25 09:05 END=AUG-25 09:07

FILE NO.= 020

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********** - ***** - **********

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, DC 20555-0001

FACSIMILE COVER PAGE	DATE: August 25, 2005

TO:

NAME: Mr. Clint Halftown

COMPANY: Cayuga Nation

FAX NUMBER:716-337-0268

TELEPHONE NUMBER:

FROM:

OFFICE OF MATERIAL SAFETY AND SAFEGUARDS
DIVISION OF WASTE MANAGEMENT AND ENVIRONMENTAL PROTECTION

NAME: Ron C. Linton

FAX NUMBER: (301) 415-5397

TELEPHONE NUMBER: (301) 415-7777

REMARKS:
Copy of NRC letter dated March 14, 2005 as requested in my phone conversation with one of your staff yesterday.

PAGE 1 of 3

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, DC 20555-0001

FACSIMILE COVER PAGE	DATE: August 25, 2005

TO:

NAME: Mr. Clint Halftown

COMPANY: Cayuga Nation

FAX NUMBER:716-337-0268

TELEPHONE NUMBER:

FROM:

OFFICE OF MATERIAL SAFETY AND SAFEGUARDS
DIVISION OF WASTE MANAGEMENT AND ENVIRONMENTAL PROTECTION

NAME: Ron C. Linton

FAX NUMBER: (301) 415-5397

TELEPHONE NUMBER: (301) 415-7777

REMARKS:
Copy of NRC letter dated March 14, 2005 as requested in my phone conversation with one of your staff yesterday.

PAGE 1 of 3

NRC FORM 699 (9-2003) — U.S. NUCLEAR REGULATORY COMMISSION

CONVERSATION RECORD

DATE: 8/24/05

TIME: 5:00 pm

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU: Ms Rebecca Hawkins

TELEPHONE NO.: 918-542-2441

ORGANIZATION: Shawnee Tribe

SUBJECT: Section 106 consultations, USEC ACP

TYPE OF CONVERSATION: ☐ VISIT ☐ CONFERENCE ☑ TELEPHONE ☐ INCOMING ☑ OUTGOING

SUMMARY *(Continue on Page 2)*

Spoke to Ms. Hawkins. She indicated that she had meant to respond on the letter, but had not done so. She asked me to fax her a copy of the March 18, 2005 letter to 918-542-2922 so she could properly respond.

I asked her if the Shawnee Tribe was Federally recognized and she indicated that they were. I was just confirming what I thought was true from the NAGPRA database I used to get her name — name of Ron Spoonman — Mr. Sea had noted in an e-mail that the Shawnee Tribe of OK was not recognized.

Continue on Page 2

ACTION REQUIRED

FAX 3/18/2005 letter to R. Hawkins

NAME OF PERSON DOCUMENTING CONVERSATION	SIGNATURE	DATE
RON LINTON	Ron C. Linton	8/24/2005

ACTION TAKEN

FAXED 3/18/05 letter to. R Hawkins. 8/25/2005

TITLE OF PERSON TAKING ACTION	SIGNATURE OF PERSON TAKING ACTION	DATE
R. LINTON		8/25/05

********** -COMM. JOURNAL- ********** DATE AUG-25-2005 ***** TIME 09:04 *** P.01

MODE = MEMORY TRANSMISSION START=AUG-25 09:03 END=AUG-25 09:04

FILE NO.= 018

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****

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, DC 20555-0001

FACSIMILE COVER PAGE	DATE: August 25, 2005

TO:

NAME: Ms. Rebecca Hawkins

COMPANY: Shawnee Tribe

FAX NUMBER: 918-542-2922

TELEPHONE NUMBER:

FROM:

OFFICE OF MATERIAL SAFETY AND SAFEGUARDS
DIVISION OF WASTE MANAGEMENT AND ENVIRONMENTAL PROTECTION

NAME: Ron C. Linton

FAX NUMBER: (301) 415-5397

TELEPHONE NUMBER: (301) 415-7777

REMARKS:
Copy of NRC letter dated March 18, 2005 as requested in my phone conversation with you yesterday.

PAGE 1 of 3

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, DC 20555-0001

FACSIMILE COVER PAGE	DATE: August 25, 2005

TO:

NAME: Ms. Rebecca Hawkins

COMPANY: Shawnee Tribe

FAX NUMBER: 918-542-2922

TELEPHONE NUMBER:

FROM:

OFFICE OF MATERIAL SAFETY AND SAFEGUARDS
DIVISION OF WASTE MANAGEMENT AND ENVIRONMENTAL PROTECTION

NAME: Ron C. Linton

FAX NUMBER: (301) 415-5397

TELEPHONE NUMBER: (301) 415-7777

REMARKS:
Copy of NRC letter dated March 18, 2005 as requested in my phone conversation with you yesterday.

PAGE 1 of 3

March 18, 2005

Mr. Ron Sparkman
Shawnee Tribe
P.O. Box 189
Miami, OK 74355

SUBJECT: INITIATION OF THE NATIONAL HISTORIC PRESERVATION ACT SECTION 106 CONSULTATION PROCESS FOR THE PROPOSED AMERICAN CENTRIFUGE COMMERCIAL PLANT, PIKE COUNTY, OHIO

Dear Mr. Sparkman:

The United States Nuclear Regulatory Commission (NRC) has received a license application from USEC, Inc. (USEC) for the construction, operation, and decommissioning of a gas centrifuge uranium enrichment facility known as the American Centrifuge Plant (ACP). The NRC is in the initial stages of developing an Environmental Impact Statement (EIS) for the proposed facility to be located at the Department of Energy (DOE) reservation in Piketon, Ohio. USEC's license application contained an Environmental Report (ER) that will be used to support the NRC's development of an EIS for the ACP. The proposed facility will use gas centrifuge technology to enrich the isotope Uranium-235 in uranium hexaflouride (UF6), up to 10-weight percent. The proposed ACP will have a design capacity of seven million separative work units. The forthcoming EIS will document the impacts associated with the construction, operation, and decommissioning of the facility.

Two phase I archaeological surveys and one draft cultural resource report have been completed for the DOE reservation. Archaeological surveys and the cultural report results are discussed section 3.8 of the ER (enclosed). Historical and cultural resource impacts are discussed in section 4.8 of the ER (enclosed). The Area of Potential Effects (APE) is defined as the DOE reservation in Piketon, Ohio.

As required by 36 CFR 800.3 (f), the NRC is requesting any information you may have regarding historic sites or cultural resources within the APE. The NRC is interested in knowing if you have specific knowledge of any sites that you believe have traditional religious and cultural significance. In addition, we are interested in knowing if you are aware of or are concerned for any site, or object, eligible for inclusion on the National Register of Historic Places. This will assure appropriate consideration in the Section 106 process.

Any information you provide may be used to document affects in accordance with 36 CFR 800.4 and 800.5. Additionally, we intend to use the EIS process for Section 106 purposes as described in 36 CFR 800.8.

If you any questions or comments, or need additional information, please contact Ron Linton at (301) 415-7777.

Sincerely,

/RA/

B. Jennifer Davis, Section Chief
Environmental and Low-Level
Waste Section
Division of Waste Management
and Environmental Protection
Office of Nuclear Material Safety
and Safeguards

Docket No.: 70-7004

cc: USEC Service List

Enclosure: Section 3.8 and 4.8 Environmental Report

From: Ron Linton
To: sniarch@sni.org
Date: 8/25/05 8:24AM
Subject: NHPA 106 Consultation

Ms. Kathleen Mitchell
Tribal Historic Preservation Officer
Seneca Nation Tribal Historic Preservation

Re: National Historic Preservation Act Section 106 Consultation Process for the Proposed American Centrifuge Plant, Pike County, Ohio

Dear Ms. Mitchell:

This is a follow-up to your April 5, 2005 request for Phase I and Phase II Archaeological/Cultural Resource Reports related to the above referenced project. Your April 5, 2005 request followed our March 16, 2005 letter to Mr. Calvin John requesting if you have specific knowledge of any sites that you believe have traditional religious and cultural significance within the area of potential effects. In addition, we are interested in knowing if you are aware of or are concerned for any site, or object, eligible for inclusion on the National Register of Historic Places.

The Phase I and Phase II reports and other information can be obtained electronically on NRC's Agencywide Documents Access and Management System (ADAMS), which provides text and image files of NRC's public documents. ADAMS may be accessed through the NRC's Public Electronic Reading Room on the Internet at http://www.nrc.gov/reading-rm/adams.html. Click on the button for "Web Based Access" and, on the next page, "Begin ADAMS search." Enter the ML number (i.e., MLXXXXXXXXX) in the search field. The following documents may be of interest:

ML052200307, Phase I Archaeological Survey for the Portsmouth Gaseous Diffusion Plant (PORTS Facility), Pike County, Ohio
ML051110118, Archaeological Testing at Site 33PK210, Scioto Township, Pike County, Ohio
ML051510305, Environmental Report for the American Centrifuge Plant in Piketon, Ohio, Revision 1
ML043620096, License Application for the American Centrifuge Plant in Piketon, Ohio

For other documents related to NRC's Section 106 compliance process, I suggest using the Advanced Search on this website, searching the Docket Number field with the value "07007004" and the Title field with various keywords such as "106," Phase 1," "Cultural Resources," etc.

Additionally, the Draft Environmental Impact Statement (DEIS) is scheduled to be published in September 2005. The DEIS will present NRC's preliminary findings related to this undertaking, including a description of the "area of potential effects" and preliminary determinations of project effect. If requested, a copy of the DEIS will be forwarded to you for your review and comment.

If you do not have access to ADAMS or if there are problems in accessing the documents located in ADAMS, contact the NRC Public Document Room (PDR) Reference staff at 1-800-397-4209, 301-415-4737 or by email to PDR@nrc.gov.

Please contact me if you have any questions.

Sincerely;

Ron C. Linton
Project Manager
U.S. Nuclear Regulatory Commission
Office of Nuclear Material Safety and Safeguards
Mail Stop T7 J08

Washington, DC 20555-0001
301-415-7777 phone
301-415-5397 fax
rcl1@nrc.gov

CC: Matthew Blevins

Mail Envelope Properties (430DB88D.281 : 16 : 1314)

Subject:	NHPA 106 Consultation
Creation Date:	8/25/05 8:24AM
From:	Ron Linton
Created By:	RCL1@nrc.gov

Recipients	**Action**	**Date & Time**
nrc.gov		
twf4_po.TWFN_DO	Delivered	08/25/05 8:24 AM
MXB6 CC (Matthew Blevins)	Opened	08/25/05 8:25 AM
sni.org		
sniarch (sniarch@sni.org)		

Post Office	**Delivered**	**Route**
twf4_po.TWFN_DO	08/25/05 8:24 AM	nrc.gov
	Pending	sni.org

Files	**Size**	**Date & Time**
MESSAGE	4690	08/25/05 08:24AM

Options

Auto Delete:	No
Expiration Date:	None
Notify Recipients:	Yes
Priority:	Standard
Reply Requested:	No
Return Notification:	
Send Notification when Opened	
Concealed Subject:	No
Security:	Standard
To Be Delivered:	Immediate
Status Tracking:	Delivered & Opened

September 6, 2005

Ms. Kathleen Mitchell
Tribal Historic Preservation Officer
Seneca Nation Tribal Historic Preservation
467 Center Street
Salamanca, NY 14779

SUBJECT: CONTINUATION OF THE NATIONAL HISTORIC PRESERVATION ACT SECTION 106 CONSULTATION PROCESS FOR THE PROPOSED AMERICAN CENTRIFUGE PLANT, PIKE COUNTY, OHIO: TRANSMITTAL OF ADDITIONAL INFORMATION

Dear Ms. Mitchell:

This letter follows a letter of March 14, 2005, in which the Nuclear Regulatory Commission (NRC) initiated consultation for the proposed American Centrifuge Commercial Plant. In a letter dated April 5, 2005, you requested additional information about archaeological and historical studies in the project area.

As required under Section 106, the NRC has undertaken the steps of identifying and evaluating historic properties that may be affected by construction and operation of the proposed American Centrifuge Plant. The NRC found that there have been surveys conducted previously to find archaeological and historic sites in the area of the proposed project. Enclosed is the "Environmental Impact Statement for the Proposed American Centrifuge Plant in Piketon, Ohio, Draft Report for Comment." Section 3.3, "Historic and Cultural Resources," provides a description of the identification and evaluation process. Section 4.2.2 "Historic and Cultural Resource Impacts," presents the NRC's preliminary findings related to this undertaking, including a description of the "area of potential effects" and preliminary determinations of project effect. The NRC hopes that this additional information allows the tribe to respond to the requests in our letter of March 14, 2005.

The NRC welcomes your input and comment on the findings of the inventory and evaluation effort and the preliminary determinations of effect on the identified historic properties. The NRC requests a response by October 24, 2005. Please feel free to respond in writing or to contact

Ron Linton by phone at 301-415-7777 or e-mail at RCL1@nrc.gov. Mr. Linton will be happy to set up a meeting or telephone conference to facilitate the consultation.

Sincerely,

/**RA**/

B. Jennifer Davis, Chief
Environmental Review Section
Division of Waste Management
and Environmental Protection
Office of Nuclear Material Safety
and Safeguards

Docket No.: 70-7004

Enclosures: As stated

cc: w/o Enclosure, see attached list

Ron Linton by phone at 301-415-7777 or e-mail at RCL1@nrc.gov. Mr. Linton will be happy to set up a meeting or telephone conference to facilitate the consultation.

Sincerely,

/RA/

B. Jennifer Davis, Chief
Environmental Review Section
Division of Waste Management
and Environmental Protection
Office of Nuclear Material Safety
and Safeguards

Docket No.: 70-7004

Enclosures: As stated

cc: w/o Enclosure, see attached list

DISTRIBUTION:	EPADr/f	LCamper	SFlanders	YFaraz	BSmith
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JClifford	DMartin	MBurrell, OE			

ML052450146

OFC	DWMEP:PM	DWMEP:SC	OGC
NAME	MBlevins	BJDavis	MZobler
DATE	8/30/05	9/02/05	8/31/05

OFFICIAL RECORD COPY

USEC Service List

cc:

William Szymanski
U.S. Department of Energy
1000 Independence Ave, SW
Washington, D.C. 20585

Michael Marriott
Nuclear Information and Resource Service,
1424 16th St., NW
Washington, D.C. 20036

The Honorable Robert W. Ney
Member, United States House of Representatives
2438 Rayburn HOB
Washington, D.C. 20515

The Honorable George V. Voinovich
United States Senator
317 Hart Senate Office Building
Washington, D.C. 20510

The Honorable Rob Portman
Member, United States House of Representatives
238 Cannon House Office Building
Washington, D.C. 20515

The Honorable Mike DeWine
United States Senator
140 Russell Senate Office Building
Washington, D.C. 20410

The Honorable Bob Taft
Governor of Ohio
77 South High Street
30th Floor
Columbus, Ohio 43215-6117

Ms. Mary Glasgow
601 Chillicothe Street
Portsmouth, Ohio 45662

Mr. Teddy L. Wheeler
Pike County Auditor
Pike County Government Center
230 Waverly Plaza, Suite 200
Waverly, Ohio 45690-1289

Mr. Harry Rioer
Pike County Commissioner
230 Waverly Plaza Suite 1000
Waverly, Ohio 45690

Mr. Larry E. Scaggs
Township Trustee
230 Waverly Plaza Suite 1400
Waverly, Ohio 45690

Kara Willis
16 North Paint St.,Suite 102
Chillicothe, Ohio 45601

Jim Brushart
Pike County Comm. Chair
230 Waverly Plaza Suite 1000
Waverly, Ohio 45690

Mr. Gary Hager
ATTN: Mailstop-4025
P.O. Box 628
Piketon, Ohio 45661

Mr. Blaine Beekman
Executive Director
Pike County Chamber of Commerce
P.O. Box 107
Waverly, Ohio 45696

Billy Spencer, Mayor of Piketon
P.O. Box 547
Piketon, Ohio 45661

Rocky Brown, Mayor of Beaver
7677 State Route 335
Beaver, Ohio 45613

Mr. Geoffrey Sea
1832 Wakefield Mound Road
Piketon OH 45661

Ms. Vina K. Colley, President PRESS
3706 McDermott Pond Creek
McDermott, Ohio 45652

Mr. Peter J. Miner, Director
Regulatory and Quality Assurance
USEC Inc.
6903 Rockledge Drive
Bethesda, MD 20817

Randall Devault, Regulatory Oversight Manager
Department of Energy - Oak Ridge
P.O. Box 2001
Oak Ridge, TN 37831-8651

Dan Minter
Southern Ohio Development Initiative
P.O. Box 467
Piketon, OH 45661

Mr. James R. Curtiss, Winston & Strawn
1400 L Street, NW
Washington, D.C. 20005-3502

Teddy West
2170 Wakefield Mound Road
Piketon, OH 45661

Carol O'Claire, Supervisor
Radiological Branch
Ohio Emergency Management Ag ency
2855 West Dublin-Granville Road
Columbus, OH 43235-2206

Rod Krich, Vice President
Licensing Projects
Exelon Generation Co.
4300 Winfield Road
Warrenville, IL 60555

Lindsay A. Lovejoy, Jr.
NIRS
618 Paseo de Peralta, Unit B
Santa Fe, NM 87501

Robert Huff, President and CEO
Portsmouth Area Chamber of Commerce
324 Chillicothe St.
P.O. Box 509
Portsmouth, OH 45662

Roger L. Suppes
Chief, Bureau of Radiation Protection
Ohio Dept. of Health
35 East Chestnut Street
Columbus, OH 43266

Donald J. Silverman
Morgan, Lewis & Bockius
1111 Pennsylvania Ave. N.W.
Washington, D.C. 20004

September 6, 2005

Mr. Kenneth Daughtery, Tribal Secretary
Absentee-Shawnee Tribe of Oklahoma
Attn: Ms. Karen Kaniatobe
2025 S. Gordon Cooper Drive
Shawnee, OK 74801-9381

SUBJECT: CONTINUATION OF THE NATIONAL HISTORIC PRESERVATION ACT SECTION 106 CONSULTATION PROCESS FOR THE PROPOSED AMERICAN CENTRIFUGE PLANT, PIKE COUNTY, OHIO: REQUEST FOR COMMENT ON PROPOSED FINDINGS AND DETERMINATIONS OF EFFECT

Dear Mr. Daughtery:

Following transmittal of our letter of March 14, 2005, initiating consultation for the proposed American Centrifuge Commercial Plant, the U. S. Nuclear Regulatory Commission (NRC) became aware of a letter from Ms. Karen Kaniatobe, dated February 24, 2005. The letter indicates that the tribe wishes to be included as a consulting party in the Section 106 process. It mentions concerns about the Barnes Works in Scioto Township and states that surveys should be conducted to find other sites that may be present. Ms. Kaniatobe's letter indicates that the Absentee Shawnee Tribe, collectively with the Algonquian tribes of the Ohio/Great Lakes Region, considers itself to be descended from the people of the Fort Ancient culture who, in turn, were descendants of the people of the Hopewell Culture who built the Barnes Works.

As required under Section 106, the NRC has undertaken the steps of identifying and evaluating historic properties that may be affected by construction and operation of the proposed American Centrifuge Plant. The NRC found that there have been surveys conducted previously to find archaeological and historic sites in the area of the proposed project.

Enclosed is the "Environmental Impact Statement for the Proposed American Centrifuge Plant in Piketon, Ohio, Draft Report for Comment." Section 3.3, "Historic and Cultural Resources," provides a description of the identification and evaluation process. Section 4.2.2 "Historic and Cultural Resource Impacts," presents the NRC's preliminary findings related to this undertaking, including a description of the "area of potential effects" and preliminary determinations of project effect.

As indicated in these sections, the site referred to by Ms. Kaniatobe as the Barnes Works in Scioto Township is known as the Scioto Township Works and is listed on the National Register of Historic places under Criterion D, for sites "that have yielded or may be likely to yield information important in history or prehistory."

These sections also indicate that the Scioto Township Works site has cultural importance to the Absentee Shawnee tribe. NRC would welcome information about the site attributes that contribute to its importance to the Absentee Shawnee tribe. In the absence of that information NRC has assumed that the site may have importance related to Criterion A of the National

Register of Historic Places, for sites that “are associated with events that have made a significant contribution to the broad patterns of our history.”

As indicated in Section 3.3.3 “Results of Document Review,” the Scioto Township Works site lies about 250 m (820 ft) from the boundary of the Department of Energy Reservation, and about one kilometer (3250 ft) from the closest construction effort associated with the proposed American Centrifuge Plant. Based on this distance, the NRC has made a determination of no effect on the information values that make the site eligible for listing on the National Register under Criterion D. Additionally, because the activities associated with construction and operation will not change the present setting and feel of the Scioto Township Works site, NRC has made a preliminary determination of no effect on these values (i.e., Criterion A) that may be of importance to the Absentee Shawnee Tribe.

The NRC welcomes your input and comment on the findings of its inventory and evaluation effort and its preliminary determination of effect on the Scioto Township Works site. If the tribe can provide information about site attributes other than those included under Criterion A that contribute to the site’s importance to the Absentee Shawnee, the NRC will be able to consider these in applying the criteria of adverse effect.

The NRC requests a response from the tribe by October 24, 2005. Please feel free to respond in writing or to contact Ron Linton by phone at 301-415-7777 or by e-mail at RCL1@nrc.gov. Mr. Linton will be happy to set up a meeting or telephone conference to facilitate the consultation.

Sincerely,

/RA/

B. Jennifer Davis, Chief
Environmental Review Section
Division of Waste Management
and Environmental Protection
Office of Nuclear Material Safety
and Safeguards

Docket No.: 70-7004

Enclosures: As stated

cc: w/o attactment, see attached list

Register of Historic Places, for sites that "are associated with events that have made a significant contribution to the broad patterns of our history."

As indicated in Section 3.3.3 "Results of Document Review," the Scioto Township Works site lies about 250 m (820 ft) from the boundary of the Department of Energy Reservation, and about one kilometer (3250 ft) from the closest construction effort associated with the proposed American Centrifuge Plant. Based on this distance, the NRC has made a determination of no effect on the information values that make the site eligible for listing on the National Register under Criterion D. Additionally, because the activities associated with construction and operation will not change the present setting and feel of the Scioto Township Works site, NRC has made a preliminary determination of no effect on these values (i.e., Criterion A) that may be of importance to the Absentee Shawnee Tribe.

The NRC welcomes your input and comment on the findings of its inventory and evaluation effort and its preliminary determination of effect on the Scioto Township Works site. If the tribe can provide information about site attributes other than those included under Criterion A that contribute to the site's importance to the Absentee Shawnee, the NRC will be able to consider these in applying the criteria of adverse effect.

The NRC requests a response from the tribe by October 24, 2005. Please feel free to respond in writing or to contact Ron Linton by phone at 301-415-7777 or by e-mail at RCL1@nrc.gov. Mr. Linton will be happy to set up a meeting or telephone conference to facilitate the consultation.

Sincerely,

/RA/

B. Jennifer Davis, Chief
Environmental Review Section
Division of Waste Management
and Environmental Protection
Office of Nuclear Material Safety
and Safeguards

Docket No.: 70-7004

Enclosures: As stated

cc: w/o attactment, see attached list

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ML052440393

OFC	DWMEP:PM	DWMEP:SC	OGC	
NAME	MBlevins	BJDavis	MZobler	
DATE	8/30/05	9/06 /05	8/31/05	

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USEC Service List

cc:

William Szymanski
U.S. Department of Energy
1000 Independence Ave, SW
Washington, DC 20585

Michael Marriott
Nuclear Information and Resource Service,
1424 16th St., NW
Washington, DC 20036

The Honorable Robert W. Ney
Member, United States House of Representatives
2438 Rayburn HOB
Washington, DC 20515

The Honorable George V. Voinovich
United States Senator
317 Hart Senate Office Building
Washington, DC 20510

The Honorable Rob Portman
Member, United States House of Representatives
238 Cannon House Office Building
Washington, DC 20515

The Honorable Mike DeWine
United States Senator
140 Russell Senate Office Building
Washington, DC 20410

The Honorable Bob Taft
Governor of Ohio
77 South High Street
30th Floor
Columbus, Ohio 43215-6117

Ms. Mary Glasgow
601 Chillicothe Street
Portsmouth, Ohio 45662

Mr. Teddy L. Wheeler
Pike County Auditor
Pike County Government Center
230 Waverly Plaza, Suite 200
Waverly, Ohio 45690-1289

Mr. Harry Rioer
Pike County Commissioner
230 Waverly Plaza Suite 1000
Waverly, Ohio 45690

Mr. Larry E. Scaggs
Township Trustee
230 Waverly Plaza Suite 1400
Waverly, Ohio 45690

Kara Willis
16 North Paint St.,Suite 102
Chillicothe, Ohio 45601

Jim Brushart
Pike County Comm. Chair
230 Waverly Plaza Suite 1000
Waverly, Ohio 45690

Mr. Gary Hager
ATTN: Mailstop-4025
P.O. Box 628
Piketon, Ohio 45661

Mr. Blaine Beekman
Executive Director
Pike County Chamber of Commerce
P.O. Box 107
Waverly, Ohio 45696

Billy Spencer, Mayor of Piketon
P.O. Box 547
Piketon, Ohio 45661

Rocky Brown, Mayor of Beaver
7677 State Route 335
Beaver, Ohio 45613

Mr. Geoffrey Sea
1832 Wakefield Mound Road
Piketon OH 45661

Ms. Vina K. Colley, President PRESS
3706 McDermott Pond Creek
McDermott, Ohio 45652

Mr. Peter J. Miner, Director
Regulatory and Quality Assurance
USEC Inc.
6903 Rockledge Drive
Bethesda, MD 20817

Randall Devault, Regulatory Oversight Manager
Department of Energy - Oak Ridge
P.O. Box 2001
Oak Ridge, TN 37831-8651

Dan Minter
Southern Ohio Development Initiative
P.O. Box 467
Piketon, OH 45661

Mr. James R. Curtiss, Winston & Strawn
1400 L Street, NW
Washington, DC. 20005-3502

Teddy West
2170 Wakefield Mound Road
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Carol O'Claire, Supervisor
Radiological Branch
Ohio Emergency Management Ag ency
2855 West Dublin-Granville Road
Columbus, OH 43235-2206

Rod Krich, Vice President
Licensing Projects
Exelon Generation Co.
4300 Winfield Road
Warrenville, IL 60555

Lindsay A. Lovejoy, Jr.
NIRS
618 Paseo de Peralta, Unit B
Santa Fe, NM 87501

Robert Huff, President and CEO
Portsmouth Area Chamber of Commerce
324 Chillicothe St.
P.O. Box 509
Portsmouth, OH 45662

Roger L. Suppes
Chief, Bureau of Radiation Protection
Ohio Dept. of Health
35 East Chestnut Street
Columbus, OH 43266

Donald J. Silverman
Morgan, Lewis & Bockius
1111 Pennsylvania Ave. N.W.
Washington, DC 20004

From: "shawnee tribe" <shawneetribe@neok.com>
To: "Ron Linton" <RCL1@nrc.gov>
Date: 9/7/05 5:29PM
Subject: Re: Nuclear Regulatory Commission Section 106 Consultation (Attn:R. Hawkins)

Dear Ron,

Indeed, we are one and the same (and we apologize for my being such a laggard in corresponding to you - it's been short-handed and very busy here of late). In 2000, with an Act of Congress, we officially changed our name from the Loyal Shawnee Tribe to the Shawnee Tribe. James Squirrel has never lived in Tahlequah and hasn't been chairman since 2000. David Snyder should know this, as I have told him, just this year! Anyhow, we used to be administered by Cherokee Nation, thus the (seemingly neverending) mix-up. Certainly not your fault, and good to know this confusion still exists. Tomorrow, I promise you, I will respond to your request for consultation,

Rebecca

----- Original Message -----
From: "Ron Linton" <RCL1@nrc.gov>
To: <Shawneetribe@neok.com>
Sent: Wednesday, September 07, 2005 3:59 PM
Subject: Nuclear Regulatory Commission Section 106 Consultation (Attn:R. Hawkins)

Attn: Rebecca Hawkins
Shawnee Tribe
P. O. Box 189
Miami, OK 74355

Rebecca:
I'm trying to tie up a loose end. What if any is the relationship between the Shawnee Tribe and the Loyal Shawnee Tribe?

In our initial letter from David Snyder at the Ohio Historical Society, he listed the Loyal Shawnee as one Tribe we should contact. We sent a letter to a Mr. James Squirrel, Loyal Shawnee Tribe, Rt 4 Box 30, Jay, OK 74346. The letter was never returned. I recently did an internet search and the Loyal Shawnee Tribe was listed on a website that listed all Tribes in Oklahoma. The number listed, 918-456-0671 x333, turned out to be the number for the Cherokee Nation. When I called the number, I was transferred to the Cherokee Nation registration desk. I spoke with Lee at the registration desk. He looked up Loyal Shawnee Tribe on his contact list and gave me the number 918-542-7774, but he wasn't sure if it was still a valid number. When I called the number, I reached the office of Mr. Ron Sparkman of the Tax Commission and the Chairman of the Shawnee Tribe. The woman I spoke with at his office gave me the number 918-542-2441, which I recognized as your number. She also indicated that the Loyal Shawnee Tribe became the Shawnee Tribe a few years ago. Therefore, the Loyal Shawnee Tribe name may be an old name that is no longer used.

I thought I would ask you to clarify this for me. Any insights into this quandary?

Thanks for your help.

Ron C. Linton
Project Manager
U.S. Nuclear Regulatory Commission
Office of Nuclear Material Safety and Safeguards
Mail Stop T7 J08
Washington, DC 20555-0001
301-415-7777 phone
301-415-5397 fax
rcl1@nrc.gov

Mail Envelope Properties (431F5BAF.65C : 2 : 9820)

Subject:	Re: Nuclear Regulatory Commission Section 106 Consultation (Attn:R. Hawkins)
Creation Date:	9/7/05 5:28PM
From:	"shawnee tribe" <shawneetribe@neok.com>
Created By:	shawneetribe@neok.com

Recipients
nrc.gov
twf4_po.TWFN_DO
RCL1 (Ron Linton)

Post Office	Route
twf4_po.TWFN_DO	nrc.gov

Files	Size	Date & Time
MESSAGE	2604	09/07/05 05:28PM
Mime.822	3900	

Options

Expiration Date:	None
Priority:	Standard
Reply Requested:	No
Return Notification:	None
Concealed Subject:	No
Security:	Standard

From: "shawnee tribe" <shawneetribe@neok.com>
To: "Ron Linton" <RCL1@nrc.gov>
Date: 9/9/05 1:04PM
Subject: Re: response to request for consultation

Dear Mr. Linton,

Thank you for your continued correspondence with the Shawnee Tribe, and for the U.S. Nuclear Regulatory Commission
Office of Nuclear Material Safety and Safeguards' interest in establishing a consultative relationship with the Shawnee Tribe.

In particular reference to the Chillicothe, Ohio, project, we would like to continue consultation on an as-needed basis. However, the Shawnee Tribe does not have any cultural resources information specific to this project and unique to the Shawnee Tribe. In cases such as this, we are thus forced to rely on the State Historic Preservation Office for (1) an assessment of the need for archaeological or historical research, or, if such research already has been performed, for (2) the SHPO's concurrence with the research report's findings and recommendations.

You have shared with me already the results of site file searches and known sites in and around the area. We remain interested, if any additional research is performed or findings are garnered, in knowing the results, regarding which we may have some additional comment. We would appreciate it, if further research is performed, to be forwarded the formal summary section from the archaeologist's or historian's report to the SHPO. You may e-mail this or, alternatively, fax it to 918-542-2922. As well, in the event that archaeological materials are discovered during the course of construction or other project-related activities, we likely will wish to consult further.

Please continue to keep us informed regarding the SHPO's concerns and decisions; you may e-mail or fax copies of their official determination regarding the project. We applaud the thoroughness of your efforts in this matter.

We also appreciate your efforts to communicate with us electronically as much as possible and help us to decrease the amount of paper waste and storage.

s/s

Rebecca A. Hawkins

Tribal Administrator

THPO

Mail Envelope Properties (4321C087.0DE : 19 : 61662)

Subject:	Re: response to request for consultation
Creation Date:	9/9/05 1:03PM
From:	"shawnee tribe" <shawneetribe@neok.com>
Created By:	shawneetribe@neok.com

Recipients
nrc.gov
twf4_po.TWFN_DO
RCL1 (Ron Linton)

Post Office	**Route**
twf4_po.TWFN_DO	nrc.gov

Files	**Size**	**Date & Time**
MESSAGE	1976	09/09/05 01:03PM
Mime.822	3233	

Options

Expiration Date:	None
Priority:	Standard
Reply Requested:	No
Return Notification:	None
Concealed Subject:	No
Security:	Standard

From: Ron Linton
To: shawnee tribe
Date: 10/14/05 10:03AM
Subject: Re: Nuclear Regulatory Commission Section 106 Consultation (Attn:R. Hawkins)

Rebecca:
Yes, clearing up the Loyal Shawnee Tribe and the Shawnee Tribe name was a big help.

We have entered your comments into the docket 070-07004 for USEC. NUREG 1834, Environmental Impact Statement for the Proposed American Centrifuge Plant in Piketon, Ohio, draft report for comment, was issued a few weeks ago and is on our public website at www.nrc.gov. If you would like to see it, you can access the document from our public reading room and do an ADAMS search using "ML0524404330". If you enter that ML number, the report should appear. You can also do a keyword search to find it.

Thanks again for your comments and I enjoyed talking with you.
Ron

>>> "shawnee tribe" <shawneetribe@neok.com> 09/21/05 5:24 PM >>>
Hi Ron,

Was my e-response to you sufficient?

Rebecca

----- Original Message -----
From: "Ron Linton" <RCL1@nrc.gov>
To: <Shawneetribe@neok.com>
Sent: Wednesday, September 07, 2005 3:59 PM
Subject: Nuclear Regulatory Commission Section 106 Consultation (Attn:R. Hawkins)

Attn: Rebecca Hawkins
Shawnee Tribe
P. O. Box 189
Miami, OK 74355

Rebecca:
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Thanks for your help.

Ron C. Linton
Project Manager
U.S. Nuclear Regulatory Commission
Office of Nuclear Material Safety and Safeguards
Mail Stop T7 J08
Washington, DC 20555-0001
301-415-7777 phone
301-415-5397 fax
rcl1@nrc.gov

Mail Envelope Properties (434FBAB8.E66 : 8 : 1314)

Subject:	Re: Nuclear Regulatory Commission Section 106 Consultation (Attn:R. Hawkins)
Creation Date:	10/14/05 10:03AM
From:	Ron Linton
Created By:	RCL1@nrc.gov

Recipients	**Action**	**Date & Time**
neok.com	Transferred	10/14/05 10:04 AM
shawneetribe (shawnee tribe)		

Post Office	**Delivered**	**Route**
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Files	**Size**	**Date & Time**
MESSAGE	5598	10/14/05 10:03AM

Options

Auto Delete:	No
Expiration Date:	None
Notify Recipients:	Yes
Priority:	Standard
Reply Requested:	No
Return Notification:	

Send Notification when Opened

Concealed Subject:	No
Security:	Standard
To Be Delivered:	Immediate
Status Tracking:	Delivered & Opened

November 29, 2005

Chief Hawk Pope
Shawnee Nation, United Remnant Band
2911 Elmo Place
Middletown OH 45042

SUBJECT: REQUEST FOR COMMENT ON PROPOSED FINDINGS AND DETERMINATIONS OF EFFECT FOR THE PROPOSED AMERICAN CENTRIFUGE PLANT, PIKE COUNTY, OHIO

Dear Chief Pope:

The U.S. Nuclear Regulatory Commission (NRC) received a copy of your letter written in late March 2005, from Mr. Geoffrey Sea. We had intended to provide you a copy of the document "Environmental Impact Statement for the Proposed American Centrifuge Plant in Piketon, Ohio, Draft Report for Comment," (DEIS), however, it has come to our attention that you were inadvertently left off the mailing list. The DEIS is enclosed for your review.

The NRC has undertaken the steps of identifying and evaluating historic properties that may be affected by construction and operation of the proposed American Centrifuge Plant. The NRC found that there have been surveys conducted previously to find archaeological and historic sites in the area of the proposed project.

Within the DEIS, information on cultural and historic resources can be found in Section 3.3, "Historic and Cultural Resources," which provides a description of the identification and evaluation process. Also, Section 4.2.2 "Historic and Cultural Resource Impacts," presents the NRC's preliminary findings related to this undertaking, including a description of the "area of potential effects" and preliminary determinations of project effect.

Specifically, the location of proposed ACP is described on pages 3-1 to 3-2. A description of existing cultural and historic resources near this location is provided on pages 3-5 through 3-11. Included in this description is the location and condition of the earthworks known as the "Barnes Works" or "Scioto Township Works."

Possible project effects are discussed on pages 4-4 to 4-7. The reasons that NRC does not expect the project to have any effects on the "Scioto Township Works" is discussed at the tops of pages 4-6 and 4-7, respectively. Specifically, the earthworks are more than one half mile from the construction area and outside the fenced reservation boundary. Construction and operation of the centrifuge plant will not change the existing setting and feeling of the earthworks site, which has been previously affected by agriculture, quarrying, and the construction and use of U.S. Route 23.

Mr. Sea had also expressed concern about what appear to be earthworks at the wellfield that will supply water for the project. The DEIS presents a discussion of impacts to the wellfield on

page 4-7 and the NRC's findings that there would be no effect on these apparent earthworks. Subsequent to publication of the DEIS, NRC received a statement from Mr. Blaine Bleekman (enclosure), a local resident, who described construction of three levies along the Scioto River after 1959, including the levy that Mr. Sea was concerned about. Thus, it is the NRC's position that the apparent earthworks at the wellfields are flood control levies.

The NRC welcomes your input and comment on the findings of its inventory and evaluation effort and its preliminary determination of effect on the Scioto Township Works site. If you can provide information about site's importance to the United Remnant Band, the NRC will be able to consider this in development of the final Environmental Impact Statement.

We hope that this information will be helpful in explaining the project and NRC's evaluation of its potential effect on historic and cultural resources. The NRC requests a response from the tribe by January 16, 2006. Please feel free to respond in writing or to contact Matthew Blevins by phone at 301-415-7684 or by e-mail at MXB6@nrc.gov. Mr. Blevins will be happy to set up a meeting or telephone conference to facilitate the consultation.

Sincerely,

/RA/

B. Jennifer Davis, Chief
Environmental Review Section
Division of Waste Management
and Environmental Protection
Office of Nuclear Material Safety
and Safeguards

Docket No.: 70-7004

Enclosures: As stated

cc: w/o enclosures, see attached list

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The NRC welcomes your input and comment on the findings of its inventory and evaluation effort and its preliminary determination of effect on the Scioto Township Works site. If you can provide information about site's importance to the United Remnant Band, the NRC will be able to consider this in development of the final Environmental Impact Statement.

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Office of Nuclear Material Safety
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Docket No.: 70-7004

Enclosures: As stated

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ML053330041

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NAME	MBlevins	BJDavis	LClark	
DATE	11/29/05	11/29/05	12/01/05	

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USEC Service List

cc:

William Szymanski
U.S. Department of Energy
1000 Independence Ave, SW
Washington, DC 20585

Michael Marriotte
Nuclear Information and Resource Service
1424 16th St., NW
Washington, DC 20036

The Honorable Robert Ney
Congressman
c/o Carrie Mytinger
51 E Second Street
Chillicothe, OH 45601

The Honorable George V. Voinovich
United States Senator
524 Hart Senate Office Building
Washington, DC 20510

Mr. Marvin Jones
President and CEO
Chillicothe Chamber of Commerce
165 South Paint Street
Chillicothe, OH 45601

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Waverly, Ohio 45690

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Kara Willis
16 North Paint St., Suite 102
Chillicothe, Ohio 45601

Jim Brushart
Pike County Commission Chair
230 Waverly Plaza Suite 1000
Waverly, Ohio 45690

Mr. David Bowe
ATTN: Mail Stop 4025
P.O. Box 628
Piketon, OH 45661

Mr. Blaine Beekman
Executive Director
Pike County Chamber of Commerce
12455 State Route 104
Waverly, OH 45690

Billy Spencer
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P. O. Box 547
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7677 State sr335
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Mr. Geoffrey Sea
The Barnes Home
1832 Wakefield Mound Road
Piketon, OH 45661

Ms. Vina K. Colley, President PRESS
3706 McDermott Pond Creek
McDermott, Ohio 45652

Mr. Peter J. Miner, Licensing Manager
USEC, Inc.
6903 Rockledge Drive
Bethesda, MD 20817

Mr. Randall De Vault
U.S. Department of Energy
P.O. Box 2001
Oak Ridge, TN 37831

Mr. Dan Minter
Southern Ohio Development Initiative
P.O. Box 467
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Mr. James R. Curtiss
Winston & Strawn,
1700 K Street, NW
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Exelon Generation Co.
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618 Paseo de Peralta, Unit B
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Roger L. Suppes
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Ohio Dept. Of Health
35 East Chestnut Street
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Donald J. Silverman
Morgan, Lewis and Bockius
1111 Pennsylvania Ave, NW
Washington D.C. 20004

Ewan Todd
403 E. Oakland Avenue
Columbus, OH 43202

Ms. MarJean Kennedy
Regional Representative
Governor's Office
of Economic Development
15 N. Paint St., Suite 102
Chillicothe, OH 45601

Ms. Joyce Leeth
Pike County Recorder
230 Waverly Plaza, Suite 500
Waverly, OH 45690

Mr. Dwight Massie
c/o The First National Bank
P.O. Box 147
Waverly, OH 45690-0147

Mr. Marvin Jones
President and CEO
Chillicothe Chamber of Commerce
165 South Paint Street
Chillicothe, OH 45601

December 19, 2005

Ms. Kathleen Mitchell
Tribal Historic Preservation Officer
Seneca Nation Tribal Historic Preservation
467 Center Street
Salamanca, NY 14779

SUBJECT: CONTINUATION OF THE NATIONAL HISTORIC PRESERVATION ACT SECTION 106 CONSULTATION PROCESS FOR THE PROPOSED AMERICAN CENTRIFUGE PLANT, PIKE COUNTY, OHIO: NEW INFORMATION REGARDING THE U.S. DEPARTMENT OF ENERGY WELL FIELD

Dear Ms. Mitchell:

The U.S. Nuclear Regulatory Commission (NRC) is providing additional information relevant to the ongoing Section 106 consultation for USEC Inc.'s proposed American Centrifuge Plant (ACP). We have previously transmitted the draft environmental impact statement (DEIS) for the proposed ACP in September and requested your comments on our findings.

As you may be aware, one of the consulting parties, Mr. Geoffrey Sea, has indicated concerns about what appeared to be prehistoric earthworks at one of the well fields that will supply water for the proposed ACP. The DEIS presents a discussion of impacts from the well field in question on page 4-7 and the NRC's findings that there would be no effect on these apparent earthworks.

Subsequent to publication of the DEIS, the NRC received a statement from Mr. Blaine Bleekman (enclosure), a local resident, who described construction of three levies along the Scioto River after a 1959 flood, including the levy that Mr. Sea is concerned about. While it appears most likely that these structures are recently constructed flood control levies, it is still the NRC's position that there will be no effect on these structures from continued pumping at the U.S. Department of Energy (DOE) well field .

At this point Mr. Sea has provided several objections to our findings in the DEIS. In addition to his concerns about the DOE well field, Mr. Sea has also expressed concerns for historic properties bordering the DOE reservation as well as the NRC's compliance with the National Historic Preservation Act Section 106 compliance. We have previously received comments from the Ohio Historic Preservation Office (OHPO) (enclosure) and are working to incorporate their comments, however, we note that the OHPO has stated their agreement that the proposed ACP would not adversely affect historic properties.

If you have any questions about this new information or wish to provide any other additional information please feel free to respond in writing or to contact Matthew Blevins by phone at 301-415-7684 or by e-mail at MXB6@nrc.gov. Mr. Blevins will be happy to set up a meeting or telephone conference to facilitate the consultation.

Sincerely,

/RA/

B. Jennifer Davis, Chief
Environmental Review Section
Division of Waste Management
and Environmental Protection
Office of Nuclear Material Safety
and Safeguards

Docket No.: 70-7004

Enclosures: As stated

cc: w/o enclosures, see attached list

If you have any questions about this new information or wish to provide any other additional information please feel free to respond in writing or to contact Matthew Blevins by phone at 301-415-7684 or by e-mail at MXB6@nrc.gov. Mr. Blevins will be happy to set up a meeting or telephone conference to facilitate the consultation.

Sincerely,

/RA/

B. Jennifer Davis, Chief
Environmental Review Section
Division of Waste Management
and Environmental Protection
Office of Nuclear Material Safety
and Safeguards

Docket No.: 70-7004

Enclosures: As stated

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DMartin	MBurrell, OE				

ML053490035

OFC	DWMEP:PM	DWMEP:SC	OGC	
NAME	MBlevins	BJDavis	LClark	
DATE	12/16/05	12/19/05	12/13/05	

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USEC Service List

cc:

William Szymanski
U.S. Department of Energy
1000 Independence Ave, SW
Washington, DC 20585

Michael Marriotte
Nuclear Information and Resource Service
1424 16th St., NW
Washington, DC 20036

The Honorable Robert Ney
Congressman
c/o Carrie Mytinger
51 E Second Street
Chillicothe, OH 45601

The Honorable George V. Voinovich
United States Senator
524 Hart Senate Office Building
Washington, DC 20510

Mr. Marvin Jones
President and CEO
Chillicothe Chamber of Commerce
165 South Paint Street
Chillicothe, OH 45601

The Honorable Mike DeWine
United States Senator
140 Russell Senate Office Building
Washington, DC 20410

The Honorable Bob Taft
Governor of Ohio
77 South High Street
30th Floor
Columbus, Ohio 43215-6117

Ms. Mary Glasgow
601 Chillicothe Street
Portsmouth, Ohio 45662

Mr. Teddy L. Wheeler
Pike County Auditor
Pike County Government Center
230 Waverly Plaza, Suite 200
Waverly, Ohio 45690-1289

Mr. Harry Rioer
Pike County Commissioner
230 Waverly Plaza, Suite 1000
Waverly, Ohio 45690

Mr. Larry E. Scaggs
Township Trustee
230 Waverly Plaza, Suite 1000
Waverly, Ohio 45690

Kara Willis
16 North Paint St., Suite 102
Chillicothe, Ohio 45601

Jim Brushart
Pike County Commission Chair
230 Waverly Plaza Suite 1000
Waverly, Ohio 45690

Mr. David Bowe
ATTN: Mail Stop 4025
P.O. Box 628
Piketon, OH 45661

Mr. Blaine Beekman
Executive Director
Pike County Chamber of Commerce
12455 State Route 104
Waverly, OH 45690

Billy Spencer
Mayor of Piketon
P. O. Box 547
Piketon, Ohio 45661

Rocky Brown, Mayor of Beaver
7677 State sr335
Beaver, Ohio 45613

Mr. Geoffrey Sea
The Barnes Home
1832 Wakefield Mound Road
Piketon, OH 45661

Ms. Vina K. Colley, President PRESS
3706 McDermott Pond Creek
McDermott, Ohio 45652

Mr. Peter J. Miner, Licensing Manager
USEC, Inc.
6903 Rockledge Drive
Bethesda, MD 20817

Mr. Randall De Vault
U.S. Department of Energy
P.O. Box 2001
Oak Ridge, TN 37831

Mr. Dan Minter
Southern Ohio Development Initiative
P.O. Box 467
Piketon, OH 45661

Mr. James R. Curtiss
Winston & Strawn,
1700 K Street, NW
Washington, DC. 20006

Mr. Teddy West
2170 Wakefield Mound Road
Piketon, OH 45661

Ms. Carol O'Claire, Supervisor
Radiological Branch
Ohio Emergency Management Agency
2855 West Dublin-Granville Road
Columbus, OH 43235-2206

Mr. Rod Krich, Vice President
Licensing Projects
Exelon Generation Co.
4300 Winfield Road
Warrenville, IL 60555

Mr. Lindsay A. Lovejoy, Jr.
Nuclear Information and Resource Service
618 Paseo de Peralta, Unit B
Santa Fe, NM 87501

Mr. Robert Huff, President and CEO
Portsmouth Area Chamber of Commerce
324 Chillicothe St.
P.O. Box 509
Portsmouth, OH 45662

Robert E. Owen
Chief, Bureau of Radiation Protection
Ohio Dept. Of Health
35 East Chestnut Street
Columbus, OH 43215

Donald J. Silverman
Morgan, Lewis and Bockius
1111 Pennsylvania Ave, NW
Washington D.C. 20004

Ewan Todd
403 E. Oakland Avenue
Columbus, OH 43202

Ms. MarJean Kennedy
Regional Representative
Governor's Office
of Economic Development
15 N. Paint St., Suite 102
Chillicothe, OH 45601

Ms. Joyce Leeth
Pike County Recorder
230 Waverly Plaza, Suite 500
Waverly, OH 45690

Mr. Dwight Massie
c/o The First National Bank
P.O. Box 147
Waverly, OH 45690-0147

Mr. Marvin Jones
President and CEO
Chillicothe Chamber of Commerce
165 South Paint Street
Chillicothe, OH 45601

December 19, 2005

Mr. Kenneth Daughtery, Tribal Secretary
Absentee-Shawnee Tribe of Oklahoma
Attn: Ms. Karen Kaniatobe
2025 S. Gordon Cooper Drive
Shawnee, OK 74801-9381

SUBJECT: CONTINUATION OF THE NATIONAL HISTORIC PRESERVATION ACT SECTION 106 CONSULTATION PROCESS FOR THE PROPOSED AMERICAN CENTRIFUGE PLANT, PIKE COUNTY, OHIO: NEW INFORMATION REGARDING THE U.S. DEPARTMENT OF ENERGY WELL FIELD

Dear Mr. Daughtery:

The U.S. Nuclear Regulatory Commission (NRC) is providing additional information relevant to the ongoing Section 106 consultation for USEC Inc.'s proposed American Centrifuge Plant (ACP). We have previously transmitted the draft environmental impact statement (DEIS) for the proposed ACP in September and requested your comments on our findings.

As you may be aware, one of the consulting parties, Mr. Geoffrey Sea, has indicated concerns about what appeared to be prehistoric earthworks at one of the well fields that will supply water for the proposed ACP. The DEIS presents a discussion of impacts from the well field in question on page 4-7 and the NRC's findings that there would be no effect on these apparent earthworks.

Subsequent to publication of the DEIS, the NRC received a statement from Mr. Blaine Bleekman (enclosure), a local resident, who described construction of three levies along the Scioto River after a 1959 flood, including the levy that Mr. Sea is concerned about. While it appears most likely that these structures are recently constructed flood control levies, it is still the NRC's position that there will be no effect on these structures from continued pumping at the U. S. Department of Energy (DOE) well field .

At this point Mr. Sea has provided several objections to our findings in the DEIS. In addition to his concerns about the DOE well field, Mr. Sea has also expressed concerns for historic properties bordering the DOE reservation as well as the NRC's compliance with the National Historic Preservation Act Section 106 compliance. We have previously received comments from the Ohio Historic Preservation Office (OHPO) (enclosure) and are working to incorporate their comments, however, we note that the OHPO has stated their agreement that the proposed ACP would not adversely affect historic properties.

If you have any questions about this new information or wish to provide any other additional information please feel free to respond in writing or to contact Matthew Blevins by phone at 301-415-7684 or by e-mail at MXB6@nrc.gov. Mr. Blevins will be happy to set up a meeting or telephone conference to facilitate the consultation.

Sincerely,

/RA/

B. Jennifer Davis, Chief
Environmental Review Section
Division of Waste Management
and Environmental Protection
Office of Nuclear Material Safety
and Safeguards

Docket No.: 70-7004

Enclosures: As stated

cc: w/o enclosures, see attached list

If you have any questions about this new information or wish to provide any other additional information please feel free to respond in writing or to contact Matthew Blevins by phone at 301-415-7684 or by e-mail at MXB6@nrc.gov. Mr. Blevins will be happy to set up a meeting or telephone conference to facilitate the consultation.

Sincerely,

/RA/

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Docket No.: 70-7004

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DMartin	MBurrell, OE				

ML053490005

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NAME	MBlevins	BJDavis	LClark	
DATE	12/16/05	12/19/05	12/13/05	

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1700 K Street, NW
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Waverly, OH 45690-0147

Mr. Marvin Jones
President and CEO
Chillicothe Chamber of Commerce
165 South Paint Street
Chillicothe, OH 45601

From: "Gail Thomspon" <gail.thompson@sni.org>
To: <MXB6@nrc.gov>
Date: 1/10/06 2:13PM
Subject: RE: American Centrifuge Plant, Pike Co., Ohio

RE: American Centrifuge Plant, Pike Co., Ohio

Dear Mr. Blevins,

Thank you for the recent update regarding the above referenced project. Our office has concluded that we have no further concerns with the project as long as the project/construction does not disturb the levee/earthwork. We do, of course, expect immediate notification in the event of an inadvertent discovery made over the course of the project's construction phase.

Respectfully,

Kathleen Mitchell

Tribal Historic Preservation Officer

Seneca Nation of Indians

Salamanca, NY 14779

716-945-9427

Mail Envelope Properties (43C4074E.E5A : 10 : 61018)

Subject:	RE: American Centrifuge Plant, Pike Co., Ohio
Creation Date:	1/10/06 2:12PM
From:	"Gail Thomspon" <gail.thompson@sni.org>
Created By:	gail.thompson@sni.org

Recipients
nrc.gov
twf4_po.TWFN_DO
MXB6 (Matthew Blevins)

Post Office	**Route**
twf4_po.TWFN_DO	nrc.gov

Files	**Size**	**Date & Time**
MESSAGE	580	01/10/06 02:12PM
Mime.822	1656	

Options

Expiration Date:	None
Priority:	Standard
Reply Requested:	No
Return Notification:	None
Concealed Subject:	No
Security:	Standard

B.3 COMMUNICATIONS TO/FROM CONSULTING PARTIES AND INTERESTED MEMBERS OF THE PUBLIC

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RDB received 2/5/05

10/15/04

69FR 61268

(2)

From: <GeoffreySeaNYC@aol.com>
To: <nrcrep@nrc.gov>, <yhf@nrc.gov>
Date: Wed, Feb 2, 2005 6:04 AM
Subject: Scoping Comments on ACP, Docket 70-7004

Scoping comments attached.

My contact information is:

Geoffrey Sea
340 Haven Ave., Apt. 3C
New York NY 10033
Tel: 212-568-9729
E-mail: _GeoffreySeaNYC@aol.com_ (mailto:GeoffreySeaNYC@aol.com)

STSP Review Complete

Template=ADM-013

E-RIDS=ADM-03

Add=M. Blevins (MXB6)
Y. Faraz (YHF)

Mail Envelope Properties (4200B3A8.A60 : 5 : 64096)

Subject:	Scoping Comments on ACP, Docket 70-7004
Creation Date:	Wed, Feb 2, 2005 6:03 AM
From:	<GeoffreySeaNYC@aol.com>
Created By:	GeoffreySeaNYC@aol.com

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YHF (Yawar Faraz)

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twf4_po.TWFN_DO	nrc.gov

Files	Size	Date & Time
MESSAGE	200	Wednesday, February 2, 2005 6:03 AM
TEXT.htm	1211	
Statement of Geoffrey Sea 2.doc		3494400
Mime.822	4791642	

Options

Expiration Date:	None
Priority:	Standard
Reply Requested:	No
Return Notification:	None
Concealed Subject:	No
Security:	Standard

Statement of Geoffrey Sea

Presented in conjunction with the Environmental Scoping Hearing
for USEC's American Centrifuge Plant

Piketon, Ohio, January 18 2005

Submitted to the US Nuclear Regulatory Commission, Rules and Directives Branch,
Division of Administrative Services, Docket #70-7004

I'm not for the centrifuge plant. I'm not against the centrifuge plant. I do believe that the plant will never open. That it was never intended to open. That from the start of the project more than twenty-five years ago, the real intention was to stuff private pockets at public expense, to create a bureaucratic security apparatus to protect this massive expropriation of taxpayer funds, to set aside the Piketon atomic reservation as a national sacrifice zone for radioactive and toxic waste, and to extend this destructive charade with the false promise of future production, for as long as eyes are blindered to it.

I believe that that the scales are about to fall.

1. "Action Alternatives"

Twenty years ago I worked for the Oil, Chemical and Atomic Workers in Piketon. At that time, the Department of Energy began to build the Gas Centrifuge Enrichment Plant, all the while lying to the local community with the suggestion that the gaseous diffusion plant would remain open, even when GCEP had come online.

We at the union were not fooled. We knew that only one facility would operate, and we started a project called the Atomic Reclamation and Conversion Project to plan for the cleanup and conversion to alternate use of whichever facility had to close. Our project later evolved into the Southern Ohio Diversification Initiative.

In 1985, Congress cut the funding for GCEP, and so we asked DOE to enter into negotiations about alternative use for those buildings. Uses that would produce jobs for union members. But DOE did not want any new domain in which they might actually be answerable to the community for cleanup standards and economic planning, with the need to reveal the full extent of the legacy of toxic and radioactive dumping onsite. DOE managers knew that much of the dumping onsite had never been documented, and would become known to its full extent only if parts of the site were released from its control. And so, even after funding had been cut, DOE ran a test run of uranium through the GCEP centrifuges, just to set the buildings off-limits for community use.

The reign of spitefulness, crass stupidity and arrogance has continued for twenty years since, at the site. And now we see that the sad history repeats itself in a cycle. In USEC's environmental report, the only "alternative actions" considered are no action, or construction of the ACP at some other site. No mention is made of potential alternative uses of those GCEP buildings, even though such uses have been contemplated and planned for over twenty years.

Since the buildings already exist and are publicly owned, reasonable alternatives for those buildings include the full range of private leasing possibilities as well as other

governmental uses. SODI, the Southern Ohio Diversification Initiative, once located a private truck manufacturing company that expressed a desire to lease one of those buildings for a plant that would employ about 800 people. That option was rejected by DOE because of its special legislated commitment to USEC. But as part of NRC's environmental and cultural resource review process, that option must be revived and explored as a reasonable alternative use.

One pernicious aspect of the centrifuge proposal is that it is a relatively small operation that will nonetheless commandeer the entire site, primarily because of the security regime that must accompany it. In practice, DOE has prohibited discussion of community use of any part of the main site, so that an unbroken "security zone" can be maintained for USEC's ACP. Therefore, the "reasonable alternatives" scenario must encompass not just a single other use for those centrifuge buildings, but a multiplicity of other uses for various parts of the very large site.

For example, what will happen to the old process buildings of the gaseous diffusion site? If the American Centrifuge Plant is built, the northern half of the site—the old diffusion plant—will wind up being cordoned off and left to decay, an enormous eyesore and environmental atrocity. That is clearly the intent of DOE and USEC, since they have built a new administrative office building on the south side of the site, intended to replace the old office building that will be fenced off with the diffusion plant, and perhaps demolished or entombed.

Another scenario is possible. In my essay, "A Pigeon in Piketon,"[1] I suggested that the X-326 building, the upper end of the Cascade, be entombed as a National Monument. Such a monument, with an environmental education center in a clean building, could become a major draw for tourists and students—entirely consistent with a manufacturing company leasing the GCEP buildings. Under that scenario, much of the surrounding forested land could be turned over to the National Park Service and added to Wayne National Forest, which borders in the east.

We wouldn't have to stop there. Since the site will be a location of ongoing environmental cleanup, employing cutting edge cleanup technologies, why not move that part of Oak Ridge National Laboratory that does research on environmental cleanup to Piketon? Piketon suffered under control from Oak Ridge for decades. Why can't Piketon benefit from new federal spending on research and development? It's already federal land, of immense historical and archaeological value. Why waste that? A multiplicity of new public and private uses all with an environmental theme must be considered as a "reasonable alternative" to the construction of one iffy and dirty centrifuge plant.

When NRC considers the full range of potential "reasonable alternatives," it must also consider that once the centrifuge facility is equipped and operated, that space will be irrevocably tainted, even if the project soon fails. That would be a repeat of the horror of 1985. And so NRC must act to stop the Lead Cascade from operating before the full project is licensed and funded.

2. Cultural Resources

We might say that the tragic history here has all been part of the American system, but it hasn't. Much of what has transpired at Piketon has been illegal, and would have been stopped if not for the abuse of the national security system, for the purpose of hiding corruption and

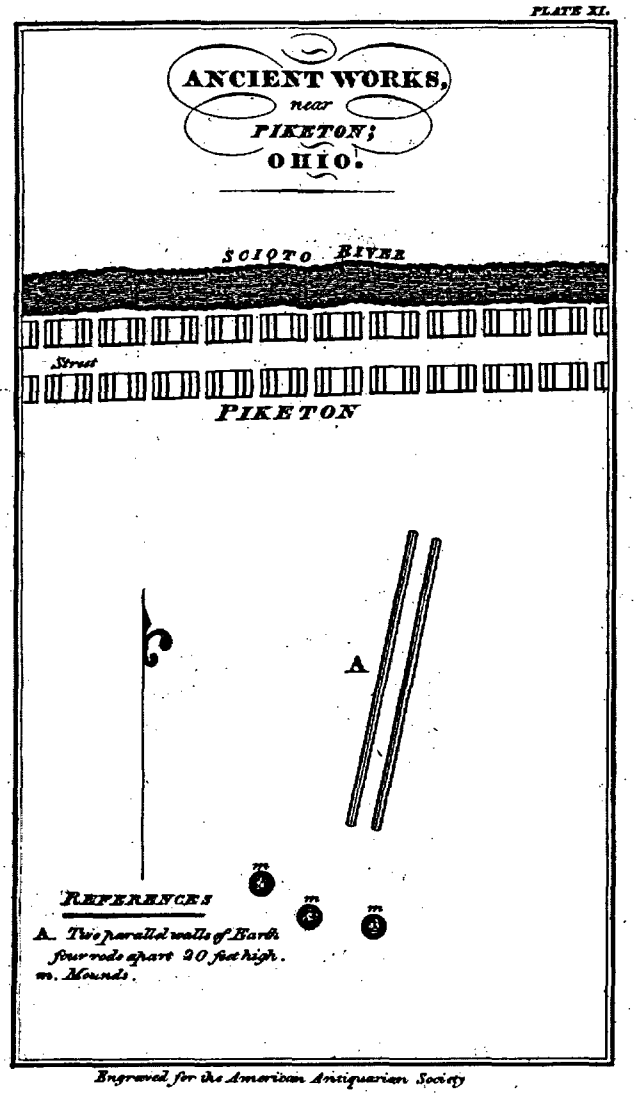
[1] Geoffrey Sea, "A Pigeon in Piketon," *The American Scholar*, Winter 2004, Volume 73, Number 1, pages 57-84.

greed.

One area of clear illegality has been the abject failure of DOE to comply with provisions of the National Historic Protection Act. NHPA was established to protect historic and prehistoric resources from adverse impacts of federal action. Section 106 of NHPA requires a complete cultural resource review when any action is contemplated that "may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register [of Historic Places] in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling or association." (Section 800.5(a)(1)) Section 110 of NHPA requires a comprehensive stewardship program for any such properties that extend onto federal land.

Not only has DOE never implemented either a 106 or 110 review at Piketon, it has not even attempted to identify qualifying properties on or near its land. There is no evidence that anyone at DOE or USEC (or NRC for that matter) has ever logged onto the National Register website, to see what sites in Pike County might qualify for protection. Were they to do so, they would discover that of Pike County's two prehistoric sites, one is on DOE's property, and the other extends onto it. A third property that borders on the proposed centrifuge site and that once included the land underneath the proposed centrifuge buildings, the Barnes Home, is now under consideration for Register listing, which qualifies it for full protection.

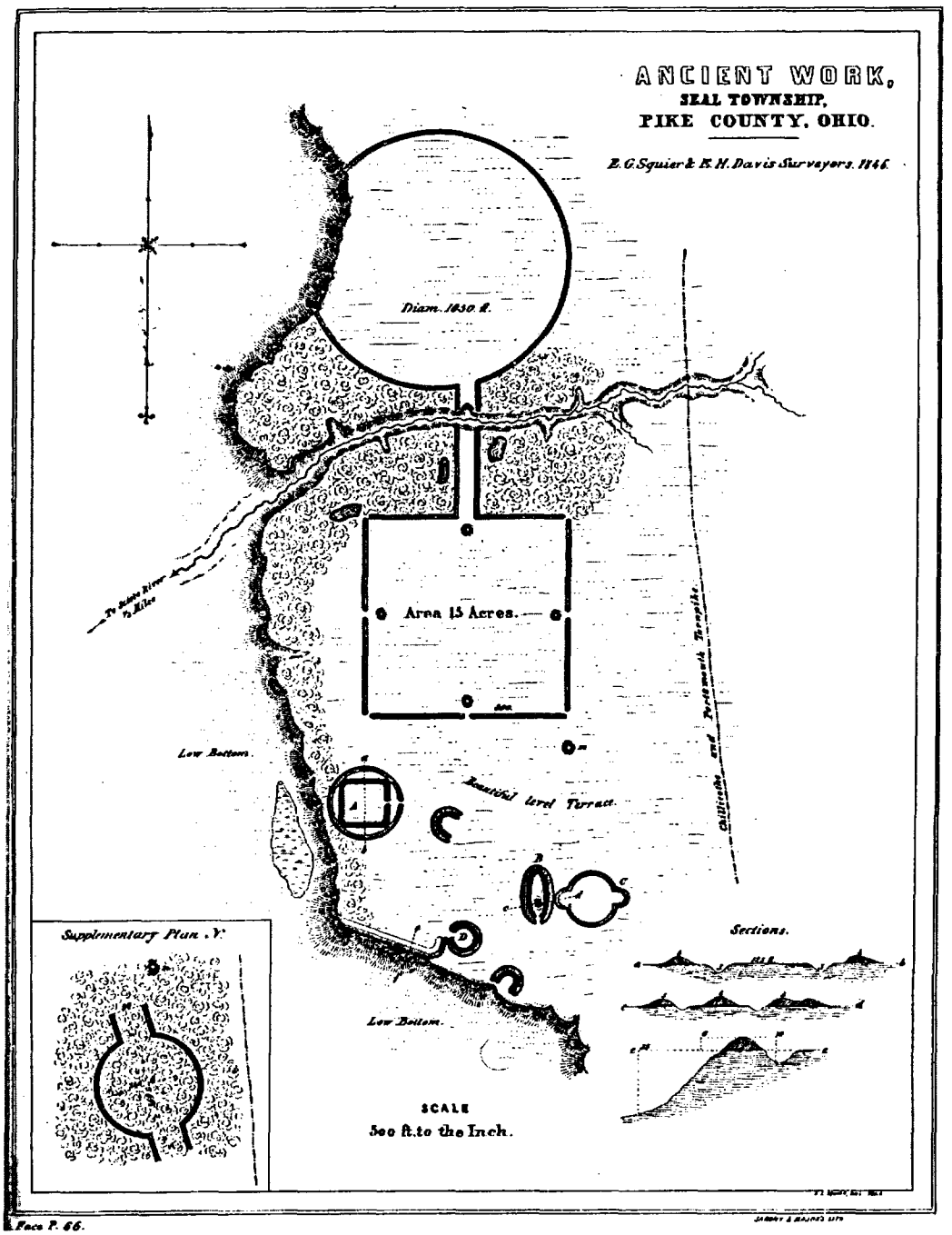
In 1820, Caleb Atwater surveyed "parallel walls of earth" along the Scioto River, and included a drawing of them in his treatise called *Description of the Antiquities Discovered in the State of Ohio and other Western States* (Plate XI):



This engraving has been misunderstood because of the careless label of the "street" between what look like modern road markings. In fact, as ground exploration and careful reading of the text make clear, those segmented walls are the primary earthworks. Between them, an ancient roadway once traversed, which survived so well for two millennia that white settlers built their first wagon road along the same trail. Later these were named the Piketon Works, now listed on the National Register (site 74001599). In the 1960s, the Department of Energy seized this property by eminent domain for its proximity to the river, apparently oblivious to the famous earthworks located there. DOE now uses the earthen embankments to shield its water wells, which provide all water to the atomic site. Pumping declined drastically with closure of the gaseous diffusion plant, but would resume with operation of the American Centrifuge. The possible effect of this water pumping on the earthworks above has never been studied.

In 1846, Isaac Newton Barnes invited the famous archaeologists Ephraim Squier and Edwin Davis onto his land, to survey the astounding Hopewell circle and square—each covering twenty acres—that he could see from his bedroom window, about a mile south of the Piketon Works. Squier and Davis dubbed these the Seal Township Works, and featured them prominently in their 1848 masterpiece, *Ancient Monuments of the Mississippi Valley* (Plate XXV). Following is the plate, on which certain inaccuracies should be noted. The square was larger and the circle smaller, so that they actually covered an approximately equal area. The connecting passage angled differently. And many features, both large and small, were missed due to overgrowth and absence of aerial perspective.

XXIV.

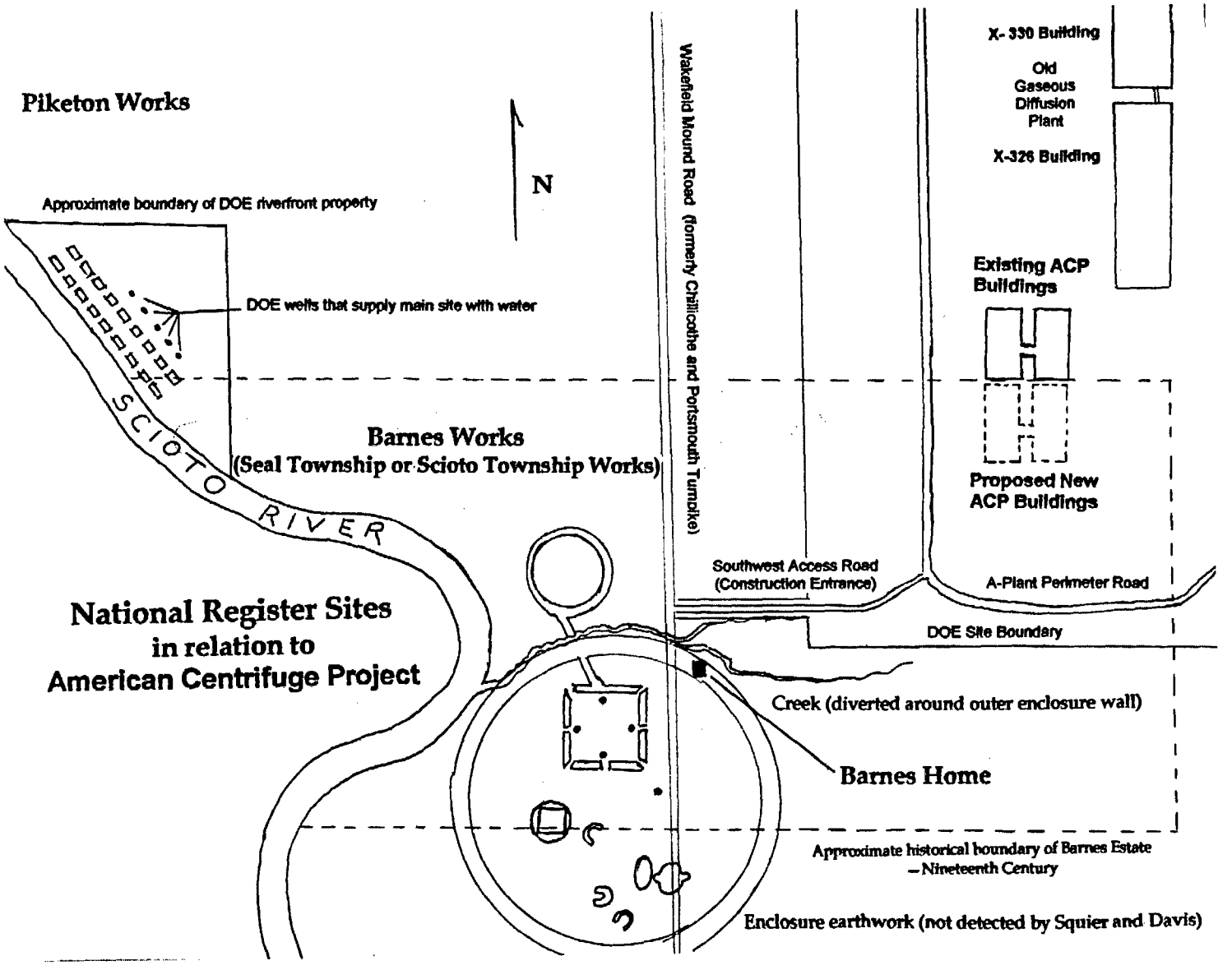

ANCIENT WORK,
SEAL TOWNSHIP,
PIKE COUNTY, OHIO.
E. G. Squier & E. H. Davis Surveyors. 1846.
Diam. 1850 ft.
Area 15 Acres.
Low Bottom.
Beautiful level Terrace.
Low Bottom.
Supplementary Plan. V.
Sections.
SCALE
300 ft. to the Inch.
Face P. 66.

These works were surveyed again in the 1880s, and included in the 1889 Smithsonian study by Cyrus Thomas called *The Circular, Square, and Octagonal Earthworks of Ohio*. They were featured also in Gerard Fowke's *Archaeological History of Ohio* of 1902—Fowke called them the Barnes Works. More recently, William Morgan's *Prehistoric Architecture in the Eastern United States* of 1980 discussed the works as an exemplar of ancient geometric landscape art.

Called either the Barnes Works or the Scioto Township Works (since Scioto broke away from Seal) the small circle was largely destroyed by the modernization of Route 23 to accommodate increased traffic for the enrichment plant in 1952. The square and many of the smaller structures were partially destroyed around that same time by a gravel quarry, which included an asphalt plant that produced pavement for the atomic site. The Scioto Township Works are also now listed on the National Register (site 74001600), though little remains of what was apparent in the 19th century.

Because of this destruction wrought by the A-Plant and associated highways and gravel quarries, people forgot about these earthworks. No recent survey has been conducted. This is truly unfortunate because the nineteenth century surveyors lacked an essential tool for assessing the extent of the works—aerial photography. Today, if you examine an aerial photograph of the area from 1951—the year before the A-plant was built—you can see the circle and square quite clearly, but also something else, a much larger circle whose edge passed precisely between the smaller circle and the square. This larger circle, which has also not been professionally surveyed, passes right by the A-plant's southwest access road and right through the area that USEC might want to pave over to connect that road to Route 23. This large circular enclosure is more than twice the size of the largest Hopewell enclosure previously known, at Chillicothe.

To give a sense of the relation of the earthworks to the proposed American Centrifuge Plant, I have constructed a map that is admittedly anachronistic. It depicts the full extent of the earthworks as they existed prior to modern destruction, compiled on the basis of nineteenth century surveys as can be corrected by twentieth century aerial photographs. Alongside these ancient works I locate the main A-Plant buildings as USEC would like to build them in the future. I have attempted to represent the comparative scales and positions of different structures with approximate accuracy (though the widths of roads and earthworks are not correct):


Piketon Works
N
Approximate boundary of DOE riverfront property
DOE wells that supply main site with water
SCIOTO RIVER
Barnes Works
(Seal Township or Scioto Township Works)
National Register Sites
in relation to
American Centrifuge Project
Wakefield Mound Road (formerly Chillicothe and Portsmouth Turnpike)
X-330 Building
Old
Gaseous
Diffusion
Plant
X-326 Building
Existing ACP
Buildings
Proposed New
ACP Buildings
Southwest Access Road
(Construction Entrance)
A-Plant Perimeter Road
DOE Site Boundary
Creek (diverted around outer enclosure wall)
Barnes Home
Approximate historical boundary of Barnes Estate
– Nineteenth Century
Enclosure earthwork (not detected by Squier and Davis)

A few things immediately become clear upon perusal of this map. Both the Hopewell mound-builders and the monument builders of the Atomic Energy Commission oriented their rectangular structures to the cardinal directions. For the Hopewell this was essential to the sacred purpose of tracking the movements of the sun; the atomic engineers probably had no commensurate rationale. And though the AEC often boasted of building the largest structure in the world in terms of ground cover at Piketon, the adjacent ancient earthwork enclosure, much of which still stands, actually extends over more acreage. The latter has lasted about two thousand years; the former only fifty. Which structure is most likely to endure a hundred years from now?

It's immediately clear that the Hopewell were engaged in an elaborate meditation on the forms of circle and square—a small circle encompassed a tangent square, and the juxtaposed circle and square may have been of equal area (impossible to tell with precision since the circle was destroyed). Ratios also suggest mathematical sophistication—the main square had a side exactly one quarter the diameter of the large enclosure circle that contained it. That these mathematicians were non-literate adds substantially to the wonder of these works. Hopewell Ohio emerges as the full and long-sought North American equivalent of ancient Mesoamerica and Peru. What secrets do they have yet to reveal?

Mapping the Piketon Works and the Barnes Works together clarifies the former's purpose. Undoubtedly, the roadway once connected to the ceremonial center just south of it—the rare straight section of the river has worked to preserve this one segment alone. Probably, this once extended all the way along the river to Chillicothe, and then on to Newark, where surviving road remnants have been dubbed "The Great Hopewell Road." The Piketon Works may be the last vestige of the whole middle part of the pathway that may have gone southward to Portsmouth, where substantial road segments also once were found (but have been destroyed).

When I asked Bill Murphee, DOE field manager with jurisdiction over Piketon, what was being done to protect this treasure, he said, "Nothing, it's not on our land." After a subordinate corrected him, he changed his story and said, "We protect it by keeping people away." Authors of section 110 of NHPA, which requires stewardship of cultural resources on federal land, did have a bit more in mind than that.

These works help explain one purpose of the large enclosures, in that the creek that now flows along the A-Plant's southwest access road, was originally diverted from its course to follow the outer circular wall of the great enclosure. The Hopewell then were engaging in large-scale terrestrial engineering, of the type not previously thought to have been practiced north of the Mayan Yucatan. This is stuff of big-time importance. DOE has a Babylon, a Teotihuacán, a Field of Nazca in its front yard.

The most astounding lesson of this map is just how close and interrelated the Hopewell Works and the A-Plant really are. How could these earthworks have been forgotten? Or have they been?

When the central portion of the A-Plant site was leveled by bulldozers in 1952, at least one ancient burial mound was encountered and destroyed. Other indigenous remains and artifacts found on the site since then have always been identified as Adena, as if to suggest that they are part of isolated and insignificant ancient burials. (The Adena did not build large ceremonial and cosmopolitan centers as did the Hopewell.) When asked to produce evidence that the artifacts found onsite are Adena, DOE cannot. (Nor does there appear to be a record of the 1952 excavations, except in local newspapers.)

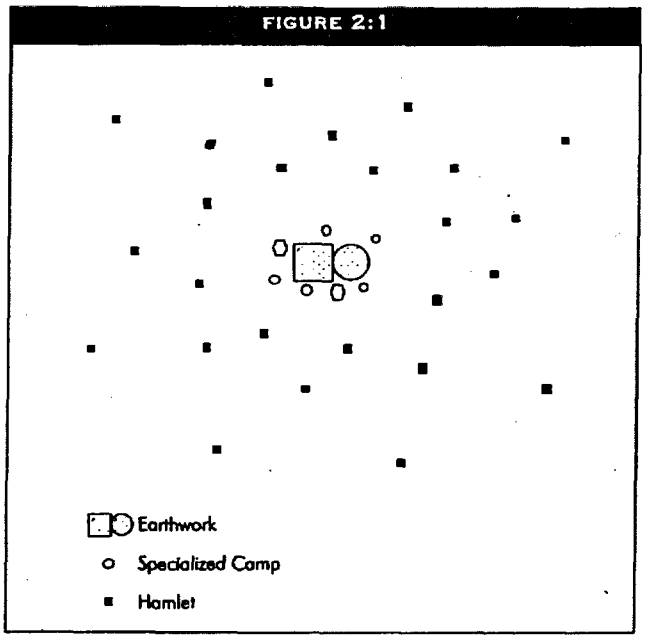
In fact DOE has kept secret an archaeological survey conducted in 1996 and

referenced vaguely in the USEC environmental report for the ACP. I tried to obtain a copy of this survey report, or even determine when it would be released: no dice. It appears to be a perpetual "working draft," withheld from release under the Freedom of Information Act. DOE officials have suggested that the report cannot be released because it might contain unreliable or unanalyzed information. And yet they provided a copy to USEC, which uses vague references to it as support for its contention that no important cultural resources survive on the site. This is a flim-flam game. DOE claims the report as a working draft, unready for release, yet USEC cites the phantom report's authority to justify a license. (Obviously, the report must now be released so that the public can evaluate its contents.)

It's pretty clear what's really going on here. The "secret" contained in that report, or in its omissions, is that most artifacts on the A-Plant site are Hopewell, not Adena. Look at the map again. The Hopewell did not build isolated ceremonial sites. The giant earthworks were the public spaces at the centers of large residential and occupational complexes. The Barnes Works includes the largest Hopewell enclosure found to date. That means that Piketon may have been the largest cosmopolis in North America, two thousand years ago.

We must say "cosmopolis" and not "city" because the Hopewell did not live in ways familiar to our concept of civilization. Experts have dubbed their pattern the "Vacant Center Model." A large geometric earthwork—typically patterned around a large circle and square—would serve as ceremonial and economic center for a dispersed network of village sites, each with its own farmland, burial plot and local administration. Close to the central earthwork would be "specialized camps" for collective occupational pursuits like the manufacture of tools. Paul Pacheco has given us a generalized schematic for this mode of settlement[2]:

FIGURE 2:1



Generalized model of an Ohio Hopewell Community.

[2] Paul Pacheco, "Ohio Hopewell Regional Settlement Patterns," *A View From the Core: A Synthesis of Ohio Hopewell Archaeology*, Ohio Archaeological Council, 1996, page 22

Now look again at my map and try to swallow the DOE claim that artifacts found on the A-Plant site are mostly or exclusively Adena.

Why hasn't any of this been revealed before? For one thing, most Hopewell habitation sites have been discovered during the process of modern urban development, in cities like Chillicothe, Newark and Marietta. In rural Pike County, there hasn't been a lot of big earthmoving that would chance upon habitation sites, most of which must await discovery. Except of course for the earthmoving on the A-Plant site, and that's the other thing.

Construction at the A-Plant site very likely has run into all manner of archaeological treasure, in 1952 and since. But atomic secrecy has served as the perfect cover for sweeping it all under the rug and into that great dust heap called History. Who knows what we have not been told, and why has federal preservation law never been applied at Piketon?

There is no evidence that either DOE or USEC has ever taken its obligations under NHPA seriously. Both the Piketon Works and the Barnes Works were added to the National Register of Historic Places in 1974. That should have triggered an automatic review under the National Historic Preservation Act, which had been passed in 1966. It didn't happen.

In the recent Risk-Based End-State document for the Piketon site, the Department of Energy included a map that showed known "archaeological sites" on the atomic reservation. But the map did not include the known Indian mounds that were destroyed during plant construction in 1952, nor did it include any of the famous Hopewell earthworks that are just offsite, even though they are listed on the National Register and even though they are close enough to appear on the map. Nor did it include DOE's riverfront property, separated from the main site, where the Piketon Works are located. These obvious and illegal omissions have allowed DOE to avoid its obligation of conducting thorough cultural resource impact assessments, to match its elaborate environmental impact assessments.

Though I understood the motive, the question of how DOE managed to evade its legal responsibility so thoroughly did mystify me. So I looked into it, and I can now give a summary of that sad story.

When NHPA passed in 1966, most of the DOE (then AEC) complex was already in place, and because of the massive disruption involved in building facilities like the Gaseous Diffusion Plant (GDP) at Piketon, it was assumed that all or most of the preexisting historic value on these sites had been obliterated, so effectively no compliance measures were undertaken throughout the complex.

Jump to the 1990s. As the early Manhattan Project sites at Chicago, Oak Ridge, Los Alamos and Hanford reached their fifty-year anniversaries, it was realized that the buildings themselves had historic value as part of the nation's nuclear legacy. Therefore, DOE field offices began to initiate NHPA compliance programs at various sites in order of age. The Oak Ridge Operations Office, which had jurisdiction over all three uranium enrichment plants at Oak Ridge, Paducah and Piketon, initiated action-specific 106 reviews for new major projects in Oak Ridge that included solicitation letters to historic Indian tribes from the area. (No tribes expressed interest in a proposed new synfuels plant on the Clinch River.) Then they instituted a programmatic cultural resource compliance agreement for the Paducah site, the second oldest GDP.

Preparations were made to do the same for the youngest plant, Piketon, when it would turn fifty, in 2004, but before that could happen, the site was removed from Oak Ridge jurisdiction and put under the new Lexington KY field office. Lexington had enough on its hands and let the 2004 anniversary pass with no concerted action on 106 or 110 compliance.

Despite some unguarded claims to have consulted with Native American tribes, no tribal governments with historic connections to the Piketon site have ever been contacted. My attempts over two months to identify an official responsible for cultural resource issues at Piketon has yet to yield a result. I've spoken to over twenty DOE employees at Piketon, Lexington, Oak Ridge, and at headquarters in Washington DC. Always, the response is that "someone must have" fulfilled the agency's responsibility under federal preservation law. But no one can tell me who that individual was or is. I've heard every cockamamie cover story in the book—ranging from "we assign that responsibility to contractors" (illegal) to "we haven't undertaken any major federal action that would incur the act" (ahem—building a new uranium enrichment plant kinda qualifies).

The few tentative contacts that the plant has had with the State Historic Protection Office were mainly directed toward identifying DOE buildings that should be granted landmark status--like the X-326 building where bomb-grade and naval-propulsion-grade uranium was produced. Imagine if the Egyptian government failed to enact a preservation plan for the Great Pyramid, because the Rolex watches of the resident archaeologist had not yet qualified as antique.

3. The Shell Game

Now, no one quite understands how this process of a federal agency licensing a quasi-private company to operate on another federal agency's land is supposed to work. And no one even pretends to fathom what kind of creature USEC really is. So everybody is making stuff up as they go.

DOE is attempting to roll all of its preservation responsibility over to NRC—clearly inadequate since DOE will continue to own the site and equipment throughout ACP's operation. USEC can claim that as a non-governmental entity (at least of late), it has no direct responsibility to comply with federal preservation law. NRC has admirably initiated a Section 106 review process, but if that review isolates the licensing action as the only federal action in question, the mounds will have been missed for one molehill.

And all of the parties—DOE, USEC and NRC—seem to be claiming that responsibility for adverse impact extends only as far as the footprints of the proposed centrifuge buildings. Thus, in the two pages out of four hundred devoted to cultural resources in USEC's environmental report, reference is made to the "archaeological surveys" that DOE commissioned in the surface soil of the immediate area of the proposed ACP project. These surveys (though not publicly released) purportedly concluded that the topsoil there had already been "disturbed."

Now that's really brilliant. The entire area inside the perimeter road was bulldozed flat in 1952.

These rollovers and evasions are impermissible under law. Let's be clear. Both DOE and NRC, as separate federal agencies, have three separate responsibilities:

1) To assess the broad range of potential impacts on cultural resources of major federal actions as part of environmental impact assessment under the National Environmental Policy Act

2) To assess and mitigate adverse impacts of major federal actions on sites that qualify for the National Register of Historic Places under Section 106 of the National Historic Preservation Act

3) To protect (steward) any historic or prehistoric resources on federal land under Section 110 of the National Historic Preservation Act.

NRC has a lot of work to do to untangle this mess. First, it must greatly expand the scope of cultural resource impact as part of its EIS process. Second, it must conduct its 106 review in compliance with NHPA. It cannot now roll this into its NEPA process, because the option to do so was forfeited by DOE. Section 800 of the regulations establishing the Advisory Council on Historic Preservation (36 CFR) lays out the rules for combining an NHPA review with a NEPA review. Since this was never done, it can't be initiated now.

Third, NRC must assess whether the DOE-USEC agreement may be illegal and invalid. DOE officials have maintained that they are legally bound to lease facilities to USEC by the legislation that mandated enrichment privatization. However, that legislation did not exempt DOE from the requirements of NHPA, any more than it did from the requirements of NEPA. NRC must therefore consider that DOE made certain fatal errors in turning over the facilities for USEC use, without proper legal compliance, just as if DOE had failed to comply with NEPA. In other words, NRC must not only conduct its own Section 106 review process, but must also consider that in failing to conduct its 106 review properly, DOE may have undermined the legal basis of its agreement with USEC.

And that gets back, in a circular way, to the issue of action alternatives. USEC has managed to paint itself into a number of different corners simultaneously. In its environmental report, USEC specifies the main action alternative as siting ACP at Paducah instead of Piketon. Since impacts will be "the same," USEC argues, they might as well go ahead and build at Piketon, where two buildings that can accommodate ACP centrifuges stand at the ready.

Now we know that impacts would not be the same. The Piketon site has incomparable cultural value, with potential adverse impacts that have not begun to be studied. That ought to trigger two alternative considerations—moving ACP to Paducah as USEC itself has suggested, and opening part of the Piketon site as a cultural resource park with restoration of earthworks as has been done under the auspices of the National Park Service at Chillicothe.

Pike County's real potential future is in tourism, education and openness, not in a continuation of the national insecurity lock-down that has prevailed for fifty years.

But who's kidding whom? USEC can't pick up and move to Paducah, as they say they can, because without the taxpayer subsidies inherent in use of the Piketon site, USEC would crumble into fairy dust in a flash. The Paducah option is a shill—suggested to exact more fealty and loot from Ohio. But now they've suggested it, and they should be taken at their word.

At the site of what may be the largest prehistoric circle in the world, there is now a highway sign that points the way to "Centrifuge Circle." Some people might call this progress. But consider that in the nineteenth century, the Hopewell circles were considered wonders of the world, signs of the perennial character of human civilization. Abraham Lincoln stayed at the Barnes Home in 1848, in a bedroom from which he could admire the Barnes Works, at the same time that Squier and Davis were making those wonders world-famous. And Ralph Waldo Emerson said, in 1841:

> "All inquiry into antiquity—all curiosity respecting the Pyramids, the excavated cities, Stonehenge, the Ohio Circles, Mexico, Memphis—is the desire to do away this wild, savage, and preposterous There and Then, and introduce in its place the Here and Now."

More than a century and a half later, amnesia seems to have set in, and USEC, that quasi-nonentity of a public-private corporation, is able to say in a submission to the government of the United States:

> "There are no wetlands, critical habitat, cultural, historical or visual resources that will be adversely affected by the refurbishment, construction or operation of the ACP at the DOE reservation in Piketon, Ohio."

This is progress?

From: Matthew Blevins
To: GeoffreySeaNYC@aol.com
Date: 2/14/05 8:04AM
Subject: Re: testimony and questions

Geoffrey,
The comments have already been entered into the record. However, for the 106 process it would be helpful to have a correct location for the property; so please provide the correct location (email, fax to 301-415-5398, or mail to my attention, MS T7J8, US NRC, Washington DC 20555-001).

I'll also forward your request to Yawar as he has been handling that aspect.
Matt

Matthew Blevins
Senior Project Manager
Division of Waste Management and
Environmental Protection
U.S. Nuclear Regulatory Commission
(301) 415-7684
>>> <GeoffreySeaNYC@aol.com> 02/14/05 06:41 AM >>>
Hello, Matt--a couple of questions.

First, would there be an opportunity to give you a corrected version of my scoping testimony before it is published or added to the record? Trying to make the deadline, a few typos crept in that irritate me. I also have learned that I made one material error related to the identification of one location. I'm faultless in this (I reproduced an error made by many past scholars), and it does not affect my argument, but I'd like the chance to correct myself if possible.

Second, if you are making hard copies of the USEC filings available to potential interveners, please add me to that list. I intended to request this at the scoping hearing but somehow neglected to hand over the request form.

Thanks much,

Geoffrey Sea
340 Haven Ave., Apt. 3C
New York NY 10033
Tel: (212) 568-9729

CC: YHF@nrc.gov

Mail Envelope Properties (4210A1F8.D19 : 12 : 23037)

Subject:	Re: testimony and questions
Creation Date:	2/14/05 8:04AM
From:	Matthew Blevins
Created By:	mxb6@nrc.gov

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MXB6 BC (Matthew Blevins)	Opened	02/15/05 06:29AM
YHF CC (Yawar Faraz)	Opened	02/14/05 08:05AM

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Reply Requested:	No
Return Notification:	

Send Mail Receipt when Undeliverable

Concealed Subject:	No
Security:	Standard
To Be Delivered:	Immediate
Status Tracking:	Delivered & Opened

From: <GeoffreySeaNYC@aol.com>
To: <mxb6@nrc.gov>
Date: 2/14/05 8:47AM
Subject: Piketon Works

Matt Blevins, NRC

Dear Matt,

The locations I provided are all correct as near as the accuracy of my mapmaking ability allows.

The "mistake" I made was in reproducing a historic confusion about The Piketon Works. These "parallel walls of earth" were classically described by Atwater in 1820 and then again by Squier and Davis in 1848. Starting with Squier and Davis and including everyone who has written about these works since, there has been the assumption that they were describing the same site.

I have now determined, backed by expert opinion, that they were actually describing different sites. The confusion has been magnified by the fact that the one site is on DOE land, hence "off limits," while the other location is recognized but not disclosed by the State Historic Protection Office. In other words, there are two different sets of "parallel walls of earth"--the one described by Atwater that is on the DOE riverfront property as I described it, and the other set which is north of the A-Plant site that was described by Squier and Davis. Again, I'm the first to clarify the distinction, and I have written up a short paper for publication.

Technically, only the Squier and Davis site is listed on the National Register. However, because these two sites were historically confused, it could be argued that the term "Piketon Works" applies to both. In any case, the Atwater site certainly "qualifies" for listing on the register, under the meaning of the National Historic Protection Act, even though the SHPO has not yet officially designated it. (I have not even had a chance to inform the SHPO about this yet.)

One factor that generated the confusion is that Atwater's Plate XI, which I reproduce in my testimony, had its compass marker way off. The top of the plate, rather than representing north, is actually southwest. This threw off just about everyone who went looking for those walls.

When I told Bill Murphee of DOE about those walls, he offered to go look at them with me. I think that what needs to happen, given that this site has not been documented since 1820, is that Mr. Murphy from DOE, Dave Snyder from the SHPO, you or some representative of NRC, someone representing USEC, a Hopewell archaeologist or two, and I take a little field trip down there, so all parties know exactly what is there.

Please keep me informed about your implementation of the 106 review.

Sincerely,

Geoffrey Sea
340 Haven Ave., Apt. 3C
New York NY 10033
Tel: (212) 568-9729

Mail Envelope Properties (4210ABFB.D4D : 17 : 56653)

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Creation Date:	2/14/05 8:47AM
From:	<GeoffreySeaNYC@aol.com>
Created By:	GeoffreySeaNYC@aol.com

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MXB6 (Matthew Blevins)

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Security:	Standard

From: <GeoffreySeaNYC@aol.com>
To: <mxb6@nrc.gov>
Date: 2/14/05 11:42AM
Subject: Piketon Works again

Matt,

Can you tear up that last e-mail I sent?

I'm honestly trying to grapple with Atwater's Plate XI from 1820, which included no scale and has been confusing everyone for 185 years. The classic interpretations of it were wrong, but now it's been pointed out that my interpretation of it is also wrong.

There really are segmented parallel walls along the river on DOE's property. Apparently they are not the walls that Atwater tried to describe. Whether they are Hopewell, as I suspect, or not, will require further investigation that should be part of the 106 review.

Thanks again,

Geoffrey Sea

Mail Envelope Properties (4210D4D8.7CA : 23 : 63434)

Subject:	Piketon Works again
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MXB6 (Matthew Blevins)

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Options

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Concealed Subject:	No
Security:	Standard

From: Marian Zobler
To: Geoffrey Sea; SargentsPigeon@aol.com
Date: Tue, Aug 9, 2005 2:29 PM
Subject: Follow-up on Phone Call

Mr. Sea,

During our phone call on Thursday, August 3, I agreed to provide you with additional information concerning the NRC Staff's activities pursuant to the National Historic Preservation Act. You specifically asked for a list of letters the Staff sent to various parties as part of the Section 106 consultation process. A list of the letters with their ADAMS accession numbers is attached to this e-mail. Additional information concerning the Staff's 106 consultations can be found in ADAMS under docket number 07007004. Using the search term "106" may help narrow the search.

You also mentioned an e-mail you had sent to Matt Blevins, Senior Project Manager for the environmental review, concerning being kept informed of the implementation of the consultation process. It is my understanding that you have been added to the distribution list for documents related to the consultation process.

Finally, you asked how the NRC will investigate and study the potential earthworks on the DOE reservation at Piketon. Please be advised that the NRC's investigation and evaluation of the impact of the proposed ACP on cultural and historic resources will be documented in the draft environmental impact statement (DEIS) associated with the ACP. The DEIS will be available shortly for public review and comment.

Marian Zobler
Counsel for NRC Staff

CC: dsilverman@morganlewis.com; Matthew Blevins; Melissa Duffy; Yawar Faraz

Mail Envelope Properties (42F8F5F8.6FB : 3 : 8714)

Subject:	Follow-up on Phone Call
Creation Date:	Tue, Aug 9, 2005 2:29 PM
From:	Marian Zobler
Created By:	MLZ@nrc.gov

Recipients

aol.com
- geoffreyseanyc (Geoffrey Sea)
- SargentsPigeon (SargentsPigeon@aol.com)

morganlewis.com
- dsilverman CC (dsilverman@morganlewis.com)

nrc.gov
- OWGWPO01.HQGWDO01
  - MLD5 CC (Melissa Duffy)

nrc.gov
- twf4_po.TWFN_DO
  - MXB6 CC (Matthew Blevins)
  - YHF CC (Yawar Faraz)

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Security:	Standard

ACHP, Office of Federal Agency Prorams
Attn: Don Klima, Director
1100 Pennsylvania Avenue NW, Suite 809
Washington, DC 20004
May 20, 2005
ML050970073

Mr. Mark Epstein, Department Head
Ohio Historic Preservation Office
Resource Protection and Review
567 East Hudson Street
Columbus, OH 43211-1030
December 28, 2004
ML043550032

Mr. Ron Sparkman
Shawnee Tribe
P.O. Box 189
Miami, OK 74355
March 18, 2005
ML050750405

Mr. Rey Kitchkumme
Prairie Band of Potawatomi Nation
16277 Q Road
Mayetta, KS 66509-8970
March 18, 2005
ML050750405

Mr. James Leaffe, Chief
Cayuga Nation
P.O. Box 11
Versailles, NY 14168
March 14, 2005
Attn: Mr. Halftown, THPO Representative
ML050660146

Cherokee Nation of Oklahoma
P.O. Box 948
Ada, OK 74820
March 14, 2005
ML050660146

Turtle Mountain Band
of Chippewa Indians
Attn: Mr. Kade M. Ferris, Tribal Historic
Preservation Officer
Office of Archaeology
and Historic Preservation
P.O. Box 900
Belcourt, ND 58316
March 14, 2005
ML050660146

Mr. Bruce Gonzales, President
Delaware Tribe of Western Oklahoma
P.O. Box 825
Anardarko, OK 73005
Attn: Ms. Tamara Francis
Delaware Nation NAGPRA Office
March 14, 2005
ML050660146

Mr. John Pryor, Executive Officer
Miami Tribe of Oklahoma
P.O. Box 1326
202 South Eight Tribes Trail
Miami, OK 74355
Attn: Ms. Julie Olds, THPO
March 14, 2005
ML050660146

Mr. Charles Todd, Chief
Ottawa Tribe of Oklahoma
P.O. Box 110
Miami, OK 74355
Attn: Mr. Roy Ross
March 14,2005
ML050660146

Mr. John P. Froman, Chief
Peoria Tribe of Oklahoma
P.O. Box 1527
118 S. Eight Tribes Trail
Miami, OK 74355
Attn: Mr. Bud Ellis, Repatriation
Committee Chairman
March 14,2005
ML050660146

Mr. Harold Frank, Chairperson
Forest County Potawtomi
P.O. Box 340
Community of Wisconsin Potawtomi
Crandon, WI 54520
Attn: Ms. Clarice M. Werle,
NAGPRA Contact
March 14, 2005
ML050660146

Mr. John A. Barret, Jr., Chairperson
Citizen Potawatomi Nation
1601 S. Gordon Cooper Drive
Shawnee, OK 74801
Attn: Mr. Jeremy Finch
March 14, 2005
ML050660146

Mr. Calvin John, President
Seneca Nation of Indians
P.O. Box 231
Salamanca, NY 14779
Attn: Ms. Kathlenn Mitchell, THPO
March 16, 2005
ML050660146

Mr. Jerry Dilliner, Chief
Seneca-Cayuga Tribe of Oklahoma
P.O. Box 1283
R2301 E. Steve Owens Blvd.
Miami, OK 74355
Attn: Mr. Paul Barton
March 14, 2005
ML050660146

Mr. Charles D. Enyart, Chief
Eastern Shawnee Tribe of Oklahoma
P.O. Box 350
Seneca, MO 644865
Attn: R.C. Kissee
March 14, 2005
ML050660146

Mr. Kenneth Daughtery, Tribal Secretary
Absentee-Shawnee Tribe of Oklahoma
2025 S. Gordon Cooper Drive
Shawnee, OK 74801-9381
Attn: Ms. Karen Kaniatobe
March 14, 2005
ML050660146

Mr. James Brushart
President, Pike County Commissioners
230 Waverly Plaza, Suite 1000
Waverly, OH 45690
March 14, 2005
ML050660146

Mr. Leaford Bearskin, Chief
Wyandotte Nation
P.O. Box 250
Wyandotte, OK 74370
Attn: Ms.Sherri Clemons
March 14, 2005
ML050660146

Mr. James Squirrel
Loyal Shawnee Tribe
Route 4, Box 30
Jay, OK 74346
March 14, 2005
ML050660146

From: <SargentsPigeon@aol.com>
To: <MLZ@nrc.gov>
Date: Tue, Aug 9, 2005 3:34 PM
Subject: Re: Follow-up on Phone Call

Ms. Zobler,

Thank you for your follow-up letter, but you did not reply to the principal questions.

First, who is contact person for NRC's Section 106 review? Who's in charge? This is an absurdly simple question. I contacted Matt Blevins about it in February, and heard nothing from him for six months, so he seems to not be the person. I contacted the Federal Preservation Officer for NRC, and he was absolutely clueless about the whole endeavor--my call to him resulted in a call back from you. You, however, told me that you are not the official in charge of the process. So who is? Please provide a name, address, e-mail and telephone number.

Second, I did not ask why I was not put on the distribution list, I asked why I have not been made a consulting party and was not sent a letter of consultation. The Commission has itself ruled that I am entitled to standing to intervene in the licensing proceeding on the basis of my ownership and residence interests in a historic property on the boundary of the proposed project. I believe I am the only individual in that category. Lest there be doubt, I do wish to be a consulting party in the Commission's 106 review. I have concerns that I have elaborated to the Commission at great length. Please explain to me why I was not put on the list of consulting parties at the beginning, and whether I am being added to the list of consulting parties now.

Please also forward to me all of the correspondence that has been shared with consulting parties since the beginning of the process.

Now some new questions. I am inferring that Commission staff is having some difficulty figuring out how it should communicate with a consulting party in a 106 review who is also an intervener or potential intervener in the licensing process. Please clarify how the Commission staff views the relationship between the 106 review process and the licensing proceeding.

In reviewing the list of parties to whom consultation letters were sent, there are two categories strikingly absent. No owners of historic homes are included on the list. (In my petition to intervene, I identified three historic homes in close proximity to the plant site--The Barnes Home, The Sargent Home and the Rittenour Home. I also conveyed the wish of Charles Beegle, owner of the Rittenour Home, to be a consulting party in the 106 review, and I included a letter from Mr. Beegle complaining about the lack of NHPA compliance.)

Also, no historic Indian tribes from the local area have been included. These are the principal tribes that have knowledge and interest in the proposed USEC site and in the ACP project. If the reason for their non-inclusion is that they are not federally recognized, I draw your attention to the fact that that the Shawnee Tribe in Oklahoma also lacks federal recognition. Thus you included at least one tribe in Oklahoma that lacks recognition, but none of

the tribes in or near Ohio that lack recognition.

For your information, the following area tribes are intensely interested in the proposed project, and would like to be granted consulting party status:

The Blue Creek Band of the Shawnee in Adams County, Ohio
The Free Shawnee of Ohio
The Piqua Sept of the Shawnee
The Tallige Cherokee Nation in Scioto County, Ohio
The United Remnant Band of the Shawnee in Ohio

I would happily provide contact information for these tribes, and other interested parties, but see question one--We are now in August and the NRC has yet to provide me with a contact name for its 106 review in the USEC proceeding. I would also like to forward the NRC contact name to the tribes and property owners who wish to be consulting parties.

Let me be clear, Ms. Zobler. You say that the NRC 106 review is nearly complete as part of the draft EIS. On the contrary, the 106 review required for this project has not yet started, because you have neither consulted the parties who have expressed the most concern about the project, nor have you provided those parties with a contact by which we can express our concerns. The 106 process is designed to be consultative, not adversarial. Let's start the consultation.

Thank you,

Geoffrey Sea

Mail Envelope Properties (42F90526.FC8 : 14 : 53192)

Subject:	Re: Follow-up on Phone Call
Creation Date:	Tue, Aug 9, 2005 3:33 PM
From:	<SargentsPigeon@aol.com>
Created By:	SargentsPigeon@aol.com

Recipients
nrc.gov
owf5_po.OWFN_DO
MLZ (Marian Zobler)

Post Office	**Route**
owf5_po.OWFN_DO	nrc.gov

Files	**Size**	**Date & Time**
MESSAGE	4336	Tuesday, August 9, 2005 3:33 PM
TEXT.htm	5690	
Mime.822	11517	

Options

Expiration Date:	None
Priority:	Standard
Reply Requested:	No
Return Notification:	None
Concealed Subject:	No
Security:	Standard

September 6, 2005

Mr. Kenneth Daughtery, Tribal Secretary
Absentee-Shawnee Tribe of Oklahoma
Attn: Ms. Karen Kaniatobe
2025 S. Gordon Cooper Drive
Shawnee, OK 74801-9381

SUBJECT: CONTINUATION OF THE NATIONAL HISTORIC PRESERVATION ACT SECTION 106 CONSULTATION PROCESS FOR THE PROPOSED AMERICAN CENTRIFUGE PLANT, PIKE COUNTY, OHIO: REQUEST FOR COMMENT ON PROPOSED FINDINGS AND DETERMINATIONS OF EFFECT

Dear Mr. Daughtery:

Following transmittal of our letter of March 14, 2005, initiating consultation for the proposed American Centrifuge Commercial Plant, the U. S. Nuclear Regulatory Commission (NRC) became aware of a letter from Ms. Karen Kaniatobe, dated February 24, 2005. The letter indicates that the tribe wishes to be included as a consulting party in the Section 106 process. It mentions concerns about the Barnes Works in Scioto Township and states that surveys should be conducted to find other sites that may be present. Ms. Kaniatobe's letter indicates that the Absentee Shawnee Tribe, collectively with the Algonquian tribes of the Ohio/Great Lakes Region, considers itself to be descended from the people of the Fort Ancient culture who, in turn, were descendants of the people of the Hopewell Culture who built the Barnes Works.

As required under Section 106, the NRC has undertaken the steps of identifying and evaluating historic properties that may be affected by construction and operation of the proposed American Centrifuge Plant. The NRC found that there have been surveys conducted previously to find archaeological and historic sites in the area of the proposed project.

Enclosed is the "Environmental Impact Statement for the Proposed American Centrifuge Plant in Piketon, Ohio, Draft Report for Comment." Section 3.3, "Historic and Cultural Resources," provides a description of the identification and evaluation process. Section 4.2.2 "Historic and Cultural Resource Impacts," presents the NRC's preliminary findings related to this undertaking, including a description of the "area of potential effects" and preliminary determinations of project effect.

As indicated in these sections, the site referred to by Ms. Kaniatobe as the Barnes Works in Scioto Township is known as the Scioto Township Works and is listed on the National Register of Historic places under Criterion D, for sites "that have yielded or may be likely to yield information important in history or prehistory."

These sections also indicate that the Scioto Township Works site has cultural importance to the Absentee Shawnee tribe. NRC would welcome information about the site attributes that contribute to its importance to the Absentee Shawnee tribe. In the absence of that information NRC has assumed that the site may have importance related to Criterion A of the National

Register of Historic Places, for sites that “are associated with events that have made a significant contribution to the broad patterns of our history.”

As indicated in Section 3.3.3 “Results of Document Review,” the Scioto Township Works site lies about 250 m (820 ft) from the boundary of the Department of Energy Reservation, and about one kilometer (3250 ft) from the closest construction effort associated with the proposed American Centrifuge Plant. Based on this distance, the NRC has made a determination of no effect on the information values that make the site eligible for listing on the National Register under Criterion D. Additionally, because the activities associated with construction and operation will not change the present setting and feel of the Scioto Township Works site, NRC has made a preliminary determination of no effect on these values (i.e., Criterion A) that may be of importance to the Absentee Shawnee Tribe.

The NRC welcomes your input and comment on the findings of its inventory and evaluation effort and its preliminary determination of effect on the Scioto Township Works site. If the tribe can provide information about site attributes other than those included under Criterion A that contribute to the site’s importance to the Absentee Shawnee, the NRC will be able to consider these in applying the criteria of adverse effect.

The NRC requests a response from the tribe by October 24, 2005. Please feel free to respond in writing or to contact Ron Linton by phone at 301-415-7777 or by e-mail at RCL1@nrc.gov. Mr. Linton will be happy to set up a meeting or telephone conference to facilitate the consultation.

Sincerely,

/RA/

B. Jennifer Davis, Chief
Environmental Review Section
Division of Waste Management
and Environmental Protection
Office of Nuclear Material Safety
and Safeguards

Docket No.: 70-7004

Enclosures: As stated

cc: w/o attactment, see attached list

Register of Historic Places, for sites that "are associated with events that have made a significant contribution to the broad patterns of our history."

As indicated in Section 3.3.3 "Results of Document Review," the Scioto Township Works site lies about 250 m (820 ft) from the boundary of the Department of Energy Reservation, and about one kilometer (3250 ft) from the closest construction effort associated with the proposed American Centrifuge Plant. Based on this distance, the NRC has made a determination of no effect on the information values that make the site eligible for listing on the National Register under Criterion D. Additionally, because the activities associated with construction and operation will not change the present setting and feel of the Scioto Township Works site, NRC has made a preliminary determination of no effect on these values (i.e., Criterion A) that may be of importance to the Absentee Shawnee Tribe.

The NRC welcomes your input and comment on the findings of its inventory and evaluation effort and its preliminary determination of effect on the Scioto Township Works site. If the tribe can provide information about site attributes other than those included under Criterion A that contribute to the site's importance to the Absentee Shawnee, the NRC will be able to consider these in applying the criteria of adverse effect.

The NRC requests a response from the tribe by October 24, 2005. Please feel free to respond in writing or to contact Ron Linton by phone at 301-415-7777 or by e-mail at RCL1@nrc.gov. Mr. Linton will be happy to set up a meeting or telephone conference to facilitate the consultation.

Sincerely,

/RA/

B. Jennifer Davis, Chief
Environmental Review Section
Division of Waste Management
and Environmental Protection
Office of Nuclear Material Safety
and Safeguards

Docket No.: 70-7004

Enclosures: As stated

cc: w/o attactment, see attached list

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RPierson	MZobler, OGC	MDuffy, OGC	DMcIntyre, OPA	SBrock, OGC	
JClifford	DMartin	MBurrell, OE			

ML052440393

OFC	DWMEP:PM	DWMEP:SC	OGC	
NAME	MBlevins	BJDavis	MZobler	
DATE	8/30/05	9/06 /05	8/31/05	

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USEC Service List

cc:

William Szymanski
U.S. Department of Energy
1000 Independence Ave, SW
Washington, DC 20585

Michael Marriott
Nuclear Information and Resource Service,
1424 16th St., NW
Washington, DC 20036

The Honorable Robert W. Ney
Member, United States House of Representatives
2438 Rayburn HOB
Washington, DC 20515

The Honorable George V. Voinovich
United States Senator
317 Hart Senate Office Building
Washington, DC 20510

The Honorable Rob Portman
Member, United States House of Representatives
238 Cannon House Office Building
Washington, DC 20515

The Honorable Mike DeWine
United States Senator
140 Russell Senate Office Building
Washington, DC 20410

The Honorable Bob Taft
Governor of Ohio
77 South High Street
30th Floor
Columbus, Ohio 43215-6117

Ms. Mary Glasgow
601 Chillicothe Street
Portsmouth, Ohio 45662

Mr. Teddy L. Wheeler
Pike County Auditor
Pike County Government Center
230 Waverly Plaza, Suite 200
Waverly, Ohio 45690-1289

Mr. Harry Rioer
Pike County Commissioner
230 Waverly Plaza Suite 1000
Waverly, Ohio 45690

Mr. Larry E. Scaggs
Township Trustee
230 Waverly Plaza Suite 1400
Waverly, Ohio 45690

Kara Willis
16 North Paint St.,Suite 102
Chillicothe, Ohio 45601

Jim Brushart
Pike County Comm. Chair
230 Waverly Plaza Suite 1000
Waverly, Ohio 45690

Mr. Gary Hager
ATTN: Mailstop-4025
P.O. Box 628
Piketon, Ohio 45661

Mr. Blaine Beekman
Executive Director
Pike County Chamber of Commerce
P.O. Box 107
Waverly, Ohio 45696

Billy Spencer, Mayor of Piketon
P.O. Box 547
Piketon, Ohio 45661

Rocky Brown, Mayor of Beaver
7677 State Route 335
Beaver, Ohio 45613

Mr. Geoffrey Sea
1832 Wakefield Mound Road
Piketon OH 45661

Ms. Vina K. Colley, President PRESS
3706 McDermott Pond Creek
McDermott, Ohio 45652

Mr. Peter J. Miner, Director
Regulatory and Quality Assurance
USEC Inc.
6903 Rockledge Drive
Bethesda, MD 20817

Randall Devault, Regulatory Oversight Manager
Department of Energy - Oak Ridge
P.O. Box 2001
Oak Ridge, TN 37831-8651

Dan Minter
Southern Ohio Development Initiative
P.O. Box 467
Piketon, OH 45661

Mr. James R. Curtiss, Winston & Strawn
1400 L Street, NW
Washington, DC. 20005-3502

Teddy West
2170 Wakefield Mound Road
Piketon, OH 45661

Carol O'Claire, Supervisor
Radiological Branch
Ohio Emergency Management Ag ency
2855 West Dublin-Granville Road
Columbus, OH 43235-2206

Rod Krich, Vice President
Licensing Projects
Exelon Generation Co.
4300 Winfield Road
Warrenville, IL 60555

Lindsay A. Lovejoy, Jr.
NIRS
618 Paseo de Peralta, Unit B
Santa Fe, NM 87501

Robert Huff, President and CEO
Portsmouth Area Chamber of Commerce
324 Chillicothe St.
P.O. Box 509
Portsmouth, OH 45662

Roger L. Suppes
Chief, Bureau of Radiation Protection
Ohio Dept. of Health
35 East Chestnut Street
Columbus, OH 43266

Donald J. Silverman
Morgan, Lewis & Bockius
1111 Pennsylvania Ave. N.W.
Washington, DC 20004

From: Ron Linton
To: Sargentspigeon@aol.com
Date: 10/24/05 1:24PM
Subject: Answers: USEC DEIS comments

Mr. Sea:
This e-mail is in response to your questions over the phone earlier today in reference to comments on the USEC DEIS.

Q1. Does NRC have a size limitation on how many photographs may be sent electronically?
A1. I'm not certain, but I don't think so. I recommend submitting the pictures a few at a time if there are problems. If there are continued problems sending the photos electronically, notify us of the problem immediately, and send them in the mail.

Q2. Is the DEIS comment deadline 5:00 pm. or midnight?
A2. Midnight.

Q3. How firm is the deadline for commenting on the DEIS?
A3. Since you have contacted us in advance and indicated a hardship with filing comments for the DEIS and completing a filing for the ASLB, which are on the same day, we can give you an additional 48 hours to complete and submit your DEIS comments.

If you have any additional questions, please contact Matt Blevins at 301-415-7684 or me at 301-415-7777.

Ron C. Linton
Project Manager
U.S. Nuclear Regulatory Commission
Office of Nuclear Material Safety and Safeguards
Mail Stop T7 J08
Washington, DC 20555-0001
301-415-7777 phone
301-415-5397 fax
rcl1@nrc.gov

CC: Jennifer Davis; Matthew Blevins

Mail Envelope Properties (435D18C9.C97 : 8 : 1314)

Subject:	Answers: USEC DEIS comments
Creation Date:	10/24/05 1:24PM
From:	Ron Linton
Created By:	RCL1@nrc.gov

Recipients	**Action**	**Date & Time**
aol.com	Transferred	10/24/05 1:25 PM
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MXB6 CC (Matthew Blevins)		

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Auto Delete:	No
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Security:	Standard
To Be Delivered:	Immediate
Status Tracking:	Delivered & Opened

September 6, 2005

Mr. Geoffrey Sea
1832 Wakefield Mound Road
Piketon OH 45661

SUBJECT: TRANSMITTAL OF DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE PROPOSED AMERICAN CENTRIFUGE PLANT, PIKE COUNTY, OHIO AND REQUEST FOR CONSULTING PARTY COMMENTS

Dear Mr. Sea,

The Nuclear Regulatory Commission (NRC) has completed its initial National Environmental Policy Act (NEPA) review of USEC Inc.'s proposed American Centrifuge Plant. As you are aware, the NRC has previously indicated that we are using the NRC's National Environmental Policy Act review process for Section 106 purposes as described in 36 CFR 800.8. Additionally, the NRC has reviewed your August 9, 2005 request for consulting party status and in consultation with the Ohio Historic Preservation Office have determined that you meet the consulting party requirements of 36 CFR 800.2(c)(5).

As required under Section 106, the NRC has undertaken the steps of identifying and evaluating historic properties that may be affected by construction and operation of the proposed American Centrifuge Plant. The NRC found that there have been surveys conducted previously to find archaeological and historic sites in the area of the proposed project. In addition to these surveys, the NRC staff considered the information you provided in your NEPA scoping comments provided on February 2, 2005 and pleadings before the Atomic Safety and Licensing Board Panel on February 28, 2005; April 1, 2005; July 18, 2005; and August 10, 2005; as well as the various emails you have submitted.

Enclosed is the "Environmental Impact Statement for the Proposed American Centrifuge Plant in Piketon, Ohio, Draft Report for Comment." Section 3.3, "Historic and Cultural Resources," provides a description of the identification and evaluation process. Section 4.2.2 "Historic and Cultural Resource Impacts," presents the NRC's preliminary findings related to this undertaking, including a description of the "area of potential effects" and preliminary determinations of project effect.

In accordance with 36 CFR 800.8(c)(2) we are providing copies of the draft Environmental Impact Statement to the State Historic Preservation Officer, Advisory Council on Historic Preservation, interested Indian tribes, consulting parties, and members of the public.

The NRC welcomes your input and comment on the findings of the inventory and evaluation effort and the preliminary determinations of effect on the identified historic properties. The NRC requests a response by October 24, 2005. Please feel free to respond in writing or to contact

Ron Linton by phone at 301-415-7777 or e-mail at RCL1@nrc.gov. Mr. Linton will be happy to set up a meeting or telephone conference to facilitate the consultation.

Sincerely,

/RA/

B. Jennifer Davis, Chief
Environmental Review Section
Division of Waste Management
and Environmental Protection
Office of Nuclear Material Safety
and Safeguards

Docket No.: 70-7004

Enclosures: As stated

cc: w/o attactment, see attached list

Ron Linton by phone at 301-415-7777 or e-mail at RCL1@nrc.gov. Mr. Linton will be happy to set up a meeting or telephone conference to facilitate the consultation.

Sincerely,

/RA/

B. Jennifer Davis, Chief
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Docket No.: 70-7004

Enclosures: As stated

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OFC	DWMEP:PM	DWMEP:SC	OGC	
NAME	MBlevins	BJDavis	MZobler	
DATE	8/30/05	9/06/05	8/31/05	

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USEC Service List

cc:

William Szymanski
U.S. Department of Energy
1000 Independence Ave, SW
Washington, DC 20585

Michael Marriott
Nuclear Information and Resource Service,
1424 16th St., NW
Washington, DC 20036

The Honorable Robert W. Ney
Member, United States House of Representatives
2438 Rayburn HOB
Washington, DC 20515

The Honorable George V. Voinovich
United States Senator
317 Hart Senate Office Building
Washington, DC 20510

The Honorable Rob Portman
Member, United States House of Representatives
238 Cannon House Office Building
Washington, DC 20515

The Honorable Mike DeWine
United States Senator
140 Russell Senate Office Building
Washington, DC 20410

The Honorable Bob Taft
Governor of Ohio
77 South High Street
30th Floor
Columbus, Ohio 43215-6117

Ms. Mary Glasgow
601 Chillicothe Street
Portsmouth, Ohio 45662

Mr. Teddy L. Wheeler
Pike County Auditor
Pike County Government Center
230 Waverly Plaza, Suite 200
Waverly, Ohio 45690-1289

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Waverly, Ohio 45690

Mr. Larry E. Scaggs
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Waverly, Ohio 45690

Kara Willis
16 North Paint St.,Suite 102
Chillicothe, Ohio 45601

Jim Brushart
Pike County Comm. Chair
230 Waverly Plaza Suite 1000
Waverly, Ohio 45690

Mr. Gary Hager
ATTN: Mailstop-4025
P.O. Box 628
Piketon, Ohio 45661

Mr. Blaine Beekman
Executive Director
Pike County Chamber of Commerce
P.O. Box 107
Waverly, Ohio 45696

Billy Spencer, Mayor of Piketon
P.O. Box 547
Piketon, Ohio 45661

Rocky Brown, Mayor of Beaver
7677 State Route 335
Beaver, Ohio 45613

Mr. Geoffrey Sea
1832 Wakefield Mound Road
Piketon OH 45661

Ms. Vina K. Colley, President PRESS
3706 McDermott Pond Creek
McDermott, Ohio 45652

Mr. Peter J. Miner, Director
Regulatory and Quality Assurance
USEC Inc.
6903 Rockledge Drive
Bethesda, MD 20817

Randall Devault, Regulatory Oversight Manager
Department of Energy - Oak Ridge
P.O. Box 2001
Oak Ridge, TN 37831-8651

Dan Minter
Southern Ohio Development Initiative
P.O. Box 467
Piketon, OH 45661

Mr. James R. Curtiss, Winston & Strawn
1400 L Street, NW
Washington, DC. 20005-3502

Teddy West
2170 Wakefield Mound Road
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Carol O'Claire, Supervisor
Radiological Branch
Ohio Emergency Management Ag ency
2855 West Dublin-Granville Road
Columbus, OH 43235-2206

Rod Krich, Vice President
Licensing Projects
Exelon Generation Co.
4300 Winfield Road
Warrenville, IL 60555

Lindsay A. Lovejoy, Jr.
NIRS
618 Paseo de Peralta, Unit B
Santa Fe, NM 87501

Robert Huff, President and CEO
Portsmouth Area Chamber of Commerce
324 Chillicothe St.
P.O. Box 509
Portsmouth, OH 45662

Roger L. Suppes
Chief, Bureau of Radiation Protection
Ohio Dept. of Health
35 East Chestnut Street
Columbus, OH 43266

Donald J. Silverman
Morgan, Lewis & Bockius
1111 Pennsylvania Ave. N.W.
Washington, DC 20004

PIKE COUNTY
CHAMBER OF COMMERCE
P.O. BOX 107 • 12455 STATE ROUTE 104
WAVERLY, OHIO 45690
740-947-7715 • FAX 740-947-7716
www.pikechamber.org

September 30, 2005

9/8/05
70FR53396
(2)

United States Nuclear
Regulatory Commission
Matthew Blevins, Project manager
Mail Stop: T7J-8
Washington, DC 20555-0001

Dear Matt,

I am enclosing a copy of the report the Chamber submitted to the Department of Energy and USEC. As we told Brian Smith yesterday, part of the dilemma we have experienced this summer has been deciding who should receive the information.

There are a couple of points that I want to emphasize. First, none of the people who contributed information received any monetary rewards. This was strictly a case where a number of people wanted to make the history of events clear.

Second, in Jeffery Sea's testimony last night he referred to an earthwork on the Rittenour property. That earthworks is referred to in the report as the Nier property levy. This was designed after the 1959 flood by the soil conservation service.

Should you desire, we would be happy to submit statements from the Pike Countians who knew about or who participated.

I appreciate your interest in this matter.

Sincerely,

Blaine Beekman
Executive Director

SISP Review Complete
Template = ADM-013

E-RIDS = ADM-03
Add = M. Blevins (MXB6)

PIKE COUNTY
CHAMBER OF COMMERCE
P.O. BOX 107 • 12455 STATE ROUTE 104
WAVERLY, OHIO 45690
740-947-7715 • FAX 740-947-7716
www.pikechamber.org

September 28, 2005

United States Nuclear
Regulatory Commission
Matthew Blevins, Project Manager
Mail Stop T7J-8
Washington, DC 20555-0001

Dear Mr. Blevins,

In response to our conversation, I am submitting a brief report on the origin of a series of levies along the Scioto River in southern Pike County. There are three separate levies. The northernmost is on the Nier property at the U.S. Route 23 entrance to Piketon Department of Energy facility. The middle levy is partially located on a Department of Energy well field located next to the Scioto River on the old Billy Cutlip farm. The third levy extends across 10 farms beginning at the Barnes property and extending south along the river to the Will Acord farm.

The confusion about the origins of these levies was surprising to the Scioto Township residents with whom I spoke. All three were manmade, constructed within the past half-century. No levies had previously existed on the properties. Many of the people involved in the projects are still available to share the record of their experiences. The levy on the Nier property and the levy covering the 10 lower properties were built in direct response to a catastrophic 1959 flood. The third levy near the DOE well field was in response to an economic need rather than a need for flood control.

Each of the levies is located on the east side of the Scioto River. To the west of the river, south of Piketon, the terrain is hilly. To the east, the land rises in a terraced manner from the river bottoms. The lowest level is only a few feet above the Scioto River water level. The second level is about 50 feet higher in elevation and occurs from a few feet to a quarter mile from the river's edge. Flooding along the Scioto River has never reached the top of this second level. Much of the area in question also has a third terrace level, again rising a few feet above the second level.

Historically, the land at river level has been utilized for farming. Late winter flooding on a periodic basis made the construction of residences at this level impractical. Floods on the Scioto River in 1913 and 1937 were considered major, but farmers in our target area either lacked the means or did not feel the need to construct levies to protect their properties.

The 1959 flood had a disastrous effect on the lowest level of land. The current was so strong that it devastated the soil. Art Nelson a farm employee of Layton and Everett Hammond, saw areas were several feet of topsoil had literally washed away, leaving the slate underlay exposed. A mile to the south, deposits of sand left by the flood, measured as much as 25 feet in depth.

Everett and Layton Hammond decided they needed to build a levy. They contacted the Pike Soil and Water Conservation District for assistance. Vince Scott and Jim Steiner were employees of the Federal Soil Conversation Service on loan to the Pike SWCD. Vince and Jim provided technical assistance the Hammond brothers, recommending that the levy be built perpendicular to the river to protect against current damage should another flood of the magnitude of the 1959 flood occur again. Paul "Bunk" Adams, a skilled bulldozer operator who completed a hundred projects for the Soil Conversation Service, completed the work under the supervision of Vince Scott and Jim Steiner. This is the levy on the Nier farm.

Everett and Layton Hammond also were instrumental in organizing the levy along the 10 farms further south. Several hundred acres of land at river level had basically been made untillable by the sand deposits. The final plan included reducing the sand piles by mixing them with soil to farm the levies. There was still plenty of sand left after the levy was completed. Art Nelson remembered that Bill Trusty, a Wakefield businessman hauled sand from one of the largest deposits. Teddy West, a local farmer, learned that much of the sand was sold to the Goodyear Atomic Corporation for use as backfill on a sewer project. Steve Acord, whose family farm was one of those involved in the levy project, stated that it took years to return to land to farm production.

The levy on the Cutlip farm was an entirely different situation. In 1968, Billy Cutlip sold his 390 acre farm to the Standard Slag Company of Youngstown. Standard Slag developed a sand and gravel quarry that eventually covered two-thirds of the property. In the early 1980s the Department of Energy built a series of wells at the river's edge of the Standard Slag property to furnish surface water for the centrifuge process being developed by Goodyear Atomic Corporation at the Piketon DOE facility. Teddy West farmed the lowest and second levels of the Standard Slag property from the 1970s to the early 1990s. He was farming the land when the DOE wells were being drilled. According to Bob Childers who was in charge of operations at the steam plant, the line was a 36" line which ran all the way from the river to the DOE facility. The project was engineered and the contracts were handled by DOE at Oak Ridge so there was not a lot of local DOE contact. Teddy West remembered that the line was not stable at its base. Ralph Beabout an employee at the plant's water system learned that pressure on the line at its source was too great for the concrete anchors designed to hold the line in place. Modifications included more concrete and ground cover. The result is a levy-like appearance.

The second factor was the need for Standard Slag to find a place to put a sizeable amount of overburden when it expanded its quarry operation. One solution, according to Don Nelson, the manager of the Standard Slag operation until 1992, was to take the overburden down to the river

and build a levy, essentially hooking it to the DOE well site. The dirt was placed between the wells and the river because Standard Slag hoped to begin quarrying at the level next to the river. However, when the company ran extensive tests near the river, Don discovered the overburden was to deep and the water table was too high to make quarrying of that area economically feasible.

At first, the levy was kept mowed and it was possible to drive on it. When the quarrying idea was discarded, the levy was left pretty much to itself.

I hope this will answer some of the questions.

Sincerely,

Blaine Beekman
Executive Director

From: <TFKing106@aol.com>
To: <NRCREP@nrc.gov>
Date: Mon, Oct 24, 2005 12:15 PM
Subject: Comments on Draft EIS, American Centrifuge Plant, Piketon, OH, NUREG-1834

(7)
9/8/05
70FR53396

Thomas F. King, PhD
P.O. Box 14515, Silver Spring MD 20911, USA
Telephone (240) 475-0595 Facsimile (240) 465-1179 E-mail
tfking106@aol.com (mailto:tfking106@aol.com)

Consultation, training, and textbooks in cultural resource management

Date: October 24, 2005

To: Chief, Rules Review and Directives Branch
U.S. Nuclear Regulatory Commission
Mail Stop T6-D59
Washington DC 20555-0001

RECEIVED
2005 OCT 24 PM 12:31
RULES AND DIRECTIVES BRANCH USNRC

Via email to _NRCREP@nrc.gov_ (mailto:NRCREP@nrc.gov)

I write to comment on your draft Environmental Impact Statement for the Proposed American Centrifuge Plant in Piketon, Ohio, NUREG-1834, published in August 2005 (hereinafter, DEIS). These comments are transmitted electronically to the NRC at its specified email address on October 24, 2005, within the comment period specified in the DEIS. My comments will be restricted to the manner in which the DEIS addresses "cultural resources." My qualifications for offering the comments I do are outlined in the attached resume.

Qualifications of EIS analyst:

The list of preparers given on pages 10-1 through 10-3 identifies only one individual as responsible for the analysis of impacts on "historic and cultural resources." That individual, Dr. Polly McW. Quick, is to my knowledge a specialist in the prehistoric archaeology of central California, who according to promotional literature from her employer, ICF Consulting, has in the last 30 years worked primarily on environmental remediation programs and development projects in Iceland, Brazil, Costa Rica, and California. Please explain the basis upon which she is regarded as qualified to analyze the impacts of the American Centrifuge Plant on prehistoric and historic "cultural resources" in Ohio.

Section 3.3:

This section begins with a definition of the term "cultural resources." This is an important definition, since it limits the range of phenomena upon which impacts are analyzed. Please explain the basis for this definition, whose source is not cited and which I do not believe is based on any United States or international guidance. Please note the concerns expressed and recommendations provided by UNESCO in its Convention for the Safeguarding of the Intangible Cultural Heritage -- 2003.

Near the bottom of page 3-5 the review process under Section 106 of the National Historic Preservation Act is inaccurately characterized as a process "done in consultation with the State Historic Preservation Officer;" later, passing reference is made to "provid(ing) Indian tribes the opportunity to

E-RIDS=ADM-03
Add = M. Blevins (MXB6)
SISP Review Complete
Template = ADM-013

identify concerns." In fact, the Section 106 regulations (36 CFR 800) make it abundantly clear that the process is done in consultation with the State Historic Preservation Officer (SHPO), Tribal Historic Preservation Officers, Indian tribes, and other interested parties. The NRC staff seems to have difficulty understanding that the regulations require actually communicating with, listening to, and discussing the concerns of interested parties; the failure to engage in such consultation is at the heart of the DEIS' inadequacies. Please re-read the Section 106 regulations and relevant guidance from the Advisory Council on Historic Preservation and the Secretary of the Interior, and recast your discussion to accurately reflect their direction.

On page 3-6, the DEIS discusses an "area of potential effects" (APE) defined by the NRC staff for the project. This APE appears to be based solely on the potential for direct and selected indirect physical effects. I see no evidence that direct or indirect visual, auditory, olfactory, or other non-physical effects were given any consideration, nor do I see any evidence that cumulative effects on "cultural resources" of any kind were considered, in defining the APE. Please reconsider your APE with reference to all types of potential effects.

The discussion of historic properties that takes up the remainder of this section is overwhelmingly weighted toward specific archaeological sites and historic structures. Particularly given the proximity of the project site to the Scioto Township Works, and the extensive cultural landscape modifications represented by such earthworks, it seems strange that so little consideration seems to have been given to cultural landscapes, and to relict landforms that may reflect such landscapes amid the damage caused to the area in the past by the DOE Reservation. Please consider attempting a more coherent, landscape-based approach to analysis of the area's historic properties.

On page 3-9 we are told that unidentified "(i)nvestigators" determined that 22 of the 36 previously unidentified archaeological sites "did not meet National register eligibility criteria." Upon what basis or bases were these determinations made, and how were the "investigators" qualified to make them? How were Indian tribes and other interested parties consulted in the course of these evaluations? The same questions pertain to the evaluation discussed in the final paragraph on this page.

Please explain how NRC has completed its responsibilities under the Archaeological and Historic Preservation Act of 1974 (16 USC 469-469c-2) with respect to the individual archaeological sites discussed in this section, and with respect to the prehistoric cultural landscape of which they are arguably parts.

How were interested parties consulted during the evaluation of the Gaseous Diffusion Plant discussed on page 3-10?

Section 3.3.4 on page 3-10 mentions in passing that the Barnes House, adjacent to the project area, is associated with the location where the last passenger pigeon was reportedly killed. This suggests that this representative of a famous species that figured significantly in American conservation history may have been killed within or near the project area, but I see no evidence that this possibility was in any way considered in your analysis. Clearly, the landscape within which the last passenger pigeon was killed would very likely be eligible for inclusion in the National Register of Historic Places. Please address this possibility, and the possible impacts of the project on this landscape.

The discussion of the Barnes House is confusing. If it is adjacent to the boundary of the reservation, it would seem that it must be subject to at least possible visual, auditory, or other non-physical effects, and impacts on its use, if not long-term physical impacts. Please explain why NRC has not evaluated its eligibility for the National Register, and considered possible effects on it. What is the relevance of the SHPO's recommendation to the property owner regarding nomination to the National Register?

Section 3.3.5 indicates that the Absentee Shawnee Tribe has indicated a concern about the Scioto Township Works and perhaps other earthworks in the area, but I see no evidence that the Tribe has been consulted about this concern. There are copies of letters to various tribes appended to the DEIS (Appendix B), but these do not represent consultation; they merely inquire about whether the tribes have "specific knowledge of any sites that you believe have traditional religious and cultural significance." Please review pertinent guidance from the Advisory Council on Historic Preservation, the National Register of Historic Places, and the U.S. Environmental Protection Agency's Interagency Native American Environmental Justice Task Force, and explain your consultation with with potentially concerned Indian tribes with reference to such guidance.

The purpose of Section 3.3.6 is unclear. Please explain what information this section, as opposed to those preceding it, is supposed to convey. Please explain what you mean by a "potential historic property." What property is NOT "potentially" historic?

Section 4.2.3:

The highlighted text at the top of page 4-5 further describes the APE as NRC has defined it, but provides no justification for it, and like the previous description appears to deny the possibility of any kind of other-than-physical impact. Please reconsider your APE definition with reference to contemp orary best practice.

Section 4.2.2.1 first suggests that various activities could have effects on historic properties by destroying or altering contributing elements of the Gaseous Diffusion Plant, but then vaguely implies that such effects will be "properly controlled" and hence will have "no effect." This is not a possible determination under the Section 106 regulations. The regulations permit "conditional" determinations of "no adverse effect," but not conditional determinations of "no effect" (strictly speaking, determinations of "no historic properties subject to effect"). IF you have actual procedures to put in place, developed in consultation with the SHPO and other interested parties, by which to "properly control" damage or destruction of historic properties and their elements, then perhaps you can determine that there will be no adverse effect, but not no effect. Please re-read 36 CFR 800.5 and reconsider this section.

The next paragraph is even vaguer about NRC's determination with respect to the archaeological sites, and continues to express total ignorance of any cultural landscape values or traditional cultural values that may be ascribed to the landscape by Indian tribes or others. Again, please review pertinent regulations and guidance and reconsider this paragraph.

At the top of page 4-6 the NRC staff concludes that there will be no effect

on the Scioto Township Works, but it does so (a) without any clear definition of the actual boundaries of the Works or their possible relationship to other cultural landscape features, and (b) without any consultation with the Absentee Shawnee or other tribes that may (and in the case of the Absentee Shawnee, say they do) ascribe cultural significance to the Works and other landscape features in the area. As requested above, please review pertinent Advisory Council, National Register, and EPA guidance and reconsider this casual dismissal of effects on the site.

The next paragraph, on the Barnes House, is equally peculiar. Here we have NRC confidently asserting that the Barnes House may be eligible for the National Register only under National Register Criteria A and C, and casually assuring the reader that the project cannot affect the attributes that may make it eligible under these criteria, when it has provided no evidence that it has performed any sort of analysis of the Barnes House's eligibility -- suggesting instead that it is the property owner's responsibility to nominate the place to the National Register. As far as I can tell, you have developed no basis whatever to say anything about the eligibility of the Barnes House, the elements that may contribute to that eligibility, or the effects of the project (direct, indirect, or cumulative) on such elements. Please develop such a basis, in consultation with interested parties and in a manner consistent with pertinent guidance, and try again.

Section 4.2.2.2 seems to be predicated on the assumption that the only possible "indirect" effects of facility operation would be vandalism by workers within the facility boundaries. Please explain the rationale for this assumption. Will there be no other long-term indirect or cumulative effects on the local environment that might alter historic properties? Why should vandal workers stay within the fence? Why does NRC staff consider only the "information values" of the Scioto Township Works, considering that the Absentee Shawnee Tribe, at least, has indicated concerns that may well go beyond information values?

Throughout this section, potential impacts are referred to as "SMALL." What does this mean with reference to (a) the significance of impacts under NEPA and (b) the criteria of adverse effect found in 36 CFR 800?

Section 4.2.9:

This section, on environmental justice, gives no consideration whatever to disproportionate adverse environmental impacts on the cultural interests of such minority (and probably low-income) groups as the Absentee Shawnee and other tribes. Please review pertinent EPA guidance and address these impacts.

Section 4.3:

This section, on cumulative impacts, is notable for its utter lack of treatment of effects on historic properties or any other kinds of "cultural resources." This is particularly striking considering that the reservation on which the project is proposed has clearly had very serious impacts on the cultural landscape of which the Scioto Township Works are a part. A cumulative impact analysis is supposed to consider the effects (even the "SMALL" effects) of the project under review in the context of other past, present, and reasonably foreseeable future actions. Serious impacts on the cultural character of the area that includes the project APE (however defined) have obviously taken place in the past; they may be going on in the present, and what the future

holds remains to be analyzed. Please address the cumulative impacts of the project on cultural resources of all kinds, notably including historic properties.

Appendices

Appendix B contains several form letters to Indian tribes asking them about "specific knowledge of any sites" that they believe "have traditional religious and cultural significance." The text indicates that the Absentee Shawnee reported knowledge of such a site -- the Scioto Township Works -- though the documentation expressing this concern, supposed to be in Appendix B, is not there. In any event, the letters do not reflect any sort of real consultation with the tribes; they are mere formletters that do not seem to have been followed up in any way. Please review the findings of the Tenth Circuit Court of Appeals in Pueblo of Sandia v. United States, 50 F.3d 856 (10th Cir. 1995), as well as pertinent Advisory Council, National Register, and EPA guidance, and initiate real consultation with tribes.

Appendix B also includes correspondence with the SHPO in which the SHPO suggests a variety of representations, studies and consultations that NRC should undertake. It is not clear what, if anything, NRC has done in response to these suggestions.

Appendix B also contains a letter to the Advisory Council on Historic Preservation in which NRC mentions, rather in passing, that it intends to "use the NRC's NEPA review processes for Section 106 purposes," and later indicates that the former will be used "in lieu of" the latter. This suggests an attempt by NRC to comply with 36 CFR 800.8(c) and substitute its NEPA compliance for completion of standard Section 106 review, but NRC has done virtually none of the things that 36 CFR 800.8(c) requires in order to effect such a substitution. It has notified the Advisory Council of its attempt to substitute, but I see no evidence that it has similarly notified the SHPO. The notification to the Advisory Council came only very late in the NEPA process, and in such a stealthy way (a short, vague paragraph buried in the middle of a longer missive) that it is easy to imagine the Council misunderstanding its intent. More importantly, NRC has engaged in virtually none of the consultation with interested parties required by 36 CFR 800.8(c), and there are, as indicated above, many questions about the quality of its efforts to identify and address historic preservation issues. I strongly suggest that you abandon your attempt to substitute your NEPA compliance for standard Section 106 review, and initiate proper consultation with all concerned parties in accordance with 36 CFR 800.4.

Beyond properly complying with Section 106 of the National Historic Preservation Act, I suggest your attention to Section 110(d) of the same statute, to the requirements of the Archaeological and Historic Preservation Act of 1974, the American Indian Religious Freedom Act, the Native American Graves Protection and Repatriation Act and its implementing regulations (43 CFR 10), Executive Order 13175, and Executive Order 13352, and to the requirement of 40 CFR 1508.27(b)(3) and (8) that effects on cultural resources -- NOT only National Register eligible historic properties -- be considered in determining the significance of environmental impacts.

The overwhelming impression conveyed by the DEIS with respect to "cultural resources" is one of ignorant dismissal. It appears that the NRC staff and the DEIS authors have convinced themselves that there will be no impact on

anything of importance, and has then written the DEIS to demonstrate that this is the case. The demonstration, however, is a perfectly amateurish one. I devoutly hope that the DEIS is not similarly flawed with respect to other kinds of environmental impacts; if it is, it would speak very poorly for NRC's attention to its responsibilities toward the public and the environment.

Thank you for the opportunity to comment; I look forward to your responses.

Sincerely,

Thomas F. King, PhD

cc: OH SHPO
ACHP
National Trust for Historic Preservation
Geoffrey Sea

CC: <tmcculloch@achp.gov>, <Betsy_Merritt@nthp.org>, <dsnyder@ohiohistory.org>, <SargentsPigeon@aol.com>

Mail Envelope Properties (435D0881.9CE : 16 : 47566)

Subject:	Comments on Draft EIS, American Centrifuge Plant, Piketon, OH, NUREG-1834
Creation Date:	Mon, Oct 24, 2005 12:14 PM
From:	<TFKing106@aol.com>
Created By:	TFKing106@aol.com

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Mime.822	124157	

Options

Expiration Date:	None
Priority:	Standard
Reply Requested:	No
Return Notification:	None

Concealed Subject: No
Security: Standard

Thomas F. King, PhD

P.O. Box 14515, Silver Spring MD 20911 **Professional Resumè**
Telephone (240) 475-0595 Facsimile (240) 465-1179 E-mail tfking106@aol.com

Cultural Resource Impact Assessment and Negotiation, Writing, Training

Employment

Presently: Private consultant, educator, writer, facilitator in cultural resource management and environmental review; Trainer/Consultant, SWCA Environmental Consultants; Archeologist, The International Group for Historic Aircraft Recovery Amelia Earhart Project. Member, Sussex Archaeological Executive, advising the Government of Great Britain regarding archaeological recovery of HMS *Sussex* off Gibraltar.

Formerly: Senior Instructional Consultant, National Preservation Institute. Expert consultant to U.S. General Services Administration, program director for Advisory Council on Historic Preservation, Consultant to the High Commissioner, Trust Territory of the Pacific Islands, Archeologist with the National Park Service, consulting archeologist, head of archeological surveys at San Francisco State University, UCLA, University of California Riverside.

Education

PhD, University of California, Riverside, Anthropology, 1976.
BA, San Francisco State University (then College), Anthropology, 1968.
Certificate: Mediator, Bowie State University Center for Alternative Dispute Resolution, 1997.

Recent and current Clients

Government Agencies: Bureau of Land Management California State Office; Bakersfield Field Office; USDA Forest Service. USDA Farm Service Agency, U.S. Fish and Wildlife Service. U.S. Navy, U.S. Air Force, U.S. Army, Federal Aviation Administration. Grand Canyon Monitoring and Research Center. City of Newport News, Virginia.

Indian Tribes and Organizations: Klamath River Intertribal Fish and Water Commission; Mole Lake Sokaogon Community of Lake Superior Chippewa Indians; Bad River and Red Cliff Bands of Lake Superior Tribe of Chippewa Indians. Hualapai Tribe. Quechan Indian Nation. Round Valley Indian Tribes. Penobscot Tribe.

Private Sector: Blythe Energy Corp., Cingular Wireless. Odyssey Marine Exploration.

Non-profit organizations: National Preservation Institute.

Thomas F. King: Courses Taught

Short courses for SWCA Environmental Consultants, National Preservation Institute, University of Nevada, Reno, General Services Administration, Advisory Council on Historic Preservation, Environmental Protection Agency, National Park Service, and Department of Defense in cultural resource law and policy, Section 106 review, National Environmental Policy Act implementation, identification and protection of traditional cultural properties, Native American consultation, environmental justice, conflict resolution, and related subjects.

Thomas F. King: Publications (Selected)

Books and Monographs

- *Doing Archaeology: a Cultural Resource Management Perspective.* Left Coast Press 2005.
- *Cultural Resource Laws and Practice: An Introductory Guide.* AltaMira Press 2004 (First edition 1998)
- *Amelia Earhart's Shoes.* With R. Jacobson, K. Burns, and K. Spading. AltaMira Press, 2004 (First edition 2001).
- *Places that Count: Traditional Cultural Properties in Cultural Resource Management.* AltaMira Press 2003
- *Thinking About Cultural Resource Management: Essays From the Edge.* AltaMira Press 2002.
- *Federal Projects and Historic Places: the Section 106 Process.* AltaMira Press, 2000
- *Piseken Nóómw Nóón Tonaachaw: Archeology in the Tonaachaw Historic District, Moen Island, Truk.* With P.L. Parker, Southern Illinois University, Carbondale and Micronesian Archeological Survey, Saipan 1984.
- *Anthropology in Historic Preservation.* With P.P. Hickman and G. Berg, Academic Press, New York 1977.
- *The Archeological Survey: Methods and Uses.* Interagency Archeological Services, Heritage Conservation and Recreation Service (National Park Service), Department of the Interior, Washington DC 1977 (Republished 2003 by California Division of Forestry).

Articles

- Considering the Cultural Importance of Natural Landscapes in NEPA Review: The *Mushgigagamongsebe* Example. *Environmental Practice* 5:4, Oxford University Press, 2003
- "I Learned Archaeology From Amelia Earhart: Using a Famous Mystery to Teach Scientific Methods." In *Strategies for Teaching Anthropology,* 3rd Edition, Patricia Rice and David McCurdy, eds., Prentice Hall, New York; 2003..
- "Cultural Resources in an Environmental Assessment Under NEPA." *Environmental Practice* 4(3):137-144, National Association of Environmental Professionals, September 2002.

- "Historic Preservation Laws" in *Encyclopedia of Life Support Systems.* EOLSS Publishers for UNESCO, 2002.

Articles (continued)

- "What Should Be the 'Cultural Resources' Element of an Environmental Impact Assessment?" *Environmental Impact Assessment Review* 20(2000):5-30, 2000.
- "Archaeology in the Search for Amelia Earhart." With Richard Gillespie. In *Lessons from the Past: An Introductory Reader in Archaeology,* Kenneth L. Felder, ed., Mayview Press, Mountain View CA, 1999
- "How the Archeologists Stole Culture: a Gap in American Environmental Impact Assessment and What to Do About It." *Environmental Impact Assessment Review,* January 1998.
- "The Nature and Scope of the Pothunting Problem." In *Protecting the Past: Readings in Archaeological Resource Management.* J.E. Ehrenhard and G.S. Smith, eds., The Telford Press, Caldwell NJ 1991.
- "AIRFA and Section 106: Pragmatic Relationships." In *Preservation on the Reservation,* A. Klesert and A. Downer, eds., Navajo Nation Publications in Anthropology 26, Window Rock 1991.
- "Prehistory and Beyond: The Place of Archeology" In *The American Mosaic: Preserving a Nation's Heritage.* R.E. Stipe and A.J. Lee, eds., US/ICOMOS, Washington DC, 1987.
- "Intercultural Mediation at Truk International Airport." With P.L. Parker. In *Anthropological Praxis: Translating Knowledge Into Action.* R.W. Wulff and S.J. Fiske, eds., Washington Association of Professional Anthropologists, Westview Press, Boulder 1987.
- "The Once and Future Drought." *American Archeology* 5:3:224-8, Ridgefield, CT 1985
- "Professional Responsibility in Public Archeology." *Annual Review of Anthropology* 12, Palo Alto 1983.
- "Recent and Current Archeological Research on Moen Island, Truk." With P.L. Parker. *Asian Perspectives* xxiv(1):11-26, Honolulu 1981.
- "The NART: A Plan to Direct Archeology Toward More Relevant Goals in Modern Life." *Early Man,* Evanston, winter 1981.
- "Don t That Beat the Band? Nonegalitarian Political Organization in Prehistoric Central California." In *Social Archeology,* C. Redman, Editor, Academic press, New York 1978.
- ""The Evolution of Complex Political Organization on San Francisco Bay". In *'Antap: California Indian Political and Economic Organization.* L.J. Bean and T.F. King, eds., Ballena Press, Ramona, CA 1974.

Government Guidelines and Regulations

- Regulations, guidelines, and plain-language brochures on environmental and cultural resource management, NEPA review, Section 106, and related topics, for Department of Agriculture Farm Service Agency (FSA) (unattributed, with FSA NEPA and Cultural Resource staff). FSA, 2004.

Government Guidelines and Regulations (Continued)

- Orders, Guidelines, and Fact Sheets: Cultural Resource Management, Floodplain Impact Management, Wetlands Impact Management, Federal Real Property Disposal, Archeological Collections Management, Indian Sacred Sites Management, Historic Document and Artifact Management, Environmental Justice, and Social Impact Assessment (unattributed, with GSA NEPA Call-In Staff). General Services Administration, Washington DC, 1998.
- *NEPA Desk Guide* and related orders (unattributed, with L.E. Wildesen and GSA Environmental Quality Working Group). General Services Administration, Public Buildings Service, Washington DC, 1997.
- *Guidelines for Evaluating and Documenting Traditional Cultural Properties.* With P.L. Parker. National Register Bulletin 38, National Register of Historic Places; National Park Service, Washington DC, 1990
- *Preparing Agreement Documents.* Advisory Council on Historic Preservation, Washington DC, 1989.
- *Public Participation in Section 106 Review: a Guide for Agency Officials.* Advisory Council on Historic Preservation, Washington DC 1989.
- *Identification of Historic Properties: a Decisionmaking Guide for Managers.* Advisory Council on Historic Preservation and National Park Service, Washington DC 1988.
- *The Section 110 Guidelines: Guidelines for Federal Agency Responsibilities Under Section 110 of the National Historic Preservation Act.* With S.M. Sheffield. 53 FR 4727-46, National Park Service, Washington DC 1988
- *Regulations for the Consideration and Use of Historic and Cultural Properties* (Unattributed). Commonwealth of the Northern Mariana Islands Historic Preservation Office, 1983
- *Treatment of Archeological Properties: a Handbook.* Advisory Council on Historic Preservation, 1980.

Popular

- "Archaeology and the Fate of Amelia Earhart." *About.com,* June 2005. http://archaeology.about.com/od/pacificislands/a/king_ae.htm
- "Amelia Earhart: Archaeology Joins the Search." *Discovering Archaeology* 1:1:40-47, El Paso; January-February 1999
- "Sea Changes: l4th Century Micronesia." *Glimpses of Micronesia and the Western Pacific* 25:1, Honolulu 1985.
- "Tonaachaw: a Truk Village Rediscovers its Past." With P. Parker. *Glimpses of Micronesia and the Western Pacific* 21:4, Honolulu 1982.
- "How You Can Help the Archeologists." *Boys Life,* Boy Scouts of America, 1971.

Other

- Videotapes on "historic contexts" and "traditional cultural properties," for National Park Service
- "E-Book" environmental review software, for General Services Administration
- "NEPA for Historic Preservationists and Cultural Resource Managers," worldwide web pages for National Preservation Institute.

09/08/05

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13

From: <SargentsPigeon@aol.com>
To: <mxb6@nrc.gov>, <nrcrep@nrc.gov>
Date: Thu, Oct 27, 2005 9:58 AM
Subject: USEC DEIS Comments

Matthew Blevins
Nuclear Regulatory Commission

Dear Mr. Blevins,

Attached are the attachments to my comments on DEIS NUREG-1834.

I've had two problems. One is getting the file to transmit given the large file size. I've been trying to send most of the night but as I have a dial-up connection only, it's very difficult and keeps quitting. Please be understanding.

Second, I have two other imposing deadlines this week....the appeal of the ASLB ruling in the USEC case was due Monday and new contentions as per the ASLB ruling are due very shortly. I did call on Monday and received an extension but am afraid it will take another day to get my full comments in. Attached are the attachments only, not the text. If for some reason you cannot accept the text, I still wish the attachments submitted...they are self explanatory as they contain mainly letters from others pertaining to historic and cultural resource issues.

I will send the text ASAP.

You will note that the first item is a DEIS comment from Professor Robert Proctor at Stanford. Unfortunately, Dr. Proctor made the mistake on Monday of e-mailing his comment to me instead of to NRC, and I did not realize it until Tuesday, when he was already on a plane to Germany. Therefore please accept his testimony as timely. His e-mail address is included. Other contact info. can be provided if necessary.

Thanks for your consideration,

Geoffrey Sea
The Barnes Home
P.O. Box 161
Piketon, OH 45661
Tel: 740-289-2473
Cell: 740-835-1508
E-mail: SargentsPigeon@aol.com

SISP Review Complete

Template = ADM-013

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Add = M. Blevins (MXB6)

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MXB6 (Matthew Blevins)

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Mime.822	2303097	

Options

Expiration Date:	None
Priority:	Standard
Reply Requested:	No
Return Notification:	None
Concealed Subject:	No
Security:	Standard

Index to Attachments submitted by Geoffrey Sea

(note: Exhibit designations refer to exhibits submitted to NRC as attachments to Geoffrey Sea's petition for intervention and subsequent filings)

1. DEIS Comment of Robert Proctor, PhD., Professor of History, Stanford University, 10/24/05

2. Map of Historic Sites in relation to American Centrifuge Project created by Petitioner Geoffrey Sea.

3. Exhibit B. Statement of Charles W. Beegle, former Professor of Education at the University of Virginia, widower of Jean Rittenour and owner of the historic Rittenour Home and Scioto Trail Farm that adjoins the DOE reservation in Piketon.

4. Exhibit E. Statement of Jerome C. Tinianow. Executive Director of Audubon Ohio and Vice President of the National Audubon Society.

5. Exhibit F. E-mail correspondence from Roger G. Kennedy, former director of the National Park 5. Service and Director Emeritus of the National Museum of American History, author of *Hidden Cities: The Discovery and Loss of Ancient American Civilization*.

6. Exhibit H. Statement of John E. Hancock, Professor of Architecture and Associate Dean at the University of Cincinnati, Project Director of "EarthWorks: Virtual Explorations of the Ancient Ohio Valley"

7. Exhibit M. Letter from Linda A. Basye, Executive Director of the Pike County Convention and Visitors Bureau, 10/21/04

8. Exhibit N. Statement of Karen Kaniatobe, Tribal Historic Preservation Officer of the Absentee Shawnee Tribe of Oklahoma in Shawnee, Oklahoma.

9. Exhibit O. Plate XXIV from Ephraim Squier and Edwin Davis, *Ancient Monuments of the Mississippi Valley*, 1848.

10. Exhibit Q. Statement of Thomas F. King, preservation consultant, author of four books on federal preservation including *Federal Planning and Historic Places: the 106 Process*

11. Exhibit V. Statement of Thomas F. King, preservation

consultant, author of four books on federal preservation including *Federal Planning and Historic Places: the 106 Process*, dated March 30, 2005.

12. Exhibit W. Letter from Chief Hawk Pope, Shawnee Nation, United Remnant Band, undated, received March 29, 2005.

13. Declaration by John Hancock, Frank L. Cowan, and Cathryn Long Regarding August 5, 2005 Visit to GCEP Water Field

14. Photographs in order: 1. The Barnes Home close-up, 2. The Barnes Home landscape 3. Surviving remnant of the Barnes Works, 4. View of the Scioto River at the point where the creek of the Barnes Works joins it, which USEC and NRC say "is not a scenic river" 5. The kill-site of the Sargents Pigeon (remnants of the home where Press Clay Southworth lived in 1900)

15. Photograph of ACP Buildings across fence-line of Barnes Home property (previously provided.)

Comment on the Draft Environmental Impact Statement for the Proposed American Centrifuge Plant in Piketon, Ohio

By Robert N. Proctor, PhD.

Submitted Oct. 24, 2005

I am Professor of the History of Science at Stanford University, and a tenured member of the faculty of the History Department at that University. I hold a doctoral degree in the History of Science from Harvard University and am the author of four books on the history of science, dozens of articles in peer-reviewed academic journals, including historical, scientific, and medical journals. I have won several prizes for my academic scholarship, including the Viseltear Prize from the American Public Health Association and the American Anthropological Association. I have held fellowships from the Guggenheim Foundation, the National Science Foundation, the National Institutes of Health, the Holocaust Memorial Museum in Washington, D.C., the Max Planck-Institute for the History of Science in Berlin, the National Library of Medicine, the Howard Foundation, the Hamburg Institute for Social Research in Germany, the National Center for Human Genome Research, the National Endowment for the Humanities, the Center for Advanced Study in the Behavioral Sciences at Stanford, the American Council of Learned Societies, the Andrew Mellon Foundation, the Woodrow Wilson Foundation (Charlotte W. Newcome Fellow), and the Shelby Cullom Davis Center for Historical Studies at Princeton University. I am also an elected Fellow of the American Academy of Arts and Sciences, the oldest scientific academy in the U.S., founded in 1780 by John Adams, John Hancock, and other American scholar-patriots.

I have visited the Piketon facility and am familiar with the historic and cultural value of the overall site, and the history of the uranium enrichment processes that have been operated there since the 1950s. I am also familiar with the work and writings of Mr. Geoffrey Sea, resident in the Barnes Home in Sargents, Ohio. I have reviewed the "Historic and Cultural Resources" section and the corresponding "impacts" and "alternatives" sections of the Draft Environmental Impact Statement for the facility.

I want to briefly note here my disappointment with the NRC assessment of the potential historical and cultural impacts of the proposed centrifuge facility. The report repeatedly states that the expected impacts to historical and cultural resources of the proposed facility are "small," "insignificant," negligible," etc., when in fact we can expect the impact to be very significant.

Historians in recent years have become increasingly aware of the importance of preserving the integrity of historic and prehistoric sites, this includes protection of such sites in their landscape settings from noise, visual insults, traffic, access obstacles, commercial development, intrusion from physical and electronic security, threats to the safety of visiting members of the public, "aesthetic" or psychological impacts that might discourage tourism, and many other factors, and these concerns have been reflected in strengthened federal legislation and regulation starting with the 1966 National Historic Preservation Act. Sites such as Gettysburg and other parks valued for their historical significance have resisted efforts to compromise such values, and here, in Piketon, we have an instance where there is a threat of significantly

compromising unique historical and cultural values by going ahead with construction, operation and eventual decommissioning of the centrifuge facility.

In his published writing, with a rather unique literary style, Geoffrey Sea exemplifies a certain model of history that sees historical persons and events as interwoven over long spans of time. The locale of what used to be called Sargents, Ohio, has become a model for his analysis, and an ideal one, for the various individual locations in close proximity in Sargents weave together in that seamless fabric we call history.

Historians will be troubled by the shallow and cavalier treatment offered by NRC Staff's assessment of the impact of this proposed plant on historical and cultural resources. The site of the last passenger pigeon slaying and the Barnes family experience and homestead, together with the important earthworks, and the recently-closed Gaseous Diffusion Plant could be part of an important public historical site with both educational and recreational value. The integrity of this site must be protected for future generations; indeed it is precisely the kind of site our preservation laws are designed to protect.

The Barnes Home is at the center of this matrix, for the Barnes family brought to world attention the enormous prehistoric earthwork complex to the west of the house, which became known as the Barnes Works. South of the home is the kill-site of the last known wild passenger pigeon, which was mounted in the home. North is the Sargent Home, which was occupied by a family that married into the Barnes clan and brought Abraham Lincoln in to view the earthworks. East of the home is the centrifuge plant, close to the excavated site of a burial mound that became a waste pit for the Department of Energy; and the X-326 building, which has historic value as America's only dedicated facility for the production of bomb-grade uranium.

It makes no sense to analyze these locations individually, as is done in the DEIS, neglecting some of them entirely, at each step blind to the historic panorama that links and surrounds. That's an approach that intends to be dismissive of discovered impacts, and dismiss them it does, cutting the historical matrix into little segregated insignificant bits.

For example, the earthwork discovered at the Well Field site is considered separately from discussion of the Scioto Township Works (Barnes Works), even though a glance at the map and a consideration of known Hopewell patterns of construction leads to a reasonable conclusion that these once were connected. (Eminent historian Roger Kennedy has in fact suggested that they were connected and that the Great Hopewell Road extended through the Barnes Works in his book, *Hidden Cities: The Discovery and Loss of Ancient North American Civilization*, Free Press, 1994.")

Too, there is no suggestion from the DEIS that the Barnes Home and the Barnes Works have any connection whatsoever, as absurd as this segregation is on its face. The DEIS enforces this segregation by using the term "Scioto Township Works" – though "Barnes Works" was the name used in the last extensive survey and description by Gerard Fowke in *The Archaeological History of Ohio*. The name "Barnes Works" is also least confusing since the historical name, "Seal Township Works," no longer corresponds to the township jurisdiction.

NRC apparently would not like to acknowledge that the building where bomb-grade uranium was produced and the extinction of the passenger pigeon might have any connection. But they are connected, and that connection served as the basis for Geoffrey Sea's long meditation on extinction and survival published in the *American Scholar*, "A Pigeon in Piketon." At the end of that piece, which was published before USEC chose Piketon as site for its centrifuge plant, Mr. Sea proposed that the X-326 building, now awaiting decommissioning, be

dedicated as a monument to the passenger pigeon.

This is a serious proposal for a number of reasons. First, there is no national memorial to the passenger pigeon, though the species was the most abundant vertebrate species on the continent and its passing is considered to be the exemplar of man-made extinction. The famous ecologist Aldo Leopold erected an extraordinary monument at the site of the last passenger pigeon kill in Wisconsin. A national monument rightfully should be located at or near the last kill site of all, in Sargents. Arguably it has not happened only because that location was not precisely known. But now Mr. Sea has found it, within a mile or two of X-326 and the Barnes Home, and that is of paramount importance to environmental history.

Second, there are no current plans for the X-326 building, which may not be easily demolished owing to the high degree of radioactive contamination inside. Entombment of the building might be the only technically viable and cost-effective solution, and if safe entombment can serve the larger purpose of a national monument, as a structure to spur reflection upon the folly and avarice of Man, so much the better. That is the essence of Mr. Sea's proposal, as was perhaps anticipated by Aldo Leopold when he wrote,in 1949, in *A Sand County Almanac*, of human superiority lying in our capacity to remember and mourn the passenger pigeon, "rather than...in Mr. Vannevar Bush's bombs."

Remembrance and memorial are at the vanguard of historical thinking and historical preservation at the moment. I have served as an advisor to the Holocaust Museum, which set the trend, and there is now an active program, sponsored in part by the Department of Energy, to memorialize the cold war and Manhattan Project sites around the nation. Mr. Sea's proposal should be analyzed in the context of this program.

Which obviously is inconsistent with licensing and completion of USEC's centrifuge plant. The USEC plant would sit in between the Barnes Home and the X-326 building, physically obstructing the possibility of connecting these locations as a memorial site and visitor attraction. How on earth can that be considered as minimal impact?

The potential for a historical landmark site that encompasses the kill-site of the Sargents Pigeon, the Barnes Works, the Sargent and Rittenour homes, and the X-326 building – with the Barnes Home at its center – is great. But only if there is no centrifuge plant at the middle of it, obstructing passage with security fences, scaring visitors away with the potential for catastrophic events and toxic releases, obviating the memorial message that we have learned our lesson to overcome folly and greed.

The building and operating of a uranium enrichment plant right over the fence-line from the Barnes Home will severely impact prospects for a public center to develop this as a place for education, tourism, and long term commemoration. Archaeologists here at Stanford and elsewhere are developing models for how this can be done at sites designated by UNESCO as being of historic significance.

Threats to this integrated set of sites from construction of the centrifuge plant are of several types, including (but not limited to): fences; roads; traffic; security surveillance (including security gates and closed access to some roads); restrictions on movement; diminishment of attractiveness to visitors; risk of terrorist attack (keeping people away); compromises from noise; diminishment of the aesthetics of the site, public worries (real or justified) to the dangers of uranium enrichment near such a site, just to name a few; vulnerability of buildings, land and people to catastrophic accidents, toxic emissions and pontential damage from decontamination activities. The USEC report does not grapple with the potential impacts in

a way that is historically responsible.

There is no evidence from the DEIS that NRC actually studied these impacts on-site, only that lots of papers were shuffled to rule out impacts by fiat of definition. For example, did NRC staff visit the Barnes Home to see if the ACP site activities could be heard at night? (Mr. Sea reports they can.) Did NRC staff visit the Barnes Home at all, or the kill site of the Sargents Pigeon, or the Sargent Home? (Apparently not.) Did NRC consult any experts on the development of historic commemoration sites? (Apparently not.)

The DEIS contains another fundamental flaw in its approach to assessing impact in that it compares life with the centrifuge plant to life as it exists today. If this were a green-field site, that would be a proper approach, because, if the plant were not built, the green-field would continue on as is, as far as we know.

In this case, however, the massive Gaseous Diffusion Plant on the site has just shut down. The site is now maintained by DOE as a production site, with all the attendant apparatus of infrastructure and security, in anticipation of USEC's plant. Thus it is a tautology that the centrifuge plant will have little impact on a site already in preparation for a centrifuge plant.

But if the plant is not licensed and built, then the site will not be a DOE production site any longer. It would revert to cleanup, environmental restoration, and alternative use, as has occurred at other closed DOE production plants like Fernald and Rocky Flats. Site ownership would pass from DOE to the Department of Interior, and DOI would implement a mixed-use development plan for the site as it has done elsewhere. That near future must be the baseline for comparison in any impact assessment, under both NEPA and NHPA.

Substantial potential exists for the development of historical attractions, tourism, and sites of economically sustained commemoration at Sargents. It is not true, as NRC reports, that "the impacts to historic and cultural resources identified onsite and around the site's perimeter would be small" (p. 2-38). The combination of the three historic homes of the Barnes, Sargent and Rittenour families, the Scioto River history, unique geological features, the passenger pigeon history (centered on the Barnes home), and the long-standing Native American presence--including a number of significant prehistoric earthworks--make this a site of substantial historical importance. There is an integrity to these various historical and cultural aspects taken together that is not reflected in the DEIS; these sites have to be evaluated as a whole.

I have visited the Piketon site, and have some understanding of its history and integrity. I have consulted with Mr. Sea, and have confidence in his assessment of the potential historic value of this site, and the threats posed to it by the expansion of the USEC facility. Mr. Sea has lectured at Stanford University on his research into this topic, and there is strong interest here and elsewhere in the story he has to tell. I should say that I was surprised--astonished in fact--to find his name not even mentioned in the DEIS, despite the fact that he knows more about the cultural history of this area than anyone alive. Mr. Sea has done important work evaluating the history and significance of this site, and it is <u>absolutely essential</u> that he be consulted in any effort to assess the potential impact of the centrifuge construction.

In conclusion, this site must be considered as an integrated whole, and should not be looked at piecemeal. Our federal preservation laws require that sites under consideration be studied for potential impacts on historical and cultural value, and the draft EIS certainly does not do an adequate job in exploring that potential impact.

Robert N. Proctor
Professor of the History of Science
Stanford University

e-mail: rproctor@stanford.edu

Map of Historic Sites in relation to American Centrifuge Project created by Geoffrey Sea. This map shows the historic sites as they once existed in conjunction with the current and proposed buildings of the ACP. It is intentially anachronistic to give a sense of respective locations and distances. This map has been updated on the basis of new information as of 10/24/05.

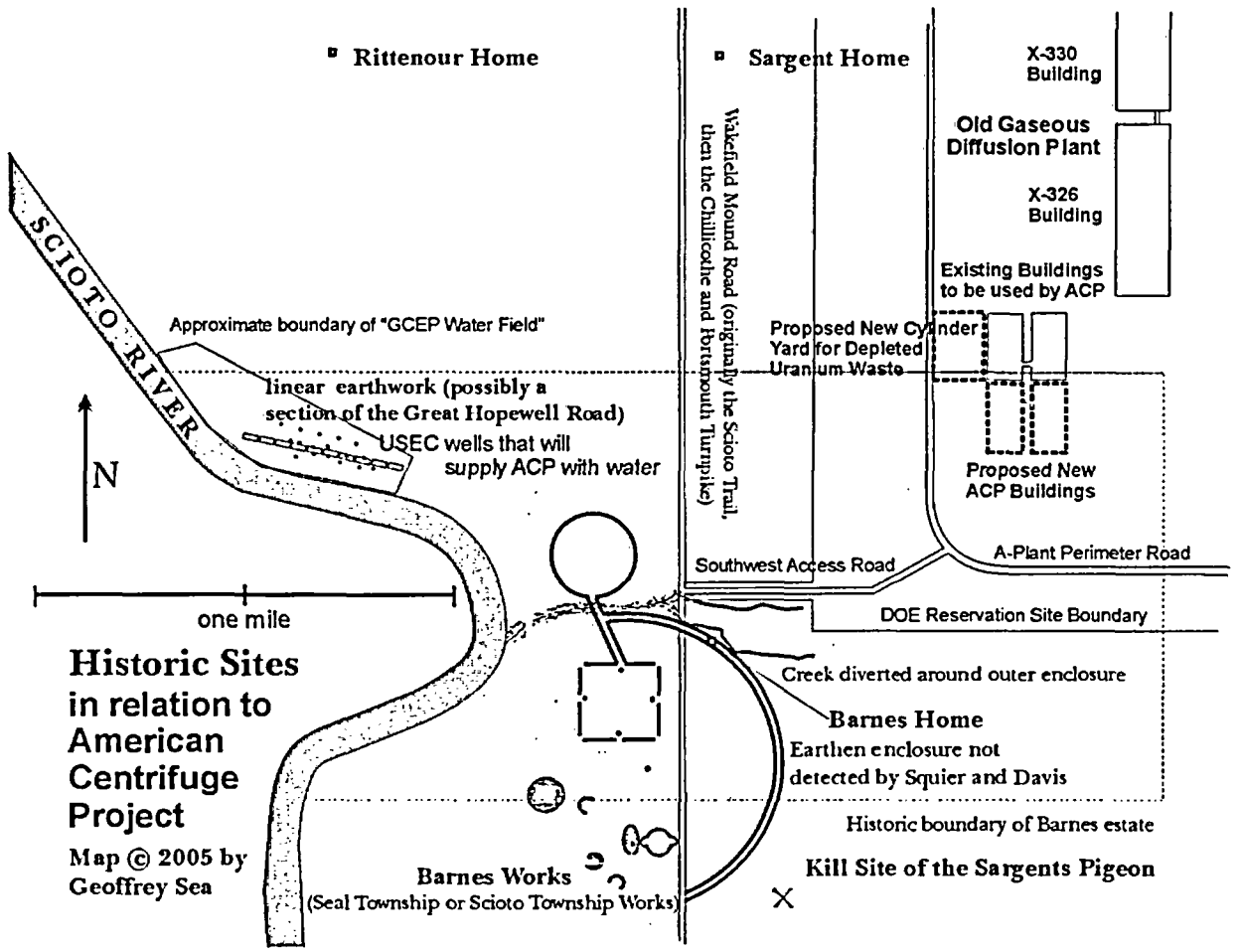


Exhibit B
[hand-written original transmitted via facsimile]

Brookhill Farm
2163 Scottsville Rd.
Charlottesville, VA 22902
27 February 2005

Nuclear Regulatory Commission

To Whom it may concern

Re: Piketon, Ohio Centrifuge Operation

As a neighboring landowner, I raise the following concerns about the expansions of the centrifuge operation at the Piketon, Ohio Plant.

1. I own the Scioto Trail Farm on State Route 23. Presently the farm is approximately 370 acres. The major portion is on the west side of State Route 23 and goes to the Scioto River.

2. The farm has been in my wife's family for generations. The Rittenours, Seargents, and Barnes were influential in the history of the Scioto Valley. From the oral history of the indian culture of the Scioto Valley, stories are told of the indian foot races along the lower portion of the farm. The historic nature of the property should qualify it for the National Historic Registry.

3. During 1966, the NHPA legislation was passed which mandated that government agencies had a moral and legal obligation to weigh the impact that projects have on historic surroundings. The government took 31.421 acres for a permanent easement in 1982. This was for a well field along the Scioto and for pipe lines and a road. Never was the NHPA legislation addressed.

4. At one time the farm was over five hundred acres. The DOE took a large portion of the farm during the early 1950s. There was a great projection on the financial benefits and jobs that would be gained with the nuclear energy project. The only thing that it did was ruin a once beautiful farming valley. There are few, if any, large landowner farmers remaining on their land. From my perspective, the plant has been a detriment and enlarging it will continue that degradation. In the process, it will destroy more Hopewell Indian relics and more of the early history of Ohio will be lost.

5. As an out of state land owner, I was not aware of the enlargement of the centrifuge plant. I would have objected earlier. This letter is written in support of Geoffrey Sea's intervention.

Sincerely,

Charles W. Beegle

Exhibit E. Statement of Jerome C. Tinianow, Executive Director of Audubon Ohio and Vice President of the National Audubon Society

Audubon Ohio
692 North High Street, Suite 303
Columbus, OH 43215-1585
Tel: 614-224-3303
Fax: 614-224-3305
www. Audubon.org

February 24, 2005

Dear Friends,

I am the Executive Director of Audubon Ohio, a conservation and wildlife advocacy organization with over 14,000 members throughout the state, some of whom live in and around Pike County, Ohio. We currently have 18 past and present donors living in Piketon itself.

Audubon Ohio is the Ohio office of the National Audubon Society, a 100-year-old conservation organization with over 400,000 members nationwide. Our mission is to conserve and restore ecosystems, focusing on birds, other wildlife and their habitats, for the benefit of mankind and the Earth's biological diversity. Geoffrey Sea is one of our members.

In pursuit of our mission, Audubon Ohio and the National Audubon Society believe it is important to protect, preserve and commemorate sites that have a special place in the history of conservation and ecology. Two such sites are in Pike County, where the last passenger pigeon ever sighted in the wild was shot by Press Clay Southworth on March 22, 1900. Over the years, investigators have tried to locate the precise scene of the shooting, without success until Geoffrey Sea did find the former residence of the Southworths and the nearby Sargents Grain Mill along Wakefield Mound Road, approximately one mile south of the A-Plant southwest access road. An affiliated site is the Barnes Home at 1832 Wakefield Mound Road, where the bird was mounted and displayed between 1900 and 1915, when it was donated to the Ohio Historical Society. The specimen is now prominently displayed at the OHS Museum in Columbus.

The extinction of the passenger pigeon, once the most populous bird in the world, over the course of a single century, is generally regarded as the most important and most instructive of all extinctions made by man. That is one reason that preservation and commemoration of the Pike County sites are so crucial. The other reason is that this is the only place on earth where the slaying of the last-seen wild survivor of a species has been located. The sites should be preserved so that they can be properly marked and made available for public education. At the scene of the last passenger pigeon shooting in Wisconsin, the

great American ecologist Aldo Leopold erected a famous bronze statue. Pennsylvania also has its passenger pigeon memorial, erected by the Boy Scouts of America at Pigeon Hills. The proper place for a national memorial is in Pike County, Ohio, as proposed by Geoffrey Sea in his essay in *The American Scholar*.

John James Audubon himself was moved to conservation activism by his witness of pigeon hunts, and his description of them stands as one of the earliest and most compelling bits of ecological writing. Audubon described a raid on a nesting of passenger pigeons this way:

"The tyrant of the creation, man, interferes, disturbing the harmony of this peaceful scene. As the young birds grow up, their enemies, armed with axes, reach the spot, to seize and destroy all they can. The trees are felled, and made to fall in such a way that the cutting of one causes the overthrow of another, or shakes the neighbouring trees so much, that the young Pigeons, or squabs, as they are named, are violently hurried to the ground. In this manner also, immense quantities are destroyed." (John James Audubon, *Bird Biographies*, "The Passenger Pigeon.")

The proposed construction and operation of a uranium enrichment plant at the southwest corner of the Department of Energy reservation would impact these historic sites and potential future projects in a number of ways. The location of the new enrichment plant borders on the Barnes Home property, and some of the land was originally taken from the Barnes estate. Safety and environmental fears, along with the conspicuous security regime, if not crafted with sensitivity to the historic importance of the neighboring property, could certainly deter public visitation to and appreciation of the historic sites.

The National Historic Preservation Act provides mechanisms for averting and ameliorating such impact. Unfortunately, the Department of Energy has not complied with its obligation to implement the various provisions of the act, creating now a monumental challenge for how to bring the proposed project into accord with federal preservation law.

Audubon Ohio supports Geoffrey Sea's intervention in this case. There must be an advocate for preservation and ecological interests involved in the proceedings.

Sincerely,

Jerome C. Tinianow
Vice President and Ohio Executive Director

Exhibit F. Statement of Roger G. Kennedy, former director of the National Park Service and Director Emeritus of the National Museum of American History, author of *Hidden Cities: The Discovery and Loss of Ancient American Civilization*

Subject: Intervention support
Date: 2/24/2005 12:20:18 PM Eastern Standard Time
From: roger@rkennedy.net
To: GeoffreySeaNYC@aol.com

To the Commissioners, Secretary and Atomic Safety and Licensing Board of the US Nuclear Regulatory Commission and to Whom it May Concern.

I am traveling away from home and letterhead, lecturing at Stanford University and for a group of private foundations in San Francisco. However, I wish to use this electronic means to support the intervention of Geoffrey Sea in the USEC American Centrifuge Plant licensing action.

Mr. Sea is entirely correct as to the importance of the Barnes works to American history and to our living cultures. It is among the half-dozen most important pre-Columbian sites in the Ohio Valley, and when more work is done on it by competent archaeologists it may turn out to be among the half dozen most important in the United States. If the people of Louisiana can save Poverty Point, and the people of East St. Louis can save Cahokia, surely the more affluent people of Ohio can rally to protect their heritage from desecration. The balance is hardly even between a mere adjustment for convenience of an atomic energy plant which can go anywhere within a hundred mile radius, and a precious place with no equals, no counterparts, and no chance of replication. This generation would be disgraced if further damage were done to an inheritance from the ages. The Barnes site must be saved.

For that to happen, it might be well for the site ultimately to be placed in responsible public hands, such as the National Park Service or the Ohio State Park System, or within the jurisdiction of the United States Forest Service.

I would be happy to verify the authenticity of this commendation by responding to an email sent the sending address.

Roger G. Kennedy

Director Emeritus, National Museum of American History

Former Director, the United States National Park Service

Exhibit H. Statement of John E. Hancock, Professor of Architecture and Associate Dean at the University of Cincinnati, Project Director of "EarthWorks: Virtual Explorations of the Ancient Ohio Valley"

University of Cincinnati
College of Design, Architecture, Art, and Planning
Office of the Dean
P.O. Box 210016
Cincinnati OH 45221-0016

Phone (513) 556-4933 / Fax (513) 556-3288
Web http://www.daap.uc.edu

February 21, 2005

To: The Commissioners, Secretary and Atomic Safety and Licensing Board of
the US Nuclear Regulatory Commission, and Whomever it May Concern

From: John E. Hancock, Professor of Architecture and Associate Dean
Project Director "EarthWorks: Virtual Explorations of the Ancient Ohio Valley"

Re: Support of the Intervention of Geoffrey Sea in the USEC American Centrifuge Plant licensing action.

One of North America's richest prehistoric legacies lies mostly buried or destroyed, and nearly invisible, beneath the modern landscapes of southern Ohio. The first settlers in this region stood in awe, amidst the largest concentration of monumental earthen architecture in the world. These included effigies like the Great Serpent Mound, and hilltop enclosures like Fort Ancient; but the most spectacular were the many embankments and enclosures formed into huge, perfect, geometric figures. Two centuries of archaeological research have shown that these were created by ancient Native cultures dating back as far as about 2000 years.

Apart from three of these figures at Newark, Ohio (two circles and an octagon), no others exist in complete, visible form, though several survive in ways still useful to archaeological research. The circle-and-square at Piketon, also known as the Barnes Works or the Seal Earthworks, despite its scant remains, is significant for several reasons:

- it is among the least known or investigated to date by archaeologists;

- its double-figure shape links it to two of the most culturally-revealing earthworks that have been investigated (Newark and High Bank), suggesting similarly-precise astronomical functions akin to those at Stonehenge;

- it is at the center of the thickest concentration of these works, between Portsmouth and Chillicothe, undoubtedly part of a culturally important series, and possibly linked by an extension of "The Great Hopewell Road";

- through its connections with the Barnes family it holds special significance in the history of the State of Ohio, its early links to Virginia, and the early importance of its earthworks in the birth of American archaeology and national identity;

- it may include as part of its design a heretofore unrecorded earthen circle, of a size unknown anywhere else in the world.

The preservation of this site has at least two major benefits:

- it will enable the continuing study of a unique asset from this ancient Ohio Valley culture, now beginning to make its way back into the public consciousness in our region and beyond.

- it will strengthen the resource base for the increasingly-lucrative cultural heritage tourism industry and its associated high-quality, non-intrusive economic development in southern Ohio.

The goal of our multimedia "EarthWorks Project" is make these hidden or vanished sites visible again, and offer them in new ways, to new audiences, in new electronic media such as museum exhibits, computer discs, and a Website. Three times funded in this work by the National Endowment for the Humanities, we have confirmed the national cultural and historical significance of this ancient culture and their spectacular architectural monuments. Numerous inquiries from Europe attest to the international significance of this unique Ohio heritage, and public awareness and interest here at home is also clearly increasing.

The opportunity to preserve a unique resource that sheds light on our predecessors in this valley should not be missed.

Yours sincerely,

John E. Hancock

Exhibit N. Statement of Karen Kaniatobe, Tribal Historic Preservation Officer of the Absentee Shawnee Tribe of Oklahoma

Absentee Shawnee Tribe of Oklahoma
Cultural/Historic Preservation Department
2025 S. Gordon Cooper
Shawnee, Oklahoma 74801-9381
(405) 275-4030 Fax: 405-878-4533

February 24, 2005

RE: Support of Geoffrey Sea's intervention in the USEC American Centrifuge Plant Licensing Action

To the Commissioners, Secretary and Atomic Safety and Licensing Board of the US Nuclear Regulatory Commission and to Whom it May Concern:

I am writing in support of the intervention of Geoffrey Sea in the USEC American Centrifuge Plant licensing action. I am the Tribal Historic Preservation Officer for the Absentee Shawnee Tribe. Our interest in supporting Mr. Sea is based on the fact that Ohio is part of our ancestral homelands. Through historical research we have identified a number of village sites in the Ohio Valley. In fact, quite a few are located along the Scioto River. Furthermore, if you look at a map, you will notice that the names of towns, cities and counties reflect the Shawnee's historical presence within the state of Ohio.

We are part of the Algonquian family of Native American peoples, and the Algonquian tribes of the Ohio/Great Lakes region are collectively believed to be descended from the culture called Ft Ancient. In turn the Ft Ancient are considered descendants of the Hopewell culture. The people of the Hopewell Culture built the many astounding geometric earthworks, including those called the Barnes Works in Scioto Township.

All of the historic and prehistoric sites in the region of Scioto Township have great meaning and significance. The Barnes Works, being one of the largest and most beautiful prehistoric architectural works in North America, is a site that has already suffered desecration and destruction--but what remains can be saved.

Many more historic sites may exist in the area, remaining to be found for lack of extensive survey. Surveys to find such sites should be conducted as part of any 106 review for the ACP.

The American Centrifuge Project may impact all these sites

in many ways that have not been studied or considered. Physical destruction caused by new buildings is only one concern. We also need to consider potential destruction of earthworks along the river caused by additional water pumping, the impacts of herbicides used to defoliate a security zone around the DOE site perimeter, the impacts of keeping the area under national-security restriction, rather than opening the area to study and tourism, and the aesthetic impacts of marring a sacred area with security fences, more roads, and shipments of radioactive fuel and waste.

Our tribe has not been contacted by DOE about the American Centrifuge Project for consultation. We first learned about the American Centrifuge Project from Geoffrey Sea. Please note that we count on being included as a consulting party in future 106 and 110 reviews at the Piketon site.

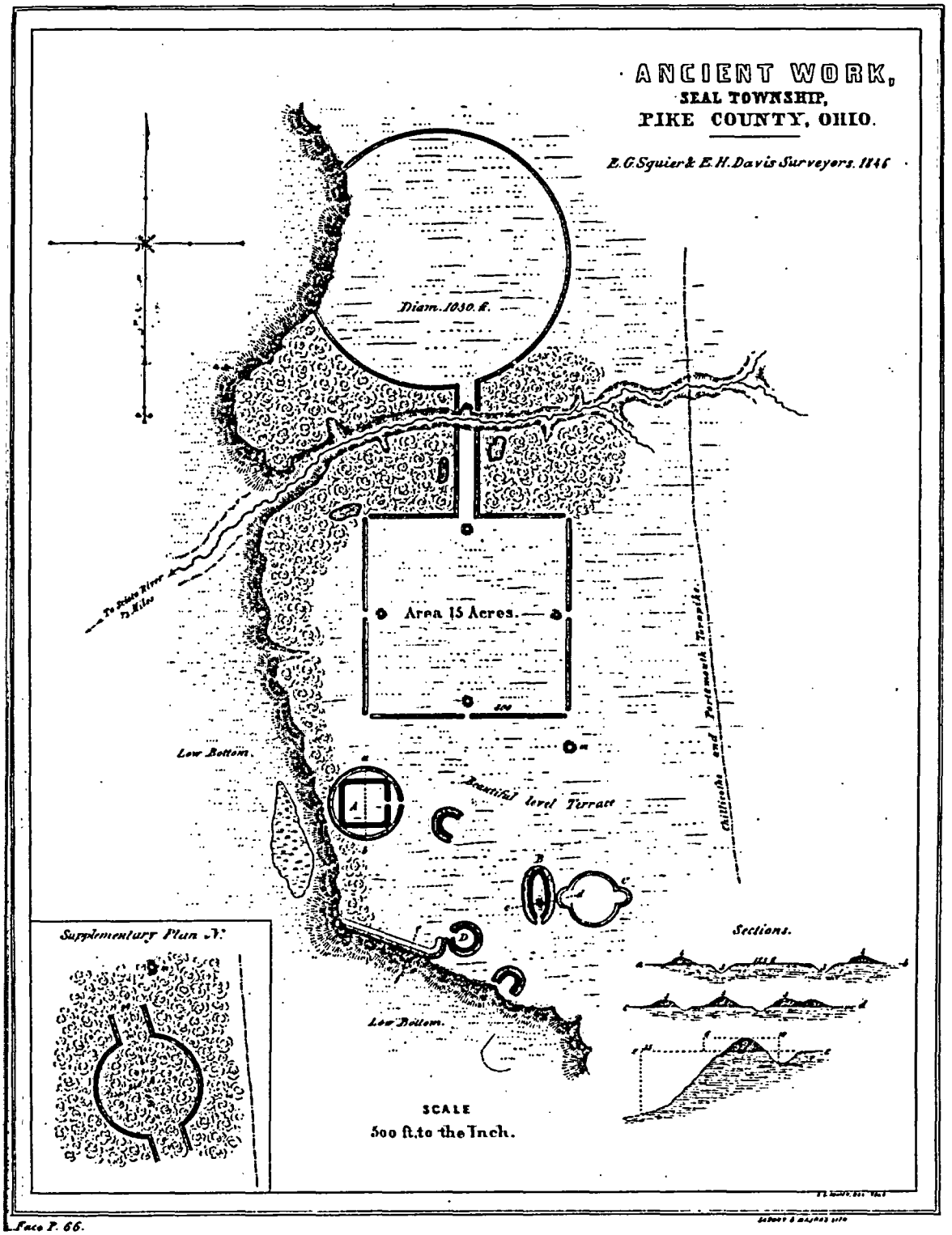
We understand that the NRC has initiated a section 106 review as part of its licensing process. That is good. However this is an important test for preservation law. If a major federal nuclear project involving two different federal agencies can proceed without any consideration of one of the largest sacred sites in North America next door, then it means that the provisions of the National Historic Preservation Act have become meaningless.

Many alternatives to the proposed action deserve full study and consideration. USEC's environmental report mentions the possible alternatives of moving ACP to the north side of the Piketon site or moving it from Piketon to Paducah, Kentucky. Since the current site at the southwest corner of the DOE reservation involves many potential impacts, those alternatives among others need careful review.

Respectfully,

Karen Kaniatobe
Tribal Historic Preservation Officer

Exhibit O. The Seal Township Works, later called the Barnes Works or Scioto Township Works. Plate XXIV from Ephraim Squier and Edwin Davis, *Ancient Monuments of the Mississippi Valley*, 1848. (Note that the more accurate measurements given by Cyrus Thomas and Gerard Fowke half a century later are substantially different, making the areas of circle and square between 10% and 15% larger.)


ANCIENT WORK,
SEAL TOWNSHIP,
PIKE COUNTY, OHIO.
E.G.Squier & E.H.Davis Surveyors. 1846
Diam. 1030 ft.
Area 15 Acres.
To Scioto River 12 Miles
Low Bottom.
Beautiful level Terrace
Chillicothe and Portsmouth Turnpike.
Supplementary Plan N.
Sections.
Low Bottom.
SCALE
500 ft. to the Inch.

Face P. 66.

Exhibit Q. Thomas F. King, preservation consultant, author of four books on federal preservation including *Federal Planning and Historic Places: the 106 Process*

Thomas F. King, PhD.
P.O. Box 14515 Silver Spring MD 20911, USA
Telephone (240) 475-0595 Facsimile (240) 465-1179 E-mail tfking106@aol,com

Cultural Resource Impact Assessment and Negotiation, Writing, Training

February 24, 2005

To: The Commissioners, Secretary and Atomic Safety and Licensing Board of
the US Nuclear Regulatory Commission, and Whom it May Concern.

I am writing in support of the intervention of Geoffrey Sea in the USEC American Centrifuge Plant licensing action. As a professional practitioner of archaeology and historic preservation in the United States, I am deeply concerned about the potential impacts of the proposed action on historic properties, and about the adequacy of NRC's and the Department of Energy's (DOE's) compliance with Section 106 and 110 of the National Historic Preservation Act and other federal environmental and cultural resource legal requirements.

A copy of my professional resume is attached. I hold a PhD in Anthropology from the University of California, Riverside, and have been practicing in historic preservation and environmental impact review for almost forty years, both within and outside the Federal government. I have some twenty years experience as a government official with the Advisory Council on Historic Preservation, the National Park Service, and the General Services Administration, and am currently self-employed as a consultant, writer, mediator, and trainer in historic preservation, tribal consultation, and environmental review. I am the author of four textbooks and numerous journal articles on these subjects, as well as a number of federal regulations and guidelines. My particular specialty lies in working with Section 106 of the National Historic Preservation Act, which requires Federal agencies to take into account the effects of their actions on places included in and eligible for the National Register of Historic Places.

It is because of my concern for the proper application of Section 106 and related authorities, and for the proper management of historic places, that I support Mr. Sea's intervention. Mr. Sea has, I believe, uncovered significant problems with NRC's and DOE's compliance with the historic preservation and environmental

laws, and identified significant potential impacts on places eligible for inclusion in the National Register. His intervention should be given your very close attention.

Respectfully,

Thomas F. King

EXHIBIT V

Thomas F. King, PhD
P.O. Box 14515, Silver Spring MD 20911, USA
Telephone (240) 475-0595 Facsimile (240) 465-1179 E-mail tfking106@aol.com

Cultural Resource Impact Assessment and Negotiation, Writing, Training

March 29, 2005

Geoffrey Sea
340 Haven Ave., Apt. 3C
New York NY 10033

Dear Geoffrey:

You've asked me for my observations on how the Nuclear Regulatory Commission (NRC) staff's positions on the scope of its responsibilities in the USEC matter, and on the tests that you must meet in order to intervene, relate to the purposes and requirements of the National Environmental Policy Act (NEPA) and National Historic Preservation Act (NHPA). I provide these observations based on some 40 years of professional practice under both statutes, including participation in the development of amendments to the latter and federal regulations and guidelines implementing both.

Both NEPA and NHPA were enacted in order to protect the public interest in the human environment in general (in the case of NEPA) and historic resources in particular (NHPA). It follows that the interested public - made up of people like yourself - has a large role to play in implementation of these laws, and this is reflected in the regulations that agencies must follow in complying with them. Both the NEPA regulations (40 CFR 1500-1508) and the Section 106 NHPA regulations (36 CFR 800) provide for participation in review by interested parties and the general public. The Section 106 regulations are particularly directive in this regard, providing both for general public involvement and participation and for identifying particular "consulting parties" whose interests in the undertaking under review, or its effects, entitle them to ongoing active involvement in the negotiation of ways to resolve adverse effects on historic properties.

It appears that the NRC staff has a much, much more restrictive notion of public involvement than that underlying either NEPA or NHPA. I suspect that this reflects the fact that the staff's policies and procedures for environmental review spring from a different intellectual tradition than do those underlying laws like NEPA and NHPA. A thought-provoking

(though rather turgid) recent book that explores this sort of dichotomy is *Citizens, Experts, and the Environment: The Politics of Local Knowledge*, by Frank Fischer (Durham, Duke University Press, 2000). Fischer discusses the world-view that is common among environmental engineers and others involved in the sort of environmental review that is driven by the toxic, hazardous, and radiological substances laws, in which environmental impact analysis is construed to be a matter of rigorous, generally quantitative, scientific analysis. It is a matter for scientific experts to concern themselves with, and is viewed as far too complicated for ordinary citizens to understand. In this world-view, public involvement is a troublesome requirement imposed by the political system, which should be kept to a minimum so the experts can get on with their work. Fischer documents that this sort of thinking is widespread in the environmental specialist community from which agencies like NRC draw their staffs, and from which their personnel derive their intellectual direction. He also documents how thoroughly wrongheaded it is, but that's another matter. My point is simply that the NRC staff's thinking on how people like you should be involved and issues like yours should be considered in its decision making has much more to do with the philosophical biases of its members than it does with any actual legal requirements.

The NRC staff seeks to limit your access to its decision making process in a variety of ways - for example by insisting that to be recognized as having "presumptive standing" you not only be "injured," but be a resident of the surrounding vicinity, and at the same time insisting that your "injury" must be of a particular kind. Let's look at the last of these first.

The staff asserts that "(i)n Commission proceedings, the injury must fall within the zone of interests sought to be protected by the AEA or the National Environmental Policy Act ("NEPA")." It is not clear to me why only these two laws are pertinent and not, for instance, NHPA, but for the moment let's assume the staff is correct; your "injury" must relate to the "zone of interests sought to be protected" by the AEA and NEPA. I claim no expertise in the AEA, but I do know about NEPA, and it appears to me manifestly obvious that your "injury" falls well within the sphere of NEPA's "protected interests."

NEPA directs agencies to consider the impacts of their actions on "the quality of the human environment." At 40 CFR 1508.27(b) the NEPA regulations of the Council on Environmental Quality (CEQ) list a range of factors to be considered in judging the significance of impacts on the quality of that environment. It is a long and varied list, and it repeatedly refers to "cultural" and "historic"

resources. It surely follows that "interests" in such resources are "protected" to the extent NEPA affords protection to anything. Thus your interests in protecting the historic character of the area subject to effect by NRC's permit action are entirely within NEPA's "sphere of protection."

Why does the NRC staff not understand this? I suspect that - based on the intellectual tradition from which they come - the staff's experts honestly believe that the quality of the human environment is not affected by anything that fails to irradiate someone to a hazardous degree. It follows from that line of reasoning that your interests in the historic character of the area are irrelevant to the potential for environmental impacts.

It also follows, of course, that only actual residents of the vicinity can be "injured," because only residents are likely to suffer a high enough dosage of something emanating from the proposed facility to affect their health and safety. Therefore, it is logical within the staff's likely framework of assumptions, that only nearby residents should be recognized as having presumptive standing. But NEPA isn't about only health and safety. The great bulk of NEPA cases that have been litigated have been brought by parties whose injuries involved damage to places and things they enjoyed and thought important - forests, mountains, animals, bodies of water, beautiful vistas, wilderness, fish, sacred sites, historic places, archaeological sites. Courts routinely grant standing to plaintiffs under NEPA on such grounds; can the staff be seriously proposing that the Commission adhere to a more exclusive standard?

It is also difficult to understand why, if an "injury" within NEPA's "zone of protected interests" is a legitimate topic for NRC consideration, an "injury" within NHPA's "zone" is not equally legitimate. Both laws were enacted by Congress; both apply to all federal agencies; both impose rather similar requirements. To the best of my knowledge, NRC has never been granted an exemption from NHPA's requirements. Your interests clearly fall within NHPA's "zone," since they concern historic properties and effects on them. Under the Section 106 regulations, your interests entitle you to consult about the significance of such properties and how to resolve adverse effects on them. Why does the NRC staff think the Commission can or should deprive you of this entitlement?

Here again, I suspect that the culprit is the world-view of NRC's staff experts. If one believes that environmental impacts are limited to things that scientific experts can quantify, and ordinary citizens have nothing useful to contribute to the discussion, then it follows that all NRC need do to address impacts on historic properties under NHPA

is to have expert surveys done and consult with the State's designated expert, the State Historic Preservation Officer. If further follows that the Commission's staff can and should keep the results of its expert studies secret, as it has in this case, and simply present the public with its conclusions. Within this framework of assumptions, the fact that the Section 106 regulations call repeatedly for participation by interested parties and the public is irrelevant; such requirements are mere politico-regulatory hoops to be gotten through with as little effort as possible.

But this interpretation of NHPA's requirements is inconsistent not only with the letter of the regulations but with routine practice in Section 106 review and with the record of case law. Courts have generally been quite liberal in recognizing the standing of interested parties in Section 106 litigation, and certainly have never imposed anything like a residency requirement. In the recent *Bonnichsen et.al. v. US* (Civil No. 96-1481JE, District of Oregon), for example, the court found that a group of physical anthropologists, none of whom lived in the vicinity of the discovery, not only were sufficiently "injured" by the Corps of Engineers' treatment of a human skeleton found on the bank of the Columbia River to give them standing to sue, but that the Corps had violated the NHPA by failing to consult them under Section 106. Here again, NRC's staff seems to be establishing for the Commission a more exclusive standard than that imposed by courts of law; I have to wonder about the basis for this.

In summary then, what I think we see in the NRC staff's conclusions about your intervention is the expression of a world-view that is common among experts in toxic, hazardous, and radiological impact analysis, that may be sensible in some contexts but thoroughly warps the process of review under NEPA and NHPA. To narrowly limit the range of interests in the public with whom one will engage in environmental impact analysis, and then to insist that these interests themselves demonstrate the existence of impacts ("injuries"), stands the process of environmental review on its head. It is the responsibility of the Commission and its staff to ascertain what impacts its permit action may have on the quality of the human environment under NEPA, and on historic properties under Section 106; it is not your responsibility to do so for them.

I realize that the NRC staff would doubtless argue that all the above factors might give you "regular" standing but not "presumptive" standing - you might have standing, but it would not be automatic unless you actually lived adjacent to the facility. But this distinction still reflects the assumption that one cannot be really "injured" unless one is likely to be subjected to irradiation. Setting aside the question of whether, as a near-term prospective resident, you are not

likely to be subjected in the future to this kind of "injury," it seems to me that NHPA (among other laws) provides the basis for other standards for awarding "presumptive standing" that are as good as nearby residency; one merely needs to recognize that exposure to radiation is not the only way one can be "injured" by a project like USEC's. Surely the owner of a National Register or Register-eligible property that is subject to potential effect by the project, who appreciates the historic qualities of the property, must be presumed to be subject to injury by the project. Similarly, I would suggest, someone whose cultural identity is tied up in a property that might or might not be eligible for the National Register, or who has research interests in such a property, or who traditionally uses or enjoys such a property, must be presumed to be subject to injury, and hence should be recognized as having presumptive standing. People in all these categories and others are routinely included as consulting parties under the Section 106 regulations; why should the Commission, acting in the public interest, not do the same?

Although the NRC staff does not comment on it, I have to believe that its beliefs about the environmental review process are in line with those of USEC, which in its response to your petition summarily rejected the earlier letter I provided you. USEC wrote:

"(4) Finally, Petitioner cites a letter from Dr. Thomas F. King (Exhibit Q), which makes no reference to any specific aspect of the ACP application and therefor (sic) does not provide meaningful support for the contention."

My letter, of course, was intended simply to advise NRC that, in my fairly well-informed professional opinion, you had a point in your allegations, which I thought (and think) it appropriate for the Commission to consider further in its decision making. Under NHPA and NEPA it is not my job, or yours, to go out and conduct the studies necessary to identify and address the impacts of NRC's permit actions; it is NRC's job to do so, or to cause the applicant to do so, with our advice and assistance. You have provided substantive information indicating that NRC needs to take a further look at the historic preservation implications of its permit decision; I was advising NRC that I thought you had a good point, that I didn't think you were an eccentric who could safely be ignored. But because I did not refer to a "specific aspect" of the application, in the eyes of USEC my opinion - like yours - can be rejected out of hand. And of course, as you know, it was impossible for me (or anyone else trying to figure out how USEC had considered impacts on historic places) to address "a specific aspect of the ACP application" because neither the application nor the accompanying Environmental Report refer to the requirements of NHPA or to the National Register of Historic Places. The absence of specific evidence

in my statement merely reflects the absence of specifics in USEC's application. To judge from the available record, at least (such as it is), USEC has not thoroughly identified historic properties subject to possible effect by its actions - to say nothing of other kinds of cultural resources that ought to be considered under NEPA. This creates a flawed record for use by NRC in making its permit decision. I trust the Commission will understand this, and appreciate your efforts to provide it with a broader and more complete basis for its deliberations.

Good luck in your continuing efforts.

Sincerely,

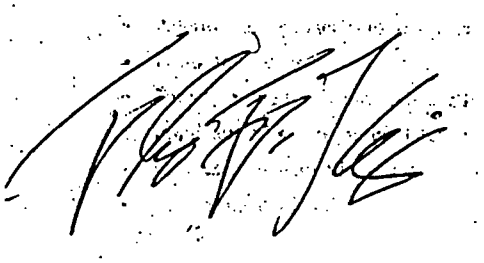


EXHIBIT W

(original handwritten on letterhead)

SHAWNEE NATION, UNITED REMNANT BAND

TUKEMAS/HAWK POPE–PRINCIPLE CHIEF

ZANE SHAWNEE CAVERNS AND SOUTHWIND PARK
SHAWNEE-WOODLAND NATIVE AMERICAN MUSEUM
2911 ELMO PLACE, MIDDLETOWN, OHIO 45042

Nuclear Regulatory Commission and whomever it may concern,

Dear Sirs,

We were only recently informed of plans to further develop the nuclear project in Pike County, Ohio. I represent the Shawnee Nation, United Remnant Band. The U.R.B is recognized as a descendant group/Tribe of the historic Shawnee Nation in Ohio– SUB. AM. H.S.R.8-1980. Our people do have historic and cultural ties to the site in Pike County, near the Scioto river. We do consider the earth works and the other ceremonial and cultural features there to be sacred. We do, therefore object to the proposed project, for reasons of the project's incompatible and inappropriate use of the land. Any destruction of features on the site, further poisoning of the ground, or limits to access to the site would be very disturbing and considered by us, wrong.

We are regularly informed of sites for proposed transmission towers and pipe lines. We were not told of this project, similarly. In the future we want to be a consulting source. We await your response.

Chief Hawk Pope

P.S. We were informed by Jeffrey Sea, and we do support his intervention in this matter. In the Shawnee language Scioto means "Hair in the Water" as the river passes through so many burial sites and is so prone to flooding. Again, this place is sacred to Shawnee People.

Thank you for your time and consideration.

Chief Hawk Pope

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before the Administrative Law Judges:
Lawrence G. McDade, Chairman
Paul B. Abramson
Richard E. Wardwell

In the Matter of	)	Filed August 15, 2005
USEC Inc. (American Centrifuge Plant)	)	Docket No. 70-7004

Declaration by John Hancock, Frank L. Cowan, and Cathryn Long Regarding August 5, 2005 Visit to GCEP Water Field

Under penalty of perjury, we the undersigned do jointly declare as follows:

Statement of Qualifications

1. My name is John Hancock. I am Professor of Architecture and Project Director of the "EarthWorks Project" being produced by the Center for the Electronic Reconstruction of Historical and Archaeological Sites (CERHAS) at the University of Cincinnati. I am an expert in ancient architectural history and in particular the forms, and the problems of visualization, of these earthen structures. A copy of my curriculum vitae is attached.

2. My name is Frank L. Cowan. I am a consulting archaeologist with the company of F. Cowan & Associates. I am a leading expert in the study and excavation of Hopewell earthwork sites with twenty-five years experience in Hopewell archaeology, including nine years of Hopewell research in Ohio. A copy of my curriculum vitae is attached.

3. My name is Cathryn Long. I am a writer and researcher with the Center for the Electronic Reconstruction of Historical and Archaeological Sites (CERHAS) at the University of Cincinnati. My expertise derives from eight years interviewing experts on the Hopewell culture for CERHAS. A copy of my curriculum vitae is attached.

Purpose of Declaration

5. The purpose of this declaration is to describe the results of our August 5, 2005, visit to a site near to but not contiguous with the Piketon atomic reservation known as the GCEP Water Field or the X-6609 Raw Water Wells. We went to the GCEP Water Field to examine and evaluate the potential historical significance of earthworks reported to be on the site. As discussed below, we identified a human-made earthwork on the site, whose origin is unknown but which appears to pre-date the U.S. Department of Energy ("DOE") water system which is also visible on the site. We believe that further investigation is warranted in order to determine the origin of the earthworks with confidence. (JH, FLC, CL)

Description of Site Visit

6. The GCEP Water Field lies on the east bank of the Scioto River, due west of the main atomic reservation at Piketon. The Water Field is owned by the DOE and leased to USEC. It is our understanding that the DOE installed a water supply system on the Water Fields site in the early 1980s to supply a future centrifuge enrichment plant. The acronym GCEP stands for Gas Centrifuge Enrichment Plant, a project that later became known as ACP or American Centrifuge Plant. (JH, FLC, CL)

7. Though maps of the GCEP Water Field were requested, they were not provided, and we were not allowed to bring cameras or take pictures. Therefore, we are not able to provide a map or pictorial evidence of our observations and conclusions. Therefore, our observations and conclusions are described solely in narrative form. (JH, FLC, CL)

8. We were dropped off by a USEC van at the northern end of the Water Fields site, and walked towards the southern end, with well-heads evident all along the way. The site extends along the Scioto River, with a forested strip adjoining the river bank, and a cleared strip with a road adjoining that. We observed a DOE water supply system in the area, consisting of DOE well heads which appear as either single pipes coming vertically out of the ground, or groups of four larger pipes arranged in a cross-shape. Most of the well heads line the west side of the road, but many extend into the forested area at irregular intervals. (JH, FLC, CL)

9. The forested strip along the river contains a series of natural levee embankments that parallel the river. However, as we moved south about a half mile, the embankment closest to the road straightened out and became level on top. The further south we moved, the straighter and more level it became, with perfectly uniform width at the level top. The structure continues south as far as we could see. Because our escorts gave us no maps or clues about the site boundaries, and because we ran short of time, we could not investigate the southern terminus of the structure. (JH, FLC, CL)

10. From the top of this structure, looking in either direction, the structure was dead straight and regularly formed with a consistent width to the level upper surface, unlike

the natural levee formations closer to the river and possible remnants of this structure as it presently appears further north. Given the linearity, we all are of the opinion that this is an artificial structure. We cannot say if other earthworks might lie on parts of the site we could not get to. (JH, FLC, CL)

11. Though the structure is man-made, it is impossible to say upon partial visual inspection what this structure is, how old it is (though it is not very recent), or who built it. However, it is within the realm of possibility that the structure is an Indian earthwork of the Middle Woodland period (about 300 B.C. to A.D. 500). The Ohio Hopewell culture of that period built large scale geometric earthworks, including long straight earthen walls; and their constructions once lined the valley of the Scioto River. (JH, FLC, CL)

12. The southern end of the structure we observed at the GCEP Water Field is very close (within a quarter of a mile) of the northern end of the great Hopewell circle-square complex known as the Barnes Works (also called the Seal Township Works or Scioto Township Works). The Barnes Works is listed on the National Register of Historic Places and is one of the large earthworks along the Scioto recorded in 1848 by E.G. Squier and E.H. Davis (*Ancient Monuments of the Mississippi Valley*, Smithsonian). (JH, FLC, CL)

13. It is also possible that the structure is a 19th or 20th century construction, although we are not aware of any major structures that were built in the area during this time. It is unlikely to be a modern levee because there has been no development in this area worthy of such elaborate protection. It is unlikely to be a remnant of the Erie Canal system, because the canal went along the west side of the Scioto River and this structure lies along the east side. It is unlikely to be part of an early pioneer road or railroad because those were built on dry ground to the east, not in the flood zone. (JH, FLC)

14. We believe it is highly unlikely that this structure could have been made by DOE or USEC, because there are trees on either side of it. Neither USEC nor DOE has identified this structure as related to the water field, and it appears unrelated as the structure is most evident at the south end of the site, while the pipes leading to the pump house and road extend from the north end of the site. In addition, it appears that as the structure proceeds north, it actually crosses the well field, which would negate its usefulness as a protective levee. There is also a report from a former land-owner, Charles Beegle, that earthworks at the site predated DOE's acquisition of the land, and that his deceased wife's family, the Rittenauer family, recognized these earthworks as ancient. This letter from Charles Beegle is attached as Exhibit A. (JH, FLC)

15. A research protocol is needed to determine the identity and age of this structure. That protocol should begin with access to all previous reports of cultural resource investigations conducted at the Water Field property prior to the development of the Water Field, investigations that would have been required by Section 106 of the National Historic Preservation Act. Access will also be needed to the maps and survey

records for the Water Field Site in possession of the DOE and USEC. This should be accompanied by historical research to determine if any known engineering work took place in that area prior to the DOE land purchase, and if the structure was noted on any older survey maps or in any archeological works. If the historical research draws a blank, a cross-sectional excavation of the structure and/or a series of soil cores through the structure would reveal much about its age and identity. (JH, FLC, CL)

16. If the structure is determined to have historic significance, an evaluation should be made of the visual and physical impact of the American Centrifuge Project on that structure. DOE well-heads, by the dozen, line both sides of the structure and some are in the midst of it. Whether pumping of water from beneath the structure damages the structure is a question that should be evaluated by hydrology experts. Further surveys of the entire Water Field Site, with maps, cameras, survey equipment, and unrestricted time are also warranted. (JH, FLC, CL)

17. The GCEP Water Field site lies close enough to the Barnes Works to warrant a close examination of its historic significance. Any prehistoric earthworks that may be identified at that location deserve the utmost attention and protection. Therefore, we urge a program of research at that site as rapidly as possible, in compliance with federal preservation law. (JH, FLC, CL)

___[signed]_____
John Hancock

___[signed]_____
Frank L. Cowan

___[signed]_____
Cathryn Long

August 11, 2005

From: Matthew Blevins
To: SargentsPigeon@aol.com
Date: 11/23/05 9:20AM
Subject: Re: USEC DEIS and 106 Comments

Mr. Sea,
In your October 27 email, you indicate that you had provided "attachments" to your comments and that the "text" of your comments would be forthcoming. We did not receive the additional text as you had indicated.

We are in the process of finalizing our Section 106 package for the Advisory Council on Historic Preservation and would like to verify whether you sent text/comments in addition to the "attachments" in the previously allotted scoping period (including the additional two days you were granted by Mr. Linton). If you had previously sent, can you please resend?

For your information, we are including your oral comments, and your pleadings from the adjudicatory process in the package we are preparing for the ACHP.

Matthew Blevins
Senior Project Manager
Division of Waste Management and
Environmental Protection
U.S. Nuclear Regulatory Commission
(301) 415-7684

>>> <SargentsPigeon@aol.com> 10/27/05 9:57 AM >>>
Matthew Blevins
Nuclear Regulatory Commission

Dear Mr. Blevins,

Attached are the attachments to my comments on DEIS NUREG-1834.

I've had two problems. One is getting the file to transmit given the large file size. I've been trying to send most of the night but as I have a dial-up connection only, it's very difficult and keeps quitting. Please be understanding.

Second, I have two other imposing deadlines this week....the appeal of the ASLB ruling in the USEC case was due Monday and new contentions as per the ASLB ruling are due very shortly. I did call on Monday and received an extension but am afraid it will take another day to get my full comments in. Attached are the attachments only, not the text. If for some reason you cannot accept the text, I still wish the attachments submitted...they are self explanatory as they contain mainly letters from others pertaining to historic and cultural resource issues.

I will send the text ASAP.

You will note that the first item is a DEIS comment from Professor Robert Proctor at Stanford. Unfortunately, Dr. Proctor made the mistake on Monday of e-mailing his comment to me instead of to NRC, and I did not realize it until Tuesday, when he was already on a plane to Germany. Therefore please accept his testimony as timely. His e-mail address is included. Other contact info. can be provided if necessary.

Thanks for your consideration,

Geoffrey Sea
The Barnes Home
P.O. Box 161
Piketon, OH 45661
Tel: 740-289-2473
Cell: 740-835-1508
E-mail: SargentsPigeon@aol.com

Mail Envelope Properties (43847AA0.C10 : 2 : 2492)

Subject:	Re: USEC DEIS and 106 Comments
Creation Date:	11/23/05 9:20AM
From:	Matthew Blevins
Created By:	MXB6@nrc.gov

Recipients	**Action**	**Date & Time**
aol.com		
SargentsPigeon (SargentsPigeon@aol.com)		
nrc.gov		
twf4_po.TWFN_DO	Delivered	11/23/05 9:20 AM
MXB6 BC (Matthew Blevins)	Opened	11/23/05 9:20 AM

Post Office	**Delivered**	**Route**
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Files	**Size**	**Date & Time**
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Options

Auto Delete:	No
Expiration Date:	None
Notify Recipients:	Yes
Priority:	Standard
Reply Requested:	No
Return Notification:	None
Concealed Subject:	No
Security:	Standard
To Be Delivered:	Immediate
Status Tracking:	Delivered & Opened

From: <SargentsPigeon@aol.com>
To: <MXB6@nrc.gov>
Date: 11/23/05 10:57AM
Subject: Re: USEC DEIS and 106 Comments

Matthew Blevins
Senior Project Manager
Division of Waste Management and
Environmental Protection
U.S. Nuclear Regulatory Commission

Mr. Blevins,

I will be sending you my full comments on the DEIS and in regard to my status as consulting party on the Section 106 review on Monday, November 28, following the Thanksgiving holiday. These comments will be forwarded directly to the Advisory Council.

The communication I received from you today, the day before Thanksgiving, is the first communication I have received from you seeking my input as a consulting party on the 106 review. As you know, I first asked to be a consulting party in my comments on the scoping process in January of 2005 and in our face-to-face conversation that followed the scoping hearing in Piketon. However, you did not name me a consulting party, did not send me any of the consulting party correspondence, and did not notify me that the consultation process was underway, despite my requests. In fact, you stopped replying to my e-mails in February of 2005, without explanation. In the summer of 2005, I requested from NRC General Counsel and from the NRC Federal Preservation Officer the name of the official at NRC in charge of the 106 review, and it took weeks and many phone calls before I was even informed that you were the official in charge.

On September 29, at the public hearing on the DEIS, I asked you for the status of my request to be a consulting party, and in my oral comments I pointed out at some length the deficiencies in the NRC effort to identify consulting parties and obtain actual consultation. Among these deficiencies was the fact that no NRC staff had visited the threatened sites in question, nor had any of your staff requested site visits. I told you then that site visits are a mandatory part of assessment and I invited you to visit the Barnes Home and the other nearby threatened sites. No such effort has been made on the part of NRC.

No "package" for the ACHP can be completed until such site visits have been conducted, in real consultation with affected parties including myself.

At the Sept. 29 hearing you informed me that I had been made a consulting party some weeks earlier, and that I had been notified by a letter that you included with a copy of the DEIS. You know that you mailed me three different copies of the DEIS under separate cover. This now appears to have been an intentional deception in hopes that I would not inspect the contents of each package. If so, it worked. Your last-minute designation of me as a consulting party was in fact a secret one. You could have easily told me by e-mail of the decision, as you have communicated every other time (that I know). But you sent no e-mail, apparently for the express purpose of running the clock.

At this hearing you also engaged me in a conversation in which you attempted to impress me that you had "driven by" my house to look at it from the road. It boggles my mind that the federal official in charge of conducting an impact assessment of a historic property would think that he can accomplish this in a drive-by manner, without even informing the property owner, who supposedly has been identified as a consulting party.

Since you have not come to Sargents to assess the actual situation here at the threatened sites, and since you have not engaged in any real consultation with affected parties, you cannot know what the actual situation is here on the ground. Section 106 provides for taking account of new discoveries that are made during the process of review. It also requires that the agency fund studies of potential impacts on new cultural resources that are identified.

Discoveries related to the impacted historic properties in Sargents are ongoing, and NRC-funded studies of these resources are required. We here in Sargents are ready to show you these impacted properties, and we invite you to come. Among the properties about which you have no clue -- because you haven't come and you have not sought our consultation -- are the actual kill-site of the Sargents Pigeon (recently identified), the old Sargents graveyard, and the Sargents Train Station. It may interest you to know that we have had these, and other properties, assessed by an expert architectural historian. We just await the slightest expression of intent to begin the consultation process on your part.

In addition, it will be necessary to inform all of the other consulting parties of these developments. We note that some of their "sign off" letters were expressly conditional on no further information coming to light.

Will this require a substantial alteration of your plan to "wrap up" the Section 106 review? Yes.

Your attempt to now close the door on the day before Thanksgiving cannot succeed. You have real legal responsibilities under NHPA. Those responsibilities include real consultation, and real consultation means that you actually look at the affected properties, communicate with consulting parties in an open non-deceptive way, and actually fund studies where necessary. All of that is just beginning.

So that we can now get consultation off the ground, I require answers to a few questions, many of which I have asked before with no reply:

1. Please inform me of the full history of communication between NRC and DOE with regard to the centrifuge project's NHPA compliance. Is there any agreement between the agencies for joing the 106 responsibilities of the two agencies? If so, was documentation of this agreement filed with the SHPO and ACHP? If not, what does NRC know about DOE's 106 review? Please provide me with copies of all correspondence between NRC and DOE with regard to NHPA compliance for the centrifuge project.

2. For the purposes of NRC's 106 review, when does NRC consider that "major federal action" in regard to ACP was initiated? Whatever the answer to this question, please provide the justification for it. Specifically, why is the Gas Centrifuge Enrichment Plant program at Piketon not considered as a precursor to ACP and, hence, the initiation of the federal action now ongoing?

Relatedly, has NRC obtained from DOE the documentation of DOE's 106 review for the GCEP program? If not, why not (since it was a virtually identical program)? If so, please forward that documentation to me.

3. As a consulting party and as previously stated, I hereby object to the NRC decision to fold its Section 106 review into the NEPA EIS process. I do not believe that this was done legally or properly. This is a classic case of need for an independent Section 106 review that can proceed even after the EIS process has been concluded, in part to take account of ongoing discoveries. How does NRC intend to handle this objection?

Thank you for attention to these matters. Enjoy the holiday.

Sincerely,

Geoffrey Sea
The Barnes Home
1832 Wakefield Mound Road
Sargents, OH 45661

Tel: 740-289-2473
E-mail: _SargentsPigeon@aol.com_ (mailto:SargentsPigeon@aol.com)

CC: <TFKing106@aol.com>

Mail Envelope Properties (43849140.CEB : 22 : 23787)

Subject:	Re: USEC DEIS and 106 Comments
Creation Date:	11/23/05 10:56AM
From:	<SargentsPigeon@aol.com>
Created By:	SargentsPigeon@aol.com

Recipients

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MXB6 (Matthew Blevins)

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Security:	Standard

From: Matthew Blevins
To: SargentsPigeon@aol.com
Date: 12/7/05 1:56PM
Subject: Re: USEC DEIS and 106 Comments

Mr. Sea,

In your November 23 email it was unclear to me whether you were going to provide the text of your comments to the NRC in addition to the ACHP or whether you were just going to provide your comments to the ACHP. If possible, we would appreciate a copy of your comments.

Also, I would like to provide several points of clarification. First, the reason I did not respond to your emails is that I have not received any emails from you between February 14 and November 23. I have kept you "informed of the NRC's implementation of the 106 process" as you requested in your February 14 email by adding you to the NRC's mailing list for all Section 106 correspondence. On August 9 you sent a list of questions to an NRC attorney. I was subsequently provided those questions and promptly replied (email dated August 23). Subsequently, the NRC sent you a letter dated September 9, accepting your request for consulting party status to which we did not receive a reply until October 27, after the DEIS comment period had ended. Finally, my email to you last week, dated November 23, was not intended to be deceptive, rather it was to verify whether you, a designated consulting party, had any additional comments before we provided our findings to the ACHP. (NOTE: all above dates were in 2005).

In terms of Section 106 compliance, we have previously defined an "area of potential effects" (APE) for both direct and indirect effects. The APE does not extend beyond the DOE reservation boundary. However, because you are adjacent to the DOE property we considered potential effects to your property as well as two other nearby properties that are listed on the National Register or the Ohio Historic Inventory. As explained in the DEIS, we assumed that your property would be Register-eligible under two criteria. As you are aware, the DEIS presented the NRC's finding of "no effect on these historic properties". This is fully explained in the DEIS (see page 4-4 to 4-7). The basic premise of this finding is that the existing DOE Gaseous Diffusion Plant is part of the cultural landscape and has been for over 50 years. The proposed ACP would not change that landscape or have other effects on qualities that contribute to the eligibility or potential eligibility of historic properties.

Finally, Section 106 does not require a site visit to each eligible property nor does it require the Federal agency to fund additional studies of eligible properties as you have indicated. Section 106 does require identification of historic properties and a good faith effort to carry out appropriate identification efforts which the NRC has completed. Of course, some of this identification has been provided in your various submittals.

In response to your three questions:

1. The NRC has had no communications with DOE regarding DOE's past actions related to Section 106 compliance. As you are aware, it is the NRC's position that DOE's past actions have no bearing on the NRC's compliance with Section 106.

2. The NRC staff considers that its major Federal action began with the filing of USEC Inc's license application on August 23, 2004. This is also consistent with the 106 regulations which define "undertaking." While the GCEP may be considered a precursor to the ACP the NRC was not involved in the GCEP project as no NRC license was necessary. Additionally, there is no legal requirement under 106 for NRC to consider effects of DOE's past actions on cultural resources nor must NRC consider DOE's Section 106 compliance history. Under Section 106, the "undertaking" before the NRC is whether or not to issue a license to USEC for the proposed ACP and to consider the associated effects on historic and cultural resources that exist today, not twenty years ago.

3. Your objection are noted and we will forward your objections to the ACHP as required by the 106 regulations.

Matthew Blevins
Senior Project Manager
Division of Waste Management and
Environmental Protection
U.S. Nuclear Regulatory Commission

>>> <SargentsPigeon@aol.com> 11/23/05 10:56 AM >>>

Matthew Blevins
Senior Project Manager
Division of Waste Management and
Environmental Protection
U.S. Nuclear Regulatory Commission

Mr. Blevins,

I will be sending you my full comments on the DEIS and in regard to my status as consulting party on the Section 106 review on Monday, November 28, following the Thanksgiving holiday. These comments will be forwarded directly to the Advisory Council.

The communication I received from you today, the day before Thanksgiving, is the first communication I have received from you seeking my input as a consulting party on the 106 review. As you know, I first asked to be a consulting party in my comments on the scoping process in January of 2005 and in our face-to-face conversation that followed the scoping hearing in Piketon. However, you did not name me a consulting party, did not send me any of the consulting party correspondence, and did not notify me that the consultation process was underway, despite my requests. In fact, you stopped replying to my e-mails in February of 2005, without explanation. In the summer of 2005, I requested from NRC General Counsel and from the NRC Federal Preservation Officer the name of the official at NRC in charge of the 106 review, and it took weeks and many phone calls before I was even informed that you were the official in charge.

On September 29, at the public hearing on the DEIS, I asked you for the status of my request to be a consulting party, and in my oral comments I pointed out at some length the deficiencies in the NRC effort to identify consulting parties and obtain actual consultation. Among these deficiencies was the fact that no NRC staff had visited the threatened sites in question, nor had any of your staff requested site visits. I told you then that site visits are a mandatory part of assessment and I invited you to visit the Barnes Home and the other nearby threatened sites. No such effort has been made on the part of NRC.

No "package" for the ACHP can be completed until such site visits have been conducted, in real consultation with affected parties including myself.

At the Sept. 29 hearing you informed me that I had been made a consulting party some weeks earlier, and that I had been notified by a letter that you included with a copy of the DEIS. You know that you mailed me three different copies of the DEIS under separate cover. This now appears to have been an intentional deception in hopes that I would not inspect the contents of each

package. If so, it worked. Your last-minute designation of me as a consulting party was in fact a secret one. You could have easily told me by e-mail of the decision, as you have communicated every other time (that I know). But you sent no e-mail, apparently for the express purpose of running the clock.

At this hearing you also engaged me in a conversation in which you attempted to impress me that you had "driven by" my house to look at it from the road. It boggles my mind that the federal official in charge of conducting an impact assessment of a historic property would think that he can accomplish this in a drive-by manner, without even informing the property owner, who supposedly has been identified as a consulting party.

Since you have not come to Sargents to assess the actual situation here at the threatened sites, and since you have not engaged in any real consultation with affected parties, you cannot know what the actual situation is here on the ground. Section 106 provides for taking account of new discoveries that are made during the process of review. It also requires that the agency fund studies of potential impacts on new cultural resources that are identified.

Discoveries related to the impacted historic properties in Sargents are ongoing, and NRC-funded studies of these resources are required. We here in Sargents are ready to show you these impacted properties, and we invite you to come. Among the properties about which you have no clue -- because you haven't come and you have not sought our consultation -- are the actual kill-site of the Sargents Pigeon (recently identified), the old Sargents graveyard, and the Sargents Train Station. It may interest you to know that we have had these, and other properties, assessed by an expert architectural historian. We just await the slightest expression of intent to begin the consultation process on your part.

In addition, it will be necessary to inform all of the other consulting parties of these developments. We note that some of their "sign off" letters were expressly conditional on no further information coming to light.

Will this require a substantial alteration of your plan to "wrap up" the Section 106 review? Yes.

Your attempt to now close the door on the day before Thanksgiving cannot succeed. You have real legal responsibilities under NHPA. Those responsibilities include real consultation, and real consultation means that you actually look at the affected properties, communicate with consulting parties in an open non-deceptive way, and actually fund studies where necessary. All of that is just beginning.

So that we can now get consultation off the ground, I require answers to a few questions, many of which I have asked before with no reply:

1. Please inform me of the full history of communication between NRC and DOE with regard to the centrifuge project's NHPA compliance. Is there any agreement between the agencies for joing the 106 responsibilities of the two agencies? If so, was documentation of this agreement filed with the SHPO and ACHP? If not, what does NRC know about DOE's 106 review? Please provide me with copies of all correspondence between NRC and DOE with regard to NHPA compliance for the centrifuge project.

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Thank you for attention to these matters. Enjoy the holiday.

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Tel: 740-289-2473
E-mail: _SargentsPigeon@aol.com_ (mailto:SargentsPigeon@aol.com)

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Subject:	Re: USEC DEIS and 106 Comments
Creation Date:	12/7/05 1:56PM
From:	Matthew Blevins
Created By:	mxb6@nrc.gov

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Send Mail Receipt when Undeliverable

Concealed Subject:	No
Security:	Standard
To Be Delivered:	Immediate
Status Tracking:	Delivered & Opened

December 19, 2005

Mr. Geoffrey Sea
The Barnes Home
1832 Wakefield Mound Road
Piketon OH 45661

SUBJECT: CONTINUATION OF THE NATIONAL HISTORIC PRESERVATION ACT SECTION 106 CONSULTATION PROCESS FOR THE PROPOSED AMERICAN CENTRIFUGE PLANT, PIKE COUNTY, OHIO: NEW INFORMATION REGARDING THE U.S. DEPARTMENT OF ENERGY WELL FIELD

Dear Mr. Sea:

The U.S. Nuclear Regulatory Commission (NRC) is providing additional information relavant to the ongoing Section 106 consultation for USEC Inc.'s proposed American Centrifuge Plant (ACP). In several of your previous submittals you had indicated concerns about what appeared to be prehistoric earthworks at one of the well fields that will supply water for the proposed ACP.

As you are aware the NRC has previously issued its draft environmental impact statement (DEIS) for the proposed ACP. The DEIS presents a discussion of impacts from the well field in question on page 4-7 and the NRC's findings that there would be no effect on these apparent earthworks. Subsequent to publication of the DEIS, the NRC received a statement from Mr. Blaine Bleekman (enclosure), a local resident, who described construction of three levies along the Scioto River after a 1959 flood, including the levy that you are concerned about. While it appears most likely that these structures are recently constructed flood control levies, it is still the NRC's position that there will be no effect on these structures from continued pumping at the subject well field.

At this point you have provided several objections to our findings in the DEIS. In addition to your concerns about the DOE well field, you have also expressed concerns for historic properties bordering the DOE reservation as well as the NRC's compliance with Section 106 of the National Historic Preservation Act. We have previously received comments from the Ohio Historic Preservation Office (OHPO) (enclosure) and are working to incorporate their comments, however, we note that the OHPO has stated their agreement that the proposed ACP would not adversely affect historic properties. We are in the process of forwarding your objections to the both the OHPO and the Advisory Council on Historic Preservation

If you have any questions about this information please feel free to respond in writing or to contact Matthew Blevins by phone at 301-415-7684 or by e-mail at MXB6@nrc.gov. Mr. Blevins will be happy to set up a meeting or telephone conference to facilitate the consultation.

Sincerely,

/RA/

B. Jennifer Davis, Chief
Environmental Review Section
Division of Waste Management
and Environmental Protection
Office of Nuclear Material Safety
and Safeguards

Docket No.: 70-7004

Enclosures: As stated

cc: w/o enclosures, see attached list

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Docket No.: 70-7004

Enclosures: As stated

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NAME	MBlevins	BJDavis	LClark	
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USEC Service List

cc:

William Szymanski
U.S. Department of Energy
1000 Independence Ave, SW
Washington, DC 20585

Michael Marriotte
Nuclear Information and Resource Service
1424 16th St., NW
Washington, DC 20036

The Honorable Robert Ney
Congressman
c/o Carrie Mytinger
51 E Second Street
Chillicothe, OH 45601

The Honorable George V. Voinovich
United States Senator
524 Hart Senate Office Building
Washington, DC 20510

Mr. Marvin Jones
President and CEO
Chillicothe Chamber of Commerce
165 South Paint Street
Chillicothe, OH 45601

The Honorable Mike DeWine
United States Senator
140 Russell Senate Office Building
Washington, DC 20410

The Honorable Bob Taft
Governor of Ohio
77 South High Street
30th Floor
Columbus, Ohio 43215-6117

Ms. Mary Glasgow
601 Chillicothe Street
Portsmouth, Ohio 45662

Mr. Teddy L. Wheeler
Pike County Auditor
Pike County Government Center
230 Waverly Plaza, Suite 200
Waverly, Ohio 45690-1289

Mr. Harry Rioer
Pike County Commissioner
230 Waverly Plaza, Suite 1000
Waverly, Ohio 45690

Mr. Larry E. Scaggs
Township Trustee
230 Waverly Plaza, Suite 1000
Waverly, Ohio 45690

Kara Willis
16 North Paint St., Suite 102
Chillicothe, Ohio 45601

Jim Brushart
Pike County Commission Chair
230 Waverly Plaza Suite 1000
Waverly, Ohio 45690

Mr. David Bowe
ATTN: Mail Stop 4025
P.O. Box 628
Piketon, OH 45661

Mr. Blaine Beekman
Executive Director
Pike County Chamber of Commerce
12455 State Route 104
Waverly, OH 45690

Billy Spencer
Mayor of Piketon
P. O. Box 547
Piketon, Ohio 45661

Rocky Brown, Mayor of Beaver
7677 State sr335
Beaver, Ohio 45613

Mr. Geoffrey Sea
The Barnes Home
1832 Wakefield Mound Road
Piketon, OH 45661

Ms. Vina K. Colley, President PRESS
3706 McDermott Pond Creek
McDermott, Ohio 45652

Mr. Peter J. Miner, Licensing Manager
USEC, Inc.
6903 Rockledge Drive
Bethesda, MD 20817

Mr. Randall De Vault
U.S. Department of Energy
P.O. Box 2001
Oak Ridge, TN 37831

Mr. Dan Minter
Southern Ohio Development Initiative
P.O. Box 467
Piketon, OH 45661

Mr. James R. Curtiss
Winston & Strawn,
1700 K Street, NW
Washington, DC. 20006

Mr. Teddy West
2170 Wakefield Mound Road
Piketon, OH 45661

Ms. Carol O'Claire, Supervisor
Radiological Branch
Ohio Emergency Management Agency
2855 West Dublin-Granville Road
Columbus, OH 43235-2206

Mr. Rod Krich, Vice President
Licensing Projects
Exelon Generation Co.
4300 Winfield Road
Warrenville, IL 60555

Mr. Lindsay A. Lovejoy, Jr.
Nuclear Information and Resource Service
618 Paseo de Peralta, Unit B
Santa Fe, NM 87501

Mr. Robert Huff, President and CEO
Portsmouth Area Chamber of Commerce
324 Chillicothe St.
P.O. Box 509
Portsmouth, OH 45662

Robert E. Owen
Chief, Bureau of Radiation Protection
Ohio Dept. Of Health
35 East Chestnut Street
Columbus, OH 43215

Donald J. Silverman
Morgan, Lewis and Bockius
1111 Pennsylvania Ave, NW
Washington D.C. 20004

Ewan Todd
403 E. Oakland Avenue
Columbus, OH 43202

Ms. MarJean Kennedy
Regional Representative
Governor's Office
of Economic Development
15 N. Paint St., Suite 102
Chillicothe, OH 45601

Ms. Joyce Leeth
Pike County Recorder
230 Waverly Plaza, Suite 500
Waverly, OH 45690

Mr. Dwight Massie
c/o The First National Bank
P.O. Box 147
Waverly, OH 45690-0147

Mr. Marvin Jones
President and CEO
Chillicothe Chamber of Commerce
165 South Paint Street
Chillicothe, OH 45601

APPENDIX C
RADIOLOGICAL DOSE ANALYTICAL METHODOLOGY

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APPENDIX C
RADIOLOGICAL DOSE ANALYTICAL METHODOLOGY

This appendix discusses the following topics:

- The dose assessment analysis for site preparation and construction activities for the proposed ACP; and

- Environmental transport and calculation of dose and risk.

C.1 Radiological Impacts from Site Preparation and Construction

Radiological impacts during site preparation and construction are primarily to the construction workers performing those activities. Exposures to off-site personnel are greatly below those of the construction workers themselves because of atmospheric dispersion of airborne material and distance from sources of external dose.

C.1.1 Dose to Construction Workers During Site Preparation and Construction

The primary modes of exposure for construction personnel are: (1) inhalation of radionuclides that are in the dust suspended by construction activities; (2) external exposure from radionuclides contained in the soil suspended in the air; (3) external exposure from radionuclides in the soil on the ground; and (4) external exposure from existing sources nearby on the site.

C.1.1.1 Construction Worker Exposure from Inhalation of Radionuclides in Air

The dose and risk calculation for inhalation is based on the methods of Federal Guidance Report 13 (EPA, 1999), which are themselves based on the models recommended by the International Commission on Radiological Protection. In this method, the computation of committed effective dose equivalent for a nuclide is arrived at by computing the intake quantity of the nuclide and multiplying that amount by a coefficient that converts intake quantity to committed effective dose equivalent.

The following linear exposure model will be used to calculate inhalation dose of the *i*th radionuclide from inhalation:

$$DSR_{inh,i} = \frac{B \times C_d \times DCF_i}{F_p} \qquad \text{(Eq. 1)}$$

where:

B	=	the volume of air inhaled per hour (m^3/hr)
C_d	=	the concentration of respirable dust in the air (g/m^3)
DCF_i	=	the adult inhalation dose conversion factor of radionuclide *i* from Federal Guidance Report 13 (mrem/pCi)
F_p	=	the assigned protection factor for respirators from 10 CFR 20 Appendix A (NRC, 1991)

Dose Conversion Factors in Federal Guidance Report 13 are a function of not just the radionuclide, but also the inhalation Type. The Type classification scheme, introduced in International Commission on Radiation Protection Publication 66 (ICRP, 1994), replaced the inhalation Class nomenclature previously used in most inhalation dose modeling. Inhalation Type is one of three values, F, M, or S. The dose conversion factor selected for a nuclide in this analysis will be the default recommended Type listed in

Federal Guidance Report 13 if one exists. If a default recommended Type does not exist, then Type M will be used.

For a few elements, the Dose conversion factor is also a function of the chemical state. For example, the Dose conversion factor for tritium (H-3) in Federal Guidance Report 13 is not only a function of Type, but also a function of whether the tritium is bound as a particulate, water vapor, organic, or in an elemental state. The element of interest in this analysis is uranium, for which Federal Guidance Report 13 has dose factors for only the particulate state.

Federal Guidance Report 13 contains dose conversion factors as a function of age. This analysis uses the adult dose conversion factors since all workers are expected to be over the age of 18. Federal Guidance Report 13 also contains risk coefficients for both mortality and morbidity that are analogous to the Dose Conversion Factors. An inhalation mortality risk for each isotope can be calculated using the same equation, but replacing the Dose Conversion Factor for an isotope with an analogous mortality risk coefficient from Federal Guidance Report 13.

The total inhalation dose from all radionuclides can be estimated by summing all the inhalation doses from the individual radionuclides.

$$\textit{Total Inhalation Dose} = E_d \, \Sigma (DSR_{inh,i} \times A_i) \qquad \text{(Eq. 2)}$$

where

A_i = the activity concentration of radionuclide *i* in dust (pCi/g)
E_d = the number of hours per year that the worker is exposed (hr/yr)

The inhalation analysis uses the following parameters, which provide for an analysis that should produce a high estimate of dose:

- 40 hours/week exposure, 48 weeks per year at job site (52 less 2 vacation and 2 weeks equivalent for holidays/sick time);
- No respiratory protection ($F_p = 1$);
- Breathing Rate is 1.4 cubic meters per hour from EPA Exposure Factors Handbook (EPA, 1997);
- The average uranium concentration in soil is 7.7 micrograms per gram soil from Table 3.3.2-1 in the ACP Environmental Report (USEC, 2004);
- On-site air contains 313 micrograms of soil per cubic meter (maximum hourly concentration from construction air modeling results);
- All the soil in the air comes from on-site soil with the average uranium concentrations; there is no contribution from off-site;
- The uranium in the soil is Type F for selecting inhalation dose conversion factors, technicium-99 is type S. These provide the maximum dose conversion factors;
- Technicium-99 activity in soil is one half of the maximum value in Table 3.3.2-1 of USEC, 2005; and
- All radioactive materials in the air exist in a fully respirable particle size.

The isotopic activity ratio for the site should average to approximately natural uranium. The mass fractions for the various isotopes of uranium are thus expected to be 0.9926 uranium-238, 0.0073 uranium-235, and 0.000054 uranium-234. The activity ratio is then the specific activity times the mass fraction as seen in Table C-1:

Table C-1 Site Isotopic Activity Ratio

Isotope	Mass Fraction	Specific Activity Ci/gram	Activity Ratio	Activity in Soil pCi/gram
U-234	5.4×10^{-05}	6.2×10^{-03}	3.4×10^{-07}	2.59
U-235	7.3×10^{-03}	2.2×10^{-06}	1.6×10^{-08}	0.12
U-238	9.9×10^{-01}	3.4×10^{-07}	3.3×10^{-07}	2.57
Tc-99	--	--	--	6.3

Notes:
Ci = curie; pCi = picocurie.

Information on isotopic ratios of natural uranium and specific activity is from the Chart of the Nuclides, Twelfth Edition, General Electric Company, San Jose, CA, 1977.

The uranium activity concentration in soil is then calculated from

$$A_i = 10^{12} \times AR_i \times C \qquad \text{(Eq. 3)}$$

where:

- A_i = the isotopic activity in soil in pCi/gram for isotope *i*;
- AR_i = the activity ratio for isotope *i* in Ci/gram of uranium;
- C = the concentration of uranium in the soil in microgram U/gram soil;
- 10^{12} = a factor to convert Ci to pCi.

Table C-2 describes the resulting dose from inhalation by isotope:

Table C-2 Inhalation Dose by Isotope

Isotope	Type	Dose Conversion Factor (mrem/pCi)	Dose (mrem/yr)
U-234	F	2.1×10^{-03}	4.5×10^{-03}
U-235	F	1.9×10^{-03}	1.9×10^{-04}
U-238	F	1.9×10^{-03}	4.0×10^{-03}
Tc-99	S	4.9×10^{-05}	2.6×10^{-04}
Total			**9.0×10^{-03}**

Notes:
mrem = millirem; pCi = picocurie; yr = year.

C.1.1.2 Construction Worker Exposure from Submersion

Dose to construction workers will occur from external exposure to radiation emitted by radionuclides that are in soil where the construction activities are taking place. The dominant sub-pathways for exposure to these radionuclides include air submersion and direct soil exposure. These exposures can be calculated using a method similar to that used for inhalation:

$$DSR_{sub,i} = C_d \times DCF_{sub,I} \quad \text{(Eq. 4)}$$

$DCF_{sub,i}$ is in units of millirem per Ci-yr per meter cubed.

With the DSR known, the submersion dose can then be calculated from:

$$\textit{Total Dose from Submersion} = E_D \sum_i (DSR_{sub,i} \times A_i) \quad \text{(Eq. 5)}$$

The dust concentrations and exposure times are the same as those used for inhalation. Table C-3 describes the dose to workers from submersion.

Table C-3 Worker Dose from Dust Submersion

Isotope	Dose Conversion Factor (mrem-m^3/Ci-yr)	Submersion Dose (mrem/yr)
U-234	$7.2 \times 10^{+05}$	4.1×10^{-09}
U-235	$7.6 \times 10^{+08}$	2.0×10^{-07}
U-238	$2.9 \times 10^{+05}$	1.7×10^{-09}
Tc-99	$3.4 \times 10^{+06}$	4.6×10^{-08}
Total		**2.5×10^{-07}**

Notes:
mrem-m^3 = millirem-cubic meter; Ci-yr = curie-year; mrem/yr = millirem per year.

C.1.1.3 Construction Worker External Dose from Radionuclides in Soil

Workers will also be subject to exposure from exposure to radionuclides in the soil. Dose from this exposure is calculated using the equation:

$$DSR_{ext,i} = C_s \times DCF_{ext,i} \quad \text{(Eq. 6)}$$

$DCF_{ext,i}$, is the Dose conversion factor for exposure to external radiation in soil, is in units of millirem per pCi-yr per gram.

The exposure time and soil concentrations used are identical to those used in the inhalation calculation. Again, with the DSR known the total external dose from radionuclides in soil can be calculated from:

$$\textit{Total Dose from Radionuclides in Soil} = E_D \sum_i (DSR_{ext,i} \times A_i) \quad \text{(Eq. 7)}$$

Table C-4 describes the total external dose to workers from radionuclides in soil.

Table C-4 Total Worker External Dose from Soil

Isotope	Dose Conversion Factor (mrem-g/pCi-yr)	External Dose (mrem/yr)
U-234	3.4×10^{-04}	2.0×10^{-04}
U-235	6.6×10^{-01}	1.7×10^{-02}
U-238	8.0×10^{-05}	4.5×10^{-05}
Tc-99	1.1×10^{-04}	1.5×10^{-04}
Total		**1.8×10^{-02}**

Notes:
mrem-g = millirem per gram; pCi-yr = picocurie-year; mrem/yr = millirem per year.

C.1.1.4 Construction Worker External Dose from Existing Sources

DOE has maintained a set of thermoluminescent dosimeters both on and offsite to measure the direct radiation exposure at various locations from the totality of on-site sources, including the cylinder storage pads and other secondary sources. Thermoluminescent dosimeters provide the best estimate of the external radiation exposure rates at various locations around the site. Work related to the proposed ACP is expected to occur primarily at and around the existing X-3001 and X-3002 buildings, with some additional work being done to build the new X-745H cylinder storage pad approximately 200 yards north of the existing X-745G cylinder storage pad.

In 2003 the environmental exposure rate in the vicinity of the X-3001 and X-3002 buildings was approximately 20 millirem per quarter based on the thermoluminescent dosimeter in that region, TLD 1404A (DOE, 2004). Environmental thermoluminescent dosimeters record information around the clock, or about 2,190 hours per quarter. Assuming a 40 hour work week for a thirteen week quarter, a construction worker in the vicinity of the X-3001 or X-3002 buildings would receive a maximum external radiation dose of 0.5 millisieverts (5 millirem) per quarter or 0.20 millisieverts (20 millirem) per year.

The ambient dose rate in the vicinity of the X-745H cylinder storage pad is expected to be greater than that near the X-3001 and X-3002 buildings. Thermoluminescent dosimeters near the existing storage yards show wide variance in their measured exposure rates; for example, the three thermoluminescent dosimeters nearest the expected location of the X-745H pad record exposure rates at approximately 20 millirem per quarter, while others slightly farther away record higher values, with one thermoluminescent dosimeter reading a value as high as 1.87 millisieverts (187 millirem) per quarter (DOE, 2004). The variation is the result of a number of factors, including the distance and geometry of the thermoluminescent dosimeter relative to the existing storage yards, and any work that may have temporarily placed a source in the vicinity of the thermoluminescent dosimeter.. Using a very conservative assumption that the exposure rate at the X-745H construction site is 1 millisievert (100 millirem) per quarter (4 millisieverts [400 millirem] per year), a construction worker working 40 hours per week for 48 weeks at that job site would receive a maximum external dose of approximately 88 millirem for the year, which is below the public dose limit of 1 millisievert (100 millirem) per year contained in 10 CFR 20.1301(a)(1). The most likely radiation dose to workers at the X-745H pad is expected to be much less, on the order of 0.20 millisieverts (20 millirem) per year, based on the readings from the nearby thermoluminescent dosimeters and the fact that the average annual dose for storage pad workers was 0.29 millisieverts (29 millirem) in 2003. A dose of 0.20 millisieverts (20 millirem), is on the same scale as the variations in individual dose caused by the fluctuation in natural background.

Background radiation dose in the United States averages approximately 3.6 millisieverts (360 millirem) per year (NRC, 2005).

The estimate for external dose from other sources is, for a number of reasons, likely to be significantly exaggerated relative to any actual dose received by a construction worker. First, construction of the pad is not expected to last a full calendar year even though the dose estimate assumes an annual exposure period. Second, the analysis implicitly assumes the same personnel are used in the higher dose rate area for the entire year regardless of the fact that the specific tasks may be changing (i.e. grading versus pouring concrete). Third, the analysis assumes that these personnel spend 100 percent of their work time in the higher dose rate region. The analysis is useful in demonstrating that even with these assumptions in place the maximum dose would still be below the applicable NRC public dose limit.

C.1.1.5 Total Potential Dose to Construction Workers

Total occupational exposures from all four pathways are expected to be less than 1 millisievert (100 millirem) per year, even for estimates combining the most conservative analytical assumptions. This dose presents a nearly negligible risk, representing a lifetime excess cancer risk of approximately 5×10^{-06} when using a risk coefficient of 5×10^{-04} risk per rem (EPA, 1994). Based on this assessment, the impact to workers, from radiological exposure during site preparation and construction is SMALL.

C.1.2 Dose to Off-Site Public from Site Preparation and Construction

Exposures to off-site personnel will be significantly smaller than that for construction workers, particularly since off-site personnel will not have any potential for measurable exposure from the depleted uranium storage pads. The off-site public will also not be exposed to dose from on-site soil containing concentrations of radionuclides above background concentrations.

Estimates of dose to the off-site public from site preparation and construction are limited to two of the pathways used in the analysis of dose to construction workers, inhalation and air submersion. The methodology used to calculate inhalation and submersion dose to the offsite public is the same as that used to calculate the doses to construction workers; only the concentration of dust in air and the exposure duration in hours per year are changed. The airborne dust concentration used in the off-site inhalation exposure is 22.7 micrograms per cubic meter, which represents the maximum fenceline one hour concentration. The exposure duration is considered to be 8,760 hours per year, or full time occupancy. Using these values in the previous models results in the following inhalation dose values in millirem per year of exposure (Table C-5):

Table C-5 Dose to the Off-Site Public

Isotope	Inhalation Dose (mSv/yr)	Submersion Dose (mSv/yr)
U-234	4.5×10^{-05}	0
U-235	1.9×10^{-06}	0
U-238	4.0×10^{-05}	0
Tc-99	2.6×10^{-06}	0
Total	**8.9×10^{-05}**	**0**

Notes:
mSv/yr = millisievert per year.
To convert millisievert to millirem multiply by 100.

The maximum exposure to off-site personnel is estimated to be much less than 0.01 millisieverts (1millirem) per year, so the impact to off-site personnel from site preparation and construction is SMALL.

C.2 Estimation of Dose and Risk

The purpose of this section is to present the mathematical models and equations used in CAP88-PC for environmental transport and estimation of dose and risk from air transport of radioactive material.

C.2.1 Environmental Transport

CAP88-PC incorporates a modified version of the AIRDOS-EPA (Moore, 1979) program to calculate environmental transport. Relevant portions of this document are reproduced here, as referenced.

C.2.1.1 Plume Rise

CAP88-PC calculates plume rise in the subroutine CONCEN using either Rupp's equation (Ru48) for momentum dominated plume rise, or Briggs' equations (Br69) for hot buoyant plumes (Mo79). CAP88-PC also accepts user-supplied values for plume rise for each Pasquill stability class. The plume rise, Dh, is added to the actual physical stack height, h, to determine the effective stack height, H. The plume centerline is shifted from the physical height, h, to H as it moves downwind. The plume centerline remains at H unless gravitational settling of particulates produces a downward tilt, or until meteorological conditions change.

Rupp's equation for momentum dominated plumes is:

$$\Delta h = \frac{1.5vd}{\mu} \qquad \text{(Eq. 1)}$$

where:

- Δh = plume rise
- v = effluent stack gas velocity (m/sec)
- d = inside stack diameter (m)
- μ = wind velocity (m/sec)

CAP88-PC models Briggs' buoyant plume rise for stability categories A, B, C, and D with:

$$\Delta h = \frac{1.6\,F^{1/3}\,x^{2/3}}{\mu} \qquad \text{(Eq. 2)}$$

where:

- Δh = plume rise
- F = $3.7 \times 10^{-5}\ Q_H$
- Q_H = heat emission from stack gases (cal/sec)
- x = downwind distance (m)
- μ = wind speed (m/sec)

This equation is valid until the downwind distance is approximately ten times the stack height, 10h, where the plume levels off. For downwind distances greater than 10h, the equation used is:

$$\Delta h = \frac{1.6\, F^{1/3}\, x\, (10h)^{2/3}}{\mu} \qquad \text{(Eq. 3)}$$

Equation (2) is also used to a distance of $X = 2.4\, \mu S^{-1/2}$ for stable categories E, F, and G, beyond which the plume is assumed to level off. For higher values of x, the stability parameter, S, is used in the equation:

$$\Delta h = 2.9\, (F/\mu S)^{1/3} \qquad \text{(Eq. 4)}$$

in which:

$$S = (g/T_a)(dT_a/dz + G) \qquad \text{(Eq. 5)}$$

- g = gravitational acceleration (m/sec^2)
- T_a = air temperature (^oK)
- dT_a/dz = vertical temperature gradient ($^oK/m$)
- z = vertical distance above stack (m)
- G = adiabatic lapse rate of atmosphere ($0.0098^oK/m$)

The value of the vertical temperature gradient, dT_a/dz, is positive for stable categories. In CAP88-PC, dT_a/dz values are:

7.280E-02 $^oK/m$ for Pasquill category E
1.090E-01 $^oK/m$ for Pasquill category F
1.455E-01 $^oK/m$ for Pasquill category G

The true-average wind speed for each Pasquill stability category is used in CAP88-PC to estimate plume rise, as it is greater than the reciprocal-averaged wind speed, and produces a smaller, more conservative plume rise. This procedure does not risk underestimating the significant contribution of relatively calm periods to downwind nuclide concentrations which could result from direct use of a plume rise calculated for each separate wind-speed category. This procedure avoids calculating an infinite plume rise when wind speed is zero (during calms), since both momentum and buoyancy plume rise equations contain wind speed in the denominator (Moore, 1979).

CAP88-PC also accepts user-supplied plume rise values, for situations where actual measurements are available or the supplied equations are not appropriate. For example, plume rises of zero may be used to model local turbulence created by building wakes.

For this analysis, the plume rise was set to zero for each Pasquill category.

C.2.1.2 Plume Dispersion

Plume dispersion is modeled with the Gaussian plume equation of Pasquill (Pasquill, 1961, and Moore, 1979), as modified by Gifford:

$$\chi = \frac{Q}{2\pi\sigma_y\sigma_z\mu}\; exp[-\tfrac{1}{2}(y/\sigma_y)^2]\{exp[-\tfrac{1}{2}((z-H)/\sigma_z)^2] + exp[-\tfrac{1}{2}((z+H)/\sigma_z)^2]\} \qquad \text{(Eq. 6)}$$

where:

χ = concentration in air (chi) at x meters downwind, y meters crosswind, and z meters above ground (Ci/m^3)
Q = Release rate from stack (Ci/sec)
μ = wind speed (m/sec)

σ_y = horizontal dispersion coefficient (m)
σ_z = vertical dispersion coefficient (m)
H = effective stack height (m)
y = crosswind distance (m)
z = vertical distance (m)

The downwind distance x comes into Equation (6) through σ_y and σ_z, which are functions of x as well as the Pasquill atmospheric stability category applicable during emission from the stack. CAP88-PC converts χ in Equation (6) and other plume dispersion equations from units of curies per cubic meter to units of picocuries per cubic centimeter.

Annual-average meteorological data sets usually include frequencies for several wind-speed categories for each wind direction and Pasquill atmospheric stability category. CAP88-PC uses reciprocal-averaged wind speeds in the atmospheric dispersion equations, which permit a single calculation for each wind-speed category. Equation (6) is applied to ground-level concentrations in air at the plume centerline by setting y and z to zero, which results in:

$$\chi = \frac{Q}{\pi \sigma_y \sigma_z \mu} \quad exp[-½(H/\sigma_z)^2] \qquad \text{(Eq. 7)}$$

The average ground-level concentration in air over a sector of 22.5° can be approximated by the expression:

$$\chi_{ave} = f\chi \qquad \text{(Eq. 8)}$$

where f is the integral of the exponential expression:

$$\exp\left[-½(y/\sigma_y)^2\right]$$

in Equation (6) from a value of y equals zero to infinity divided by y_s, the value of y at the edge of the 22.5° sector, which is the value of the downwind distance, x, multiplied by the tangent of half the sector angle. The expression is:

$$f = \frac{\int_o^\infty \exp\left[-\left(0.5/\sigma_y^2\right)y^2\right] dy}{y_s} \qquad \text{(Eq. 9)}$$

The definite integral in the numerator of Equation (9) is evaluated as

$\sigma_y (\pi/2)^{½}$

Since $y_s = x \tan (11.25^o)$,

$$f = \frac{6.300836\sigma_y}{x} \qquad \text{(Eq. 10)}$$

The equation for sector-averaged ground level concentration in air is therefore:

$$\chi = \frac{Q}{0.15871\pi x\sigma_z\mu} \quad exp[-½(H)/\sigma_z)^2] \qquad \text{(Eq. 11)}$$

This method of sector-averaging compresses the plume within the bounds of each of the sixteen 22.5° sectors for unstable Pasquill atmospheric stability categories in which horizontal dispersion is great enough to extend significantly beyond the sector edges. It is not a precise method, however, because the integration over the y-axis, which is perpendicular to the downwind direction, x, involves increasing values for x as y is increased from zero to infinity.

An average lid for the assessment area is provided as part of the input data. The lid is assumed not to affect the plume until x becomes equal to $2x_L$, where x_L is the value of x for which $\sigma_z = 0.47$ times the height of the lid (Turner, 1969). For values of x greater than $2x_L$, vertical dispersion is restricted and radionuclide concentration in air is assumed to be uniform from ground to lid.

The average concentration between ground and lid, which is the ground-level concentration in air for values of x greater than $2x_L$, may be expressed by:

$$\chi_{ave} = \int_o^\infty \frac{\chi}{L} dz \qquad \text{(Eq. 12)}$$

where χ is taken from Equation (6) and L is lid height. The value of H in Equation (6) may be set at zero since X_{ave} is not a function of the effective stack height.

The resulting simplified expression may be evaluated for constant x and y values (s_y and s_z held constant) by using a definite integral similar to that in Equation (10):

$$\chi_{ave} = \left(\frac{1}{L}\right)\int_o^\infty \left(\frac{Q}{\pi\sigma_y\sigma_z}\right)\exp\left(\frac{-Z^2}{2\sigma_Z^2}\right)\exp\left(\frac{-Z^2}{2\sigma_y^2}\right)dz \qquad \text{(Eq. 13)}$$

The result is:

$$\chi_{ave} = \frac{Q}{2.5066\ \sigma_y L\mu} \quad exp[-y^2/\sigma y^2] \qquad \text{(Eq. 14)}$$

One obtains the sector-averaged concentration at ground level by replacing the exponential expression containing y by f in Equation (11):

$$\chi_{ave} = Q/0.397825xL\mu \quad \text{(Eq. 15)}$$

It should be noted at this point that for values of the downwind distance greater than $2x_L$ dispersion, as expressed in Equation (16), no longer can be said to be represented by the Pasquill equation. The model is simply a uniform distribution with a rectangle of dimensions LID and 2x tan (11.25^o).

Gravitational settling is handled by tilting the plume downward after it has leveled off at height H by subtracting V_g x/m from H in the plume dispersion equations. For CAP88-PC V_g is set at the default value of zero and cannot be changed by the user.

C.2.1.3 Dry Deposition

Dry deposition is modeled as being proportional to the ground-level concentration of the radionuclide (Moore, 1979):

$$R_d = V_d\chi \quad \text{(Eq. 16)}$$

where:

- R_d = surface deposition rate (pCi/cm^2-sec)
- V_d = deposition velocity (cm/sec)
- χ = ground-level concentration (chi) in air (pCi/cm^3)

Although V_d has units of velocity, it is only a proportionality constant and is usually higher than the actual, measured velocity of radionuclides falling to the ground. The proportionality constant must include deposition from fallout interception by foliage, which subsequently falls to the ground and so adds to ground deposition. Defaults for deposition velocity used by CAP88-PC are 3.5×10^{-02} meters per second for Iodine, 1.8×10^{-03} meters per second for particulates, and zero for gases.

C.2.1.4 Precipitation Scavenging

The deposition rate from precipitation scavenging (Moore, 1979), which occurs when rain or snow removes particles from the plume, is modeled with:

$$R_s = \Phi\chi_{ave}L \quad \text{(Eq. 17)}$$

where:

- R_s = surface deposition rate (pCi/cm^2-sec)
- Φ = scavenging coefficient (sec^{-1})
- χ_{ave} = average concentration in plume up to lid height (pCi/cm^3)
- L = lid height (tropospheric mixing layer) (cm)

The scavenging coefficient, Φ (in sec^{-1}), is calculated in CAP88-PC by multiplying the rainfall rate in cm/yr, by 1.0×10^{-07} yr/cm-sec.

C.2.1.5 Plume Depletion

Radionuclides are depleted from the plume by precipitation scavenging, dry deposition, and radioactive decay. Depletion is accounted for by substituting a reduced release rate, Q^1, for the original release rate Q for each downwind distance x (Slade, 1968). The ratio of the reduced release rate to the original is the depletion fraction. The overall depletion fraction used in CAP88-PC is the product of the depletion fractions for precipitation scavenging, dry deposition and radioactive decay.

For precipitation scavenging the depletion fraction for each downwind distance (x) is:

$$\frac{Q^1}{Q} = e^{-\Phi t} \qquad \text{(Eq. 18)}$$

where:

- Φ = scavenging coefficient (sec^{-1})
- t = time (sec) required for the plume to reach the downwind distance x

The depletion fraction for dry deposition is derived by using Equation (6) with z set to zero for ground-level concentrations, and subtracting the quantity (V_g x)/U from H for a tilted plume (Van, 1968, and Moore, 1979):

$$\frac{Q^1}{Q} = \exp\left\{ -\left(\frac{2}{\pi}\right)^{1/2} \left(\frac{V_d}{\mu}\right) \int_o^x \frac{\exp\left[-\left(H - V_g \chi / \mu \right) / 2\sigma_z^2 \right]}{\sigma_z} dx \right\} \qquad \text{(Eq. 19)}$$

where:

- V_d = deposition velocity (m/sec)
- μ = wind speed (m/sec)
- σ_z = vertical dispersion coefficient (m)
- V_g = gravitational velocity (m/sec)
- H = effective stack height (m)
- x = downwind distance (m)

The integral expression must be evaluated numerically. Values for the vertical dispersion coefficient s_z are expressed as functions of x in the form x^D/F where D and F are constants with different values for each Pasquill atmospheric stability category, to facilitate integrations over x.

Values for the depletion fraction for cases where V_g is zero are obtained from the subroutine QY in CAP-88. Subroutine QY obtains depletion fractions for the conditions V_d = 0.01 m/sec and μ = 1 m/sec for each Pasquill stability category from the data file REFA.DAT. This file contains values for release heights (meters) of:

1, 1.5, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12.5, 15, 17.5, 20, 25, 30, 35, 40, 50, 60, 70, 80, 90, 100, 120, 140, 160, 180, 200, 240, 260, 300 and 400;

and for downwind distances (meters) of:

35, 65, 100, 150, 200, 300, 400, 500, 650, 800, 1,000, 1,500, 2,000, 4,000, 7,000, 10,000, 25,000, 60,000, 90,000, and 200,000.

The stored depletion fractions were calculated numerically with a Simpson's rule routine. CAP88-PC uses a linear interpolation to produce a fraction for the required downwind value, release height and Pasquill category for V_d = 0.01 m/sec and μ = 1 m/sec. The value is then converted to the appropriate value for the actual deposition velocity and wind speed by use of the equation:

$$(Q^1/Q)_2 = (Q^1/Q)_1^{100\ Vd/\mu} \quad \text{(Eq. 20)}$$

in which subscript 2 refers to the desired value and subscript 1 refers to the value for V_d = 0.01 μ/sec and m = 1 m/sec.

For downwind distances greater than $2x_L$ where Equation 15 applies to the ground-level concentrations in air, the depletion is modeled with (Moore, 1979):

$$\frac{Q_x^1}{Q_{2x_L}^1} = \exp\left[-V_d\,(x - 2x_L)\Big/ L\mu\right] \quad \text{(Eq. 21)}$$

Which shows the reduced release rates at distances x and $2x_L$, respectively.

The depletion fraction for radioactive decay is:

$$\frac{Q^1}{Q} = \exp(-\lambda_r t) \quad \text{(Eq. 22)}$$

where:

λ_r = effective decay constant in plume
t = time required for plume travel

The decay constant used is referred to as the "effective decay constant" since it is not the true radiological decay constant in all cases. For example, if a radionuclide is a short-lived decay product in equilibrium with a longer-lived parent, the effective decay constant would be equal to the true radiological decay constant of the parent.

The atmospheric dispersion equations use the reciprocal-averaged wind speed, but neither this value nor the true average wind speed can adequately be used to calculate reduced release rates to account for radiological decay and scavenging losses because averaging of exponential terms is required. CAP88-PC uses an approximate method of calculation for this purpose, which establishes three wind speeds (1 m/sec, the average wind speed, and 6 m/sec) to simulate the actual wind-speed spectrum for each specific wind direction and Pasquill category. The wind speeds 1 and 6 m/sec were chosen because they approximate the upper and lower bounds in most meteorological data sets.

If f_1, f_2 and f_3 are designated as the time fractions for the three wind speeds, then:

$$f_1 + (\mu_a f_2) + 6f_3 = \mu$$

$$f_1 + (f_2/\mu_a) + f_3/6 = 1/\mu_r$$

and

$$f_1 + f_2 + f_3 = 1$$

where:

μ_a = Arithmetic-average wind speed
μ_r = Reciprocal-average wind speed

Solving the three simultaneous equations yields:

$$f_1 = 1 - f_2 - f_3$$

$$f_2 = \frac{(7/6) - (\mu_a/6) - (1/\mu_r)}{(7/6) - (\mu_a/6) - (1/\mu_a)}$$

$$f_3 = \frac{(\mu_a - 1)(1 - f_2)}{5}$$

The depletion fraction to account for radioactive decay is then approximated by:

$$f_1 \exp(-\lambda_r x) + f_2 \exp[-\lambda_r (x/\mu_a)] + f_3 \exp[-\lambda_r (x/6)]$$

where:

λ_r = effective decay constant in plume (sec^{-1})
μ_a = Arithmetic-average wind speed
x = downwind distance (m)

For precipitation scavenging losses, the depletion fraction is:

$$f_1 \exp(-\Phi x) + f_2 \exp[-\Phi (x/\mu_a)] + f_3 \exp[-\Phi (x/6)]$$

where Φ is the scavenging coefficient (sec^{-1}).

The overall depletion fraction is calculated by multiplying the depletion fraction for dry deposition by the fraction for radioactive decay and precipitation scavenging.

C.2.1.6 Dispersion Coefficients

Horizontal and vertical dispersion coefficients (s_y and s_z) used for dispersion calculation in CONCEN and for depletion fraction determination in QY are taken from recommendations by G.A. Briggs of the Atmospheric Turbulence and Diffusion Laboratory at Oak Ridge, Tennessee (Moore, 1979, and Gifford, 1976). The coefficients are different functions of the downwind distance x for each Pasquill stability category for open-country conditions, as shown in Table C-6:

Table C-6 Coefficients for Open-Country Conditions

Pasquill category	σ_y (m)	σ_z (m)
A	$0.22 \times (1+0.0001x)^{-1/2}$	$0.20 x$
B	$0.16 \times (1+0.0001x)^{-1/2}$	$0.12 x$
C	$0.11 \times (1+0.0001x)^{-1/2}$	$0.08 \times (1+0.0002x)^{-1/2}$
D	$0.08 \times (1+0.0001x)^{-1/2}$	$0.06 \times (1+0.0015x)^{-1/2}$
E	$0.06 \times (1+0.0001x)^{-1/2}$	$0.03 \times (1+0.0003x)^{-1}$
F	$0.04 \times (1+0.0001x)^{-1/2}$	$0.016 \times (1+0.0003x)^{-1}$
G	calculated by subtracting half the difference between values for categories E and F from the value for category F.	

where:

x = downwind distance

CAP88-PC uses the functions in the form of

$\sigma_y = x^A / C$

$\sigma_z = x^D / F$

to facilitate integrations over x. Values for A, C, D, and F for each stability category and downwind distance are stored in a data statement.

C.2.1.7 Ground Surface Concentrations

Ground surface and soil concentrations are calculated for those nuclides subject to deposition due to dry deposition and precipitation scavenging. The deposition accumulation time is defined by the user. This value corresponds to establishing a cutoff for the time following a release when any significant intake or external exposure associated with deposition on soil might take place.

Ingrowth from a parent radionuclide is calculated using the Bateman decay equations for all chains contained in the isotope database from Federal Guidance Report 13. Ingrowth is calculated for the entire chain based on the decay time input by the user. The default decay time is 100 years.

Radionuclide concentrations in meat, milk, and vegetables are calculated using elemental transfer factors from Report 123 of the National Council on Radiation Protection (NCRP, 1996). The concentration in soil for each isotope is multiplied by the appropriate elemental transfer factor to generate a concentration in each of the ingestion pathways media for that isotope in that sector. This information is then supplied to the dose and risk calculation models via an intermediate output file.

C.2.2 Dose and Risk Estimates

CAP88-PC uses a modified version of DARTAB (ORNL, 1981) and a database of dose and risk factors from Federal Guidance Report 13 (EPA, 1999) for estimating dose and risk. Relevant portions of these documents are reproduced here, as referenced.

Dose and risk conversion factors include the effective dose equivalent calculated with the weighting factors in International Commission on Radiation Protection Publication Number 72 (ICRP, 1996). Dose

and risk factors are provided for the pathways of ingestion and inhalation intake, ground level air immersion, and ground surface irradiation. Factors are further broken down by particle size, clearance category chemical form, and gut-to-blood transfer factors. These factors are stored in a database for use by the program. At this time CAP88-PC only uses dose and risk factors for adult populations, for particle sizes of 1 micron, and for cancer mortality.

For assessments where radon-222 decay products are not considered, estimates of dose and risk are made by combining the inhalation and ingestion intake rates, air and ground surface concentrations with the appropriate dose and risk conversion factors. CAP88-PC lists the dose and risk to the maximum individual and the collective population. CAP88-PC calculates dose to the 23 internal organs in International Commission on Radiation Protection Publication 72 (ICRP, 1996) in addition to the 50 year effective dose equivalent. Risks are estimated for 15 cancer sites, including leukemia, bone, thyroid, breast, lung, stomach, colon, liver, pancreas, ovaries, skin, kidneys, esophagus, and bladder. Doses and risks can be further tabulated as a function of radionuclide, pathway, location, and organ.

For each assessment, CAP88-PC tabulates the frequency distribution of risk, that is, the number of people at various levels of risk (lifetime risk). The risk categories are divided into powers of ten, from one in ten to one in one million. The number of health effects is also tabulated for each risk category.

C.2.2.1 Air Immersion

Individual dose is calculated for air immersion with the general equation:

$$\frac{E_{ij}(k)\ DF_{ijl}\ K_j}{P(k)}$$

where:

- $E_{ij}(k)$ = exposure rate, person-pCi/cm^3
- DF_{ijl} = Dose rate factor, mrem/nCi-yr/m^3
- $P(k)$ = number of exposed people
- K_j = 0.001 nCi/pCi x 1,000,000 cm^3/m^3 (proportionality factor)

Risk is calculated similarly, by substituting the risk conversion factor, for the dose conversion factor. The risk conversion factor is in units of risk/nCi-yr/m^3.

C.2.2.2 Surface Exposure

Individual dose is calculated for ground surface exposure with the general equation:

$$\frac{E_{ij}(k)\ DF_{ijl}\ K_j}{P(k)}$$

where:

- $E_{ij}(k)$ = exposure rate, person-pCi/cm^2
- DF_{ijl} = Dose rate factor, mrem/nCi-yr/m^2
- $P(k)$ = number of exposed people
- K_j = 0.001 nCi/pCi x 10,000 cm^2/m^2 (proportionality factor)

Risk is calculated by substituting the risk conversion factor for the dose conversion factor. The risk conversion factor is in units of risk/nCi-yr/m^2.

C.2.2.3 Ingestion and Inhalation

Individual dose is calculated for the ingestion and inhalation exposure pathway with the general equation:

$$\frac{E_{ij}(k)\ DF_{ijl}\ K_j}{P(k)}$$

where:

$E_{ij}(k)$ = exposure rate, person-pCi/cm^3
DF_{ijl} = Dose rate factor, mrem/nCi-yr/m^3
$P(k)$ = number of exposed people
K_j = 0.001 nCi/pCi x 1,000,000 cm^3/m^3 (proportionality factor)

Risk is calculated by substituting the risk conversion factor or the dose conversion factor.

C.2.2.4 Maximally-Exposed Individual

Doses for the maximally-exposed individual in population runs are estimated by CAP88-PC for the location, or sector-segment in the radial assessment grid, of highest risk where at least one individual actually resides. The effective dose equivalent for the maximally-exposed individual is tabulated in mrem/yr for a 50 year exposure. The reported risk associated with the 50 year Total Effective Dose Equivalent based on the risk coefficients contained in Federal Guidance Report 13.

When performing assessments of individual dose in CAP88-PC, the code will calculate the maximum individual dose based on the result from the highest grid point input by the user for that individual case. Alternatively, the user may specify the grid location where CAP88-PC is to generate the maximum exposed individual. This is done using the ILOC and JLOC parameters on the individual assessment grid input screen.

C.2.2.5 Collective Population

Collective population dose and risk are found by summing, for all sector segments, the intake and exposure rates multiplied by the appropriate dose or risk conversion factors from Federal Guidance Report 13. Collective population dose is reported by person-Rem per year (not millirem), and collective risk is reported in deaths per year.

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APPENDIX D
TRANSPORTATION ANALYSIS METHODOLOGY, ASSUMPTIONS, AND IMPACTS

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APPENDIX D
TRANSPORTATION ANALYSIS METHODOLOGY, ASSUMPTIONS, AND IMPACTS

D.1 Introduction

This appendix presents the methodology, assumptions, and impacts from the transportation of radiological materials to and from the proposed American Centrifuge Plant (ACP) near Piketon, Ohio. Transportation of radiological materials include shipments of feed materials to the ACP, shipments of product materials and heel cylinders from the proposed ACP, shipments of radioactive waste from the proposed ACP during the operation of the facility, and the shipment of radioactive materials resulting from the decontamination and decommissioning of the ACP. Also included in the appendix is the eventual shipment of depleted uranium to a disposal site after its conversion from uranium hexafluoride (UF_6) to triuranium octaoxide (U_30_8), and calcium fluoride (CaF_2), a by-product of the conversion that would be contaminated with small amounts of uranium. Shipments to and from the ACP are modeled as truck shipments, while shipments from the conversion plant are modeled as rail shipments..

This appendix is organized into separate sections that include a description of the radioactive materials being shipped; a description of the routes modeled; the input parameters used to estimate the number of latent cancer fatalities from both incident-free transport and accidents; the results of the risk assessment; and a discussion of the chemical impacts from accidents.

D.2 Radioactive Materials Description

The feed material is transported in Type 48Y or Type 48X cylinders. The product consists of enriched UF_6 and is transported in Type 30B cylinders. Specifications for these cylinders are given in Table D-1. Two other radioactive materials requiring transportation that result from the conversion of UF_6 are depleted U_3O_8 and calcium fluoride (CaF_2), contaminated with uranium. Assuming no change in isotopic concentration of the uranium isotopes, the U_3O_8 material would have the same isotopic ratios as the depleted UF_6 tails. The CaF_2 could have about 55 becquerels (1.5 picocuries) per gram of depleted uranium as a radioactive contaminate (DOE, 2004). Finally radioactive waste resulting from routine operations and the eventual decontamination and decommissioning (D&D) of the plant would be transported to a waste disposal site. Specifications for 55-gallon drums and B-25 boxes, used to transport radioactive waste are give in Table D-2.

Table D-1 Specifications for Type 30B, 48X, and 48Y Cylinders

Cylinder Specification	30B	48X	48Y
Nominal Diameter	76 cm	122 cm	122 cm
Nominal Length	206 cm	302 cm	380 cm
Wall Thickness	1.3 cm	1.6 cm	1.6 cm
Nominal Tare Weight	635 kg	2,000 kg	2,359 kg
Maximum Net Weight	2,300 kg	9,540 kg	12,500 kg
Nominal Gross Weight	2,900 kg	11,600 kg	14,800 kg
Minimum Volume	0.74 m^3	3.05 m^3	4.04 m^3
Basic Construction Material	Steel: ASTM-516	Steel: ASTM-516	Steel: ASTM-516
Service Pressure	1,380 kPa gage	1,380 kPa gage	1,380 kPa gage
Hydrostatic Test Pressure	2,760 kPa gage	2,760 kPa gage	2,760 kPa gage
Isotopic Content Limit (Max. with Moderation Control)	5.0 % U-235	4.5 % U-235 (5.0% in-plant use)	4.5 % U-235
Valve Used	2.54 cm valve	2.54 cm valve	2.54 cm valve

Notes:
cm = centimeter;m^3 = cubic meter; kg = kilogram; kPa = kilopascal; psi = pounds per square inch; ASTM = American Society for Testing and Materials.
To convert cm to inches multiply by 0.394.
To convert m^3 to ft^3 multiply by 35.3.
To convert kg to lb multiply by 2.2.
To convert kPa to psi multiply by 0.144.
Source: USEC, 1995.

Table D-2 Specifications for 55-Gallon Drums and B-25 Boxes

Cylinder Specification	55-Gallon Drum	B-25 Box
Nominal Diameter	61 cm	122 cm × 183 cm
Nominal Length	89 cm	122 cm
Minimum Volume	259 L	2,720 L
Material of Construction	Steel	Steel

Notes:
cm = centimeter; L = liter
To convert cm to inches multiply by 0.394.
To convert L to ft^3 multiply by 0.35.
Source: USEC, 2005.

Table D-3 provides the isotopic mass fractions used to calculate the activities of the individual radionuclides in the various shipping containers. The calculated activity of the uranium isotopes and their

most prevalent progeny are given in Table D-4. The activities of the various isotopes of protactinium and thorium are calculated assuming one year of decay. These progeny along with the uranium isotopes account for more than 99 percent of the total activity of the radioactive materials described in Section D.1. While other progeny are present in very small quantities, their contribution to the total risk is negligible.

Table D-3 Uranium Isotopic Mass Fractions

Radionuclide	Mass Fraction		
	Feed Material (%)	Product Materials (%)	Depleted Tails (%)
U-234	0.0054	0.047	0.00052
U-235	0.7	4.7	0.3
U-238	99.3	95.2	99.7

Table D-4 Activities of Uranium, Protactinium, and Thorium Radionuclides in Various Shipping Containers (becquerels)

Radionuclide	Feed Material			Product 30B Cylinder	Heels 30B Cylinder	Radioactive Waste[1]		Depleted Uranium Bulk Bag	Calcium Fluoride Bulk Bag
	48X Cylinder	48Y Cylinder	30B Cylinder			55-Gallon Drum	B-25		
Th-230	7.4×10^{5}	9.6×10^{5}	1.6×10^{6}	1.6×10^{6}	8.1×10^{3}	0	0	1.1×10^{5}	5.2×10^{-1}
Th-231	3.7×10^{9}	4.8×10^{9}	5.9×10^{9}	5.9×10^{9}	2.9×10^{7}	7.4×10^{6}	7.4×10^{7}	2.1×10^{9}	1.0×10^{4}
Th-234	8.1×10^{10}	1.0×10^{11}	1.9×10^{10}	1.9×10^{10}	9.3×10^{7}	1.2×10^{8}	1.6×10^{9}	1.2×10^{11}	5.6×10^{5}
Pa-231	7.8×10^{4}	1.0×10^{5}	1.2×10^{5}	1.2×10^{5}	5.9×10^{2}	0	0	4.4×10^{4}	2.1×10^{-1}
Pa-234	1.0×10^{8}	1.4×10^{8}	2.4×10^{7}	2.4×10^{7}	1.2×10^{5}	0	0	1.6×10^{8}	7.4×10^{2}
Pa-234m	8.1×10^{10}	1.0×10^{11}	1.9×10^{10}	1.9×10^{10}	9.3×10^{7}	1.2×10^{8}	1.6×10^{9}	1.2×10^{11}	5.6×10^{4}
U-234	8.1×10^{10}	1.0×10^{11}	1.7×10^{11}	1.7×10^{11}	8.1×10^{8}	1.2×10^{8}	1.6×10^{9}	1.1×10^{10}	5.6×10^{4}
U-235	3.7×10^{9}	4.8×10^{9}	1.6×10^{9}	1.6×10^{9}	2.9×10^{7}	7.4×10^{6}	7.4×10^{7}	2.1×10^{9}	1.0×10^{4}
U-238	8.1×10^{10}	1.0×10^{11}	1.9×10^{10}	1.9×10^{10}	9.3×10^{7}	1.2×10^{8}	1.6×10^{9}	1.2×10^{11}	5.6×10^{5}
Total Curies	$\mathbf{3.3 \times 10^{11}}$	$\mathbf{4.1 \times 10^{11}}$	$\mathbf{2.4 \times 10^{11}}$	$\mathbf{2.4 \times 10^{11}}$	$\mathbf{1.0 \times 10^{9}}$	$\mathbf{5.2 \times 10^{8}}$	$\mathbf{6.7 \times 10^{9}}$	$\mathbf{3.7 \times 10^{11}}$	$\mathbf{1.7 \times 10^{6}}$

Notes:
1 curie (Ci) = 3.7×10^{10} becquerels
[1]Source: USEC, 2005.

D.3 Transportation Routes

Transportation of radiological materials would include shipments of feed material to the proposed ACP, shipments of product materials (enriched UF_6) from the proposed ACP, and shipments of radioactive waste from the proposed ACP (USEC, 2005). Depleted UF_6 is assumed to be stored onsite until it is converted from UF_6 to U_3O_8, a more stable chemical form, and then transported by railcar to a low-level radioactive waste disposal site. According to the ACP Environmental Report, feed materials will be transported from Metropolis, Illinois; Port Hope, Ontario, Canada; and Wilmington, Delaware in Type 48Y, Type 48X , and Type 30B cylinders, respectively. Product materials will be shipped to Richland, Washington; Columbia, South Carolina; Wilmington, North Carolina; and Seattle, Washington in Type 30B cylinders. Wilmington, Delaware is the shipping port for feed materials from Russia, while Seattle is the port for product shipments to Korea, and Japan. Low-level radioactive waste (LLRW) will be shipped to Gainsville, Florida; Clive, Utah; and the Nevada Test Site. The transportation of radiological materials is subject to NRC and DOT regulations. Table D-5 presents a matrix of the shipping origins and destinations for the various radioactive materials.

In addition to the transport of radioactive materials during the operation of the proposed ACP, low-level radioactive waste will be shipped to disposal sites during decontamination and decommissioning (D&D) waste are expected to include of the proposed ACP. Shipments of decontamination and decommissioning waste are expected to be 5,100 shipments to the Nevada Test Site; 105 shipments to Clive, Utah; and 60 shipments to Kingston, Tennessee.

WebTragis (ORNL, 2003) was used to generate the routing information. WebTragis is a web-based version of Tragis (Transport Routing Analysis Geographic Information System) and is used to calculate highway, rail, or waterway routes within the United States. WebTragis generates routing distance, population density within 800 meters (0.5 mile), and for the truck routes, the number of rest stops and stops for State inspections. Table D-6 presents the output from WebTragis to be used in this risk assessment. For Port Hope, Ontario, an additional 241 kilometers (150 miles) of route distance was added to the TRAGIS output to account for that portion of the route located in Canada. Even though transportation regulations by truck do not require restricted routing for the shipment of natural uranium, low-enriched uranium, or depleted uranium, routing restrictions were applied as follows (USEC, 2005):

- Highway Route Controlled Quantity preferred route with two drivers;
- Prohibit use of links prohibiting truck use; and
- Prohibit use of ferry crossing; prohibit use of roads with hazardous materials prohibition.

Transport routes generated by TRAGIS are shown in Figures D-1 through D-5 for the different types of materials transported.

Table D-5 Radioactive Waste Shipment Routes

Route	Radioactive Shipments							
	Feed Material (Natural UF_6)	Product (Enriched UF_6)	Heeled Containers	Low-Level Radioactive Waste	Mixed Low- Level Radioactive Waste	Low-Level Liquid Radioactive Waste	Depleted Uranium (U_3O_8)	Calcium Fluoride (CaF_2)
Metropolis, IL to ACP	✓							
Port Huron, ON to ACP	✓							
Wilmington, DE to ACP	✓							
ACP to Richland, WA		✓	✓					
ACP to Columbia, SC		✓	✓					
ACP to Wilmington, NC		✓						
ACP to Seattle, WA		✓						
ACP to Clive, UT				✓			✓	✓
ACP to Nevada Test Site, NV				✓				
ACP to Gainsville, FL					✓			
ACP to Oak Ridge, TN						✓		

Source: USEC, 2005.

Table D-6 Route Information as Generated by TRAGIS

Destination/ Origin	Distance (km)				Elapsed Time (hh:mm)	Weighted Population (people/km^2)			Population within 800 m Buffer Zone
	Rural	Suburban	Urban	Total		Rural	Suburban	Urban	
Metropolis, IL	554.1 (63.0%)	307.3 (35.0%)	17.7 (2.0%)	879.1 (100%)	9:31	20.6	282	2,193	174,192
Port Hope, ON	457.8 (50.9%)	392.7 (43.7%)	48.2 (5.4%)	898.7 (100%)	10:26	21	305.2	2,444	316,151
Wilmington, DE	474.4 (54.3%)	355.3 (40.7%)	44.3 (5.1%)	873.9 (100%)	10:06	19	330.6	2,316	308,509
Richland, WA	3,130.9 (81.4%)	653.4 (17.0%)	60.8 (1.6%)	3,844.8 (100%)	41:27	10.9	298.3	2,235	494,741
Columbia, SC	422.2 (53.8%)	331.8 (42.3%)	30.4 (3.9%)	784.3 (100%)	8:02	17.6	367	2,278	256,008
Wilmington, NC	549.2 (55.3%)	409.7 (41.3%)	33.8 (3.4%)	992.6 (100%)	10:26	18.3	359.1	2,150	305,803
Seattle, WA	3,229.9 (79.2%)	743.8 (18.2%)	103.6 (2.5%)	4,077.2 (100%)	44:09	11	320.7	2,319	695,631
Clive, UT (Truck)	2,430.1 (80.7%)	520.8 (17.3%)	60.1 (2.0%)	3,010.9 (100%)	31:46	11.1	310.4	2,292	448,863
Clive, UT (Rail)	2,518.1 (80.0%)	500.2 (15.9%)	128.3 (4.1%)	3,146.4 (100%)	72.26	9.3	370.3	2,375	716,122
Nevada Test Site, NV	2,935.2 (80.6%)	617.7 (17.0%)	90.5 (2.5%)	3,643.1 (100%)	38:15	10.7	316.2	2,405	614,875
Gainsville, FL	875.3 (61.2%)	519.4 (36.3%)	36.3 (2.5%)	1,430.8 (100%)	14:52	15.1	334.6	2,306	343,734
Oak Ridge, TN	350.9 (59.1%)	226.6 (38.2%)	16.3 (2.8%)	593.3 (100%)	6:20	21	293.8	2,065	131,400

Notes:
km = kilometer; km^2 = square kilometer
To convert km to mi multiply by 0.62.
To convert from km^2 to mi^2 multiply by 0.386.

Figure D-1 Routes Modeled for the Transport Feed Material by Truck to the American Centrifuge Plant (ACP) from Port Huron, ON; Metropolis, IL; and Wilmington, DE

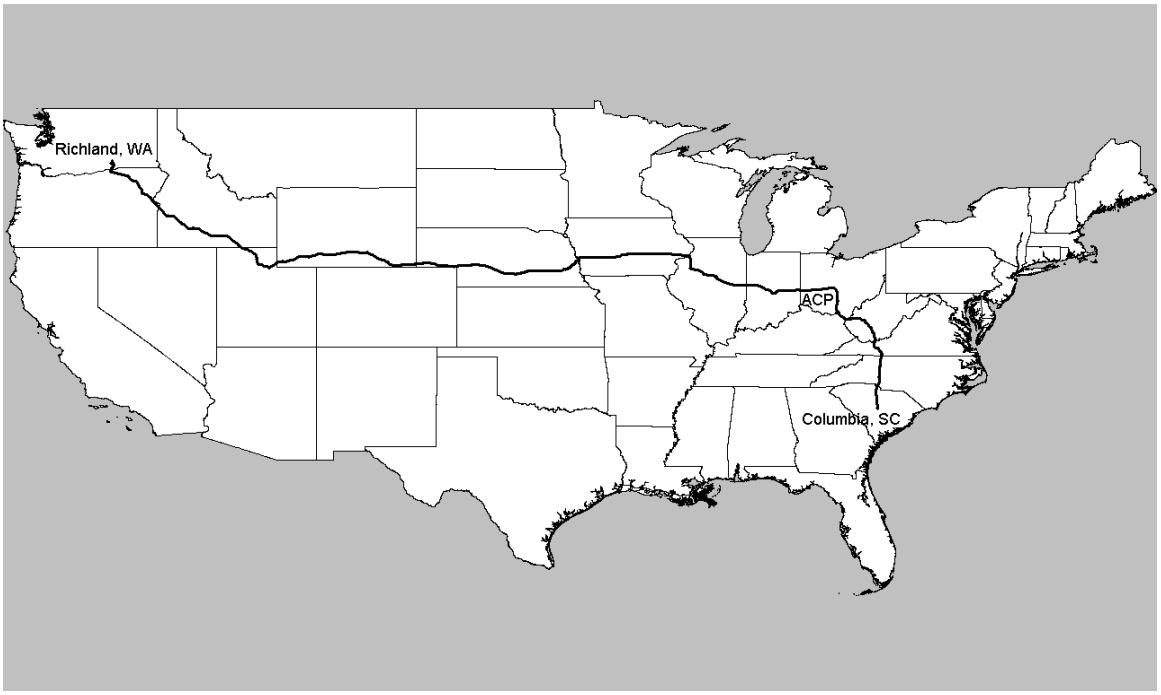

Figure D-2 Routes Modeled for the Transport of Product Materials by Truck from the American Centifuge Plant (ACP) to Seattle, WA; Richland, WA; Wilmington, NC; and Columbia, SC

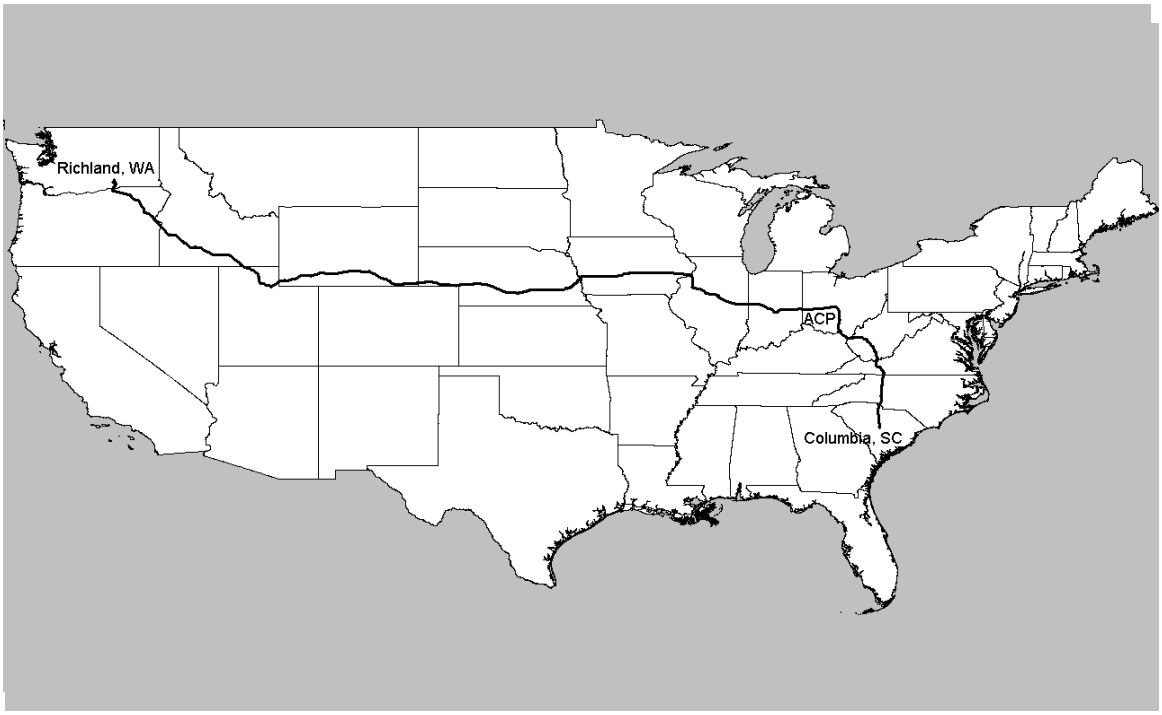

Figure D-3 Routes Modeled for the Transport of Heeled Cylinders by Truck from the American Centifuge Plant to Richland, WA and Columbia, SC

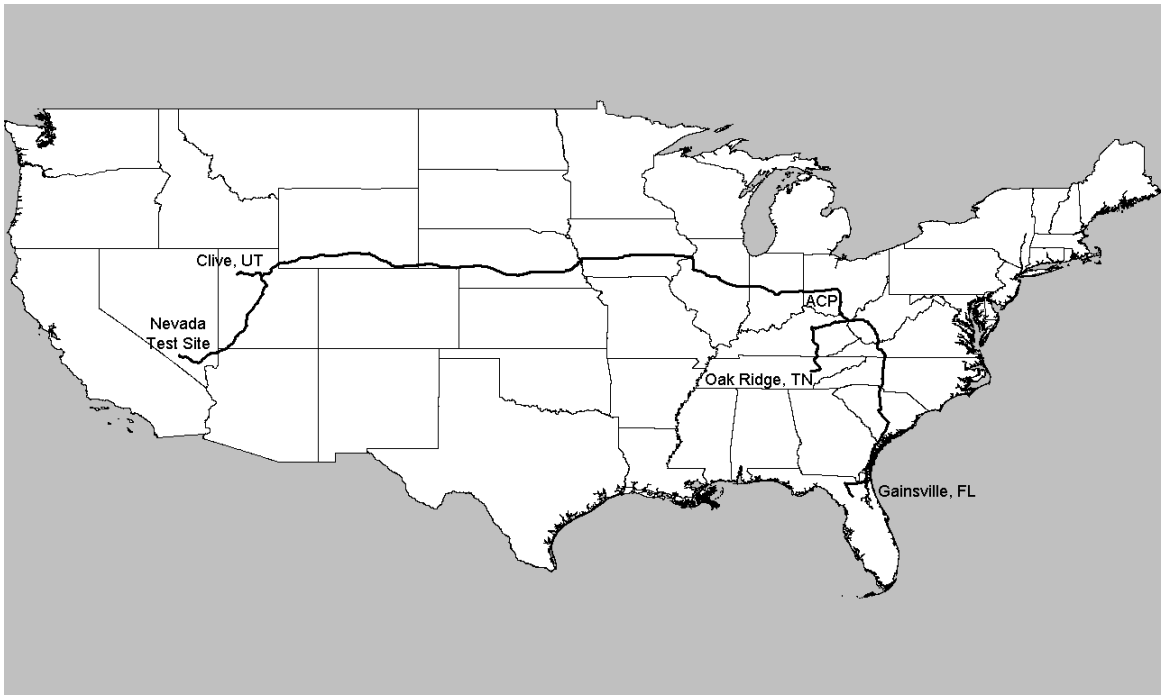

Figure D-4 Routes Modeled for the Transport of Radioactive Waste by Truck from the American Centrifuge Plant (ACP) to the Nevada Test Site; Clive, UT; Oak Ridge, TN; and Gainsville, FL

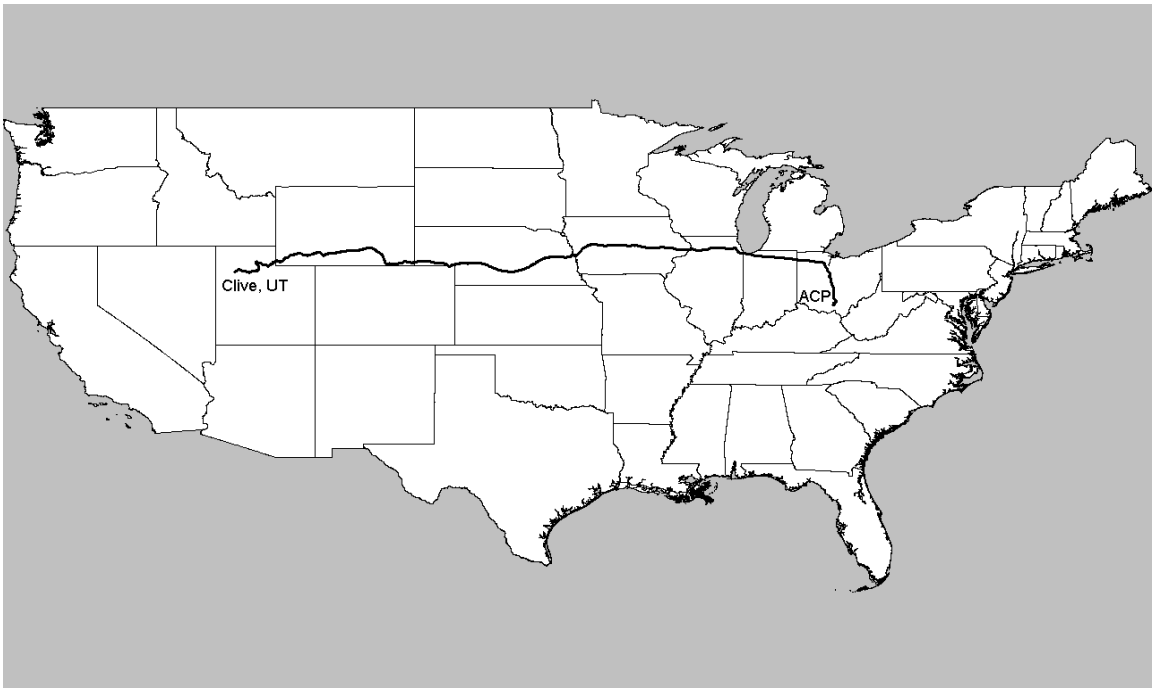

Figure D-5 Route Modeled for the Transport of Conversion Products by Rail from a Conversion Facility located in Piketon, OH to Clive, UT

D.4 RADTRAN Modeling Inputs and Results

The radiological impacts to occupational workers and the general public from the transport of the radioactive materials were estimated using RADTRAN 5 (Osborn, 2005), a computer code that calculates the risks for both the incident-free transport of radioactive-material and for accidents. The term "incident free" means that no traffic accident or other incident resulted in the release of radioactive material to the surrounding environment. In this context, accidents refer only to incidents that result in the release of radioactive material. The risks associated with the transport of radioactive materials include injuries and fatalities from traffic accidents and an increased risk of cancer fatalities from exposure of persons near the vehicle to direct radiation.

Exposure to radiation from radioactive shipments is assumed to result in an increased risk of latent cancer to crews operating the truck or train, persons sharing the route with the shipment (on-link public), persons living alongside the route (off-link public), and persons at rest stops and inspection stops. These latent cancers do not occur immediately after exposure, but instead occur a number of years after the exposure. RADTRAN 5 estimates the number of latent cancer fatalities from the incident free transport of the materials and accidents. This section includes the RADTRAN input parameters used in this analysis and the results of that analysis in expected latent cancer fatalities.

D.4.1 Incident-Free Parameters

The risks from incident-free transport depend on the external radiation levels of the package being transported; the length and time duration of the route; and the number of persons sharing the route. Tables D-7 and D-8 provide a listing of the input parameters to RADTRAN that were used in this risk assessment.

Table D-7 RADTRAN "Package" Parameters

Package	RADTRAN Parameter			
	Long Dimension (m)	Dose Rate (mrem/hr)[1]	Gamma Fraction	Neutron Fraction
Feed Material (48X cylinder)	3.0	0.7	1	0
Feed Material (48Y cylinder)	3.8	0.7	1	0
Feed Material (30B cylinder)	2.1	0.7	1	0
Product Material (30B cylinder)	2.1	0.4	1	0
Heels (30B cylinder)	2.1	0.4	1	0
Waste (55-gallon drums)	0.9	1	1	0
Waste (B-25)	1.8	1	1	0
Depleted UF_6 (bulk bag)	8	1	1	0
CaF_2 (bulk bag)	8	0.0001	1	0

Notes:
[1]Dose rate is the external dose rate at 1 m from the package.
m = meter; mrem/hr = millirem per hour
To convert from m to ft multiply by 3.28.

Table D-8 RADTRAN "Link" Parameters

RADTRAN Parameter	Truck Links			Rail Links		
	Rural	Suburban	Urban	Rural	Suburban	Urban
Speed (km/hr)	88.5	40.2	24.1	64.4	40.2	24.2
Vehicle Density (vehicles/hr)	470	780	2,800	1	5	5
Persons Per Vehicle	2	2	2	3	3	3
Accident Rate (accidents/vehicle-hour)	3×10^{-7}	3×10^{-7}	3×10^{-7}	1×10^{-7}	1×10^{-7}	1×10^{-7}
Zone	Rural	Suburban	Urban	Rural	Suburban	Urban
Type	Primary Highway	Primary Highway	Primary Highway	N/A	N/A	N/A
Farm Fraction	1	0	0	1	0	0

Notes:
km = kilometer
To convert km to mi multiply by 0.62.

D.4.2 Accident Parameters

To calculate the risk associated with accidents that result in the release of radioactive material, RADTRAN 5 estimates the probability, or likelihood, of an accident and the consequences, or outcome, of such an accident. The likelihood or frequency of an accident is a function of the type of road and the number of vehicles using the road. NRC classifies accidents into eight severity categories, based on the mechanical (impact) and thermal (fire) forces involved (NRC, 1977). Category I is the least severe and Category VIII is the most severe. Less severe accidents occur more frequently, but have relatively mild consequences. More severe accidents happen less frequently, but have more significant consequences, including the release of some or all of the radioactive material in the shipment. NRC has estimated the fraction of accidents for truck and rail transport that fall within each category. Additionally, NRC has estimated the fraction of accidents in each category that occur in rural, suburban, and urban areas. As shown in Table 2-9 less severe accidents are most likely to occur in urban areas, where driving speeds are typically lower, while more severe accidents are more likely to occur in rural areas where driving speeds are higher (NRC, 1977). These estimates when combined with average accident rates are used estimate the number of latent cancer fatalities due to exposure to radiation and radioactivity from transportation accidents. Fatalities to chemical effects and bodily injury are addressed separately. Tables D-9 and D-10 provided the fractional occurrences of accidents by severity category used in this risk assessment.

Table D-9 Fractional Occurrences of Truck Accidents by Severity Category

Accident Severity Category	Fractional Occurrences of Severity Category	Fractional Occurrence by Population Zone		
		Rural	Suburban	Urban
I	0.55	0.1	0.1	0.8
II	0.36	0.1	0.1	0.8
III	0.07	0.3	0.4	0.3
IV	0.016	0.3	0.4	0.3
V	0.0028	0.5	0.3	0.2
VI	0.0011	0.7	0.2	0.1
VII	0.000085	0.8	0.1	0.1
VIII	0.000015	0.9	0.05	0.05

Source: NRC, 1977.

Table D-10 Fractional Occurrences of Rail Accidents by Severity Category

Accident Severity Category	Fractional Occurrences of Severity Category	Fractional Occurrence by Population Zone		
		Rural	Suburban	Urban
I	0.5	0.1	0.1	0.8
II	0.3	0.1	0.1	0.8
III	0.18	0.3	0.4	0.3
IV	0.018	0.3	0.4	0.3
V	0.0018	0.5	0.3	0.2
VI	0.00013	0.7	0.2	0.1
VII	0.00006	0.8	0.1	0.1
VIII	0.00001	0.9	0.05	0.05

Source: NRC, 1977.

Table D-11 provides the release fraction used for each severity category. For purposes of this analysis, all releases of material are assumed to be airborne and respirable.

Table D-11 Release Fractions for Accidents by Severity Category

Accident Severity Category	Release Fraction
I	0
II	0.01
III	0.1
IV, V, VI, VII, and VIII	1

Source: DOE, 2002.

D.4.3 RADTRAN Results

The transportation of feed material, product, heel cylinders, radioactive waste, and the products from the conversion of depleted UF_6 results in some increased risk of cancer to both the occupational workers transporting and handling the material and to members of the public driving on the roads or living along the transportation route. RADTRAN results for the transportation of radioactive materials associated with operations are given in Tables D-12 and D-13 on an annual basis. The transport of all materials is estimated to result in approximately 0.014 latent cancer fatalities per year of operation from exposure to direct radiation during incident-free transport, and an additional 0.008 latent cancer fatalities per year from accidents that result in the release of radioactive material into the environment. The total latent cancer fatalities per year is estimated to be 0.02 per year of operation or about one cancer fatality over thirty years of operation.

In addition to the transport of radioactive materials during the operation of the proposed ACP, low level radioactive waste will be shipped to disposal sites during decontamination and decommissioning (D&D) of the proposed ACP. Tables D-14 and D-15 provide the RADTRAN results for the transportation of radioactive materials associated with all decontamination and decommissioning activities of the proposed ACP. The number of latent cancer fatalities from the transportation of all decontamination and decommissioning waste is estimated to be 0.3, including 0.005 deaths resulting from the release of radioactive material from accidents.

The risk assessment described above is for product materials enriched to approximately 5 weight percent of uranium-235. Although it is currently believed to be unlikely, USEC may in the future enrich relatively small volumes of product up to 10 weight percent of uranium-235. There are currently no 2.5 ton cylinders certified for the shipment of UF_6. In the event this higher enrichment occurs, USEC would have to gain the appropriate certification before it shipped 10 percent product in either an existing 2.5-ton cylinder or in a new 2.5-ton cylinder. External exposure rates surrounding such a cylinder would likely be similar to those around the 30B cylinders presently used to ship 5 percent product and less than the external dose equivalent rates used in this assessment, which are considered conservative. For this reason, the risks associated with the incident free transport of the 10 percent enriched product would not be significantly than that of the 5 percent enriched product.

Table D-12 Number of Latent Cancer Fatalities Expected from the Incident-Free Transportation of Radioactive Materials for One Year of Operation

Route	Material	Latent Cancer Fatalities							
		MEI	**Drivers**	**Off-Link Public**	**On-Link Public**	**Rest Stop**	**Inspect-ion Stop**	**Loading**	**Total**
Metropolis, IL to ACP	Feed Material	6.2×10^{-9}	1.2×10^{-3}	6.8×10^{-5}	4.4×10^{-4}	8.1×10^{-4}	1.1×10^{-3}	3.0×10^{-3}	$\mathbf{4.0 \times 10^{-3}}$
Port Hope, ON to ACP	Feed Material	9.4×10^{-9}	1.4×10^{-3}	1.4×10^{-4}	1.1×10^{-3}	1.2×10^{-3}	6.9×10^{-4}	5.2×10^{-4}	$\mathbf{5.1 \times 10^{-3}}$
Wilmington, DE to ACP	Feed Material	1.5×10^{-9}	2.5×10^{-4}	2.2×10^{-5}	1.7×10^{-4}	2.0×10^{-4}	1.8×10^{-4}	9.7×10^{-5}	$\mathbf{9.1 \times 10^{-4}}$
ACP to Richland, WA	Product	5.0×10^{-10}	2.8×10^{-4}	1.3×10^{-5}	1.1×10^{-4}	2.6×10^{-4}	1.1×10^{-4}	6.5×10^{-5}	$\mathbf{8.3 \times 10^{-4}}$
ACP to Columbia, SC	Product	5.9×10^{-10}	8.8×10^{-5}	8.8×10^{-6}	5.2×10^{-5}	3.8×10^{-5}	7.1×10^{-5}	7.7×10^{-5}	$\mathbf{3.3 \times 10^{-4}}$
ACP to Wilmington, NC	Product	6.7×10^{-10}	1.2×10^{-4}	1.2×10^{-5}	7.0×10^{-5}	8.7×10^{-5}	6.4×10^{-5}	8.7×10^{-5}	$\mathbf{4.4 \times 10^{-4}}$
ACP to Seattle, WA (Korea)	Product	1.3×10^{-10}	1.1×10^{-4}	4.0×10^{-6}	3.6×10^{-5}	8.3×10^{-5}	3.3×10^{-5}	1.6×10^{-5}	$\mathbf{2.8 \times 10^{-4}}$
ACP to Seattle, WA (Japan)	Product	1.9×10^{-10}	1.5×10^{-4}	7.7×10^{-6}	7.0×10^{-5}	2.3×10^{-4}	5.4×10^{-5}	2.2×10^{-5}	$\mathbf{5.4 \times 10^{-4}}$
Richland, WA to ACP	Heels	8.9×10^{-11}	5.1×10^{-5}	2.3×10^{-6}	1.9×10^{-5}	4.7×10^{-5}	1.9×10^{-5}	4.9×10^{-5}	$\mathbf{1.9 \times 10^{-4}}$
Columbia, SC to ACP	Heels	8.9×10^{-11}	1.3×10^{-5}	1.3×10^{-6}	8.0×10^{-6}	5.8×10^{-6}	1.1×10^{-5}	4.9×10^{-5}	$\mathbf{8.8 \times 10^{-5}}$
ACP to Clive UT	LLW	3.5×10^{-10}	1.3×10^{-4}	7.4×10^{-6}	6.4×10^{-5}	1.6×10^{-4}	4.1×10^{-5}	7.3×10^{-5}	$\mathbf{4.7 \times 10^{-4}}$
ACP to Nevada Test Site, NV	LLW	1.4×10^{-10}	1.6×10^{-4}	3.6×10^{-6}	3.4×10^{-5}	8.1×10^{-5}	3.8×10^{-5}	3.0×10^{-5}	$\mathbf{3.5 \times 10^{-4}}$
ACP to Gainsville, FL	Mixed LLW	7.3×10^{-11}	2.5×10^{-5}	1.6×10^{-6}	9.3×10^{-6}	1.4×10^{-5}	1.4×10^{-5}	1.0×10^{-5}	$\mathbf{7.5 \times 10^{-5}}$
Piketon, OH to Clive, UT	U_3O_8	3.2×10^{-11}	2.2×10^{-7}	7.3×10^{-7}	7.3×10^{-8}	2.7×10^{-5}	0	0	$\mathbf{2.8 \times 10^{-5}}$
Piketon, OH to Clive, UT	CaF_2	3.2×10^{-15}	2.2×10^{-10}	7.3×10^{-11}	7.3×10^{-11}	2.7×10^{-9}	0	0	$\mathbf{3.1 \times 10^{-9}}$
Total		$\mathbf{9.4 \times 10^{-9}}$	$\mathbf{4.0 \times 10^{-3}}$	$\mathbf{2.9 \times 10^{-4}}$	$\mathbf{2.2 \times 10^{-3}}$	$\mathbf{3.3 \times 10^{-3}}$	$\mathbf{2.4 \times 10^{-3}}$	$\mathbf{1.4 \times 10^{-3}}$	$\mathbf{1.4 \times 10^{-2}}$

Table D-13 Number of Latent Cancer Fatalities Expected from Accidents Resulting from the Transportation of Radioactive Materials for One Year of Operation

Route	Material	Latent Cancer Fatalities				
		Ground	Inhaled	Resuspended	Cloudshine	Total
Metropolis, IL to ACP	Feed Material	5.2×10^{-6}	4.8×10^{-4}	3.2×10^{-4}	3.5×10^{-10}	$\mathbf{8.0 \times 10^{-4}}$
Port Hope, ON to ACP	Feed Material	1.3×10^{5}	1.2×10^{-3}	8.0×10^{-4}	8.8×10^{-10}	$\mathbf{2.0 \times 10^{-3}}$
Wilmington, DE to ACP	Feed Material	9.8×10^{-6}	8.0×10^{-4}	5.2×10^{-4}	2.5×10^{-10}	$\mathbf{1.3 \times 10^{-3}}$
ACP to Richland, WA	Product	7.5×10^{-6}	6.6×10^{-4}	2.1×10^{-4}	2.0×10^{-10}	$\mathbf{8.7 \times 10^{-4}}$
ACP to Columbia, SC	Product	4.9×10^{-6}	4.3×10^{-4}	1.3×10^{-4}	1.3×10^{-10}	$\mathbf{5.6 \times 10^{-4}}$
ACP to Wilmington, NC	Product	6.5×10^{-6}	5.7×10^{-4}	1.8×10^{-4}	1.8×10^{-10}	$\mathbf{7.5 \times 10^{-4}}$
ACP to Seattle, WA (Korea)	Product	2.5×10^{-6}	2.1×10^{-4}	6.9×10^{-5}	6.6×10^{-11}	$\mathbf{2.8 \times 10^{-4}}$
ACP to Seattle, WA (Japan)	Product	3.5×10^{-6}	3.0×10^{-4}	9.6×10^{-5}	9.2×10^{-11}	$\mathbf{3.9 \times 10^{-4}}$
Richland, WA to ACP	Heels	5.2×10^{-8}	3.2×10^{-6}	7.2×10^{-6}	1.0×10^{-12}	$\mathbf{1.0 \times 10^{-5}}$
Columbia, SC to ACP	Heels	2.8×10^{-8}	1.8×10^{-6}	4.0×10^{-6}	5.5×10^{-13}	$\mathbf{5.8 \times 10^{-6}}$
ACP to Clive UT	LLW	5.2×10^{-8}	4.4×10^{-6}	5.1×10^{-6}	5.7×10^{-12}	$\mathbf{9.5 \times 10^{-6}}$
ACP to Nevada Test Site, NV	LLW	8.8×10^{-9}	5.5×10^{-7}	1.7×10^{-6}	4.5×10^{-12}	$\mathbf{2.2 \times 10^{-6}}$
ACP to Gainsville, FL	Mixed LLW	2.0×10^{-9}	1.3×10^{-7}	5.7×10^{-7}	1.0×10^{-12}	$\mathbf{7.0 \times 10^{-7}}$
Piketon, OH to Clive, UT	U_3O_8	1.7×10^{-6}	7.4×10^{-4}	6.1×10^{-7}	9.1×10^{-10}	$\mathbf{7.5 \times 10^{-4}}$
Piketon, OH to Clive, UT	CaF_2	3.5×10^{-11}	2.9×10^{-9}	1.3×10^{-8}	3.6×10^{-15}	$\mathbf{1.6 \times 10^{-8}}$
Total		$\mathbf{5.4 \times 10^{-5}}$	$\mathbf{5.4 \times 10^{-3}}$	$\mathbf{2.3 \times 10^{-3}}$	$\mathbf{3.1 \times 10^{-9}}$	$\mathbf{7.8 \times 10^{-3}}$

Table D-14 Number of Latent Cancer Fatalities Expected from the Incident-Free Transportation of Radioactive Materials of All Decontamination and Decommissioning (D&D) Waste

Route	Material	Latent Cancer Fatalities							
		MEI	Drivers	Off-Link Public	On-Link Public	Rest Stop	Inspect-ion Stop	Loading	Total
ACP to Clive, UT	D&D Waste	4.1×10^{-9}	1.4×10^{-3}	8.6×10^{-5}	7.4×10^{-4}	2.2×10^{-3}	1.9×10^{-3}	4.7×10^{-4}	$\mathbf{6.8 \times 10^{-3}}$
ACP to Nevada Test Site, NV	D&D Waste	2.0×10^{-7}	8.9×10^{-2}	5.1×10^{-3}	4.8×10^{-2}	1.2×10^{-1}	3.1×10^{-2}	2.1×10^{-2}	$\mathbf{3.1 \times 10^{-1}}$
ACP to Kingston, TN	D&D Waste	1.8×10^{-10}	2.7×10^{-5}	1.5×10^{-6}	1.0×10^{-5}	1.2×10^{-5}	1.0×10^{-5}	1.1×10^{-4}	$\mathbf{1.7 \times 10^{-4}}$
Total		$\mathbf{2.0 \times 10^{-7}}$	$\mathbf{9.1 \times 10^{-2}}$	$\mathbf{5.2 \times 10^{-3}}$	$\mathbf{4.9 \times 10^{-2}}$	$\mathbf{1.2 \times 10^{-1}}$	$\mathbf{3.2 \times 10^{-2}}$	$\mathbf{2.1 \times 10^{-2}}$	$\mathbf{3.2 \times 10^{-1}}$

Table D-15 Number of Latent Cancer Fatalities Expected from Accidents Resulting from the Transportation of Radioactive Materials of All Decontamination and Decommissioning (D&D) Waste

Route	Material	Latent Cancer Fatalities				
		Ground	Inhaled	Resuspended	Cloudshine	Total
ACP to Clive, UT	D&D Waste	3.2×10^{-7}	2.5×10^{-5}	4.7×10^{-5}	3.3×10^{-11}	$\mathbf{7.3 \times 10^{-5}}$
ACP to Nevada Test Site, NV	D&D Waste	2.1×10^{-5}	1.6×10^{-3}	3.0×10^{-3}	2.1×10^{-9}	$\mathbf{4.7 \times 10^{-3}}$
ACP to Kingston, TN	D&D Waste	7.5×10^{-9}	5.3×10^{-7}	1.2×10^{-6}	4.4×10^{-12}	$\mathbf{1.7 \times 10^{-6}}$
Total		$\mathbf{2.1 \times 10^{-5}}$	$\mathbf{1.7 \times 10^{-3}}$	$\mathbf{3.1 \times 10^{-3}}$	$\mathbf{2.1 \times 10^{-9}}$	$\mathbf{4.7 \times 10^{-3}}$

However, the accident related radiological risks associated with the transport of the 10 percent enriched product would be somewhat greater than that of the 5 percent enriched product. This primarily due to the higher activity of uranium-234 in the 10 percent enriched product. Uranium-234 does not contribute significantly to the external dose rate, but is an inhalation hazard if released. Table D-16 shows the calculated latent cancer fatalities from the transport of the higher enriched product material for the same routes used previously. The number of expected latent cancer fatalities associated with the transport of product material only would be approximately a factor of three greater than that previously estimated. It should be noted that this factor of three is conservative in that it assumes all the product material is enriched to 10 percent; and that it does not account for the decreased risks associated with lower activities of uranium-234 in shipment of the conversion products.

Table D-16 Number of Latent Cancer Fatalities Expected from Accidents Resulting from the Transportation of Product Material Enriched to 10 Percent for One Year of Operation

Route	Material	Latent Cancer Fatalities				
		Ground	Inhaled	Resuspended	Cloudshine	Total
ACP to Richland, WA	Product	1.6×10^{-5}	2.3×10^{-3}	1.4×10^{-4}	3.6×10^{-10}	$\mathbf{2.5 \times 10^{-3}}$
ACP to Columbia, SC	Product	1.0×10^{-5}	1.5×10^{-3}	9.4×10^{-5}	2.4×10^{-10}	$\mathbf{1.6 \times 10^{-3}}$
ACP to Wilmington, NC	Product	1.3×10^{-5}	2.0×10^{-3}	1.3×10^{-4}	3.1×10^{-10}	$\mathbf{2.1 \times 10^{-3}}$
ACP to Seattle, WA (Korea)	Product	5.2×10^{-6}	7.5×10^{-4}	1.1×10^{-4}	1.2×10^{-10}	$\mathbf{8.6 \times 10^{-4}}$
ACP to Seattle, WA (Japan)	Product	7.3×10^{-6}	1.0×10^{-3}	1.5×10^{-4}	1.6×10^{-10}	$\mathbf{1.2 \times 10^{-3}}$
Total		$\mathbf{5.2 \times 10^{-5}}$	$\mathbf{7.6 \times 10^{-3}}$	$\mathbf{6.2 \times 10^{-4}}$	$\mathbf{1.2 \times 10^{-9}}$	$\mathbf{8.3 \times 10^{-3}}$

D.5 Chemical Impacts from Transportation Accidents

In addition to the radiological impacts during transportation described above, chemical impacts from a transportation accident involving uranium could also affect the surrounding public. Uranium compounds, in addition to being radioactive, can have toxic chemical effects (primarily on the kidneys) if inhaled or ingested. The operation of the ACP would result in the transport of UF_6 as feed and product material to and from the ACP, as well as the transport of triuranium octaoxide as a conversion product. Calcium fluoride, another conversion product, contains small amounts of uranium as a contaminant.

Uranium hexafluoride does not react with nitrogen (N_2), oxygen (O_2), carbon dioxide (CO_2) or dry air, but does react rapidly with water vapor to hydrogen fluoride (HF) and uranyl fluoride (UO_2F_2):

$$UF_6 + (2+4\,x)\,H_2O \rightarrow UO_2F_2 * 2\,H_2O + 4\,HF * x\,H_2O$$

Hydrogen fluoride is extremely corrosive and can damage the lungs and cause death if inhaled at high enough concentrations. Irreversible adverse effects resulting from sufficiently high concentrations of these chemicals include permanent organ damage or the impairment of everyday functions, includingdeath. The number of deaths resulting from the chemical effects of hydrogen fluoride and uranyl fluoride is estimated to occur in one percent of those experiencing irreversible effects (Policastro et al., 1997). In contrast to the irreversible adverse effects from exposure to higher concentrations of hydrogen fluoride and uranyl fluoride, the adverse effects from exposure to lower concentrations include skin rash and respiratory irritation.

To estimate the chemical effects of an accident involving the transport of UF_6, the Department of Energy (ANL 2001, DOE 2004) modeled the dispersion of chemical emissions released into the environment from a transportation accident involving a fire. The results were used to determine the number of people whose exposure would exceed the threshold for adverse and irreversible adverse effects. DOE estimated the chemical effects for accidents in rural, suburban, and urban areas. Table D-17 shows the potential chemical impacts to the public from a hypothetical severe transportation accident that involves a fire.

Table D-17 Potential Chemical Consequences to the Population from Severe Transportation Accidents

Material	Mode	Number of Persons with Potential Adverse Health Effects			Number of Persons with Potential Irreversible Adverse Health Effects		
		Rural	Suburban	Urban	Rural	Suburban	Urban
UF_6	Truck	6	760	1,700	0	1	3
U_3O_8	Rail	0	47	103	0	17	38

Source: DOE, 2004.

Based on the total number of trips, the length of the trips, and the mean accident rate, the estimated number of accidents involving shipments of UF_6 is 0.5 accidents per year, or an average of one accident every two years. Of these accidents, approximately 55 percent will not result in the release of any UF_6, and another 43 percent will result in a release of no more than 10 percent of the UF_6. About 2 percent of all accidents are expected to be severe enough to result in the release of all the UF_6 present. The probability of one or more of the fifteen expected accidents being this severe is about 26 percent. Such an accident is most likely to occur in a rural or suburban area.

D.6 References

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APPENDIX E
AIR QUALITY ANALYSIS

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APPENDIX E
AIR QUALITY ANALYSIS

E.1 Air Dispersion Modeling Inputs

This section discusses the inputs used in the application of the ISCLT3 air dispersion model (EPA, 1995) to assess the non-radiological air quality impacts from site preparation and construction as well as from the operation of the proposed ACP. Modeling results can be found in Chapter 4 of the EIS.

E.1.1 Emissions from Site Preparation and Construction

Emissions during the site preparation and construction phases can be divided into four parts: emissions from diesel equipment used by the work crews, emissions from gasoline-powered trucks used by the work crews, emissions from commuter vehicles and delivery trucks, and fugitive dust from construction activity for the construction of new buildings. Emissions related to work crews, crew trucks, and fugitive dust were modeled as area sources with the same footprint as the building being constructed or prepared. Emissions from on-road vehicles were modeled as elongated area sources following the most likely (shortest distance from main entrance) route of traffic.

During the construction period, four work crews are expected to be active: the steel crew, the electrical and mechanical crew, the equipment crew, and the utilities crew. Equipment and fuel proposed for use for each crew are summarized in Table E-1. (USEC, 2005) Diesel equipment is assumed to consume one gallon of fuel per 10 hp per day with equipment horsepowers were taken from the Means Open Shop Building Construction Cost Data Book (USEC, 2005). Each crew trucks is assumed to consume 10 gallons of gasoline per day.

Table E-1 Equipment and Fuel Use Associated with each Crew

Steel Crew			**Electrical and Mechanical Crews**		
90T Crane	275	hp	Bucket Truck	200	hp
Welding	50	hp	55T Crane	170	hp
Diesel	260	gal/day	12T Crane	40	hp
Gas	40	gal/day	Diesel	328	gal/day
			Gas	30	gal/day
Utilities Crew			**Equipment Crew**		
Excavator	240	hp	90T Crane	275	hp
Diesel	192	gal/day	Diesel	220	gal/day
Gas	10	gal/day	Gas	20	gal/day

Notes:

gal/day = gallons per day; hp = horsepower

The NONROAD model is the EPA's standard method for preparing emissions inventories for mobile sources that are not classified as being related to on-road traffic, railroads, air traffic, or water going vessels (EPA, 2002a). The model was developed to estimate county-level emission inventories, but contains all of the information needed to develop a facility specific inventory. Thus NRC used the used the supporting information from the NONROAD model for developing a site-specific emission inventory.

The NONROAD model uses the following general equation to estimate emissions separately for CO, NO_x, PM (essentially all the PM from combustion is $PM_{2.5}$), and THC:

$$EMS = EF * HP * LF * ACT * DF \quad \text{(Eq. 1)}$$

where:

EMS = estimated emissions
EF = emissions factor in grams per horsepower hours
HP = peak horsepower
LF = load factor (assumed percentage of peak horsepower)
ACT = Activity in hours of operation per period of operation
DF = Deterioration Factor

The emissions factor (EF) is specific to the equipment type, engine size, and technology type. The technology type for diesel equipment can be "Base" (before 1988), Tier 0 (1988-1999), or Tier 1 (2000-2005). Tier 2 emissions factors are appropriate for equipment that satisfies 2006 national standards (or slightly earlier California standards). The range in years represents a phase-in by equipment type, engine size and technology. Since most construction activity is schedule for the 2007-2010 time period it was assumed that equipment would meet the Tier 1 standard. Different emissions factors are applied to different ranges of engine sizes. These size ranges are lower bound exclusive and upper bound inclusive. Thus a 175 hp diesel forklift is included in the 100-175 hp range rather than the 175-300 hp range.

The load factor (LF) is specific to the equipment type in the NONROAD model regardless of engine size or technology type and represents the average fraction of peak horsepower at which the engine is assumed to operate.

The deterioration factor (DF) is used to estimate increased emissions due to engine age and is calculated according to the following equation:

$$DF = 1 + A*(AGE)^b \quad \text{(Eq. 2)}$$

where:

A,b = factors given specified in the NONROAD model
AGE = normalized age of the engine

The normalized age of each type of engine appearing in the NONROAD model is calculated using equation 3:

$$AGE = (\text{cumulative hours of operation}) * LF / (\text{median engine life}) \quad \text{(Eq. 3)}$$

The median engine life is specified in the NONROAD model's data files and LF is the load factor used in equation 1 above. The "cumulative hours of operation" can be calculated by multiplying the age in years of the engine by the average activity assumed by the NONROAD model. For this study we assumed a nominal equipment age of five years.

The source classification code and name associated by the NONROAD model with each piece of equipment is presented in Table E-2.

Table E-2 Equipment with Source Classification Codes and Names as they appear in the NONROAD Data Tables

Equipment	Source Classification Code	NONROAD Name
Bucket Truck	2270003010	Diesel Aerial Lift
Crane	2270002045	Diesel Crane
Excavator	2270002036	Diesel Excavator
Welding	2270006025	Diesel Light Commercial Welder

All of the information needed to estimate the facility specific emissions is available as part of the NONROAD model's data files. Sample calculations for estimating CO emissions from the 240 hp excavator follow.

From the NONROAD model data file ACTIVITY.DAT the following record is associated with diesel powered excavators (some blank spaces have been deleted):

```
2270002036 Diesel Excavators    ALL 0 9999 0.59  hrs/yr  1092  DEFAULT
```

The fields of interest are the load factor (0.59) and the average hours of operation per year (1092). The other fields appear identical for all equipment and are intended for use in a future version of the model.

The data file with emissions factors for each pollutant is called EXHCO.EMF which contains the exhaust factors for CO. The following lines are associated with diesel excavators between 175 and 300 hp (some blank spaces and additional technology types have been deleted):

```
2270002036  175  300    Base    T0      T1      T2   g/hp-hr   CO
                          3.98    4.13    1.14    1.14
```

Once again the source classification code appears followed by the minimum and maximum horsepower for the following emissions factors. Because all equipment is assumed to be Tier 1 (T1) the emissions factor will be 1.14 grams of CO per horsepower-hour. In this case an advance to Tier 2 would not produce an improvement, but it could for other pollutants and/or other equipment types and sizes.

To estimate the emissions per eight-hour day using Equation 1 all that is needed is to calculate the deterioration factor.

The following record is associated with Tier 1 diesel equipment in the file EXHCO.DAT:

```
T1                          0.101       1.0       1.0        CO
```

The second field gives factor "A" from Equation 2; the third field gives factor "b"; and the fourth field gives the emissions cap in median life units (the largest number that can be used for "age" in Equation 2).

To determine the "age" used in Equation 3 it is now necessary to know the cumulative hours of operation and the "median engine life." This information is found from equipment type population survey's available for each state. For Ohio, the equipment population file OH.POP gives the expected useful life of a diesel excavator between 175 and 300 hp as 4,667 hours (some blank spaces have been deleted):

```
39000 2000 2270002036 Dsl - Excavators 175 300 233.3 4667 DFAULT
1577.2
```

It is now possible to calculate CO emissions for the excavator.

Starting with Equation 3:

AGE = (5 years * 1092 hrs/yr)*0.59/(4667 hours) = 0.69

Then Equation 2:

$DF = 1 + 0.101*(0.69)^1 = 1.07$

Finally Equation 3:

EMS = (1.14 g/hp-hr)*(240 hp)*(0.59)*(8 hr/day)*(1.07)*(0.002205 lb/g) = 3.05 lb/day

The above process was used to estimate emissions of PM, CO, NO_x, and non-methane hydrocarbons (NMHC). All PM was assumed to be $PM_{2.5}$. SO_2 emissions were calculated by mass balance using the 2007 nonroad sulfur emission standard (500 ppm) and an average density of 7.1 lbs per gallon of diesel.

Each work crew was assumed to have one truck for every four people (USEC, 2005). Emissions were estimated assuming that each crew had a truck similar to a Ford F-150 Supercab meeting Tier 1 standards with at least 80,500 kilometers (50,000 miles) of use. Such a truck fits into the Heavy Duty-Light Truck classification. Table E-3 gives the emissions standards for this truck type. Each truck was assumed to be in use for a full eight-hour day (USEC, 2005) traveling at an average speed of five miles per hour.

Table E-3 Emissions from crew trucks

	NMHC	CO	NOx	PM
grams/mile	0.56	7.3	1.53	0.12
grams/day	22.4	292	61.2	4.8

Notes:
To convert grams to ounces multiply by 0.35.

SO_2 emissions from crew trucks were calculated by mass balance using the 2007 gasoline sulfur standard (30 ppm) and an average fuel density of 6.1 lbs per gallon of gasoline.

Emissions from on-road heavy-duty delivery trucks and commuter cars and trucks were estimated using EPA's MOBILE6.2 model (EPA, 2002b). Long-haul diesel truck emission rates were estimated based on trucks operating in 2010 using national fleet age distribution. Medium-haul diesel trucks were based on the same parameters. Commuter vehicle emissions rates were applied using national defaults for fleet age distribution, but assumed that the fleet mix was half light duty gasoline vehicles and half light duty gasoline trucks. Table E-4 gives emission rates for delivery trucks and commuter vehicles.

Table E-4 Emissions rates for on-road vehicles (grams per mile)

	NMHC	CO	NO_x	PM_{10}	SO_2
Long-Haul Heavy Duty Diesel Delivery Trucks	0.36	1.3	5.61	0.11	0.01
Medium-Haul Heavy Duty Diesel Delivery Trucks	0.44	1.9	8.32	0.16	0.01
Commuter vehicles	0.83	10.6	0.66	0.03	0.01

Notes:
To convert grams per mile to ounces per mile multiply by 0.035.

Delivery trucks were modeled as elongated area sources originating at the facility's main entrance and taking larger roads to the north end of the construction area. Commuter vehicles were modeled as elongated area sources originating at the southwest construction access entrance and following interior roads to the parking lot south of the construction area. During the construction period an average of 28 one-way truck trips (9 long-haul and 19 medium-haul) per day and 2,612 one-way commuter trips per day were modeled. This assumed that each construction worker arrived in a single occupant vehicle.

Emissions rates for fugitive dust were estimated using guidelines outlined in the Western Regional Air Partnership fugitive dust handbook (WRAP, 2004). Although these guidelines were developed for use in western states they assume standard dust mitigation activities, such as wetting, so they were deemed applicable to a Midwestern setting. The handbook offers several options for selecting PM_{10} factors depending on what information is known. Table E-5 shows the possible emissions factors and bases for choosing them.

Table E-5 PM_{10} emissions factors recommended by the Western Regional Air Partnership Handbook

Basis for Emission Factor	Recommended PM10 Emission Factor
Only area and duration known	0.11 ton/acre/month (average conditions) or 0.22 ton/acre/month (average, no mitigation) or 0.43 ton/acre/month (worst-case conditions)
Volume of earth moved known	0.011 ton/acre/month for general construction plus 0.059 ton/1000 yd3 for on-site cut-fill plus 0.22 ton/1000 yd3 for off-site cut-fill
Equipment usage known	0.13 lb/acre/work-hr for general construction plus 49 lb/scraper-hr for on-site haulage plus 94 lb/hr for off-site haulage

Notes:
lb = pounds; yd^3 = cubic yards; hr = hour

Because equipment usage is known, the third option is most appropriate for the proposed ACP. However, because the foundations have been dug and the fill has been hauled before the modeled construction period only the 0.13 pound/acre/work-hour factor was applied. Once PM_{10} was estimated, the Western Regional Air Partnership recommended fractional factor of 0.209 was used to estimate $PM_{2.5}$ from PM_{10}.

Fugitive dust emissions were only applied to new buildings and then only to the construction phase, not to other phases such as equipment installation.

E.1.2 Emissions from Plant Operations

Air emissions during plant operation were associated with the use of emergency backup generators burning diesel fuel as well as the on-road delivery trucks and commuter vehicles. These are the only non-radioactive emissions associated with the normal operation of the proposed proposed ACP.

Emissions factors for on-road vehicles were identical to those used for the construction phase. During plant operations, however, an average of 24 one-way delivery truck trips per day and 1,116 commuter one-way trips per day were modeled.

A number of diesel-powered emergency generators will be installed at the plant. The generators' total emissions rates for CO, NOx, PM_{10}, $PM_{2.5}$, SO_2, and NMHC were modeled using specifications from a proprietary appendix to the Environmental Report (USEC, 2005).

Each generator was modeled as a point source located at the assigned building as identified in a proprietary index to the Environmental Report (USEC, 2005). Stack parameters were based on a typical 1,109 hp diesel generator described in Appendix 7 of CARB's Diesel Risk Reduction Plan (CARB, 2000) with the exception that the stack height was increased from 3 meters to 10 meters to reflect good engineering practice to avoid downwash effects assuming that the stacks are located on top of the building(s). Table E-7 lists the stack parameters used in modeling the generators.

Table E-7 Stack Parameters for Diesel Generators

Stack Temperature	Stack Height	Stack Diameter	Exit Velocity
787 ˚K	30 m (10 m above roof)	0.25 m	59.8 m/s

Notes:
K = ˚Kelvin; m = meter; m/s = meters per second.
To convert °K to °F use the following formula: ° F = ((°K - 275.15) x 1.8) + 32
To convert meters to feet multiply by 3.3

E.1.3 Emissions from Manufacturing and Assembly

[The information in this section is being withheld pursuant to 10 CFR 2.390.]

[The information in this section is being withheld pursuant to 10 CFR 2.390.]

E.2 Meteorological Inputs

Surface meteorological data, including wind data, have been collected at the on-site meteorological tower at the 10-, 30-, and 60-meters (33-, 98-, and 197-feet) levels. The tower is in the southern part of the reservation. A comparison of annual wind roses for the period 1995 through 2001 indicates that wind patterns at the 10-m (33-ft) level are different from those at the 30-m and 60-meters (98- and 197-feet) levels. Winds at the 10-m (33-ft) level appear to be influenced by local topographical and/or vegetative features. Accordingly, wind data at the 30-meters (98-feet) level, believed to be representative of the site, were used in this analysis. This same meteorological data set was used in the radiological air quality assessment.

Seasonal temperatures from Waverly, OH (NOAA, 2000) and mean mixing heights were obtained from Huntington, WV (Holzworth, 1972). Table E-12 lists temperature data used in modeling and Table E-13 gives the mixing heights.

Table E-12 Seasonal temperatures (°K) for Waverly, OH (Climatology:1960-1991, NOAA)

	Minimum	Maximum	Average
Winter	267	273	279
Spring	277	284	291
Summer	289	296	302
Fall	278	285	292

Notes:
°K = °Kelvin
To convert °K to °F use the following formula: ° F = ((°K - 275.15) x 1.8) + 32

Table E-13 Mean afternoon mixing heights (meters) for Huntington, WV (Holzworth, 1972)

Winter	1,079
Spring	1,986
Summer	1,641
Fall	1,340

Notes:
To convert meters to feet multiply by 3.3.

E.2 References

(CARB, 2000) California Air Resources Board. "Risk Reduction Plan to Reduce Particulate Matter from Diesel-Fueled Engines and Vehicles." Appendix 7, Sacramento, CA. October 2000.

(EPA, 1995) U.S. Environmental Protection Agency. "User's Guide for the Industrial Source Complex (ISC3) Dispersion Models." Volume 1. EPA-454/B-95-003a. September 1995.

(EPA, 2002a) U.S. Environmental Protection Agency. "User's Guide for the EPA Emissions Model Draft NONROAD 2002." EPA-420-P-02-013. December 2002.

(EPA, 2002b) User's Guide to MOBILE6.1 and MOBILE6.2: Mobile Source Emission Factor Model (Draft). EPA420-R-02-010. March 2002.

(Holzworth, 1972) Mixing Heights, Wind Speeds, and Potential for Urban Air Pollution Throughout the Contiguous United States, EPA, Office of Air Programs, RTP, AP-101. 1972.

(NOAA, 2000) Climatography of the United States No. 20, 1971-2000., Waverly, Ohio, National Oceanic Atmospheric Administration, National Climate Data Center, North Carolina. 2000.

(USEC, 2005) USEC Inc. "Environmental Report for the American Centrifuge Plant in Piketon, Ohio." Revision 6. LA-3605-0002, Docket No. 70-7004. Nonvember 2005.

(WRAP, 2004) Western Regional Air Partnership. "Fugitive Dust Handbook." Prepared by Countess Environmental, 4001 Whitesail Circle, Westlake Village, CA. under contract to the Western Governor Association (WGA), WGA Contract No. 30204-83. November 2004.

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APPENDIX F
ENVIRONMENTAL JUSTICE ANALYSIS

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APPENDIX F
ENVIRONMENTAL JUSTICE ANALYSIS

This appendix provides additional data for the assessment of the potential for disproportionately high and adverse human health or environmental effects on minority and/or low-income populations resulting from the proposed construction, operation, and decommissioning of the proposed American Centrifuge Plant (ACP).

Tables F-1 and F-2 present detailed year 2000 Census data for the environmental justice analysis at the State and county level, respectively. The tables provide minority and low-income population data for each Census tract within 80 kilometers (50 miles) of the proposed ACP. Census tracts exceeding minority or low-income criteria are shown in bold.

A summary of the number of Census tracts exceeding minority and/or low-income criteria is presented in Tables F-3 and F-4. Table F-3 summarizes information at the State level; Table F-4 summarizes information at the county level.

Refer to Chapter 3 of this Environmental Impact Statement (EIS) for methods and references.

Table F-1 State Population Data, by Census Tract [a, b]

Census Tract	Persons	Below Poverty Level (%)	Whites (%)	African American/ Black (%)	Native American (%)	Asian and Pacific Islander (%)	Other Races (%)	Two or More Races (%)	Hispanic or Latino (%)	Minorities (%)
State of Ohio	11353140	10.6	84.9	11.5	0.2	1.2	0.8	1.5	1.9	16
Threshold for EJ Concerns	NA	30.6	NA	31.5	20.2	21.2	20.8	21.5	21.9	36
Adams County										
39001990100	4868	22.4	96.8	0	1.3	0	0.1	1.7	0.8	3.9
39001990200	4635	13.1	98.4	0	0.2	0.2	0.1	1.1	0.6	1.9
39001990300	6212	12.6	98.8	0.1	0.1	0	0.2	0.8	0.3	1.5
39001990400	4630	17.6	97.8	0	1.3	0	0	1	0	2.2
39001990500	3454	21.7	96.3	0	1.6	0	0	2.1	0	3.7
39001990600	3531	19.6	99	0	0.1	0.1	0	0.8	0.5	1.5
Athens County										
39009972800	4272	27.7	97.4	0.4	0.8	0.4	0.3	0.6	1.8	4
39009972900	5362	29.8	90.9	3.1	0.4	3.1	0.3	2.1	0.5	9.5
39009973200	4320	17.4	87.8	3.7	0.5	4.4	0.5	2.5	2.2	13
39009973700	3967	13.9	95.7	1.2	0.6	0.8	0.2	1.6	1.4	5.7
39009973800	4642	11.3	98.4	0.2	0	0.7	0.1	0.5	0.5	2
Brown County										
39015951200	9522	6.2	98.3	0.2	0.1	0.3	0	1.1	0	1.7
39015951300	6435	12.3	98.7	0.3	0.2	0.3	0	0.5	0.3	1.6
39015951400	4408	14.4	98.6	0.4	0	0.1	0	0.8	0.5	1.9
39015951500	4896	12.3	98.5	0	0.9	0.4	0	0.2	0	1.5
39015951600	3869	16.5	97.4	1.1	0.3	0.2	0.2	0.8	1.4	3.5
39015951700	2764	15.3	92.8	4.8	0.1	0.1	0.1	2.1	0.6	7.6
39015951800	4650	12.2	97.4	2	0.2	0.1	0	0.3	0.4	2.9
39015951900	5741	12.1	99	0	0.2	0	0.3	0.5	0.6	1.2

Table F-1 State Population Data, by Census Tract (continued)

Census Tract	Persons	Below Poverty Level (%)	Whites (%)	African American/ Black (%)	Native American (%)	Asian and Pacific Islander (%)	Other Races (%)	Two or More Races (%)	Hispanic or Latino (%)	Minorities (%)
Clinton County										
39027994300	3871	10.3	97.6	0.9	0	0.1	0.4	1	0.1	2.4
39027994400	4808	4.4	98.1	0	0.7	0	0	1.2	0.2	2.1
39027995000	3967	7.9	99.3	0.1	0.2	0.1	0	0.4	0.1	0.7
39027995100	4105	8	97	0.1	1.2	0.2	0.9	0.6	1.2	3.2
Fairfield County										
39045031200	4901	6.1	99.3	0	0	0.1	0.3	0.3	1.3	1.8
39045032500	5996	6.1	83.8	14	0.4	0.1	0.3	1.1	0.7	16.2
39045032600	5840	5	99.1	0.1	0.2	0	0.1	0.5	0.4	1.2
Fayette County										
39047985800	3785	9.1	96.9	1.3	0.2	0	0.8	0.8	0.9	3.2
39047985900	3847	8.7	95.3	2.2	0.2	0.1	0.1	2	0.9	5.2
39047986000	4180	9.4	96.1	0.6	0.4	2.4	0	0.6	0.8	4.7
39047986100	4132	17.1	94	4	0	0	0	2	0	6
39047986200	4623	10.3	93	3.1	0.2	0.8	1.8	1.1	2.8	8.2
39047986300	3602	11	96.8	2.7	0.1	0	0	0.4	1	4
39047986400	4264	5.5	98.3	1	0	0	0.2	0.5	0.4	1.9
Gallia County										
39053953500	4929	14.3	94.5	3.4	0.3	0.8	0.2	0.8	0.4	5.7
39053953600	3974	19.7	95.5	2.3	0.2	0.6	0.1	1.3	0.6	4.8
39053953700	4067	27.4	95.6	0.7	0.2	1.2	0.2	1.9	0.3	4.6
39053953800	4322	19.4	98.2	0.3	0	0	0.2	1.3	0.7	2
39053953900	6790	13.6	94.4	4.1	0	0.4	0	1.2	0	5.6
39053954000	4489	17.2	92.4	3.4	0.8	1.5	0.5	1.5	0.9	8
39053954100	2498	20.7	93.8	3.4	0.3	0	0	2.5	0.4	6.2

Table F-1 State Population Data, by Census Tract (continued)

Census Tract	Persons	Below Poverty Level (%)	Whites (%)	African American/ Black (%)	Native American (%)	Asian and Pacific Islander (%)	Other Races (%)	Two or More Races (%)	Hispanic or Latino (%)	Minorities (%)
Highland County										
39071954400	3825	11	97.1	2.2	0.4	0	0.3	0	0.3	2.9
39071954500	4129	10.8	96.9	1.2	0	0	0.1	1.8	1.2	3.9
39071954600	4726	6.8	99	0.6	0	0.1	0	0.3	0	1
39071954700	5976	6.8	98.1	0	0.3	0.4	0	1.2	0	1.9
39071954800	4011	17.5	95.1	2.1	0.3	1.4	0.6	0.5	0.1	4.9
39071954900	3757	13.8	87.2	9	0.6	1.3	0	1.9	1	12.8
39071955000	4027	19.1	97.9	0.3	1.8	0	0	0	0.9	2.6
39071955100	5783	14	97.6	0.1	0.5	0.7	0	1	0.1	2.5
39071955200	4641	9.6	99.5	0	0.4	0	0	0.1	0.2	0.6
Hocking County										
39073964900	4400	7.3	98.7	0.3	0.7	0	0	0.4	0.1	1.4
39073965000	3888	15.7	99.6	0.2	0.2	0	0	0	0.7	1.1
39073965100	4134	10.5	97.9	0.4	0	0	0	1.7	0	2.1
39073965200	4302	15.9	98.7	0.8	0.2	0	0	0.3	0.2	1.5
39073965300	3548	10.9	99.5	0.4	0.2	0	0	0	0.1	0.7
39073965400	3991	18.9	96.1	0.7	0	1.6	0	1.5	0.6	4.2
39073965500	3978	16.2	93.5	4.6	0.1	0	0.3	1.5	0.3	6.5
Jackson County										
39079957200	5318	16.7	98.1	0.6	0	0.4	0.2	0.7	0.7	2.4
39079957300	3669	19.7	97	0.2	0.3	0.4	0.2	1.8	0.8	3.5
39079957400	5332	15.3	95.3	2.8	0.3	0.3	0.2	1.1	1.2	4.9
39079957500	5765	16	98.5	1.1	0	0.2	0	0.3	2.6	4.1
39079957600	2822	16.6	96.5	0.2	0.2	0.2	0	2.3	0.4	3.5
39079957700	5188	17.2	97.1	0.6	0.2	0.6	0	1.5	1.8	4.7
39079957800	4547	14.8	98.3	0.5	0.9	0	0	0.4	0.1	1.7

Table F-1 State Population Data, by Census Tract (continued)

Census Tract	Persons	Below Poverty Level (%)	Whites (%)	African American/ Black (%)	Native American (%)	Asian and Pacific Islander (%)	Other Races (%)	Two or More Races (%)	Hispanic or Latino (%)	Minorities (%)
Lawrence County										
39087050100	2692	15.2	95.9	2.8	0.2	0	0	1.1	0.8	4.9
39087050200	2524	20.8	97	2.5	0	0	0	0.5	0.3	3.3
39087050300	2349	**33**	78.1	19.6	0	1.4	0.2	0.5	0.9	22.3
39087050400	3155	25.1	97.8	1.6	0.3	0	0	0.3	0.4	2.3
39087050500	6585	19.1	97.6	0.1	0.3	1	0.2	0.7	0.9	2.9
39087050600	1677	28.1	94.5	1.4	0.3	0	0.4	3.5	0.4	5.5
39087050700	3749	26	99	0	0	0.7	0	0.3	0	1
39087050800	3843	22.6	97.4	1.8	0	0.7	0	0.1	0.2	2.8
39087050900	2279	18.4	98.3	0.3	0.4	0	0.4	0.7	1	2
39087051001	4475	13.9	95	3.7	0	0	0	1.3	0	5
39087051002	4316	14.5	96.7	1.6	0	0	0	1.7	0	3.3
39087051100	6977	21.2	92.2	5.7	0.6	0	0.5	1.1	0.5	7.8
39087051200	5299	15.7	98.6	0.3	0.3	0	0.1	0.6	1	1.9
39087051300	3705	18.4	98.7	0.3	0	0.1	0	1	0	1.3
39087051400	8694	12	97.5	1.1	0.3	0.6	0.2	0.3	0.4	2.8
Madison County										
39097041200	3282	7.6	97.8	0	0.1	0.9	0.2	1	1.4	3.3
Meigs County										
39105964200	4423	17.3	98.6	0.3	0.1	0	0.1	0.8	0.2	1.5
39105964300	4342	21.3	96.8	0.3	0.3	0	0.5	2	0.7	4
39105964400	3676	28.2	94.5	2.2	0.6	0.1	0	2.6	0	5.5
Pickaway County										
39129020100	2050	22.9	92.6	3.1	2.2	0	0	2.1	0.7	8.1
39129020200	2698	10.8	98.3	1.3	0	0	0	0.4	0.6	2.3

Table F-1 State Population Data, by Census Tract (continued)

Census Tract	Persons	Below Poverty Level (%)	Whites (%)	African American/ Black (%)	Native American (%)	Asian and Pacific Islander (%)	Other Races (%)	Two or More Races (%)	Hispanic or Latino (%)	Minorities (%)
39129020310	5089	6.2	96.5	1.1	0.2	0.8	0.1	1.2	0	3.5
39129020320	3335	6.8	93.8	2.2	1.1	1.7	1.1	0.2	2.4	7.5
39129020400	2543	25.6	98	1	0	0	0.2	0.8	0.3	2.2
39129021100	6910	5.5	97.9	0.1	0.3	0.8	0	1	0.4	2.4
39129021200	6424	8.9	97.3	0.3	0.9	0.1	0.1	1.3	0.5	3.1
39129021400	8992	7.7	88.1	9.8	0.3	0.1	0.1	1.5	0.7	12.2
39129021500	2987	9.2	99.2	0	0.1	0	0	0.7	1.3	1.9
39129021600	3528	12.7	98.1	0.4	0.5	0.1	0.1	0.9	0.1	2
39129021700	4506	7.1	99	0.6	0.4	0	0.1	0	1	1.9
Pike County										
39131952200	5592	16.2	94.2	1.9	1.4	0.2	0.6	1.8	0.3	5.9
39131952300	5067	18.6	95.9	1.2	0.3	0.5	0	2.1	0.4	4.4
39131952400	3368	10.7	95.5	1.3	1	1.4	0.1	0.7	0	4.5
39131952500	3753	17.7	97.9	0	0.1	0.5	0	1.5	0.6	2.1
39131952600	5573	20.6	96.9	0.2	2	0	0	1	0.3	3.4
39131952700	4342	25.7	98	0	1.1	0.3	0.3	0.3	1.7	3.4
Ross County										
39141955500	5388	5.2	98.6	0.1	0.2	0	0.2	0.8	0.7	1.8
39141955601	2047	7.5	98.5	0.8	0.4	0	0.3	0	1.9	3.4
39141955602	4954	4.8	57.1	**39.3**	0.2	0	0	4	2.2	**44**
39141955603	3861	11.8	98.3	0.6	0.1	0.5	0.2	0.3	0	1.7
39141955700	4267	12.5	98.5	0.4	0.4	0.1	0	0.5	0.4	1.9
39141955800	6824	9.8	94.9	3.5	0	0.1	0.5	1	0.7	5.4
39141955900	4257	10.4	87.9	8.7	0	0.8	0.2	2.5	0.1	12.2
39141956000	4549	12	90.1	6.8	1.3	0	0	1.8	0.2	10.1
39141956100	3774	9.4	84.9	11.8	0.2	0.8	0	2.3	0.3	15.4

Table F-1 State Population Data, by Census Tract (continued)

Census Tract	Persons	Below Poverty Level (%)	Whites (%)	African American/ Black (%)	Native American (%)	Asian and Pacific Islander (%)	Other Races (%)	Two or More Races (%)	Hispanic or Latino (%)	Minorities (%)
39141956200	2299	11	90.9	2.9	1.3	2.3	0.3	2.5	0.8	9.7
39141956300	2942	14.4	93.6	4.2	0	0.7	0	1.3	0.6	6.7
39141956400	3665	15.3	89.1	7.5	0.6	0.2	0.4	2.3	0.7	11.2
39141956500	4045	16.4	91.3	5.9	0.9	0	0	2	1.7	9.5
39141956600	5044	9.5	98.9	0.2	0	0.6	0	0.2	0.6	1.6
39141956700	5003	13.5	97	1	1.1	0.4	0.3	0.3	1	3.7
39141956800	6026	15.4	97.6	0.9	0.1	0.1	0	1.3	1.7	4
39141956900	4400	18	97.7	0.4	0	0.3	0	1.6	0	2.3
Scioto County										
39145992100	4960	17.4	98.3	0	0.2	0.1	0.6	0.7	0.6	1.7
39145992200	5180	12.8	79.9	16	0.4	0.1	0.3	3.4	2	20.8
39145992300	4867	16.1	96.7	0.2	1.5	0	0.3	1.3	0	3.3
39145992400	5626	21	97.2	0	0.2	0.7	0.3	1.6	1	3.2
39145992500	3188	17.8	95.4	0.5	0	0.6	0.5	2.9	1.5	5.1
39145992600	4164	16	98.2	0	0.2	0.1	0.1	1.2	1.4	2.3
39145992700	4538	12.5	96.7	0.2	0.2	0.2	0.1	2.5	0.4	3.3
39145992800	4486	18.8	95.7	2.5	1.1	0.3	0	0.4	0.3	4.7
39145992900	6372	15.4	98.1	0.7	0.4	0	0	0.8	0	1.9
39145993000	3878	20.8	96.9	0.3	0.9	1.3	0	0.6	0	3.1
39145993100	3495	21.9	98.5	0	0.4	0.3	0.1	0.6	0.1	1.5
39145993200	1861	**31.5**	97.6	0.3	0	0	0	2.1	0	2.4
39145993300	2698	14.1	94.6	2.4	0.8	1.8	0	0.5	0.9	6.3
39145993400	3801	28.5	93.1	3.9	0.5	0.2	0.2	2.1	0.3	7.1
39145993500	2859	29.3	97.2	0.2	0.8	0.2	0	1.6	1.5	4.4
39145993600	2596	**43.4**	88.8	7	0	1.2	0	2.9	0	11.2
39145993700	2618	24.6	75.4	20.3	0.4	0	0	4.2	1.4	25.6
39145993800	4689	8.1	95.6	0.7	0.2	1.9	0	1.6	0.2	4.6

Table F-1 State Population Data, by Census Tract (continued)

Census Tract	Persons	Below Poverty Level (%)	Whites (%)	African American/ Black (%)	Native American (%)	Asian and Pacific Islander (%)	Other Races (%)	Two or More Races (%)	Hispanic or Latino (%)	Minorities (%)
39145993900	3515	22.6	96.4	0	2.3	0.2	0	1.1	0	3.6
39145994000	3804	20.3	98.1	0.6	0.3	0.3	0.1	0.5	0.3	1.9
Vinton County										
39163953000	4509	17.8	98.3	0.3	0.5	0	0.1	0.8	0.4	2
39163953100	5284	21.4	97.3	0.1	0.5	0	0.2	1.9	0.8	3.4
39163953200	3013	20.8	98.4	0	0	0	0	1.6	0.5	2
State of Kentucky	4041769	15.8	90	7.3	0.2	0.7	0.5	1.2	1.4	10.7
Threshold for EJ Concerns	NA	35.8	NA	27.3	20.2	20.7	20.5	21.2	21.4	30.7
Boyd County										
21019030200	1182	25.9	81.2	9.2	0.5	4.9	1.2	3	0.6	19.4
21019030300	2542	32.3	96.6	3	0	0	0	0.4	0.2	3.6
21019030400	2072	27.9	93.1	2.3	0.2	0.2	1	3.2	2.3	7.1
21019030500	4489	11.1	97.3	1.6	0	0.9	0	0.2	0	2.7
21019030600	4169	9.9	97	1.6	0.1	0.2	0	1.1	0.2	3
21019030700	3578	8.7	95.8	0.8	0.5	0.1	1.1	1.6	0.4	4.3
21019030800	3969	29.4	97.6	0.5	0	0	0.2	1.8	1	3
21019030900	5772	13.7	99	0.2	0.3	0	0	0.5	0.3	1.3
21019031000	8122	12.6	88.7	7	0.4	0.3	1.1	2.3	4.7	14.1
21019031100	7764	10.9	98	0.5	0	0.2	0.1	1	0.5	2.1
21019031200	3374	11.5	99.1	0.9	0	0	0	0	0	0.9
21019031300	2719	19.2	97.1	1.1	0.2	0.3	0.1	1.3	0	2.9
Carter County										
21043960100	3370	26	98.5	0.7	0	0	0	0.8	0.7	2.2
21043960200	4334	25.5	99.3	0	0.1	0.3	0	0.3	0.2	0.9
21043960300	3080	20.8	100	0	0	0	0	0	0.6	0.6

Table F-1 State Population Data, by Census Tract (continued)

Census Tract	Persons	Below Poverty Level (%)	Whites (%)	African American/ Black (%)	Native American (%)	Asian and Pacific Islander (%)	Other Races (%)	Two or More Races (%)	Hispanic or Latino (%)	Minorities (%)
21043960400	1696	25.6	98.8	0	0.9	0.2	0	0	0	1.2
21043960500	4183	18	99	0.3	0.5	0	0	0.2	0	1
21043960600	5863	18.6	99.3	0.2	0	0.2	0.3	0	0.2	0.7
21043960700	4363	24.5	98.1	0	0	1.2	0	0.7	1.3	2.9
Fleming County										
21069980100	3949	16.6	94.9	4.5	0	0	0.1	0.5	0.8	6
21069980200	3184	12.9	98.4	1	0.2	0	0	0.4	1.3	2.7
21069980400	4085	24.1	99.1	0.9	0	0	0	0	0	0.9
Greenup County										
21089040100	4375	5.5	98.1	0.2	0.2	0.8	0.3	0.3	1.9	3.5
21089040200	7475	12.2	97.8	0.6	0.2	0.1	0.5	0.8	1.9	3.5
21089040300	4531	11.3	97	0.3	0	1.5	0.1	1	0.4	3.3
21089040400	5562	14.6	98.5	0.6	0	0.2	0.1	0.6	0.2	1.6
21089040500	8110	18.7	96.7	1.6	0	0.4	0.2	1.1	0.3	3.4
21089040600	3310	18	98.1	0	0.2	0.2	0	1.5	0	1.9
21089040700	3528	17.6	99.1	0	0.2	0.3	0	0.3	0	0.9
Lewis County										
21135990100	4716	29.1	99.7	0	0.2	0	0	0.1	0.2	0.5
21135990200	3990	33.6	98.9	0.4	0.2	0	0	0.5	0.5	1.6
21135990300	3293	22.5	97	0.8	0.6	0	0.7	0.9	0.7	3.2
21135990400	2093	27.1	100	0	0	0	0	0	0	0

Table F-1 State Population Data, by Census Tract (continued)

Census Tract	Persons	Below Poverty Level (%)	Whites (%)	African American/ Black (%)	Native American (%)	Asian and Pacific Islander (%)	Other Races (%)	Two or More Races (%)	Hispanic or Latino (%)	Minorities (%)
Mason County										
21161960100	3093	14.3	97.3	1.6	0	0	0.2	0.9	0.8	3.3
21161960200	3478	24.7	84.5	12.2	0.2	0	0.9	2.3	1.3	15.7
21161960300	4337	16.8	85.7	10.3	0.1	1.1	0.9	1.9	1.5	15.6
21161960400	4140	11.4	94.7	2.4	0.4	0.7	0.5	1.5	1	5.7
Carter County										
21205950100	6103	16.5	94.4	2.2	0.5	0.9	1	1	2	6.5
State of West Virginia	1808344	17.9	95	3.1	0.2	0.5	0.2	1	0.7	5.5
Threshold for EJ Concerns	NA	37.9	NA	23.1	20.2	20.5	20.2	21	20.7	25.5
Cabell County										
54011000600	1607	**58.9**	89.3	4	1.2	5	0.4	0	0.9	10.7
54011000900	1852	30.7	95.3	3.2	0	0	0.3	1.2	0.3	4.7
54011001000	2426	29.6	97.7	1.1	0	0	0	1.3	0.4	2.7
54011001100	2096	28.1	93.6	2	0	0	0	4.5	2.6	6.4
54011010700	7160	15.5	98.1	0.3	0	0.3	0.1	1.2	0.4	2.2
Mason County										
54053954800	6909	16.3	98.5	0.6	0.2	0	0	0.6	0.2	1.7
54053954900	6750	24	98.8	0.6	0	0.4	0	0.1	0.6	1.7
54053955000	5025	17.6	96.5	1.8	0	1.5	0	0.2	0.5	4
54053955100	7273	21.2	99	0	0.2	0.1	0	0.7	0.2	1.3
Wayne County										
54099005100	2181	13.7	98.4	0	0.6	0.7	0	0.3	0	1.6
54099005200	2086	14.1	98.8	0	0	0.9	0.3	0	0.3	1.2
54099020100	2545	13.1	99.3	0.4	0.4	0	0	0	0	0.7

Table F-1 State Population Data, by Census Tract (continued)

Census Tract	Persons	Below Poverty Level (%)	Whites (%)	African American/ Black (%)	Native American (%)	Asian and Pacific Islander (%)	Other Races (%)	Two or More Races (%)	Hispanic or Latino (%)	Minorities (%)
54099020300	5307	16.4	99	0.4	0	0.2	0.1	0.3	0.4	1.3
54099020400	6219	11.8	99.3	0	0	0	0.2	0.5	1.1	1.6

Notes:
[a] NA = Not available.
[b] Census tracts exceeding minority/low-income criteria are shown in bold.

Table F-2 County Population Data, by Census Tract [a, b]

Census Tract	Persons	Below Poverty Level (%)	Whites (%)	African American/ Black (%)	Native American (%)	Asian and Pacific Islander (%)	Other Races (%)	Two or More Races (%)	Hispanic or Latino (%)	Minorities (%)
Ohio										
Adams County	39001	6	17.4	0	0.7	0	0.1	1.2	0.4	2.4
Threshold for EJ Concerns	NA	26	NA	20	20.7	20	20.1	21.2	20.4	22.4
39001990100	4868	22.4	96.8	0	1.3	0	0.1	1.7	0.8	3.9
39001990200	4635	13.1	98.4	0	0.2	0.2	0.1	1.1	0.6	1.9
39001990300	6212	12.6	98.8	0.1	0.1	0	0.2	0.8	0.3	1.5
39001990400	4630	17.6	97.8	0	1.3	0	0	1	0	2.2
39001990500	3454	21.7	96.3	0	1.6	0	0	2.1	0	3.7
39001990600	3531	19.6	99	0	0.1	0.1	0	0.8	0.5	1.5
Ohio										
Athens County	39009	5	27.4	2.4	0.5	1.8	0.3	1.6	1	7.3
Threshold for EJ Concerns	NA	25	NA	22.4	20.5	21.8	20.3	21.6	21	27.3
39009972800	4272	**27.7**	97.4	0.4	0.8	0.4	0.3	0.6	1.8	4
39009972900	5362	**29.8**	90.9	3.1	0.4	3.1	0.3	2.1	0.5	9.5
39009973200	4320	17.4	87.8	3.7	0.5	4.4	0.5	2.5	2.2	13
39009973700	3967	13.9	95.7	1.2	0.6	0.8	0.2	1.6	1.4	5.7
39009973800	4642	11.3	98.4	0.2	0	0.7	0.1	0.5	0.5	2

Table F-2 County Population Data, by Census Tract (continued)

Census Tract	Persons	Below Poverty Level (%)	Whites (%)	African American/ Black (%)	Native American (%)	Asian and Pacific Islander (%)	Other Races (%)	Two or More Races (%)	Hispanic or Latino (%)	Minorities (%)
Ohio										
Brown County	39015	8	11.6	0.8	0.2	0.2	0.1	0.7	0.4	2.3
Threshold for EJ Concerns	NA	28	NA	20.8	20.2	20.2	20.1	20.7	20.4	22.3
39015951200	9522	6.2	98.3	0.2	0.1	0.3	0	1.1	0	1.7
39015951300	6435	12.3	98.7	0.3	0.2	0.3	0	0.5	0.3	1.6
39015951400	4408	14.4	98.6	0.4	0	0.1	0	0.8	0.5	1.9
39015951500	4896	12.3	98.5	0	0.9	0.4	0	0.2	0	1.5
39015951600	3869	16.5	97.4	1.1	0.3	0.2	0.2	0.8	1.4	3.5
39015951700	2764	15.3	92.8	4.8	0.1	0.1	0.1	2.1	0.6	7.6
39015951800	4650	12.2	97.4	2	0.2	0.1	0	0.3	0.4	2.9
39015951900	5741	12.1	99	0	0.2	0	0.3	0.5	0.6	1.2
Ohio										
Clinton County	39027	4	8.6	2.1	0.3	0.2	0.4	1.1	0.9	4.7
Threshold for EJ Concerns	NA	24	NA	22.1	20.3	20.2	20.4	21.1	20.9	24.7
39027994300	3871	10.3	97.6	0.9	0	0.1	0.4	1	0.1	2.4
39027994400	4808	4.4	98.1	0	0.7	0	0	1.2	0.2	2.1
39027995000	3967	7.9	99.3	0.1	0.2	0.1	0	0.4	0.1	0.7
39027995100	4105	8	97	0.1	1.2	0.2	0.9	0.6	1.2	3.2

Table F-2 County Population Data, by Census Tract (continued)

Census Tract	Persons	Below Poverty Level (%)	Whites (%)	African American/ Black (%)	Native American (%)	Asian and Pacific Islander (%)	Other Races (%)	Two or More Races (%)	Hispanic or Latino (%)	Minorities (%)
Ohio										
Fairfield County	39045	3	5.9	2.6	0.3	0.7	0.3	1	1	5.5
Threshold for EJ Concerns	NA	23	NA	22.6	20.3	20.7	20.3	21	21	25.5
39045031200	4901	6.1	99.3	0	0	0.1	0.3	0.3	1.3	1.8
39045032500	5996	6.1	83.8	14	0.4	0.1	0.3	1.1	0.7	16.2
39045032600	5840	5	99.1	0.1	0.2	0	0.1	0.5	0.4	1.2
Ohio										
Fayette County	39047	7	10.1	2.1	0.2	0.5	0.4	1.1	1	4.8
Threshold for EJ Concerns	NA	27	NA	22.1	20.2	20.5	20.4	21.1	21	24.8
39047985800	3785	9.1	96.9	1.3	0.2	0	0.8	0.8	0.9	3.2
39047985900	3847	8.7	95.3	2.2	0.2	0.1	0.1	2	0.9	5.2
39047986000	4180	9.4	96.1	0.6	0.4	2.4	0	0.6	0.8	4.7
39047986100	4132	17.1	94	4	0	0	0	2	0	6
39047986200	4623	10.3	93	3.1	0.2	0.8	1.8	1.1	2.8	8.2
39047986300	3602	11	96.8	2.7	0.1	0	0	0.4	1	4
39047986400	4264	5.5	98.3	1	0	0	0.2	0.5	0.4	1.9
Ohio										
Gallia County	39053	7	18.1	2.6	0.2	0.7	0.2	1.4	0.4	5.3
Threshold for EJ Concerns	NA	27	NA	22.6	20.2	20.7	20.2	21.4	20.4	25.3
39053953500	4929	14.3	94.5	3.4	0.3	0.8	0.2	0.8	0.4	5.7
39053953600	3974	19.7	95.5	2.3	0.2	0.6	0.1	1.3	0.6	4.8
39053953700	4067	**27.4**	95.6	0.7	0.2	1.2	0.2	1.9	0.3	4.6
39053953800	4322	19.4	98.2	0.3	0	0	0.2	1.3	0.7	2

Table F-2 County Population Data, by Census Tract (continued)

Census Tract	Persons	Below Poverty Level (%)	Whites (%)	African American/ Black (%)	Native American (%)	Asian and Pacific Islander (%)	Other Races (%)	Two or More Races (%)	Hispanic or Latino (%)	Minorities (%)
39053953900	6790	13.6	94.4	4.1	0	0.4	0	1.2	0	5.6
39053954000	4489	17.2	92.4	3.4	0.8	1.5	0.5	1.5	0.9	8
39053954100	2498	20.7	93.8	3.4	0.3	0	0	2.5	0.4	6.2
Ohio										
Highland County	39071	9	11.8	1.5	0.5	0.4	0.1	0.8	0.4	3.4
Threshold for EJ Concerns	NA	29	NA	21.5	20.5	20.4	20.1	20.8	20.4	23.4
39071954400	3825	11	97.1	2.2	0.4	0	0.3	0	0.3	2.9
39071954500	4129	10.8	96.9	1.2	0	0	0.1	1.8	1.2	3.9
39071954600	4726	6.8	99	0.6	0	0.1	0	0.3	0	1
39071954700	5976	6.8	98.1	0	0.3	0.4	0	1.2	0	1.9
39071954800	4011	17.5	95.1	2.1	0.3	1.4	0.6	0.5	0.1	4.9
39071954900	3757	13.8	87.2	9	0.6	1.3	0	1.9	1	12.8
39071955000	4027	19.1	97.9	0.3	1.8	0	0	0	0.9	2.6
39071955100	5783	14	97.6	0.1	0.5	0.7	0	1	0.1	2.5
39071955200	4641	9.6	99.5	0	0.4	0	0	0.1	0.2	0.6
Ohio										
Hocking County	39073	7	13.5	1	0.2	0.2	0	0.8	0.3	2.5
Threshold for EJ Concerns	NA	27	NA	21	20.2	20.2	20	20.8	20.3	22.5
39073964900	4400	7.3	98.7	0.3	0.7	0	0	0.4	0.1	1.4
39073965000	3888	15.7	99.6	0.2	0.2	0	0	0	0.7	1.1
39073965100	4134	10.5	97.9	0.4	0	0	0	1.7	0	2.1
39073965200	4302	15.9	98.7	0.8	0.2	0	0	0.3	0.2	1.5
39073965300	3548	10.9	99.5	0.4	0.2	0	0	0	0.1	0.7
39073965400	3991	18.9	96.1	0.7	0	1.6	0	1.5	0.6	4.2

Table F-2 County Population Data, by Census Tract (continued)

Census Tract	Persons	Below Poverty Level (%)	Whites (%)	African American/ Black (%)	Native American (%)	Asian and Pacific Islander (%)	Other Races (%)	Two or More Races (%)	Hispanic or Latino (%)	Minorities (%)
39073965500	3978	16.2	93.5	4.6	0.1	0	0.3	1.5	0.3	6.5
Ohio										
Jackson County	39079	7	16.5	0.9	0.3	0.3	0.1	1.1	1.2	3.6
Threshold for EJ Concerns	NA	27	NA	20.9	20.3	20.3	20.1	21.1	21.2	23.6
39079957200	5318	16.7	98.1	0.6	0	0.4	0.2	0.7	0.7	2.4
39079957300	3669	19.7	97	0.2	0.3	0.4	0.2	1.8	0.8	3.5
39079957400	5332	15.3	95.3	2.8	0.3	0.3	0.2	1.1	1.2	4.9
39079957500	5765	16	98.5	1.1	0	0.2	0	0.3	2.6	4.1
39079957600	2822	16.6	96.5	0.2	0.2	0.2	0	2.3	0.4	3.5
39079957700	5188	17.2	97.1	0.6	0.2	0.6	0	1.5	1.8	4.7
39079957800	4547	14.8	98.3	0.5	0.9	0	0	0.4	0.1	1.7
Ohio										
Lawrence County	39087	15	18.9	2.4	0.2	0.3	0.1	0.8	0.5	4.2
Threshold for EJ Concerns	NA	35	NA	22.4	20.2	20.3	20.1	20.8	20.5	24.2
39087050100	2692	15.2	95.9	2.8	0.2	0	0	1.1	0.8	4.9
39087050200	2524	20.8	97	2.5	0	0	0	0.5	0.3	3.3
39087050300	2349	33	78.1	19.6	0	1.4	0.2	0.5	0.9	22.3
39087050400	3155	25.1	97.8	1.6	0.3	0	0	0.3	0.4	2.3
39087050500	6585	19.1	97.6	0.1	0.3	1	0.2	0.7	0.9	2.9
39087050600	1677	28.1	94.5	1.4	0.3	0	0.4	3.5	0.4	5.5
39087050700	3749	26	99	0	0	0.7	0	0.3	0	1
39087050800	3843	22.6	97.4	1.8	0	0.7	0	0.1	0.2	2.8
39087050900	2279	18.4	98.3	0.3	0.4	0	0.4	0.7	1	2
39087051001	4475	13.9	95	3.7	0	0	0	1.3	0	5

Table F-2 County Population Data, by Census Tract (continued)

Census Tract	Persons	Below Poverty Level (%)	Whites (%)	African American/ Black (%)	Native American (%)	Asian and Pacific Islander (%)	Other Races (%)	Two or More Races (%)	Hispanic or Latino (%)	Minorities (%)
39087051002	4316	14.5	96.7	1.6	0	0	0	1.7	0	3.3
39087051100	6977	21.2	92.2	5.7	0.6	0	0.5	1.1	0.5	7.8
39087051200	5299	15.7	98.6	0.3	0.3	0	0.1	0.6	1	1.9
39087051300	3705	18.4	98.7	0.3	0	0.1	0	1	0	1.3
39087051400	8694	12	97.5	1.1	0.3	0.6	0.2	0.3	0.4	2.8
Ohio										
Madison County	39097	1	7.8	6	0.2	0.5	0.2	1.5	0.7	8.7
Threshold for EJ Concerns	NA	21	NA	26	20.2	20.5	20.2	21.5	20.7	28.7
39097041200	3282	7.6	97.8	0	0.1	0.9	0.2	1	1.4	3.3
Ohio										
Meigs County	39105	3	19.8	0.6	0.3	0.2	0.3	1.3	0.6	3
Threshold for EJ Concerns	NA	23	NA	20.6	20.3	20.2	20.3	21.3	20.6	23
39105964200	4423	17.3	98.6	0.3	0.1	0	0.1	0.8	0.2	1.5
39105964300	4342	21.3	96.8	0.3	0.3	0	0.5	2	0.7	4
39105964400	3676	**28.2**	94.5	2.2	0.6	0.1	0	2.6	0	5.5
Ohio										
Pickaway County	39129	11	9.5	5.7	0.5	0.3	0.2	1.1	0.8	8.3
Threshold for EJ Concerns	NA	31	NA	25.7	20.5	20.3	20.2	21.1	20.8	28.3
39129020100	2050	22.9	92.6	3.1	2.2	0	0	2.1	0.7	8.1
39129020200	2698	10.8	98.3	1.3	0	0	0	0.4	0.6	2.3
39129020310	5089	6.2	96.5	1.1	0.2	0.8	0.1	1.2	0	3.5
39129020320	3335	6.8	93.8	2.2	1.1	1.7	1.1	0.2	2.4	7.5
39129020400	2543	25.6	98	1	0	0	0.2	0.8	0.3	2.2

Table F-2 County Population Data, by Census Tract (continued)

Census Tract	Persons	Below Poverty Level (%)	Whites (%)	African American/ Black (%)	Native American (%)	Asian and Pacific Islander (%)	Other Races (%)	Two or More Races (%)	Hispanic or Latino (%)	Minorities (%)
39129021100	6910	5.5	97.9	0.1	0.3	0.8	0	1	0.4	2.4
39129021200	6424	8.9	97.3	0.3	0.9	0.1	0.1	1.3	0.5	3.1
39129021400	8992	7.7	88.1	9.8	0.3	0.1	0.1	1.5	0.7	12.2
39129021500	2987	9.2	99.2	0	0.1	0	0	0.7	1.3	1.9
39129021600	3528	12.7	98.1	0.4	0.5	0.1	0.1	0.9	0.1	2
39129021700	4506	7.1	99	0.6	0.4	0	0.1	0	1	1.9
Ohio										
Pike County	39131	6	18.6	0.8	1	0.4	0.2	1.3	0.5	4
Threshold for EJ Concerns	NA	26	NA	20.8	21	20.4	20.2	21.3	20.5	24
39131952200	5592	16.2	94.2	1.9	1.4	0.2	0.6	1.8	0.3	5.9
39131952300	5067	18.6	95.9	1.2	0.3	0.5	0	2.1	0.4	4.4
39131952400	3368	10.7	95.5	1.3	1	1.4	0.1	0.7	0	4.5
39131952500	3753	17.7	97.9	0	0.1	0.5	0	1.5	0.6	2.1
39131952600	5573	20.6	96.9	0.2	2	0	0	1	0.3	3.4
39131952700	4342	25.7	98	0	1.1	0.3	0.3	0.3	1.7	3.4
Ohio										
Ross County	39141	17	12	5.7	0.4	0.3	0.1	1.4	0.8	8.5
Threshold for EJ Concerns	NA	37	NA	25.7	20.4	20.3	20.1	21.4	20.8	28.5
39141955500	5388	5.2	98.6	0.1	0.2	0	0.2	0.8	0.7	1.8
39141955601	2047	7.5	98.5	0.8	0.4	0	0.3	0	1.9	3.4
39141955602	4954	4.8	57.1	**39.3**	0.2	0	0	4	2.2	**44**
39141955603	3861	11.8	98.3	0.6	0.1	0.5	0.2	0.3	0	1.7
39141955700	4267	12.5	98.5	0.4	0.4	0.1	0	0.5	0.4	1.9
39141955800	6824	9.8	94.9	3.5	0	0.1	0.5	1	0.7	5.4

Table F-2 County Population Data, by Census Tract (continued)

Census Tract	Persons	Below Poverty Level (%)	Whites (%)	African American/ Black (%)	Native American (%)	Asian and Pacific Islander (%)	Other Races (%)	Two or More Races (%)	Hispanic or Latino (%)	Minorities (%)
39141955900	4257	10.4	87.9	8.7	0	0.8	0.2	2.5	0.1	12.2
39141956000	4549	12	90.1	6.8	1.3	0	0	1.8	0.2	10.1
39141956100	3774	9.4	84.9	11.8	0.2	0.8	0	2.3	0.3	15.4
39141956200	2299	11	90.9	2.9	1.3	2.3	0.3	2.5	0.8	9.7
39141956300	2942	14.4	93.6	4.2	0	0.7	0	1.3	0.6	6.7
39141956400	3665	15.3	89.1	7.5	0.6	0.2	0.4	2.3	0.7	11.2
39141956500	4045	16.4	91.3	5.9	0.9	0	0	2	1.7	9.5
39141956600	5044	9.5	98.9	0.2	0	0.6	0	0.2	0.6	1.6
39141956700	5003	13.5	97	1	1.1	0.4	0.3	0.3	1	3.7
39141956800	6026	15.4	97.6	0.9	0.1	0.1	0	1.3	1.7	4
39141956900	4400	18	97.7	0.4	0	0.3	0	1.6	0	2.3
Ohio										
Scioto County	39145	20	19.3	2.6	0.5	0.5	0.2	1.5	0.6	5.5
Threshold for EJ Concerns	NA	40	NA	22.6	20.5	20.5	20.2	21.5	20.6	25.5
39145992100	4960	17.4	98.3	0	0.2	0.1	0.6	0.7	0.6	1.7
39145992200	5180	12.8	79.9	16	0.4	0.1	0.3	3.4	2	20.8
39145992300	4867	16.1	96.7	0.2	1.5	0	0.3	1.3	0	3.3
39145992400	5626	21	97.2	0	0.2	0.7	0.3	1.6	1	3.2
39145992500	3188	17.8	95.4	0.5	0	0.6	0.5	2.9	1.5	5.1
39145992600	4164	16	98.2	0	0.2	0.1	0.1	1.2	1.4	2.3
39145992700	4538	12.5	96.7	0.2	0.2	0.2	0.1	2.5	0.4	3.3
39145992800	4486	18.8	95.7	2.5	1.1	0.3	0	0.4	0.3	4.7
39145992900	6372	15.4	98.1	0.7	0.4	0	0	0.8	0	1.9
39145993000	3878	20.8	96.9	0.3	0.9	1.3	0	0.6	0	3.1
39145993100	3495	21.9	98.5	0	0.4	0.3	0.1	0.6	0.1	1.5

Table F-2 County Population Data, by Census Tract (continued)

Census Tract	Persons	Below Poverty Level (%)	Whites (%)	African American/ Black (%)	Native American (%)	Asian and Pacific Islander (%)	Other Races (%)	Two or More Races (%)	Hispanic or Latino (%)	Minorities (%)
39145993200	1861	31.5	97.6	0.3	0	0	0	2.1	0	2.4
39145993300	2698	14.1	94.6	2.4	0.8	1.8	0	0.5	0.9	6.3
39145993400	3801	28.5	93.1	3.9	0.5	0.2	0.2	2.1	0.3	7.1
39145993500	2859	29.3	97.2	0.2	0.8	0.2	0	1.6	1.5	4.4
39145993600	2596	**43.4**	88.8	7	0	1.2	0	2.9	0	11.2
39145993700	2618	24.6	75.4	20.3	0.4	0	0	4.2	1.4	**25.6**
39145993800	4689	8.1	95.6	0.7	0.2	1.9	0	1.6	0.2	4.6
39145993900	3515	22.6	96.4	0	2.3	0.2	0	1.1	0	3.6
39145994000	3804	20.3	98.1	0.6	0.3	0.3	0.1	0.5	0.3	1.9
Ohio										
Vinton County	39163	3	20	0.1	0.4	0	0.1	1.4	0.6	2.5
Threshold for EJ Concerns	NA	23	NA	20.1	20.4	20	20.1	21.4	20.6	22.5
39163953000	4509	17.8	98.3	0.3	0.5	0	0.1	0.8	0.4	2
39163953100	5284	21.4	97.3	0.1	0.5	0	0.2	1.9	0.8	3.4
39163953200	3013	20.8	98.4	0	0	0	0	1.6	0.5	2
Kentucky										
Boyd County	21019	12	15.5	2.2	0.2	0.3	0.4	1.2	1.1	5
Threshold for EJ Concerns	NA	32	NA	22.2	20.2	20.3	20.4	21.2	21.1	25
21019030200	1182	25.9	81.2	9.2	0.5	4.9	1.2	3	0.6	19.4
21019030300	2542	**32.3**	96.6	3	0	0	0	0.4	0.2	3.6
21019030400	2072	27.9	93.1	2.3	0.2	0.2	1	3.2	2.3	7.1
21019030500	4489	11.1	97.3	1.6	0	0.9	0	0.2	0	2.7
21019030600	4169	9.9	97	1.6	0.1	0.2	0	1.1	0.2	3
21019030700	3578	8.7	95.8	0.8	0.5	0.1	1.1	1.6	0.4	4.3

Table F-2 County Population Data, by Census Tract (continued)

Census Tract	Persons	Below Poverty Level (%)	Whites (%)	African American/ Black (%)	Native American (%)	Asian and Pacific Islander (%)	Other Races (%)	Two or More Races (%)	Hispanic or Latino (%)	Minorities (%)
21019030800	3969	29.4	97.6	0.5	0	0	0.2	1.8	1	3
21019030900	5772	13.7	99	0.2	0.3	0	0	0.5	0.3	1.3
21019031000	8122	12.6	88.7	7	0.4	0.3	1.1	2.3	4.7	14.1
21019031100	7764	10.9	98	0.5	0	0.2	0.1	1	0.5	2.1
21019031200	3374	11.5	99.1	0.9	0	0	0	0	0	0.9
21019031300	2719	19.2	97.1	1.1	0.2	0.3	0.1	1.3	0	2.9
Kentucky										
Carter County	21043	7	22.3	0.2	0.2	0.3	0.1	0.3	0.4	1.3
Threshold for EJ Concerns	NA	27	NA	20.2	20.2	20.3	20.1	20.3	20.4	21.3
21043960100	3370	26	98.5	0.7	0	0	0	0.8	0.7	2.2
21043960200	4334	25.5	99.3	0	0.1	0.3	0	0.3	0.2	0.9
21043960300	3080	20.8	100	0	0	0	0	0	0.6	0.6
21043960400	1696	25.6	98.8	0	0.9	0.2	0	0	0	1.2
21043960500	4183	18	99	0.3	0.5	0	0	0.2	0	1
21043960600	5863	18.6	99.3	0.2	0	0.2	0.3	0	0.2	0.7
21043960700	4363	24.5	98.1	0	0	1.2	0	0.7	1.3	2.9
Kentucky										
Fleming County	21069	3	18.6	1.8	0.1	0	0	0.4	0.8	3
Threshold for EJ Concerns	NA	23	NA	21.8	20.1	20	20	20.4	20.8	23
21069980100	3949	16.6	94.9	4.5	0	0	0.1	0.5	0.8	6
21069980200	3184	12.9	98.4	1	0.2	0	0	0.4	1.3	2.7
21069980400	4085	**24.1**	99.1	0.9	0	0	0	0	0	0.9

Table F-2 County Population Data, by Census Tract (continued)

Census Tract	Persons	Below Poverty Level (%)	Whites (%)	African American/ Black (%)	Native American (%)	Asian and Pacific Islander (%)	Other Races (%)	Two or More Races (%)	Hispanic or Latino (%)	Minorities (%)
Kentucky										
Greenup County	21089	7	14.1	0.6	0.1	0.4	0.2	0.8	0.8	2.8
Threshold for EJ Concerns	NA	27	NA	20.6	20.1	20.4	20.2	20.8	20.8	22.8
21089040100	4375	5.5	98.1	0.2	0.2	0.8	0.3	0.3	1.9	3.5
21089040200	7475	12.2	97.8	0.6	0.2	0.1	0.5	0.8	1.9	3.5
21089040300	4531	11.3	97	0.3	0	1.5	0.1	1	0.4	3.3
21089040400	5562	14.6	98.5	0.6	0	0.2	0.1	0.6	0.2	1.6
21089040500	8110	18.7	96.7	1.6	0	0.4	0.2	1.1	0.3	3.4
21089040600	3310	18	98.1	0	0.2	0.2	0	1.5	0	1.9
21089040700	3528	17.6	99.1	0	0.2	0.3	0	0.3	0	0.9
Kentucky										
Lewis County	21135	4	28.5	0.3	0.3	0	0.2	0.4	0.4	1.4
Threshold for EJ Concerns	NA	24	NA	20.3	20.3	20	20.2	20.4	20.4	21.4
21135990100	4716	**29.1**	99.7	0	0.2	0	0	0.1	0.2	0.5
21135990200	3990	**33.6**	98.9	0.4	0.2	0	0	0.5	0.5	1.6
21135990300	3293	22.5	97	0.8	0.6	0	0.7	0.9	0.7	3.2
21135990400	2093	**27.1**	100	0	0	0	0	0	0	0

Table F-2 County Population Data, by Census Tract (continued)

Census Tract	Persons	Below Poverty Level (%)	Whites (%)	African American/ Black (%)	Native American (%)	Asian and Pacific Islander (%)	Other Races (%)	Two or More Races (%)	Hispanic or Latino (%)	Minorities (%)
Kentucky										
Mason County	21161	4	16.8	6.4	0.1	0.5	0.9	1.5	1.4	9.9
Threshold for EJ Concerns	NA	24	NA	26.4	20.1	20.5	20.9	21.5	21.4	29.9
21161960100	3093	14.3	97.3	1.6	0	0	0.2	0.9	0.8	3.3
21161960200	3478	**24.7**	84.5	12.2	0.2	0	0.9	2.3	1.3	15.7
21161960300	4337	16.8	85.7	10.3	0.1	1.1	0.9	1.9	1.5	15.6
21161960400	4140	11.4	94.7	2.4	0.4	0.7	0.5	1.5	1	5.7
Kentucky										
Carter County	21043	7	22.3	0.2	0.2	0.3	0.1	0.3	0.4	1.3
Threshold for EJ Concerns	NA	27	NA	20.2	20.2	20.3	20.1	20.3	20.4	21.3
21205950100	6103	16.5	94.4	2.2	0.5	0.9	1	1	2	6.5
West Virginia										
Cabell County	54011	5	19.2	4	0.2	0.9	0.3	1.3	0.6	7
Threshold for EJ Concerns	NA	25	NA	24	20.2	20.9	20.3	21.3	20.6	27
54011000600	1607	**58.9**	89.3	4	1.2	5	0.4	0	0.9	10.7
54011000900	1852	**30.7**	95.3	3.2	0	0	0.3	1.2	0.3	4.7
54011001000	2426	**29.6**	97.7	1.1	0	0	0	1.3	0.4	2.7
54011001100	2096	**28.1**	93.6	2	0	0	0	4.5	2.6	6.4
54011010700	7160	15.5	98.1	0.3	0	0.3	0.1	1.2	0.4	2.2

Table F-2 County Population Data, by Census Tract (continued)

Census Tract	Persons	Below Poverty Level (%)	Whites (%)	African American/ Black (%)	Native American (%)	Asian and Pacific Islander (%)	Other Races (%)	Two or More Races (%)	Hispanic or Latino (%)	Minorities (%)
West Virginia										
Mason County	54053	4	19.9	0.7	0.1	0.4	0	0.4	0.4	2
Threshold for EJ Concerns	NA	24	NA	20.7	20.1	20.4	20	20.4	20.4	22
54053954800	6909	16.3	98.5	0.6	0.2	0	0	0.6	0.2	1.7
54053954900	6750	**24**	98.8	0.6	0	0.4	0	0.1	0.6	1.7
54053955000	5025	17.6	96.5	1.8	0	1.5	0	0.2	0.5	4
54053955100	7273	21.2	99	0	0.2	0.1	0	0.7	0.2	1.3
West Virginia										
Wayne County	54099	5	19.6	0.1	0.2	0.2	0.1	0.5	0.3	1.4
Threshold for EJ Concerns	NA	25	NA	20.1	20.2	20.2	20.1	20.5	20.3	21.4
54099005100	2181	13.7	98.4	0	0.6	0.7	0	0.3	0	1.6
54099005200	2086	14.1	98.8	0	0	0.9	0.3	0	0.3	1.2
54099020100	2545	13.1	99.3	0.4	0.4	0	0	0	0	0.7
54099020300	5307	16.4	99	0.4	0	0.2	0.1	0.3	0.4	1.3
54099020400	6219	11.8	99.3	0	0	0	0.2	0.5	1.1	1.6

Notes:
[a] NA = Not available.
[b] Census tracts exceeding minority/low-income criteria are shown in bold.

Table F-3 Number of Census Tracts Exceeding State Environmental Justice Threshold [a]

County	Below Poverty Level	African American/ Black	Native American	Asian and Pacific Islander	Other Races	Two or More Races	Hispanic or Latino (All Races)	Minorities (Racial Minorities plus White Hispanics)	Total Minority Tracts
State of Ohio (%)	10.6	11.5	0.2	1.2	0.8	1.5	1.9	16	--
Threshold for EJ Concerns (%)	30.6	31.5	20.2	21.2	20.8	21.5	21.9	36	--
Adams	0	0	0	0	0	0	0	0	0
Athens	0	0	0	0	0	0	0	0	0
Brown	0	0	0	0	0	0	0	0	0
Clinton	0	0	0	0	0	0	0	0	0
Fairfield	0	0	0	0	0	0	0	0	0
Fayette	0	0	0	0	0	0	0	0	0
Gallia	0	0	0	0	0	0	0	0	0
Highland	0	0	0	0	0	0	0	0	0
Hocking	0	0	0	0	0	0	0	0	0
Jackson	0	0	0	0	0	0	0	0	0
Lawrence	**1**	0	0	0	0	0	0	0	NA
Madison	0	0	0	0	0	0	0	0	0
Meigs	0	0	0	0	0	0	0	0	0
Pickaway	0	0	0	0	0	0	0	0	0
Pike	0	0	0	0	0	0	0	0	0
Ross	0	**1**	0	0	0	0	0	**1**	NA
Scioto	**2**	0	0	0	0	0	0	0	NA
Vinton	0	0	0	0	0	0	0	0	0
Total Ohio Counties	**3**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	NA

Table F-3 Number of Census Tracts Exceeding State Environmental Justice Threshold (continued)

County	Below Poverty Level	African American/ Black	Native American	Asian and Pacific Islander	Other Races	Two or More Races	Hispanic or Latino (All Races)	Minorities (Racial Minorities plus White Hispanics)	Total Minority Tracts
State of Kentucky (%)	15.8	7.3	0.2	0.7	0.5	1.2	1.4	10.7	--
Threshold for EJ Concerns (%)	35.8	27.3	20.2	20.7	20.5	21.2	21.4	30.7	--
Boyd	0	0	0	0	0	0	0	0	0
Carter	0	0	0	0	0	0	0	0	0
Fleming	0	0	0	0	0	0	0	0	0
Greenup	0	0	0	0	0	0	0	0	0
Lewis	0	0	0	0	0	0	0	0	0
Mason	0	0	0	0	0	0	0	0	0
Carter	0	0	0	0	0	0	0	0	0
Total Kentucky Counties	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
State of West Virginia (%)	17.9	3.1	0.2	0.5	0.2	1	0.7	5.5	--
Threshold for EJ Concerns (%)	37.9	23.1	20.2	20.5	20.2	21	20.7	25.5	--
Cabell	**1**	0	0	0	0	0	0	0	NA
Mason	0	0	0	0	0	0	0	0	0
Wayne	0	0	0	0	0	0	0	0	0
Total West Virginia Counties	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	NA

Table F-3 Number of Census Tracts Exceeding State Environmental Justice Threshold (continued)

County	Below Poverty Level	African American/ Black	Native American	Asian and Pacific Islander	Other Races	Two or More Races	Hispanic or Latino (All Races)	Minorities (Racial Minorities plus White Hispanics)	Total Minority Tracts
Grand Total (3 States)	**4**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**NA**

Notes:

[a] NA = Not available.

Table F-4 Number of Census Tracts Exceeding County Environmental Justice Threshold [a]

County	Below Poverty Level	African American/ Black	Native American	Asian and Pacific Islander	Other Races	Two or More Races	Hispanic or Latino (All Races)	Minorities (Racial Minorities plus White Hispanics)	Total Minority Block Groups
State of Ohio (%)	10.6	11.5	0.2	1.2	0.8	1.5	1.9	16	--
Threshold for EJ Concerns (%)	30.6	31.5	20.2	21.2	20.8	21.5	21.9	36	--
Adams	0	0	0	0	0	0	0	0	0
Athens	**2**	0	0	0	0	0	0	0	NA
Brown	0	0	0	0	0	0	0	0	0
Clinton	0	0	0	0	0	0	0	0	0
Fairfield	0	0	0	0	0	0	0	0	0
Fayette	0	0	0	0	0	0	0	0	0
Gallia	**1**	0	0	0	0	0	0	0	NA
Highland	0	0	0	0	0	0	0	0	0
Hocking	0	0	0	0	0	0	0	0	0
Jackson	0	0	0	0	0	0	0	0	0
Lawrence	0	0	0	0	0	0	0	0	0
Madison	0	0	0	0	0	0	0	0	0
Meigs	**1**	0	0	0	0	0	0	0	NA
Pickaway	0	0	0	0	0	0	0	0	0
Pike	0	0	0	0	0	0	0	0	0
Ross	0	**1**	0	0	0	0	0	**1**	NA
Scioto	**1**	0	0	0	0	0	0	**1**	NA
Vinton	0	0	0	0	0	0	0	0	0
Total Ohio Counties	**5**	**1**	0	0	0	0	0	**2**	NA

Table F-4 Number of Census Tracts Exceeding County Environmental Justice Threshold (continued)

County	Below Poverty Level	African American/ Black	Native American	Asian and Pacific Islander	Other Races	Two or More Races	Hispanic or Latino (All Races)	Minorities (Racial Minorities plus White Hispanics)	Total Minority Block Groups
State of Kentucky (%)	15.8	7.3	0.2	0.7	0.5	1.2	1.4	10.7	--
Threshold for EJ Concerns (%)	35.8	27.3	20.2	20.7	20.5	21.2	21.4	30.7	--
Boyd	**1**	0	0	0	0	0	0	0	NA
Carter	0	0	0	0	0	0	0	0	0
Fleming	**1**	0	0	0	0	0	0	0	NA
Greenup	0	0	0	0	0	0	0	0	0
Lewis	**3**	0	0	0	0	0	0	0	NA
Mason	**1**	0	0	0	0	0	0	0	NA
Total Kentucky Counties	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	NA
State of West Virginia (%)	17.9	3.1	0.2	0.5	0.2	1	0.7	5.5	--
Threshold for EJ Concerns (%)	37.9	23.1	20.2	20.5	20.2	21	20.7	25.5	--
Cabell	**4**	0	0	0	0	0	0	0	NA
Mason	**1**	0	0	0	0	0	0	0	0
Wayne	0	0	0	0	0	0	0	0	0
Total West Virginia Counties	**5**	0	0	0	0	0	0	0	NA
Grand Total (3 States)	**16**	**1**	**0**	**0**	**0**	**0**	**0**	**2**	**NA**

Notes:

[a] NA = Not available.

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APPENDIX G
COST BENEFIT ANALYSIS

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APPENDIX G
COST BENEFIT ANALYSIS

G.1 Introduction

This appendix describes the methodology used in preparing the incremental cost benefit analysis that is summarized in Section 7.2.

An incremental cost benefit analysis measures the impacts of each alternative relative to a baseline, which is how things would be if the alternative were not imposed (i.e., the no-action alternative). The baseline used in this analysis assumes full licensee compliance with existing NRC requirements, including current regulations. This is consistent with the *Regulatory Analysis Guidelines of the U.S. Nuclear Regulatory Commission* (NRC, 2004), which state that "...in evaluating a new requirement for existing plants, the staff should assume that all existing NRC and Agreement State requirements have been implemented" (NRC, 2004).

The incremental cost benefit analysis described in this appendix compares the proposed action (construction and operation of the proposed ACP at Piketon, Ohio) with the no-action alternative. For the purposes of this analysis, the no-action alternative is defined as continued operation of the Paducah Gaseous Diffusion Plant at Paducah, Kentucky. This appendix presents full details of construction and operating costs and the results of a net present value analysis estimating the economic impact of implementing the proposed action compared to the no-action alternative under different discount rates and production capacity assumptions.

G.2 Methodology and Assumptions

The incremental cost benefit analysis presented in Section 7.2 considers a limited number of costs and benefits in assessing the net present value of implementing the proposed action compared to the no-action alternative. Specifically, the analysis quantitatively assesses direct costs such as construction costs, manufacturing costs, and decontamination and decommissioning costs. The only benefits assessed are those resulting from operating cost savings associated with implementing the proposed action compared to the no-action alternative. Some of the indirect impacts and costs described in Section 7.1.1 are not included as part of this comparative analysis because the effect of these impacts is assumed to be either (1) equal for the proposed action and the no-action alternative as defined above, or (2) too small an impact to materially affect the comparative cost benefit analysis.

The estimates in this analysis reflect costs and benefits to the U.S. economy and not to USEC**.** All costs and benefits in this analysis are measured in 2005 real dollars (denoted hereafter as 2005$). Costs and benefits are assumed to accrue at the beginning of the calendar year over which they actually occur.

G.3 Costs of the Proposed Action

Construction Costs: The construction phase of the proposed alternative is estimated to cost $1,449 million between calendar years 2006 and 2010 (USEC, 2005b). Construction costs are assumed to accrue evenly in each of the calendar years of the construction phase of the proposed action. The construction cost figure USEC provided is not expressed in constant dollars. To be conservative, NRC staff treat these costs as 2005$. This approach overestimates costs, and is therefore a conservative assumption.

Manufacturing Costs: The manufacturing and assembly phase of the proposed alternative is estimated to cost $1,423 million between calendar years 2004 and 2013 (USEC, 2005b). Manufacturing costs are assumed to accrue evenly in each of the calendar years of the manufacturing phase of the proposed action. Again, the USEC cost estimates are not expressed in constant dollars. Similar to the assumption made for construction costs, the costs derived from the manufacturing and assembly phase are treated as 2005$ in the cost benefit analysis. This is a conservative assumption that likely overstates costs.

Decontamination and Decommissioning Costs: Decontamination and decommissioning of the proposed alternative is estimated to cost $435 million (2004$) (USEC, 2005b). These costs are adjusted to reflect 2005$ (NASA, 2005). Decontamination and decommissioning costs are assumed to accrue evenly over six years, commencing 30 years after the first year of operation. The cost benefit analysis does not factor in costs associated with tails disposition. It is assumed that for a given production level, the amount of tails generated by the proposed ACP will be equivalent to the amount of tails that would have been generated using Paducah Gaseous Diffusion Plant (USEC, 2005b). Therefore, no incremental tails disposition costs result from the proposed action relative to the no-action alternative.

G.4 Costs of the No-Action Alternative

No construction or manufacturing costs are associated with the no-action alternative.

The decontamination and decommissioning schedule and costs associated with the Paducah Gaseous Diffusion Plant are considered independent of the proposed alternative and are not included in this analysis.

In addition, this section does not consider the costs and benefits associated with actions pertaining to the Portsmouth Gaseous Diffusion Plant. USEC closed the Portsmouth Gaseous Diffusion Plant in May 2001 to reduce operating costs. The NRC staff do not believe that there has been any significant change in the factors that were considered by USEC in its decision to cease uranium enrichment at Portsmouth. For the purposes of this cost benefit analysis, actions pertaining to the Portsmouth Gaseous Diffusion Plant, such as decontamination and decommissioning, are considered unrelated to the no-action alternative and the proposed action.

G.5 Benefits of the Proposed Action Relative to the No-Action Alternative

Benefits in a given year are computed as the difference between the operating costs per separative work unit of the no-action alternative and the proposed alternative multiplied by the level of production substituted in that year. Two scenarios are assumed:

(i) the proposed action substitutes 4.6 million separative work units of production at the Paducah Gaseous Diffusion Plant (this figure reflects the anticipated production levels at the Paducah Gaseous Diffusion Plant in 2005); and,

(ii) the proposed action substitutes 7 million separative work units of production at the Paducah Gaseous Diffusion Plant.

In both scenarios, the proposed ACP is assumed to be producing at the 7 million separative work unit capacity level. The difference is that in the first scenario, the proposed ACP is replacing only 4.6 million separative work units that would otherwise have been produced at the Paducah Gaseous Diffusion Plant. This analysis assumes that the proposed ACP's excess production (2.4 million separative work units) substitutes production from sources that are no more expensive than the proposed ACP. Therefore, incremental benefits from the proposed action do not accrue beyond the 4.6 million separative work units

level. In the second scenario, the proposed ACP is substituting 7 million separative work units that would otherwise have been produced at the Paducah Diffusion Gaseous Plant; the benefits are therefore higher in the second scenario.

In both scenarios, separative work unit production at the proposed ACP is expected to phase-in according to USEC's proposed schedule (USEC, 2005b). Specifically, the proposed ACP is expected to reach an annual capacity of 1 million separative work units per year in 2010, and is projected to have an annual capacity of 3.5 million separative work units per year in 2011 (USEC, 2005b). The proposed ACP is assumed to reach full capacity by 2015. These milestones are factored into the cost benefit analysis.

Operating costs under the no-action alternative are estimated to be approximately four times higher than under the proposed action.

G.6 Discount Rates

Three different real discount rates are applied to estimate the net present value of the proposed alternative – zero percent, three percent, and seven percent. These discount rates are consistent with those recommended in NUREG/BR-0184, *Regulatory Analysis Technical Evaluation Handbook* (NRC, 1997). The higher discount rate places a lower value on benefit streams occurring in the future. Net present value estimates are lower under the higher real discount rate because most of the costs associated with the proposed alternative occur up front while benefits are distributed evenly over time.

G.7 Limitations

The cost benefit analysis presented here does not quantitatively estimate potential impacts such as public health effects, occupational health effects, and property value impacts.

Furthermore, certain benefits associated with the proposed alternative, including domestic energy security policy objectives, are not captured in this economic analysis.

As stated in Chapter 7, this analysis does not attempt a dynamic general equilibrium modeling of the economic effects of a cheaper source of enriched uranium for nuclear power plants. No attempt is made to model the effects of reduced enriched uranium prices on the ratio of nuclear and non-nuclear power in the domestic economy, on overall power demand and price, and on the potential economic benefits to consumers and suppliers. Instead, the analysis focuses on estimating the economic savings to society from replacing Paducah Gaseous Diffusion Plant production by a cheaper and less resource-intensive source based on centrifuge technology.

G.8 Results

Table G-1 presents the net present value of implementing the proposed action instead of the no-action alternative for the two scenarios described above at three alternative real discount rates. The figures represent net benefits of the proposed action when compared to the no-action alternative.

Table G-1 Net Present Value of the Net Benefits of Proposed Alternative Relative to the No-action Alternative

Scenario 1: Proposed ACP Substitutes 4.6 Million Separative Work Units of Paducah Gaseous Diffusion Plant Production	
Net Present Value (3 percent) in 2005 in Millions 2005$	$3,630
Net Present Value (7 percent) in 2005 in Millions 2005$	$966
Net Present Value (0 percent) in 2005 in Millions 2005$	$7,992
Scenario 2: Proposed ACP Substitutes 7 Million Separative Work Units of Paducah Gaseous Diffusion Plant Production	
Net Present Value (3 percent) in 2005 in Millions 2005$	$6,417
Net Present Value (7 percent) in 2005 in Millions 2005$	$2,290
Net Present Value (0 percent) in 2005 in Millions 2005$	$13,212

G.9 Conclusions

The analysis indicates that the incremental economic benefits of implementing the proposed action instead of the no-action alternative are substantially positive under both the scenarios and the three discount rates considered, even after accounting for all project-related costs.

G.10 References

(NASA, 2005) National Aeronautics and Space Administration. "Gross Domestic Product Deflator Inflation Calculator." <http://www1.jsc.nasa.gov/bu2/inflateGDP.html> May 25, 2005.

(USEC, 2005a) United States Enrichment Corporations. "Additional Responses to Request for Additional Information Regarding the Environmental Report (TAC No. L32307) - Proprietary Information." April 21, 2005.

(USEC, 2005b) United States Enrichment Corporation. "Environmental Report for the American Centrifuge Plant in Piketon, Ohio." Revision 3. NRC Docket No. 70-7004. July 2005.

(NRC, 1997) U.S. Nuclear Regulatory Commission, Office of Nuclear Regulatory Research. "Regulatory Analysis Technical Evaluation Handbook, Final Report," NUREG/BR-0184. January 1997.

(NRC, 2004) U.S. Nuclear Regulatory Commission, Office of Nuclear Regulatory Research. "Regulatory Analysis Guidelines of the U.S. Nuclear Regulatory Commission," NUREG/BR-0058. September 2004.

APPENDIX H
ACCIDENT ANALYSIS FOR THE PROPOSED ACP

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The text in this appendix is being withheld pursuant to 10 CFR 2.390.

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APPENDIX I
GLOSSARY

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APPENDIX I
GLOSSARY

Acid rain: Rain with a pH of less than 5.6.

Agreement State: A state that has signed an agreement with the Nuclear Regulatory Commission under which the state regulates the use of byproduct, source, and small quantities of special nuclear material in that state.

Air pollutant: Any substance in air which could, if in high enough concentration, harm humans, other animals, vegetation, or material. Pollutants may include almost any natural or artificial composition of matter capable of being airborne.

Air quality: A measure of the quantity of pollutants, measured individually, in the air. These levels are often compared to regulatory standards.

ALARA: Acronym for "as low as (is) reasonably achievable." An approach to keep radiation exposures (both to the workforce and the public) and releases of radioactive material to the environment at levels that are as low as social, technical, economic, practical, and public policy considerations allow. ALARA is not a dose limit; it is a practice whose objective is the attainment of dose levels as far below applicable limits as possible.

Alluvium: Loose gravel, sand, silt, or clay deposited by streams or running water.

Alpha particle: A positively charged particle ejected spontaneously from the nuclei of some radioactive elements**.** It is identical to a helium nucleus that has a mass number of 4 and an electrostatic charge of +2. It has low penetrating power and a short range (a few centimeters in air)**.** The most energetic alpha particle will generally fail to penetrate the dead layers of cells covering the skin and can be easily stopped by a sheet of paper**.** Alpha particles are hazardous when an alpha-emitting isotope is inside the body.

Ambient Air Quality Standards: Standards established on a State or Federal level, that define the limits for airborne concentrations of designated “criteria” pollutants (nitrogen dioxide, sulfur dioxide, carbon monoxide, total suspended particulates, ozone, and lead), to protect public health with an adequate margin of safety (primary standards) and to protect public welfare, including plant and animal life, visibility, and materials (secondary standards).

Aquifer: A permeable body of rock capable of yielding quantities of groundwater to wells and springs.

Area of potential effects: The geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking (See 36 CFR § 800.16).

Assay: The qualitative or quantitative analysis of a substance often used to determine the proportion of isotopes in radioactive materials.

***Atomic Energy Act of 1954 as amended*:** A federal law that created the Atomic Energy Commission, which later split into the Nuclear Regulatory Commission and the Energy and Research and Development Administration (ERDA). ERDA became part of the Department of Energy in 1977. This act encouraged the development and use of nuclear energy and research for the general welfare and the security of the United States. This act authorized the Nuclear Regulatory Commission to regulate and license fuel fabrication facilities that seek to receive, possess, use, or transfer special nuclear material.

Attainment area: A region that meets the U.S. EPA National Ambient Air Quality Standards (NAAQS) for a criteria pollutant under the *Clean Air Act*.

Background radiation: Radiation from cosmic sources, naturally occurring radioactive materials, including radon (except as a decay product of source or special nuclear material), and global fallout as it exists in the environment from the testing of nuclear explosive devices. It does not include radiation from source, byproduct, or special nuclear materials regulated by the Nuclear Regulatory Commission. The typically quoted average individual exposure from background radiation is 3.6 millisievert per year (360 millirem per year).

Becquerel (Bq): A unit used to measure radioactivity. One Becquerel is that quantity of a radioactive material that will have one transformation in one second. There are 3.7×10^{10} Bq in one curie (Ci).

Best Management Practices (BMP): Structural, nonstructural, and managerial techniques recognized to be the most effective and practical means to reduce surface water and groundwater contamination while still allowing the productive use of resources.

Beta particle: A charged particle emitted from a nucleus during radioactive decay, with a mass equal to 1/1837 that of a proton. A negatively charged beta particle is identical to an electron. A positively charged beta particle is called a positron. Large amounts of beta radiation may cause skin burns, and beta emitters are harmful if they enter the body. Beta particles may be stopped by thin sheets of metal or plastic.

Bound: To estimate or describe a lower or upper limit on a potential environmental or health consequence when uncertainty exists.

Buffer area: A designated area of land that is designed to permanently remain vegetated in an undisturbed and natural condition in order to protect an adjacent aquatic or wetland site from upland impacts and to provide habitat for wildlife.

Byproduct material: The tailings or wastes produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content. See also, Source Material.

Carbon monoxide: An odorless, colorless, poisonous gas produced by incomplete burning of carbon in fuels. Exposure to carbon monoxide reduces the delivery of oxygen to the body's organs and tissues. Elevated levels can cause impairment of visual perception, manual dexterity, learning ability, and performance of complex tasks.

Census tract: An area usually containing between 2,500 and 8,000 persons that is used for organizing and monitoring census data. The geographic dimensions of census tracts vary widely, depending on population density. Census tracts do not cross county borders.

Climatology: The science devoted to the study of the conditions of the natural environment (rainfall, daylight, temperature, humidity, air movement) prevailing in specific regions of the earth.

Cold standby: Cold standby involves placing those portions of the Gaseous Diffusion Plant needed for 3 million separative work units per year production capacity in a non-operational condition. It also includes performing surveillance and maintenance activities necessary to retain the ability to resume operations after a set of restart activities are conducted.

Contamination: Undesired radioactive material that is deposited on the surface of, or inside structures, areas, objects, or people.

Cooling water: Water circulated through a nuclear reactor or processing plant to remove heat.

Cost-benefit analysis: A formal quantitative procedure comparing costs and benefits of a proposed project or act under a set of preestablished rules.

Council on Environmental Quality: The President's Council on Environmental Quality (CEQ) was established by the enactment of *National Environmental Policy Act* (NEPA). The CEQ is responsible for developing regulations to be followed by all federal agencies in developing and implementing their own specific NEPA implementation policies and procedures.

Criteria pollutants: Common air pollutants for which National Ambient Air Quality Standards have been established by the U.S. EPA under Title I of the *Clean Air Act*. Criteria pollutants include sulfur dioxide, nitrogen oxides, carbon monoxide, ozone, particulate matter (PM_{10} and $PM_{2.5}$), and lead. Standards for these pollutants were developed on the basis of scientific knowledge about their health effects.

Critical habitat: Specific areas within the geographical range of an endangered species that is formally designated by the U.S. Fish and Wildlife Service under the *Endangered Species Act* as essential for conservation.

Cumulative impacts: Potential impacts when the proposed action is added to other past, present, and reasonable foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Curie (Ci): The basic unit used to describe the intensity of radioactivity in a sample of material**.** The curie is equal to 37 billion (3.7×10^{10}) disintegrations per second, which is approximately the activity of 1 gram of radium. A curie is also a quantity of any radionuclide that decays at a rate of 37 billion disintegrations per second. It is named for Marie and Pierre Curie, who discovered radium in 1898.

Day-Night Average Noise Level (DNL): DNL is a noise metric combining the levels and durations of noise events and the number of events over an extended time period. It is a cumulative average computed over a set of 24-hour periods to represent total noise exposure. DNL also accounts for more intrusive night time noise, adding a 10 dB penalty for sounds after 10:00 p.m. and before 7:00 a.m.

Decibel (dB): A standard unit for measuring sound-pressure levels based on a reference sound pressure of 0.0002 dyne per square centimeter. This is the smallest sound a human can hear. In general, a sound doubles in loudness with every increase of slightly more than 3 decibels.

Decibel, A-weighted (dBA): A number representing the sound level which is frequency weighted according to a prescribed frequency response established by the American National Standards Institute and accounts for the response of the human ear.

Decommissioning: The process of closing down a facility followed by reducing residual radioactivity to a level that permits the release of the property for unrestricted use (see 10 CFR 20.1003).

Decontamination: The reduction or removal of contaminating radioactive material from a structure, area, object, or person. Decontamination may be accomplished by (1) treating the surface to remove or decrease the contamination, (2) letting the material stand so that the radioactivity is decreased as a result of natural radioactive decay, or (3) covering the contamination to shield or attenuate the radiation emitted (see 10 CFR 20.1003 and 20.1402).

Depleted uranium: Uranium having a percentage of uranium-235 smaller than the 0.7 percent found in natural uranium. It is obtained from spent (used) fuel elements or as byproduct tails, or residues, from uranium isotope separation.

Depleted uranium hexafluoride (DUF_6): A compound of uranium and fluorine from which most of the uranium-235 isotope has been removed.

Direct jobs: The number of workers required at a site to implement an alternative.

Dose: The absorbed dose, given in rads (or in SI units, grays), that represents the energy absorbed from the radiation in a gram of any material. Furthermore, the biological dose or dose equivalent, given in rem or sieverts, is a measure of the biological damage to living tissue from radiation exposure.

Dosimetry: The theory and application of the principles and techniques involved in the measurement and recording of radiation doses. Its practical aspect is concerned with the use of various types of radiation instruments with which measurements are made (i.e., film badge, thermoluminescent dosimeter, and Geiger counter).

Effluent: A gas or fluid discharged into the environment, treated or untreated. Most frequently, the term applies to wastes discharged to surface waters.

Emissions: Substances that are discharged into the air.

Endangered species: Any species (plant or animal) that is in danger of extinction throughout all or a significant part of its range. Requirements for declaring a species endangered are found in the *Endangered Species Act*.

***Endangered Species Act of 1973*:** An act requiring federal agencies, with the consultation and assistance of the Secretaries of the Interior and Commerce, to ensure that their actions will not likely jeopardize the continued existence of any endangered or threatened species or adversely affect the habitat of such species.

Erosion: The wearing away of the land surface by wind, water, ice, or other geologic agents**.** Erosion occurs naturally from weather or runoff but is often intensified by human land use practices.

Exposure: Being exposed to ionizing radiation or to radioactive material.

Exposure pathways: A route or sequence of processes by which a radioactive or hazardous material may move through the environment to humans or other organisms. Each exposure pathway includes a source or release from a source, an exposure point, and an exposure route.

Floodplain: Low-lying areas adjacent to rivers and streams that are subject to natural inundations typically associated with precipitation.

Fuel cycle: The series of steps involved in supplying fuel for nuclear power reactors. It can include mining, milling, isotopic enrichment, fabrication of fuel elements, use in a reactor, chemical reprocessing to recover the fissionable material remaining in the spent fuel, reenrichment of the fuel material, refabrication into new fuel elements, and waste disposal.

Fugitive Dust: Any solid particulate matter (PM) that becomes airborne, other than that emitted from an exhaust stack, directly or indirectly as a result of the activities of man. Fugitive dust may include emission from haul roads, wind erosion of exposed soil surfaces, and other activities in which soil is either removed or redistributed.

Geology and Soils: Those Earth resources that may be described in terms of landforms, geology, and soil conditions.

Gray (Gy): The international system (SI) unit of absorbed dose. One gray is equal to an absorbed dose of 1 Joule/kilogram (one gray equals 100 rads) (see 10 CFR 20.1004).

Groundwater: Water, both fresh and saline, that is stored below the Earth's surface in pores, cracks, and crevices below the water table.

Hazardous Air Pollutants (HAPs): A group of 188 chemicals identified in the *1990 Clean Air Act Amendments*. Exposure to these pollutants can cause or contribute to cancer, birth defects, genetic damage, and other adverse health effects.

Hazardous waste: According to the *Resource Conservation and Recovery Act*, a waste that, because of its characteristics, may (1) cause or significantly contribute to an increase in mortality or an increase in serious irreversible illness, or (2) pose a substantial hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed. Hazardous wastes possess at least one of the following characteristics**:** ignitability, corrosivity, reactivity, or toxicity. Hazardous waste is nonradioactive.

Heels: In the uranium enrichment process, heels refers to the residual solid uranium hexafluoride left after the feed rate declines to a predetermined level.

Highly enriched uranium (HEU): Uranium enriched in the isotope uranium-235 to 20 percent or above, which thus becomes suitable for nuclear weapons use.

Historic and Cultural Resources: Cultural resources include any prehistoric or historic district, site, building, structure, or object resulting from, or modified by, human activity. Historic properties are cultural resources listed in, or eligible for listing in, the National Register of Historic Places.

Holding ponds: Engineered depressions in the land that contain storm-water runoff until it can slowly seep back into the ground or evaporate.

Impacts: An assessment of the meaning of changes in all attributes being studies for a given resource. An aggregation of all of the adverse effects, usually measured using a qualitative and nominally subjective technique.

Indirect jobs: Jobs generated or lost in related industries within a regional economic area as a result of a change in direct employment.

Ingestion: To take in by mouth. Material that is ingested enters the digestive system.

Inhalation: To take in by breathing. Material that is inhaled enters the lungs.

Isotope: Any two or more forms of an element having identical or very closely related chemical properties and the same atomic number but different atomic weights or mass numbers.

Land Use: The way land is developed and used in terms of the kinds of anthropogenic activities that occur (e.g., agriculture, residential areas, industrial areas).

Lead: A heavy metal element formerly added to gasoline and paint for improved performance characteristics. Lead can be inhaled and ingested in food, water, soil, or dust. High exposure to lead can cause seizures, mental retardation, and/or behavioral disorders. Low exposure to lead can lead to central nervous system damage.

Low-enriched uranium (LEU): Uranium enriched in the isotope uranium-235, greater than 0.7 percent but less than 20 percent of the total mass. Naturally occurring uranium contains about 0.7 percent
uranium-235, almost all the rest is uranium-238.

Low-level mixed waste: Low-level waste that also contains hazardous chemical components regulated under the *Resource Conservation and Recovery Act*.

Low-level radioactive waste: Wastes containing source, special nuclear, or byproduct material are acceptable for disposal in a land disposal facility. For the purposes of this definition, low-level waste has the same meaning as in the *Low-Level Radioactive Waste Policy Act*, that is, radioactive waste not classified as high-level radioactive waste, transuranic waste, spent nuclear fuel, or byproduct material as defined in section 11e.(2) of the *Atomic Energy Act* (uranium or thorium tailings and waste).

Maximally exposed individual (MEI): A hypothetical person who—because of proximity, activities, or living habits—could receive the highest possible dose of radiation or of a hazardous chemical from a given event or process.

Meteorology: The science dealing with the atmosphere and its phenomena, especially as relating to weather.

Microcurie: One millionth of a curie. That amount of radioactive material that disintegrates (decays) at the rate of 37 thousand atoms per second.

Mitigation: A series of actions implemented to ensure that projected impacts will result in no net loss of habitat value or wildlife populations. The purpose of mitigative actions is to avoid, minimize, rectify, or compensate for any adverse environmental impact.

Millirem (mrem): One thousandth of a rem (0.001 rem).

Mixing height: The height above the earth's surface through which relatively strong vertical mixing of the atmosphere occurs.

Modified Mercalli Intensity: A measurement of earthquake intensity based on the effects to people and structures. Ranges from I (low) to XII (total destruction), as opposed to the Richter scale, which measures the energy of the earthquake. Mercalli scale is often used to classify earthquakes that were not recorded on modern seismographs.

***National Environmental Policy Act (NEPA) of 1969*:** A federal law constituting the basic national charter for protection of the environment. The act calls for the preparation of an environmental impact statement (EIS) for every major federal action that may significantly affect the quality of the human or natural environment. The main purpose is to ensure that environmental information is provided to decision makers so that their actions are based on an understanding of the potential environmental and socioeconomic consequences of a proposed action and the reasonable alternatives.

***National Historic Preservation Act (NHPA)*:** A federal law providing that property resources with significant national historic value be placed on the National Register of Historic Places. It does not require permits; rather, it mandates consultation with the proper agencies whenever it is determined that a proposed action might impact a historic property.

National Pollutant Discharge Elimination System (NPDES): A federal permitting system controlling the discharge of effluents to surface waters of the United States and regulated through the *Clean Water Act*, as amended.

National Register of Historic Places (NRHP): A list of districts, sites, buildings, structures, and objects of prehistoric or historic local, state, or national significance. The list is maintained by the Secretary of the Interior.

Nitrogen dioxide: A brownish, highly reactive gas that is present in all urban atmospheres. Nitrogen dioxide can irritate the lungs, cause bronchitis and pneumonia, and lower resistance to respiratory infections. The major mechanism for the formation of nitrogen dioxide in the atmosphere is the oxidation of the primary air pollutant nitric oxide. Nitrogen oxides, together with volatile organic carbons, play a major role in the atmospheric reactions that produce ozone. Nitrogen oxides form when fuel is burned at high temperatures. The two major emissions sources are transportation and stationary fuel combustion sources such as electric utility and industrial boilers.

Non-Attainment Areas: An area that has been designated by the Environmental Protection Agency, or the appropriate state air quality agency, as exceeding one or more national or state Ambient Air Quality Standards.

Normal operations: Conditions during which facilities and processes operate as expected or designed. In general, normal operations include the occurrence of some infrequent events that, although not considered routine, are not classified as accidents.

Ozone: A photochemical (formed in chemical reactions between volatile organic compounds and nitrogen oxides in the presence of sunlight) oxidant and the major component of smog. Exposure to ozone for several hours at low concentrations has been shown to significantly reduce lung function and induce respiratory inflammation in normal, healthy people during exercise. Other symptoms include chest pain, coughing, sneezing, and pulmonary congestion.

Outfall: The place where effluent is discharged into receiving waters.

Particulate matter: Materials such as dust, dirt, soot, smoke, and liquid droplets that are emitted into the air by sources such as factories, power plants, cars, construction activity, fires, and natural windblown dust. Exposure to high concentrations of particulate matter can affect breathing, aggravate existing respiratory and cardiovascular disease, alter the body's defense systems against foreign materials, damage lung tissue, and cause premature death.

Personnel monitoring: The use of portable survey meters to determine the amount of radioactive contamination on individuals; or, the use of dosimetry to determine an individual's occupational radiation dose.

Pigtail operations: Refers to the activities related to the connection and disconnection of the valving and hosing associated with feed and withdrawal operations.

Point source: A source of effluents that is small enough in dimensions that it can be treated as if it were a point. A point source can be either a continuous source or a source that emits effluents only in puffs for a short time.

Pollutant: Any material entering the environment that has undesired effects.

Pollution: The addition of an undesirable agent to the environment in excess of the rate at which natural processes can degrade, assimilate, or disperse it.

Pollution prevention: The use of any process, practice, or product that reduces or eliminates the generation and release of pollutants, hazardous substances, contaminants, and wastes, including those that protect natural resources through conservation or more efficient utilization.

Prime farmland: Land with the best combination of physical and chemical characteristics for economically producing high yields of food, feed, forage, fiber, and oilseed crops with minimum inputs of fuel, fertilizer, pesticides, and labor. Prime farmland includes cropland, pastureland, rangeland, and forestland.

Rad: The special unit for radiation absorbed dose, which is the amount of energy from any type of ionizing radiation (e.g., alpha, beta, gamma, neutrons, etc.) deposited in any medium (e.g., water, tissue, air). A dose of one rad means the absorption of 100 ergs (a small but measurable amount of energy) per gram of absorbing tissue (100 rad = 1 gray).

Radiation (ionizing radiation): Alpha particles, beta particles, gamma rays, x-rays, neutrons, high-speed electrons, high-speed protons, and other particles capable of producing ions. Radiation, as used in 10 CFR Part 20, does not include non-ionizing radiation, such as radio- or microwaves, or visible, infrared, or ultraviolet light. (see also 10 CFR 20.1003)

Radiation standards: Exposure standards, permissible concentrations, rules for safe handling, regulations for transportation, regulations for industrial control of radiation, and control of radioactive material by legislative means.

Radioactivity: The spontaneous decay or disintegration of unstable atomic nuclei, accompanied by the emission of radiation. Eventually the unstable nuclei reach a stable state.

Radionuclide: An atom that exhibits radioactive properties. Radionuclides can be man-made or naturally occurring, can have a long life, and can have potentially mutagenic or carcinogenic effects on the human body.

Region of influence (ROI): The physical area that bounds the environmental, sociological, economic, or cultural features of interest for the purpose of analysis. A site-specific geographic area that includes the counties where approximately 90 percent of the site's current employees reside.

Rem: The acronym for roentgen equivalent man is a standard unit that measures the effects of ionizing radiation on humans. The dose equivalent in rems is equal to the absorbed dose in rads multiplied by the quality factor of the type of radiation (see 10 CFR 20.1004).

Remediation: Action taken to permanently remedy a release, or threatened release, of a hazardous or radioactive substance to the environment, instead of or in addition to removal.

***Resource Conservation and Recovery Act (RCRA*):** A federal law that provides for a "cradle-to-grave" regulatory program for hazardous waste, including a system for managing hazardous waste from its generation to its ultimate disposal.

Restricted area: Any area to which access is controlled for the protection of individuals from exposure to radiation and radioactive materials.

Roentgen: A unit of exposure to ionizing radiation. It is the amount of gamma or x-rays required to produce ions resulting in a charge of 0.000258 coulombs/kilogram of air under standard conditions. Named after Wilhelm Roentgen, the German scientist who discovered x-rays in 1895.

Runoff: The portion of rainfall that is not absorbed by soil, evaporated, or transpired by plants, but finds its way into streams directly or as overland surface flows.

Sanitary/industrial waste: Nonhazardous, nonradioactive liquid and solid waste generated by normal housekeeping activities.

Sediment: Eroded soil particles that are deposited downhill or downstream by surface runoff.

Shielding: Any material or obstruction that absorbs radiation and thus tends to protect personnel or materials from the effects of ionizing radiation.

Sievert (Sv): A unit of radiation dose used to express a quantity called equivalent dose**.** This relates the absorbed dose in human tissue to the effective biological damage of the radiation by taking into account the kind of radiation received, the total amount absorbed by the body, and the tissues involved. Not all radiation has the same biological effect, even for the same amount of absorbed dose**.** One sievert is equivalent to 100 rem.

Site characterization: An onsite investigation at a known or suspected contaminated waste or release site to determine the extent and type(s) of contamination.

Source material: Uranium or thorium ores containing 0.05 percent Uranium or Thorium regulated under the *Atomic Energy Act*. In general, this includes all materials containing radioactive isotopes in concentrations greater than natural and the byproduct (tailings) from the formation of these concentrated materials

Special nuclear material: Plutonium, uranium-233, or uranium enriched in the isotopes uranium-233 or uranium-235.

State Historic Preservation Officer (SHPO): The state officer charged with the identification and protection of prehistoric and historic resources in accordance with the *National Historic Preservation Act*.

Subsidence: The process of sinking or settling of a land surface due to natural or artificial causes.

Sulfur dioxide: A gas emitted largely from stationary sources such as coal and oil combustion, steel and paper mills, and refineries. It is a primary contributor to acid rain and contributes to visibility impairments in large parts of the country. Exposure to sulfur dioxide can affect breathing and may aggravate existing respiratory and cardiovascular disease.

Surface water: Water located on the surface of the Earth in water bodies such as lakes, rivers, streams, ponds, wetlands, and the ocean.

Tails: In the uranium enrichment process, tails refers to gas with a reduced concentration of the uranium-235 isotope.

Threatened Species: Plant and wildlife species that are likely to become endangered in the foreseeable future.

***Toxic Substances Control Act (TSCA)*:** A federal law authorizing the U.S. Environmental Protection Agency to secure information on all new and existing chemical substances and to control any of these substances determined to cause unreasonable risk to public health or the environment. This law requires that the health and environmental effects of all new chemicals be reviewed by the EPA before such chemicals are manufactured for commercial purposes.

Uranium: A radioactive element with the atomic number 92 and, as found in natural ores, an atomic weight of approximately 238. The two principal natural isotopes are uranium-235 (0.7 percent of natural uranium), which is fissile, and uranium-238 (99.3 percent of natural uranium), which is fissionable by fast neutrons and is fertile. Natural uranium also includes a minute amount of uranium-234.

Visual Resource Management (VRM): A process devised by the Bureau of Land Management to assess the aesthetic quality of a landscape and to design proposed activities in a way that would minimize their visual impact on that landscape. The process consists of a rating of site visual quality followed by a measurement of the degree of contrast between the proposed development activities and the existing landscape.

Visual and Scenic Resources: Natural or developed landscapes that provide information for an individual to develop their perceptions of the area. The size, type, gradient, scale, and continuity of landforms, structures, land use patterns, and vegetation are all contributing factors to an area's visual character and how it is perceived.

Volatile Organic Compounds (VOCs): Organic compounds that easily volatize or evaporate and can break down through photodestructive mechanisms. VOCs contribute to air pollution, especially the generation of tropospheric ozone (O_3).

Waste management: The planning, coordination, and direction of functions related to generation, handling, treatment, storage, transportation, and disposal of waste. It also includes associated pollution prevention and surveillance and maintenance activities.

Waste minimization: An action that economically avoids or reduces the generation of waste by source reduction and recycling; or reduces the toxicity of hazardous waste, improving energy usage.

Water resources: This term includes both freshwater and marine systems, wetlands, floodplains, and ground water.

Well field: Area containing one or more wells that produce usable amounts of water.

Wetlands: Land or areas exhibiting the following characteristics: hydric soil conditions; saturated or inundated soil during some part of the year and plant species tolerant of such conditions; also, areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, under normal circumstances, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

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APPENDIX J
PUBLIC COMMENTS ON THE DRAFT
ENVIRONMENTAL IMPACT STATEMENT

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APPENDIX J
PUBLIC COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT

J.1 Introduction

The U.S. Nuclear Regulatory Commission (NRC) staff published a notice in the Federal Register requesting public review and comment on the Draft Environmental Impact Statement (Draft EIS) on September 8, 2005 (70 FR 53396) in accordance with Title 10, Parts 51.73, 51.74, and 51.117 of the U.S. Code of Federal Regulations (10 CFR § 51.73, 51.74, and 51.117). The official public comment period began with publication of the Environmental Protection Agency's Notice of Availability on September 9, 2005 (70 FR 53657). The NRC staff established October 24, 2005 as the deadline for submitting public comments on the Draft EIS, consistent with the cited NRC regulations. Approximately 15 commenters (one commenter submitted letters and statements from 8 individuals and one commenter provided two submittals) provided nearly 25 documents (i.e., letters, facsimiles, and e-mails) to the NRC. In addition, oral comments were received from 17 individuals at a public meeting conducted by the NRC staff on September 29, 2005.

Public Participation

Public participation is an essential part of the environmental review process. This section discusses the process for public participation during the NRC staff's development of the EIS for the proposed American Centrifuge Plant (ACP). The NRC conducted an open, public EIS development process consistent with the requirements of the National Environmental Policy Act of 1969 (NEPA) and the NRC's regulations (detailed discussions follow). The NRC held a public scoping meeting early in the environmental review process (January 18, 2005) and a public meeting on the Draft EIS during the public comment period (September 29, 2005). The NRC provided a 48 day public comment period for agencies and the public to review the Draft EIS and provide comments. This EIS considers and addresses the nearly 300 individual comments the NRC staff identified from letters, facsimile transmittals, and e-mails received from approximately 15 individuals and from oral comments given by approximately 17 individuals.

Initial Notification and Notice of Formal Proceeding

Upon receipt of USEC's application for the proposed ACP and completion of an initial acceptance review, the NRC published a notice in the Federal Register (69 FR 61411) of receipt of the application and notice of hearing on October 18, 2004.

Public Scoping

The NRC's public scoping process for the EIS began on October 15, 2004, with the publication in the Federal Register (69 FR 61268) of a Notice of Intent to prepare an EIS (NOTE: An amended Notice of Intent was published on December 29, 2004 (69 FR 78058) that described a revised meeting time and location). As part of this process, the NRC conducted a public scoping meeting in Piketon, Ohio, on January 18, 2005. At this meeting, the NRC staff provided a description of NRC's role, responsibilities, and mission; gave a brief overview of its environmental and safety review processes; discussed how the public could effectively participate in the environmental review process; and solicited input from the general public on environmental concerns related to the proposed ACP. The NRC postponed the originally scheduled public scoping meeting in Piketon, Ohio from November 15, 2004 to January 18,

2005 after removal of public documents from the NRC public reading room and website for several weeks in November 2004 due to security concerns. Due to this delay, the public scoping comment period was extended from December 6, 2004 until February 1, 2005.

Issuance and Availability of the Draft EIS

On September 8, 2005, in accordance with NRC regulations, the NRC staff published a Notice of Availability for the Draft EIS in the Federal Register (70 FR 53396). In the notice, the NRC staff provided information on how to obtain a free copy of the Draft EIS. Additionally, copies of the Draft EIS were mailed to approximately 70 individuals including Federal, Tribal, State, and local government officials as well as members of the general public. An electronic version of the document and supporting information was made accessible through the NRC's project-specific web site (http://www.nrc.gov/materials/fuel-cycle-fac/usecfacility.html) and through the NRC's Agencywide Documents Access and Management System database on the NRC's web site.

Public Comment Meeting

On September 29, 2005 in Piketon, Ohio, the NRC staff conducted a public meeting to receive oral comments on the Draft EIS from members of the public. The NRC staff selected the city of Piketon as the location for the meeting because it is a few miles from the proposed ACP site. The NRC staff advertised this meeting in the local and regional newspapers including the Portsmouth Daily Times and the Columbus Dispatch as well as on several radio stations including WXIZ.

Seventeen people provided oral comments during the meeting. A certified court reporter recorded the oral comments and prepared a written transcript. The transcript is provided in Appendix K of this EIS. The transcript is part of the public record for the proposed project and was used in the development of the comment summaries contained in Appendix J.

Comments Received on the Draft EIS

As discussed above, the NRC staff received both oral and written comments on the Draft EIS during the comment period. The NRC staff identified approximately 300 comments in the more than 18 letters, facsimiles, and e-mails received and from the oral comments.

Comment Review

The NRC staff reviewed each comment letter and the transcript of the public meeting. Comments relating to similar issues and topics were grouped, as permitted by NRC regulations in 10 CFR § 51.91 and the Council on Environmental Quality's NEPA regulations at 40 CFR § 1503.4(b). Appendix J presents the comments, or summaries of comments, along with the NRC staff's corresponding responses. When comments have resulted in a modification to the Draft EIS, those changes are noted in the staff's response. In cases for which the comments do not warrant a detailed response, the NRC staff provides an explanation as to why no further response is necessary. In all cases, the NRC staff sought to respond to all comments received during the public comment period.

Appendix J provides summaries of all substantive comments received on the Draft EIS. The NRC staff prepared responses for each of the comments or for summaries of comments.

Major Issues and Topics of Concern

The majority of the comments received specifically addressed the scope of the environmental reviews, analysis, and issues contained in the Draft EIS, including existing conditions, potential impacts, proposed mitigation, and the NRC's environmental review process. However, other comments addressed topics and issues that were not part of the review process for the proposed action. Those comments included questions about the NRC's safety evaluation of the proposed uranium enrichment facility, security concerns, general statements of support or opposition to nuclear power, and observations regarding past USEC activities.

Comments on Out-of-Scope Topics

Some commenters raised issues that were not related to the NRC staff's environmental review of USEC's application to construct, operate, and decommission the proposed ACP. These issues are identified below. Because these issues did not directly relate to the environmental effects of the proposed action and were outside the scope of the NEPA review of the proposed action, the NRC staff did not prepare detailed responses to these comments.

Public Hearing

By law, a license to construct and operate the proposed ACP cannot be issued until completion of a hearing before the NRC's Atomic Safety and Licensing Board. Notice of the hearing, including guidance on certain aspects, was provided by the Commission in a notice published in the Federal Register on October 18, 2004 (69 FR 61411). Thereafter, a Licensing Board comprised of three administrative judges was established to conduct the hearing. Mr. Geoffrey Sea and Portsmouth/Piketon Residents for Environmental Safety and Security were granted standing by the Commission on May 12, 2005 (CLI-05-11). The Licensing Board made a decision on October 7, 2005 that neither intervenor had submitted an admissible contention on the proposed ACP. Currently, this ruling has been appealed to the NRC Commission. Nonetheless, the Licensing Board will conduct a mandatory hearing. Following completion of these hearings, the Licensing Board will issue a final decision as to whether the requested license should be issued. The evidence submitted during the hearing and the decisions of the Licensing Board are publically available except to the extent that they contain proprietary or sensitive security information.

Public Participation in the NRC Environmental Review Process

The NRC's environmental review began with the receipt and docketing of an application, which is described above. Pursuant to 10 CFR § 51.60, an applicant for an NRC license to construct and operate a uranium enrichment facility must submit an environmental report to the NRC with the application. In support of its licensing decision for a uranium enrichment facility, the NRC is required under 10 CFR § 51.20(b)(10) to prepare an EIS, and pursuant to 10 CFR § 51.26, to issue a Notice of Intent to prepare the EIS, which is published in the Federal Register. In the Notice of Intent, the NRC staff described, among other things, the scoping process proposed for the requested action. A public meeting on the scoping process was held in Piketon, Ohio on January 18, 2005 to receive both oral and written comments from interested parties. Pursuant to 10 CFR § 51.28, the NRC staff invited designated persons to participate in the scoping process, including any person who requested to participate.

Once the NRC staff has completed the scoping process, defined the proposed action, and determined the scope of the EIS, the staff prepares a Draft EIS. During the development of the Draft EIS, NRC sought

input from a number of sources, including State government agencies, Tribal governments, and individuals identified as consulting parties. Pursuant to 10 CFR § 51.74, the NRC staff then made the Draft EIS publicly available, published notice of the Draft EIS's availability in the Federal Register, and requested public comment on it. As specified in 10 CFR § 51.73, the minimum public comment period is 45 days. The NRC staff also distributed copies of the Draft EIS to the persons or organizations identified in 10 CFR § 51.74 including the U.S. Environmental Protection Agency (EPA), certain State and local agencies, Indian Tribes, and, upon written request and to the extent copies are available, to any other person. After receipt and consideration of public comments on the Draft EIS, the NRC staff prepares a Final EIS pursuant to 10 CFR § 51.90 and 51.91.

NRC Safety Review Process

The NRC staff evaluates a license application to determine whether an applicant has demonstrated compliance with the regulatory requirements which pertain to the type of license being sought. In the case of the present license application from USEC to construct, operate, and decommission a uranium enrichment facility, the NRC staff evaluated the application against the Commission's regulations found at 10 CFR Part 70. The NRC staff's evaluation of an applicant's demonstration of compliance with the regulations is documented in a Safety Evaluation Report. The NRC staff evaluates an applicant's attempt to demonstrate compliance with the regulations by reviewing the license application against the regulations. Requests by the NRC staff for additional information from the applicant are made publicly available. However, there is no requirement for a formal public comment resolution process for Safety Evaluation Reports.

Commenter and Comment Identification

The NRC staff received 15 comment documents (one commenter submitted letters and statements from 8 individuals and one commenter provided two submittals). The NRC staff assigned an identification number to each commenter, which will aid the reader in locating comments submitted by individual commenters and the NRC staff’s corresponding responses. Comment numbers beginning with the letters PMT refer to comments summarized from the transcript of the public meeting held in Piketon, Ohio on September 29, 2005. All remaining comment numbers reflect written comments received during the public comment period on the Draft EIS (e.g., 001).

Commenter Name	Affiliation	Commenter Number	Section(s)
Arnold, E.D.	Member of the Public	012	J.7
Arnold, Kathy	Member of the Public	PMT-015	J.4, J.7, J.9, J.11
Baker, Deborah	Member of the Public	PMT-002	J.2, J.4, J.11, J.19
Beegle, Charles W.	Member of the Public	010-2	J.11
Beekman, Blaine	Member of the Public	PMT-013; 011	J.3, J.11
Cheznik, Michael T.	United States Department of Interior	013	J.11
Cimprich, John and Vickie	Member of the Public	001	J.2
Colley, Vina	Member of the Public	PMT-003	J.2, J.4, J.7, J.11, J.19
Cowan, Frank	Member of the Public	010-8	J.19
Feight, Andrew	Member of the Public	PMT-017	J.11, J.19
Galanti, Maria	Ohio Environmental Protection Agency	005	J.9, J.10, J.11, J.15
Hancock, John	Member of the Public	010-5; 010-8	J.19
Kaniatobe, Karen	Absentee Shawnee Tribe of Ohio	010-6	J.19
Kennedy, MarJean	Governor's Office	PMT-011	J.2, J.10
Kennedy, Roger G.	Member of the Public	010-4	J.19
King, Thomas	Member of the Public	008	J.8, J.10, J.11, J.17
Kite, Fred	Member of the Public	PMT-001	J.3
Manuta, Dr.	Member of the Public	PMT-007	J.3, J.11, J.14, J.18, J.19
Marida, Pat	Central Ohio Sierra Club	PMT-014; 009	J.7, J.11, J.19
McCosker, Loraine	Member of the Public	004	J.2, J.4, J.7, J.9, J.11, J.19
Newman, Judy on behalf of Congressman Ted Strickland	State Elected Official	PMT-012	J.3
Pope, Chief Hawk	Shawnee Nation, United Remnant Band	010-7	J.19
Proctor, Robert N.	Member of the Public	010-1	J.8, J.9
Puchstein, Jean	Member of the Public	PMT-006	J.2, J.4, J.7, J.9, J.11
Rainey, Carol	Member of the Public	PMT-008; 006	J.2, J.11

Commenter Name	Affiliation	Commenter Number	Section(s)
Sea, Geoffrey	Member of the Public	PMT-010; 010[a]	J.6, J.8, J.11
Snyder, David	Ohio Historic Preservation Office	002	J.9, J.10, J.11
Swain, Lorry	Member of the Public	PMT-004; 007	J.2, J.4, J.11, J.19
Tinianow, Jerome C.	Audubon Ohio	010-3	J.19
Toelle, Steven A.	USEC	015	J.5, J.9, J.10, J.11, J.13, J.14, J.15, J.16
Wahley, Lois	Member of the Public	PMT-009	J.6, J.9
Walker, Nancy	Member of the Public	PMT-016	J.11
Weiner, Alan	Member of the Public	PMT-005	J.9, J.11, J.19
Westlake, Kenneth A.	United States Environmental Protection Agency	014	J.5, J.6, J.7, J.8, J.9, J.10, J.11, J.13, J.18
Young, Elisa	Member of the Public	003	J.2, J.4, J.11, J.19

Notes:
[a] Commenter number 010 submitted as part of their comments a series of attachments from other commenters which are numbered 010-1 through 010-8.

J.2 General Opposition

Comment: PMT-002-4
A commenter stated that although the proposed ACP at Piketon apparently has a better than average Occupational Safety and Health Administration safety record, a whistleblower was reportedly fired and the commenter questioned whether this would lead to safety concerns possibly not being openly discussed and addressed at the plant or by NRC.

Response: In evaluating applications, the NRC conducts a safety review, which is documented in a Safety Evaluation Report. The purpose of a Safety Evaluation Report is to evaluate the safety of an applicant's proposed action. NRC encourages any safety concerns to be openly discussed and addressed at all times. The proposed ACP would only be licensed if the NRC finds that public health and safety and the environment would be adequately protected.

Additionally, operation of the proposed ACP would be subject to inspections and reviews of operating procedures and required reports. Thus, the NRC would continue to review compliance with applicable NRC requirements, should NRC grant a license and the proposed ACP be constructed and operated.

Comment: PMT-002-7; PMT-003-1; PMT-003-2; PMT-003-8
Several commenters expressed concern over liability and sovereign immunity issues. Commenters asked who would be responsible for compensating workers after an illness such as cancer was discovered, which may occur long after a company has been at the site. They questioned whether the liability resides with the U.S. Department of Energy (DOE), USEC, NRC or companies, and noted that many smaller companies are out of business by the time an illness is determined. The commenters stated that there are

ill workers currently not being compensated. The commenters also challenged NRC to sign a legal document stating the proposed plant would not cause harm to workers or the community.

Response: The NRC shares the commenters' concerns about worker health and safety. The NRC occupational health and safety review is designed to limit exposure to radiological and non-radiological materials. Further, the proposed ACP would only be licensed if the NRC finds that public health and safety would be adequately protected. Section 4.2.12 of the EIS addresses the potential impacts to worker health. The analysis indicates that impacts associated with occupational exposures in the workplace should be small.

Comment: PMT-006-5; 001-1; 004-9; 007-5; 003-10; 006-4
Commenters expressed their opposition to granting an NRC license to USEC for the proposed project. Commenters stated their general belief that safety issues are not adequately addressed in the Draft Environmental Impact Statement and enriched uranium is not a safe product. Therefore, NRC should deny issuing a license to USEC for the proposed ACP at Piketon because the potential benefits do not outweigh the potential damage. Another commenter stated that no license should be granted because the site has not yet been cleaned up from operation of the gaseous diffusion plant and that the plant is not healthy for the environment of southern Ohio or anywhere else.

Response: The proposed ACP would only be licensed if the NRC finds that public health and safety and the environment would be adequately protected. The conclusions regarding environmental impacts provided in section 4.2.12 of the Draft EIS have not changed. Safety issues that are not within the scope of the EIS are addressed in the NRC's Safety Evaluation Report.

J.3 General Support

Comment: PMT-007-2; PMT-007-6; PMT-011-3; PMT-012-1; PMT-013-1
Several commenters expressed general support for the proposed ACP. One commenter viewed NRC involvement and licensing process as an improvement compared to the gaseous diffusion "era" when little to no information was provided to workers. One commenter noted the potential benefit of power generation that does not use carbon-bearing chemicals. One commenter stated the facility would be beneficial to the economy and expressed support about the deployment of advanced enrichment technology in southern Ohio. Several commenters praised NRC involvement and wanted to ensure that NRC regulators were getting correct information.

Response: The NRC acknowledges the comments in support of the proposed action.

J.4 NEPA Process

Comment: PMT-001-1
A commenter questioned when would an NRC license be granted if the Final EIS were issued by April 2006.

Response: The NRC Commission has issued an order for a 30-month review process from the submittal of the application to the final decision. Based on this 30-month schedule, a final decision on the license application would be made in February 2007. The NRC would only approve the license application after the EIS and Safety Evaluation Report are complete and the Atomic Licensing and Safety Board has completed its hearing process, and it has been concluded that the construction, operation, and decommissioning of the proposed ACP would meet its environmental and safety requirements.

Comment: PMT-002-3
A commenter requested the names of the Judges who will oversee the hearing process for the license application.

Response: The Atomic Licensing and Safety Board conducts hearings for the NRC and performs some other regulatory functions. On October 7, 2004, the board for the proceeding was announced, and includes the following members: The Chief Administrative Judge is Lawrence G. McDade. The two Associate Chief Administrative Judges are Richard E. Wardwell and Paul B. Abramson.

Comment: PMT-006-1
A commenter questioned if all scoping comment letters were going to be made available in their entirety instead of in a summary format.

Response: The letters that were submitted during the scoping period are a matter of public record and are available from NRC's public document room which is available online at http://www.nrc.gov/reading-rm/adams/web-based.html. *Select the "Web-based access" link and on the following webpage, select the "Begin ADAMS Search" link. To find all publicly available documents type in "Docket 07007004" and click the "Search" link. This search may be narrowed by selecting the "Advanced Search" link, typing in "07007004" in the Docket Number field and any other appropriate keyword related to the subject of interest in the various fields that are present.*

Comment: PMT-015-4; 004-2
Commenters expressed concern that per 40 CFR 1503, the NRC staff has been negligent to respond in a satisfactory manner to the scoping comments submitted by opponents of the proposed ACP on the Draft EIS.

Response: All comments received during the scoping process are a matter of public record and are available from NRC's public document room which is available online at http://www.nrc.gov/reading-rm/adams/web-based.html. *Select the "Web-based access" link and on the following webpage, select the "Begin ADAMS Search" link. To find all publicly available documents type in "Docket 07007004" and click the "Search" link. This search may be narrowed by selecting the "Advanced Search" link, typing in "07007004" in the Docket Number field and any other appropriate keyword related to the subject of interest in the various fields that are present.*

Section 1 of the EIS identifies the issues raised by public scoping comments that relate to implementation of the proposed action. Issues determined to be within the scope of the EIS were studied in detail. A summary of scoping comments also is provided in Appendix A Section 2. As required under the NRC's regulations at 10 CFR 51.29, the NRC has considered all scoping comments from the public and prepared a concise summary of the determinations and conclusions reached.

Comment: 003-2
A commenter requested that a separate EIS be conducted that would address additional depleted uranium tailings that may be generated by USEC. The commenter noted the EIS states that additional tailings generated by ACP would be processed on site, and questioned whether this activity has been approved. The commenter questioned if an additional 200,000 tons either from Ohio or New Mexico (in the Louisiana Energy Services application) would be enough to trigger an additional EIS because the conversion facility is not constructed or operational. The commenter also noted NRC has not provided a formal response to this query.

Response: NRC performs environmental reviews for each of our licensing and regulatory actions and actively seeks public input on environmental impacts during the reviews.

In accordance with NEPA, its implementing regulations, and NRC regulations for implementing NEPA, NRC reviewed the impacts of reasonable foreseeable future actions associated with the development of the proposed ACP.

As stated in Section 2.1.4.3 Facility Operation, USEC proposes to transport the depleted UF_6 generated at the proposed ACP to this new UF_6 conversion facility on the DOE reservation in Piketon. This plan is based on Section 3113 of the 1996 United States Enrichment Corporation Privatization Act that states the DOE "shall accept for disposal low-level radioactive waste, including depleted uranium if it were ultimately determined to be low-level radioactive waste, generated by [...] any person licensed by the Nuclear Regulatory Commission to operate a uranium enrichment facility under Sections 53, 63, and 193 of the Atomic Energy Act of 1954 (42 U.S.C. 2073, 2093, and 2243)." On January 18, 2005, the Commission issued its ruling that depleted uranium is considered a form of low-level radioactive waste (NRC, 2005). The Commission also stated that disposal of depleted uranium tails at a DOE facility represents a plausible strategy for the disposition of depleted uranium tails (NRC, 2005).

In addition, DOE analyzed the impacts of the operation of a conversion facility in the "Final Environmental Impact Statement for the Construction and Operation of a Depleted Uranium Hexafluoride Conversion Facility at the Portsmouth, Ohio site." DOE/EIS-0360, Oak Ridge Operations, Office of Environmental Management, U.S. Department of Energy, June, 2004. Should a new conversion facility be developed an environmental review in accordance with NEPA would be completed. DOE has maintained that, with routine facility and equipment maintenance, periodic equipment replacements, or upgrades, the conversion facility could be operated safely beyond the 18-year planned life-time period to process the additional depleted UF_6 from the proposed ACP. In addition, DOE indicates the estimated impacts that would occur from prior conversion facility operations would remain the same when processing the proposed ACP wastes. The overall cumulative impacts from the operation of the conversion facility would extend proportionately with the increased life of the facility (DOE, 2004a).

Comment: 003-11
A commenter requested additional time to review the Draft EIS and submit comments.

Response: The NRC reviewed the comments requesting additional time to comment and concluded that the participation process had provided sufficient time and opportunities for the public to bring forward issues and concerns for the NRC's consideration. The NRC provided a 48-day comment period on the Draft EIS. A 45-day period is generally provided under NRC regulations (10 CFR § 51.73). In view of the NRC staff efforts to solicit public involvement in the EIS scoping process, and public meeting held during the comment period, the NRC staff concluded that an additional extension of the comment period was not warranted. The NRC received hundreds of written comments from 15 commenters plus 17 public commenters at the public meeting by the October 24, 2005, comment period closing date. Additional information on the opportunity for comment during the public comment period is provided in section J.1.

Role of the NRC

Comment: PMT-003-4
A commenter questioned who would regulate special nuclear material and transuranic waste at the site.

Response: The NRC is responsible for regulating the use of special nuclear material which consists of enriched uranium and plutonium. USEC's possession limits for these two radionuclides are provided in Table 1.2-1 of the ACP License Application. Transuranic wastes are regulated by the EPA which develops environmental standards and Federal radiation protection guidance for offsite radiation due to the disposal of spent nuclear fuel and high-level and transuranic radioactive wastes. (http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/radwaste.html)

Comment: PMT-004-2
A commenter questioned whether the NRC has ever not licensed an applicant for any type of facility, other than Louisiana Energy Services, which was denied in a couple of places, but is still under application.

Response: Throughout the NRC's regulatory history, there have been cases where an application has not been approved. An application will be approved only after it has undergone technical and environmental review and has successfully demonstrated that it satisfies the NRC's regulatory requirements. If deemed necessary, the NRC will impose additional conditions on a license for the license applicant to improve safety or to meet regulations. In some instances this has resulted in the applicant withdrawing their application. With regard to Louisiana Energy Services, an application has never been denied. Louisiana Energy Services withdrew the application for a site in Louisiana, and is currently under review for a site in New Mexico.

J.5 Introduction and Background

Comment: 014-42
A commenter suggested that (Introduction, Section 1.5 Applicable Regulatory Requirement, Pages 1 -11 through 1-33) Executive Directive and Presidential Orders that make specific requirements on all Federal Agencies that would apply or impact the ACP project need to be included.

Response: Section 1.5.2 addresses all the applicable Executive Orders that were identified as having an impact on the proposed actions of this EIS.

Comment: 014-43
A commenter noted that (Introduction, Table 1-3, Pages 1-20 through 1-29) Table 1-3 is incomplete and suggested that all potential applicable requirements for the construction of the ACP have not been included and need to be thoroughly re-evaluated.

Response: The NRC conducted a complete review of state, local and federal requirements for the construction and operation of the ACP. No further requirements were identified in the preparation of the Final EIS.

Comment: 014-47
A commenter noted that (Page 1-4, Line 23) the Draft EIS states that the Portsmouth Gaseous Diffusion Plant is currently in "cold standby" mode (possible to restart in 18 to 24 months). The commenter suggested the Final EIS should include a schedule for when the facility will be placed into "cold iron"

mode (unable to be restarted) and become ready for decontamination and demolition work to proceed.

Response: The purpose of this EIS is to evaluate the potential environmental impacts of the construction, operation, and decommissioning of the proposed ACP. Thus, an evaluation of the status of the Portsmouth Gaseous Diffusion Plant is beyond the scope of this analysis.

Comment: 015-1
Commenter suggested changing "municipal" to "public" on line 30 of page 1-13.

Response: The NRC staff revised the text to reflect the commenter's suggestion.

Comment: 015-02
Commenter suggested changing "United States Enrichment Corporation" to "USEC Inc." on lines 23 and 26 of page 1-35.

Response: The NRC staff revised the text to reflect the commenter's suggestion.

J.6 Purpose and Need

Comment: PMT-009-1
A commenter wanted to know how much fuel from the proposed ACP would be produced, enough to supply five power plants, 10, or 100.

Response: The amount of enriched fuel that would be produced by the ACP would depend on the market for commercial nuclear power reactor fuel. The USEC Environmental Report indicated that it plans to produce 3.5 million separative work units (SWUs) initially with the capability of up to 7.0 million (SWUs) annually if the market warrants. According to USEC, it takes on the order of 100,000 SWU of enriched uranium to fuel a typical 1,000 megawatt commercial nuclear reactor for a year. Thus, the ACP at maximum capacity (i.e., 7 million SWU) could produce enough nuclear fuel to supply 70 commercial reactors for a year.

Comment: PMT-010-1
A commenter noted the Draft EIS states that one of the main justifications for the proposed ACP is that Paducah would be shut down and yet, the document states that Paducah would be needed to stay in operation to meet the total domestic demand for enriched uranium. The commenter suggested that acquiring cleaner technology and more efficient technology as the document purports is irrelevant if Paducah is not shut down.

Response: The Draft EIS does not state that Paducah needs to stay in operation to meet future demands. At the initial licensed capacity of 3.5 million SWUs, the proposed ACP would provide roughly 29 percent of the U.S. enrichment needs. Additionally, the NRC is evaluating the Louisiana Energy Services' proposed National Enrichment Facility as part of a separate proposed action with an output of an additional 3 million SWUs (25 percent). The combined output from the proposed ACP and National Enrichment Facility (6.5 million SWUs or 54 percent of U.S. demand) could offset the current output from the aging Paducah Gaseous Diffusion Plant (which currently supplies 14 percent of U.S. demand) and allow the Paducah plant to be retired. In addition, if USEC were to expand to a 7 million SWU capacity, USEC could contribute up to 58 percent of U.S. enrichment needs, in addition to the 25 percent that Louisiana Energy Services could produce.

Comment: 014-5
A commenter noted that (Page xix, line 41 and Page 1-5, Line 34) the justification of the rationale used for the Purpose and Need of the proposed project is insufficient and asked NRC to re-evaluate the aspect related to national security. The Draft EIS states, the commenter noted, that the proposed ACP is needed because only one uranium enrichment plant currently operates in the United States, the Paducah Kentucky Gaseous Diffusion Plant (Paducah Plant). A supply disruption with the Paducah Plant would leave the nation's commercial nuclear reactors fully dependent on foreign sources for enriched uranium-a situation which could impact national security. However, the Draft EIS also states that the Paducah Plant would be shut down, decontaminated, and decommissioned after ACP begins operating. Therefore, ACP would not satisfy the national security facet of the purpose and need of the proposed project, because the project would merely replace, instead of supplement, the nation's only operating uranium enrichment plant.

Response: The EIS does state that by 2020, the U.S. is estimated to need about 393 gigawatts or 393,000 megawatts of new generating capacity, and that enriched uranium will have to come from one or more new sources, such as the proposed ACP, to fulfill the shortfall in supply that may exist after that time. The shortfall is based on the projected growth in demand combined with the potential closure of the Paducah plant. The proposed action would help meet U.S. energy supply and national security goals by providing an additional reliable and economical domestic source of enriched uranium and to replace existing aging and less efficient uranium enrichment facilities.

Currently the Paducah Gaseous Diffusion Plant supplies approximately 14 percent of the U.S. enrichment needs. At a 3.5 million SWU capacity the proposed ACP would provide approximately 29 percent of the U.S. enrichment needs and at a 7 million SWU capacity would provide approximately 58 percent of the U.S. enrichment needs. In addition the NRC is evaluating the Louisiana Energy Services' National Enrichment Facility as part of a separate proposed action (NRC, 2005) with a proposed capacity of 3.0 million SWU or 25 percent of the U.S. enrichment needs. Combined these proposed facilities could provide up to 83 percent of future U.S. enrichment needs, thus reducing the dependence on foreign suppliers of enriched uranium.

Comment: 014-6
A commenter (Page 1 -2, Line 38 and footnote of Page 4-53) suggested there is a lack of a justification in the Draft EIS for the need to enrich uranium up to 10 percent by weight of uranium-235. According to the Draft EIS, the commenter stated, the license issued by NRC would authorize USEC Inc. (USEC) to produce enriched uranium up to 10 percent by weight of uranium-235. However, the Draft EIS also states that most power plants use enriched uranium with less than 5.5 percent of uranium-235 by weight, and that it would be unlikely for USEC to enrich uranium up to the higher weight. Finally, the Draft EIS states that, of the cylinders used to ship enriched uranium, none of them are certified to ship uranium enriched to higher than 5 percent by weight of uranium-235. Given that it would not be feasible for USEC to enrich uranium above 5 percent by weight of uranium-235 (for civilian use), the commenter suggested that NRC should explain why the proposed license would authorize a higher level of enrichment. If the project proponents foresee a scenario under which USEC would need to enrich uranium up to 10 percent of uranium-235, then that scenario should be documented in the Purpose and Need Section of the Final EIS. The commenter urged NRC to reconsider the limit of uranium enrichment cited in its license for USEC.

Response: The NRC staff evaluates a license application to determine whether an applicant has demonstrated compliance with the regulatory requirements which pertain to the type of license being sought. In the case of the present license application from USEC to construct, operate, and decommission a uranium enrichment facility, the NRC staff evaluated the application against the

Commission's regulations found at 10 CFR Part 70. The NRC's mandate is to ensure the safe use of nuclear materials and, as such, it must consider the issuance of licenses to applicants who wish to conduct operations involving these materials. Because USEC submitted an application for a license to enrich uranium up to 10 percent by weight of uranium-235, the NRC staff must evaluate that application as submitted.

The NRC is analyzing both the safety and environmental impacts of issuing a license that would allow enrichment to 10 percent. USEC has stated that they wish to maintain the operational flexibility for future business opportunities. Even if USEC demonstrates that they can safely enrich to 10 percent they would not do so until customers are found and then USEC would have to receive NRC approval for the larger shipping casks for transporting the product in a cost-effective manner as noted on page 4-53 of the EIS.

Comment: 014-7
A commenter noted (Executive Summary, Purpose and Need For the Proposed Action, Page xx, paragraph 1) the description appears to be incomplete and does not address the range or possibilities of materials that can be reasonably assumed to be produced at the proposed ACP citing the type and range of enrichments that have been conducted in past operations at the gaseous diffusion facility at the site.

Response: As described in Section 1.2, page 1-2 of the EIS, the proposed ACP would produce only low-enriched uranium for shipment to commercial nuclear power fuel fabricators; expected product recipients are listed in Section 2.1.4.3, page 2-27. The production of highly-enriched uranium for the Department of Defense is not considered part of the proposed action and is not under consideration in the NRC licensing review (see Section 1.3.1).

Comment: 014-8
A commenter noted that (Introduction, Section 1.3.2 The Need for Domestic Supplies of Enriched Uranium for National Energy Security, page 1-5, paragraph 1) it is unclear whether future inclusion of additional nuclear power plants and their needs for enriched fuel is taken into account. The commenter suggested to include at least one or two new plants and their potential needs to assure that a "more representative range" of possible customers for this facility's output is evaluated.

Response: At a capacity of 3.5 million SWUs, the proposed ACP would provide roughly 25 percent of the projected U.S. enrichment needs and allow the Paducah plant to be retired. However, as noted in the EIS, the USEC Environmental Report indicated that it plans to produce up to 7.0 million separative work units (SWUs) annually. This would allow the ACP to be a larger contributor to the nation's nuclear fuel needs and would help compensate for the addition of one or two new power plants. In addition, the NRC is evaluating the Louisiana Energy Services' National Enrichment Facility as part of a separate proposed action that would generate approximately 3 million SWUs (NRC, 2005).

J.7 Scope of the Environmental Analysis

Comment: PMT-003-3; PMT–015-1; 004-1; 009-3
Commenters suggested that the Draft EIS is not the result of an independent investigation and uses data that may not be accurate. Commenters cited the results the Piketon and Portsmouth Residents for Environmental Safety and Security analyses of contamination in Big Run Creek Water and questions DOE, USEC and Ohio EPA data from offsite sampling locations. The commenter urged NRC to conduct an independent investigation and conduct a critical analysis, and not rely on USEC or contractors at the facility, and suggested not to rely solely on the USEC application.

Response: The NRC has conducted an independent analysis of environmental impacts associated with the proposed action. The Energy Reorganization Act of 1974 established the NRC as an independent government agency whose mission is the protection of public health and safety and the environment from the commercial uses of nuclear materials. As an independent Federal agency, the NRC reports to Congress rather than the Executive Branch.

The NRC regulates licensees by conducting a thorough and independent review of each application for a license, consistent with its congressional mandate and the NRC's regulations for safety and environmental review. These regulations establish an independent review process to consider factual issues and contentions brought before the NRC. The NRC staff completed the environmental review described in the EIS and that review was consistent with NEPA as well as the Council on Environmental Quality implementing regulations (40 CFR Part 1500-1508) and the NRC's implementing regulations (10 CFR Part 51). Those regulations specify the procedures for reviewing potential environmental impacts and soliciting public review of the draft results and recommendations.

Throughout this review process, the NRC's only relationship with the applicant is the formal and open exchange of factual information about the application, safety evaluation, and environmental report. This exchange is completed through a process in which the applicant submits the license application, the NRC reviews the application and issues requests for additional information, and the applicant responds to the requests for additional information. All requests for additional information and responses are documented and are publicly available.

For the proposed ACP, the NRC staff were required to prepare an EIS. The EIS was based on the best scientific information available about the potential environmental impacts. This EIS was completed by the NRC staff and their consultants, independently of the applicant. When the applicant provided information, the NRC reviewed and verified the information, and conducted its own analysis of potential impacts. If comments on the Draft EIS provided specific corrections or additional information, the staff evaluated, considered, and addressed this information in this EIS, as appropriate.

Comment: PMT-003-5; PMT-015-1
A commenter suggested that the Draft EIS may not have adequately captured the costs of the proposed ACP, is not an independent investigation and is not fully open to public scrutiny due to relying on classified and proprietary information.

Response: Certain information that represents security or business proprietary concerns has been withheld from the EIS pursuant to 10 CFR 2.390. Although this information is not available to the public, it is reviewed and evaluated by the NRC in the Safety Evaluation Report and the EIS and will be considered in the NRC's final decision.

Comment: PMT-006-3
A commenter questioned the results of the Draft EIS analysis and the use of broad categories - small, medium, and large - to describe environmental effects. The commenter cited page xxii, and noted that no mention is made of centrifuges failing and the commenter questioned whether radiological impacts from routine transportation and transportation accidents is a "small" impact. The commenter indicated that NRC had done little in the way of independent investigation of the USEC application.

Response: The EIS specifically did evaluate the impacts of failed centrifuges in section 4.2.12.3. A much more detailed evaluation of the potential impacts of centrifuge failure is contained in the Safety

Evaluation Report. Section 4.1 of the EIS describes the process of determining the significance of potential environmental impacts.

Based on the Council of Environmental Quality's regulations and NRC guidance provided in NUREG-1748, each environmental impact is to be assigned a significance level of small, moderate, or large.

A discussion of NRC's approach to conducting an independent review is provided in the response to comment numbers PMT-003-3; MPT-015-1; 004-1; and 009-3 in this appendix.

Comment: 012-1
A commenter suggested the Draft EIS seems to omit any information or analysis about the product of the Centrifuge Facility, and the impacts of its use, and therefore, NRC cannot provide the favorable finding as described in the Draft EIS.

Response: The purpose of this EIS is to evaluate the potential environmental impacts of the construction, operation, and decommissioning of the proposed ACP. As the EIS indicates, the enriched uranium produced by the facility would be ultimately used in commercial nuclear power plants, which are licensed by NRC and are also subject to a NEPA review.

Comment: 014-1
A commenter stated the Draft EIS appears to evaluate this project as a generic case and recommended the Final EIS be focused on site-specific analyses, impacts, and mitigation. Some of the general descriptions, the commenter stated, of how the materials, source materials, product materials, and the waste materials will be handled and controlled at DOE's Portsmouth, Ohio Reservation (Portsmouth Reservation) appear to be incomplete and fragmented, which the commenter said made it difficult to properly evaluate whether or not requirements under other Federal regulations can be met with the necessary degree of completeness to authorize this project.

Response: The EIS is an analysis of the environmental impacts associated with the proposed action and is necessarily site-specific and based on anticipated construction and operational activities. For example, in Section 4.2.13 Waste Management Impacts, NRC analyzes the impacts associated with construction and operation. The waste management associated with construction analyzes site-specific impacts including the refurbishment of specific buildings, volumes of specific types of waste (sanitary, low-level radioactive, and recyclable), and the use of specific landfills, while the waste impacts associated with operation analyzes the use of specific depleted uranium storage cylinders, specifies the number of cylinders, the locations of the onsite storage yards, and reviews various long-term storage options. Further, aside from any NRC license issued to the applicant, the applicant is still responsible for complying with all other Federal, State, and local regulations and requirements. Tables 1-2 and 1-3 list the regulations that would apply for the construction and operation of the ACP. Granting a license does not excuse USEC from its obligations to comply with other Federal and state requirements.

Comment: 014-9
A commenter noted (Page 2-1, Line 44) the scope of the Draft EIS does not include decommissioning and related activities of the Paducah, Kentucky Gaseous Diffusion Plant and should. The scope, the commenter suggested, should include the cessation of all uranium enrichment operations at Paducah because the start of ACP's uranium enrichment operations and the cessation of uranium enrichment operations at the Paducah Plant are closely related.

Response: As discussed in Section 2.1 of the EIS, cessation of uranium enrichment activity is included, but decommissioning of the Paducah Gaseous Diffusion Plant, changes to any other activities at that site, or any alternate uses of the site in the future are considered out of the scope of this analysis. The decommissioning of the Paducah facility would be the subject of future DOE decisions and NEPA analysis which is beyond the scope of licensing the proposed ACP. These actions would be the subject of other decisions by agencies such as the DOE, and other environmental reviews under NEPA.

Comment: 014-10
A commenter suggested the Final EIS should discuss the former Portsmouth, Ohio gaseous diffusion plant, and any ACP interactions with it, considering that the Portsmouth plant is either in cold standby or cold iron and that the ACP will be in close proximity to it.

Response: The EIS discusses the Portsmouth Gaseous Diffusion Plant appropriately (e.g., use of ancillary facilities and cumulative impacts) but does not discuss the infrastructure of the plant because the operation of the proposed ACP is not dependent on this infrastructure.

Comment: 014-11
A commenter (Introduction, Section 1.2, The Proposed Action, Page 1-2, paragraph 5) noted the potential range of produced materials does not include the possibility of production for the Department of Defense. If this is potentially a reasonably assumed product, the commenter suggested it needs to be included for evaluation.

Response: As described in Section 1.2, page 1-2 of the EIS, the proposed ACP would produce only low-enriched uranium for shipment to commercial nuclear power fuel fabricators; expected product recipients are listed in Section 2.1.4.3, page 2-27. The production of highly-enriched uranium for the Department of Defense is not part of the proposed action and is not under consideration in the NRC licensing review.

Comment: 014-12
A commenter suggested (Introduction, Section 1.4, Scope of the Environmental Analysis, Page 1-7, paragraph 3) the scope of the environmental analysis may not meet the actual needs to be addressed for the new facility to be created and put into operation. The scope may need to be expanded to assure that all of the environmental issues are adequately addressed.

Response: The EIS analyzes impacts and actions considered to be within the scope of the proposed action as described in section 1.2. As described in Section 1.4.1, a public scoping process was used by the NRC to help identify the relevant issues to be discussed in detail and to help identify issues that are beyond the scope of the EIS, that do not warrant a detailed discussion, or that are not directly relevant to the assessment of potential impacts from the proposed action. Therefore, the NRC staff believes that the scope of the EIS adequately considers issues related to the proposed action that could have short- or long-term impacts on the environment.

Comment: 014-13
A commenter stated (Introduction, Section 1.4.4 Issues Outside the Scope of the EIS, Page 1-9) that this section artificially narrows the scope of this evaluation to exclude security issues relevant to this facility. Safety and Security, Credibility and Terrorism must be addressed in any project of this type. The Draft EIS is incomplete and inadequate to properly address these issues.

Response: Safety and security issues associated with the proposed ACP will be evaluated in the NRC staff's safety review. The results of that evaluation will be documented in the Safety Evaluation Report.

Any facility licensed by the NRC is required to fully comply with NRC regulations and license conditions, including those that relate to security.

Additionally, in The Matter of Private Fuel Storage, LLC *(Independent Spent Fuel Storage Installation), 56 NRC 340 (2002), the Commission held that it is not appropriate to address issues of terrorism within the context of NEPA. But, as stated in Commission Memorandum and Order CLI-02-24 (dated 12/18/2002), although the NRC has declined to consider terrorism in the context of NEPA, the NRC is devoting substantial time and attention to terrorism-related matters. For example, as part of fulfilling its mission to protect public health and safety and common defense and security pursuant to the Atomic Energy Act, the NRC staff is conducting vulnerability assessments of commercial uses of radioactive material. The NRC has assessed potential vulnerabilities of radioactive dispersal devices, dirty bombs, and other diversion type activities. The NRC has issued interim compensatory measures and a number of other orders imposing enhanced security requirements on its licensees. Also, the NRC has acted to increase security awareness in its applicants.*

Comment: 014-14
A commenter (Page 2-2, Line 26) suggested the Final EIS should identify: 1) all of the uranium enrichment projects expected for the facility; 2) all of the projects that the facility is capable of performing; 3) whether this facility will be reprocessing feed materials from spent nuclear fuel; and 4) whether this Final EIS encompasses all of the activities that an enrichment facility may be called to perform.

Response: NRC regulations for implementing NEPA require consideration of only those activities that are reasonably foreseeable under the proposed action. Section 1.2 and Section 2.1.4 provide details on the proposed action and the expected activities under each of the phases of the proposed action. Any potential activities of an enrichment facility that are possible but not within the scope of the proposed action, are out of the scope of this analysis. USEC intends to use natural uranium in the form of UF_6 for the proposed ACP. The intention is to not introduce feedstock contaminated with significant concentrations of other nuclides into the process. Feed material that meets the American Standards for Testing and Materials specification for recycled feed may be used, and may contain small quantities of radionuclides such as uranium-236 and technetium-99.

Comment: 014-15
A commenter suggested that (Page D-5) considering the amount of depleted uranium that will be generated by ACP operations, and since it's a credible option, the Final EIS should also assess the transportation of depleted uranium and other radioactive wastes to Andrews, Texas, and the location of another disposal facility that should have an Agreement State license for disposal within the next year.

Response: NRC identified and evaluated reasonable transportation points and corridors, including Gainesville, Florida; Clive, Utah; and the Nevada Test Site for processing and disposal of low-level radioactive waste. The analysis indicated that there would be no significant impacts. The sites analyzed in the EIS reasonably represent a range of radioactive waste disposal sites and present results that are representative of the impacts associated with the transportation of depleted uranium and other low-level radioactive wastes.

J.8 Agencies and Persons Consulted

Comment: PMT-010-5
A commenter said NRC was not fulfilling its obligation under section 106 of the National Historic Preservation Act because NRC had not included persons, including the owner of the Rittenour home, who asked to be consulted on the project. In addition, the commenter suggested that NRC needs to include a letter written to NRC from the owner of the Rittenour home in the Draft EIS.
Response: A letter from the owner of the Rittenour home was included in a petition for intervention, but did not include a request to be consulted on the project. The letter describes the writer's property as "the major portion is on the west side of State Route 23 and goes to the Scioto River."

Comment: 008-22
A commenter stated that Appendix B of the Draft EIS contains several form letters to Indian tribes asking them about "specific knowledge of any sites" that they believe "have traditional religious and cultural significance." The text indicates that the Absentee Shawnee reported knowledge of such a site -- the Scioto Township Works -- though the documentation expressing this concern, supposed to be in Appendix B, is not there. In any event, the letters do not reflect any sort of real consultation with the tribes; they are mere formletters that do not seem to have been followed up in any way. The commenter suggested NRC review the findings of the Tenth Circuit Court of Appeals in Pueblo of Sandia v. United States, 50 F3d 856 (10th Cir. 1995), as well as pertinent Advisory Council, National Register, and EPA guidance, and initiate real consultation with tribes.

Response: A letter from the Absentee Shawnee was included in a petition for intervention, but no specific information was included. The NRC staff made several attempts to establish consultation ties with the Absentee Shawnee Tribe (see response to Comment 008-11 in Section J.10) but never received any response. The Ohio Historic Preservation Office has received all Section 106 correspondence and did not object to NRC's efforts in its letter dated October 5, 2005, included in Appendix B.

Comment: 008-23
The commenter stated that Appendix B also includes correspondence with the State Historic Preservation Officer in which the State Historic Preservation Officer suggests a variety of representations, studies and consultations that NRC should undertake. It is not clear what, if anything, NRC has done in response to these suggestions.

Response: The NRC responded to the suggestions in the February 2005 letter from the State Historic Preservation Officer by including information in the EIS about previous ground disturbance in the area of proposed new construction, considering public concerns expressed in the petition for intervention and provided in scoping meetings, and explaining the basis for its conclusions that the project would have no effect on historic properties. Appendix B has been updated to include all available consultation correspondence, including the Ohio Historic Preservation Office letter dated October 5, 2005, which reaffirms Ohio Historic Preservation Office's interpretation that the proposed ACP will not adversely affect historic properties.

Comment: 008-24
The commenter stated that Appendix B also contains a letter to the Advisory Council on Historic Preservation in which NRC mentions, rather in passing, that it intends to "use the NRC's NEPA review processes for Section 106 purposes," and later indicates that the former will be used "in lieu of" the latter. The commenter indicated that this suggests an attempt by NRC to comply with 36 CFR 800.8(c) and substitute its NEPA compliance for completion of standard Section 106 review, but the commenter

suggested that NRC has done what 36 CFR 800.8(c) requires in order to effect such a substitution. It has notified the Advisory Council of its attempt to substitute, however the commenter indicated that there is no evidence that NRC has similarly notified the State Historic Preservation Officer. The notification to the Advisory Council came only very late in the NEPA process, the commenter suggested, and in such a manner (a short, vague paragraph buried in the middle of a longer missive) that it is easy to imagine the Council misunderstanding its intent. More importantly, NRC has engaged in virtually none of the consultation with interested parties required by 36 CFR 800.8(c), and there are, as indicated above, many questions about the quality of its efforts to identify and address historic preservation issues. The commenter suggested that NRC should not substitute NEPA compliance for standard Section 106 review, and initiate proper consultation with all concerned parties in accordance with 36 CFR 800.4.

Response: The NRC notified the State Historic Preservation Officer of its intent to coordinate NEPA and National Historic Preservation Act compliance in a December 2004 letter, included in Appendix B of the Draft EIS. The commenter is referred to the response to comment 008-11 in Section J.10 for descriptions of NRC's consultation efforts with tribes. The commenter is referred to the response to comment PMT-010-4 in Section J.11 regarding a request for consulting party status.

Comment: 008-25
The commenter stated that beyond properly complying with Section 106 of the National Historic Preservation Act, NRC should attend to Section 110(d) of the same statute, to the requirements of the Archaeological and Historic Preservation Act of 1974, the American Indian Religious Freedom Act, the Native American Graves Protection and Repatriation Act and its implementing regulations (43 CFR 10), Executive Order 13175, and Executive Order 13352, and to the requirement of 40 CFR 1508.27(b)(3) and (8) that effects on cultural resources -- NOT only National Register eligible historic properties -- be considered in determining the significance of environmental impacts.

Response: Section 110(d) applied to this case requires that the NRC, consistent with its mission and mandates, carry out its licensing process in accordance with the purposes of the National Historic Preservation Act and give consideration to projects and programs that will further the purposes of the Act, which are to expand the preservation of historic resources on federal and private lands. The Archeological and Historic Preservation Act of 1974 emphasizes preservation of archaeological and historical sites and data. As indicated in the EIS, NRC has not identified threats to preservation of historic resources by the proposed project.

The American Indian Religious Freedom Act and the Native American Graves Protection and Repatriation Act and its implementing regulations set forth policy and requirements that a federal agency shall avoid interference with exercise of Native American religious practices, effects to or access to religious sites, and shall consult with tribes to identify and avoid impacts to places and things of traditional cultural value, including cultural items, as defined under the Native American Graves Protection and Repatriation Act. The NRC has addressed these in its consultation effort. Executive Order 13175 applies to consultation in the context of agency policymaking and is not applicable to this NRC process. Executive Order 13352 mandates efforts by the Departments of the Interior, Agriculture, Commerce, Defense and the Environmental Protection Agency to facilitate cooperative conservation, to take into account the interests of persons with ownership of lands and to properly accommodate local participation in Federal decision making. Although the order does not apply to the NRC specifically, the NRC has received and taken into account the interests of persons with ownership of nearby lands in its review. The paragraphs of the regulations implementing NEPA that the commenter cites mention the need to consider "proximity to historic or cultural resources" and the degree to which an action "may cause loss or destruction of significant scientific, cultural, or historical resources." The EIS did evaluate

possible effects on cultural resources outside the construction zone and area of operations of the proposed plant, but identified no likelihood of change in the existing conditions of these resources that would be associated with construction or operation of the plant.

Comment: 014-37
A commenter suggested that (Alternatives, Section 2.4 Comparison of Predicted Environmental impacts, Table 2-8, Page 2-60) the National Emission Standards for Hazardous Air Pollutants 40 CFR 61 Subpart H evaluation has not been submitted for determination of appropriateness and to demonstrate potential compliance status of this type of facility to the regulating agency. However, the Draft EIS characterized impacts as "SMALL." The commenter stated that until this determination is made under Subpart H, classifying impacts, is premature. The commenter encouraged NRC to involve EPA and other appropriate Federal, agencies earlier in the determination process.

Response: As described in Section 4.2.12.3 and Appendix C of the EIS, the NRC staff have determined that public doses from emissions of radioactivity to the atmosphere from the ACP would be well below both the 10 CFR 20 dose limits of 100 millirem per year (approximately 1 millirem per year), and the 10 CFR 20.1101(d) dose constraint of 10 millirem per year. For this reason, staff estimates that the public dose impacts would be "SMALL."

Aside from the question of the anticipated level of public dose impact, the question of whether USEC, Inc. must either request a permit from EPA or show EPA by analysis that a permit is not required pursuant to EPA regulations in 40 CFR Part 61, Subpart H, for the DOE-owned ACP is a matter which USEC must address with EPA, not NRC. NRC has no role in EPA's determination on this matter.

Comment: 014-50
A commenter noted that (Introduction, Section 1.5.5 Cooperating Agencies, Page 1-19) the Draft EIS states that during the scoping process, no Federal, State, or local agencies were identified as potential cooperating agencies in the preparation of the Draft EIS. The commenter said the Draft EIS, however, does not address whether there was any contact with other regulating Agencies at any level that could have been considered cooperating Agencies. The commenter suggested all of the current Federal, as well as State and Local regulators for this site would have been potential Cooperating Agencies in the development of this document and process.

Response: NRC did not request any agencies to be a cooperating agency in the preparation of the EIS. In accordance with NEPA, NRC consulted with several Federal and State agencies as described in section 1.5.6, and none of the agencies consulted requested or indicated interest in being a cooperating agency in the preparation of the EIS.

Comment: 014-51
A commenter (Introduction, Section 1.5.6 Consultations, Page 1-19) noted that when the NRC was first given some regulatory authority at this site, a consultative procedure was to have been used with U.S. EPA, to assure that the site could be "certified" for their regulation. A similar process, the commenter suggested, should have been used with all current regulating Agencies of this facility prior to preparation of this document.

Response: As indicated in Section 1.5.6, and in accordance with NEPA and cross-cutting Acts and regulations, NRC consulted with Federal and State regulatory agencies throughout the development of the EIS.

Comment: 001-1-1
Another commenter argued that a member of the public who has done important work evaluating the history and significance of the Piketon site should be consulted in any effort to assess the potential impact of the centrifuge plant construction.

Response: NRC engaged members of the public, to include those who have done important work evaluating the history of the Piketon site through hosting public scoping and comment meetings. In addition, in accordance with the National Historic Preservation Act, NRC consulted with the State Historic Preservation Officer, Federally recognized tribes, and a member of the public who is familiar with the local historic setting.

J.9 Proposed Action and Alternatives

Proposed Action

Comment: PMT-006-2
A commenter stated that the Draft EIS glossary defines special nuclear material, plutonium, uranium-233, or uranium enriched in the isotope, ores containing 0.05 percent uranium or thorium, regulated under the Atomic Energy Act. In general, this includes all materials containing radioactive isotopes concentrations greater than the natural and the byproduct tailings from the formation of this concentrated material, and byproduct materials is defined as the tailings or waste products produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content. The commenter noted that these very broad definitions seem to include any and all radioactive materials that USEC will be authorized to possess and use if NRC grants this license, and suggested that the NRC include a list of the nuclear material that will not be used at the site, such as weapons-grade material.

Response: Source material and special nuclear material are accurately defined in the EIS glossary (Appendix I) in accordance with the definitions in 10 CFR Part 20, 40 and 70. The purpose of the glossary is to depict the terminology used in the EIS. The use of weapons-grade material is not part of the terminology used for the proposed action.

Comment: PMT-009-2
A commenter wanted clarification on the purpose of the Megatons-to-Megawatts program, and whether dismantled Russian nuclear warheads would be used as feed material at the ACP. The commenter also wanted confirmation that the plant would not use material from dismantled U.S. warheads as feed material.

Response: The EIS clearly states the proposed action is for the NRC to issue a license that would authorize USEC to possess and use special nuclear, source material, and byproduct material at the proposed ACP, a gas centrifuge uranium enrichment facility proposed to be located on the DOE reservation near Piketon, Ohio. The proposed action is not part of the Megatons- to-Megawatts program, which is discussed in section 1.3.1, nor does the proposed action involve dismantlement of U.S. warheads.

Comment: PMT-005-4
A commenter asked about the potential of recreational opportunities on the surrounding waterways, such as the Mill Creek and along the Ohio and Scioto rivers, and urged that these waterways be kept or made clean.

Response: The EIS assesses the potential impacts on surface and ground water quality and water use due to the proposed action and alternatives. Impacts to local receiving waters from proposed ACP facility operation wastewater discharges, including action levels will be based on discharge monitoring as described in section 6.1.4. The cumulative impact of the proposed action on local water resources is expected to be small as described in section 4.3.4 as all discharges for operation would have to meet EPA and State National Pollutant Discharge Elimination System standards, as well as DOE and NRC standards, which are designed to protect human health and the environment. During site preparation and construction (section 4.2.6.1), cumulative impacts could result in a moderate short-term cumulative impact on surface water quality due to increased erosion and storm water flows (not taking into account USEC's proposed Best Management Practices to mitigate surface water impacts) during operations. During operations, no liquid discharges of licensed radioactive materials are anticipated from the proposed ACP as described in section. 4.2.6.2. Any effluents potentially containing radioactive material would have to meet NRC standards in 10 CFR Part 20 prior to being discharged or would have to be disposed at a licensed facility.

Comment: PMT-015-2
A commenter stated that the Draft EIS offers "bad advice" by suggesting, for example, on page 2-18, that the Gas Centrifuge Enrichment Plant documents from the 1980s be destroyed. This would make it more difficult, the commenter stated, to determine what contaminants have historically polluted the groundwater at the site, thereby, impeding cleanup.

Response: Any Gas Centrifuge Enrichment Plant records relating to contaminants are the property of the DOE (DOE). These records are retained by DOE and housed in appropriate storage locations in accordance with DOE requirements and environmental regulations.

Comment: PMT-015-8
A commenter suggested that USEC has not adequately explained why it requires the license of 10 percent enrichment. The commenter noted that a competitor in New Mexico has only asked for a five percent license and the power industry does not require fuel enriched above five percent.

Response: The National Enrichment Facility that Louisiana Energy Services has proposed to build near Eunice, New Mexico is being evaluated by NRC in a separate proposed action.

The NRC staff evaluates a license application to determine whether an applicant has demonstrated compliance with the regulatory requirements which pertain to the type of license being sought. In the case of the present license application from USEC to construct, operate, and decommission a uranium enrichment facility, the NRC staff evaluated the application against the Commission's regulations found at 10 CFR Part 70. The NRC's mandate is to ensure the safe use of nuclear materials and, as such, it must consider the issuance of licenses to applicants who wish to conduct operations involving these materials. Because USEC submitted an application for a license to enrich uranium up to 10 percent by weight of uranium-235, the NRC staff must evaluate that application as submitted.

Comment: 002-3
A commenter noted that the Draft EIS provides information on the size of the Reservation in several places. For instance, on Page 2-2 the Reservation is described as encompassing 3,700 acres with 1,300 acres inside the perimeter loop road while on Page 3-1(and also Page 3-5) the report states that within the Reservation there are 750 security-fenced acres with 550 acres in the central area surrounded by the Perimeter Road.

Response: Perimeter Road encompasses 1,300 acres. Within Perimeter Road there are approximately 750 security fenced (i.e. controlled access) acres, 550 acres are occupied by the Gaseous diffusion plant, and approximately 200 acres would be occupied by the ACP facilities. Not all of these areas are continuous. Inconsistencies describing the size of the Reservation were corrected throughout the EIS.

Comment: 004-3
A commenter stated the annual number of feed cylinders is different on page 2-22 than it is on page 4-47.

Response: The proposed number of shipments of feed cylinders to the proposed ACP is 1,100 annually. This number has been changed in Table 4-10.

Comment: 005-5
A commenter stated the Draft EIS (Page 2-14, Section 2.1.3.2 Secondary Facilities) does not discuss the potential to utilize additional buildings currently leased by USEC, Inc. The commenter questioned what other facilities may be used including those currently leased by USEC, Inc. to support the centrifuge program.

Response: All facilities proposed to support the proposed action are discussed in the EIS.

Comment: 005-6
A commenter asked (Page 2-29, Solid Waste Handling, Storage, and Transport, Line 30) what the NRC regulatory requirements for the management of low level mixed wastes are and where are they cited in the CFR.

Response: Low level mixed waste is regulated under the Resource Conservation and Recovery Act (RCRA). As stated on page 2-30 of the EIS, "low level mixed waste is exempted from the storage requirements of the RCRA as defined in Ohio Administrative Code (OAC) 37455-103. Low level mixed waste is eligible for this conditional exemption as it is a hazardous waste and would be generated and managed by USEC as described in 40 CFR Part 266, Subpart N and OAC 3745-266."

Comment: 005-7
A commenter suggested (Page 2-30 and 2-31, Management and Disposal of Depleted UF_6 from Facility Operation, line 45) that if USEC-ACP and DOE have reached agreement concerning the management of UF_6 cylinders, the information should be discussed. Additionally, the USEC-ACP and DOE should discuss the potential to insert a fourth process line within the conversion facility to limit the amount of time needed to complete the conversion process for the number of cylinders USEC will create over time. The DOE and USEC should be proactive in this matter and associated cost should be examined in this EIS.

Response: As stated in Section 2.1.4.3 Facility Operation, USEC proposes to transport the depleted UF_6 generated at the proposed ACP to this new UF_6 conversion facility on the DOE reservation in Piketon. This plan is based on Section 3113 of the 1996 United States Enrichment Corporation Privatization Act that states the DOE "shall accept for disposal low-level radioactive waste, including depleted uranium if it were ultimately determined to be low-level radioactive waste, generated by [...] any person licensed by the Nuclear Regulatory Commission to operate a uranium enrichment facility under Sections 53, 63, and 193 of the Atomic Energy Act of 1954 (42 U.S.C. 2073, 2093, and 2243)." On January 18, 2005, the Commission issued its ruling that depleted uranium is considered a form of low-level radioactive waste. The Commission also stated that disposal of depleted uranium tails at a DOE facility represents a plausible

strategy for the disposition of depleted uranium tails (NRC, 2005).

In addition, DOE analyzed the impacts of the operation of a conversion facility in the "Final Environmental Impact Statement for the Construction and Operation of a Depleted Uranium Hexafluoride Conversion Facility at the Portsmouth, Ohio site." DOE/EIS-0360, Oak Ridge Operations, Office of Environmental Management, U.S. Department of Energy, June, 2004.

Comment: 014-21
A commenter observed (Page 2-12, Line 48) the Draft EIS states that UF_6 cylinders may be stored in any storage yard. The commenter suggested it should be clarified whether all of the cylinders will have comparable management and security whether they are depleted uranium or enriched product. The commenter questioned whether there will be any long-term staging of enriched materials for subsequent blending made between UF_6 cylinders that are tails/waste (suitable for processing and disposal), UF_6 product, and UF_6 materials that support production. Otherwise, mixing these UF_6 materials up in any of the storage yards seems to provide an opportunity for negative impacts related to UF_6 management.

Response: There are seven cylinder storage yards that would support the ACP. The ACP cylinder storage yards would provide storage for feed uranium, depleted (tails) uranium, and enriched (product) uranium. These cylinders may be stored in any storage yard regardless of use, although it is anticipated that cylinders of a certain type will be routinely stored in a particular yard. For example, the X-745G-2 yard is identified as the storage yard typically used for tails cylinders. All storage yards will have management and security appropriate to the material being stored. It is possible that USEC could mix product to achieve a desired enrichment (e.g., USEC could blend 4 percent enriched product with 6 percent product to achieve a 5 percent product). In its license application, USEC is seeking authorization to enrich uranium up to a maximum level of 10 percent. No mixing or blending of materials contained in cylinders will take place in any of the storage yards. Any classified low-level mixed waste will remain on-site and be managed in accordance with the rules in Ohio Administrative Code 3745-266 until shipments can be scheduled to an approved Treatment, Storage, Disposal, Recycling Facility.

Comment: 014-22
A commenter noted (Page 2-19, Line 29) the Draft EIS text and Table 2-3 provide information that approximately 8,000 cubic meters of low-level waste will be generated during refurbishment and construction activities. The commenter suggested the Final EIS should discuss its waste disposition, where the low-level waste is being shipped for processing and disposal, and whether any of this low-level waste is considered "mixed waste" under RCRA.

Response: Section 4.2.13.1 of the EIS states that low-level mixed waste generated during the site preparation activities would be shipped to a licensed low-level radioactive waste disposal facility, such as Envirocare in Utah, which is subject to regulatory controls to limit radiological releases and exposure. Low-level mixed wastes anticipated to be generated during operation of the proposed ACP are described in section 2.1.4.3. Any low-level mixed waste generated will remain on-site and be managed in accordance with the rules in Ohio Administrative Code 3745-266 until shipments can be scheduled to an approved Treatment, Storage, Disposal, Recycling Facility.

Comment: 014-23
A commenter suggested (Page 2-27, Line 18) this section of the Final EIS should discuss: 1) at what point the depleted uranium tails are considered a waste or a product; 2) who has the authority to make the determination that the depleted uranium tails are waste (especially considering that DOE may be the

recipient of these materials); 3) at what time the waste determination is made; 4) how much tailings/waste is expected to be generated annually; 5) whether there will be sufficient capacity on-site to process the tailings/waste for use or disposal; and 6) the disposal options currently available and potentially available in the future for the off-site storage or disposal of the tailings/waste.

Response: A complete discussion of the depleted uranium tails is provided on page 2–30 through 2-34 of the EIS as well as on pages 4-75 through 4-78. The NRC has no authority to make a classification as to whether the tails are a waste or a resource. Section 3113(a) paragraph 4 of the USEC Privatization Act states that DOE must take title/possession of the depleted uranium tails if requested, regardless of whether a determination as to the material being a waste or resource has been made. For NEPA purposes, the NRC staff considers this material as waste due to the large volume of depleted uranium that is currently in storage in the United States. As discussed in the EIS on page 4-76, DOE is required to take title to the depleted uranium if requested. A 7 million SWU plant would produce 19,040 metric tons of depleted uranium tails annually (page 2-34 of NRC EIS). DOE has previously considered the long-term disposal of depleted uranium from their conversion facilities as noted on page 4-77 of the NRC EIS. Included in the DOE analysis were the two disposal sites: Envirocare of Utah and the Nevada Test Site.

Comment: 014-24

A commenter observed (Page 2-30, Line 45) the United States has produced depleted UF_6 since the early 1950s as part of the process of enriching natural uranium for both civilian and military applications. DOE's Paducah Depleted UF_6 conversion facility will process that site's estimated 450,000 metric tons of depleted UF_6 over a 25 year processing period. DOE's Portsmouth Depleted UF_6 conversion facility will process that site's estimated 250,000 metric tons of depleted UF_6 that is currently stored in about 16,000 cylinders on the Portsmouth Reservation, as well as process an additional 4,800 cylinders that will be transferred from the Oak Ridge East Tennessee Technology Park facility to the Portsmouth Reservation; the overall processing period is expected to be 18 years. DOE expects the conversion of all its stored depleted UF_6 to cost approximately $2.6 billion, excluding costs for the decontamination and decommissioning of the conversion facilities.

The Draft EIS states that 571,000 metric tons of depleted UF_6 will be generated during ACP operations, in 30 years generating as nearly as much depleted UF_6 as DOE has over nearly 50 years. The commenter stated this is a large amount of depleted UF_6 material that should be fully characterized in the Final EIS. Detailed information should be provided on depleted UF_6 management and disposal including: how long the ACP-generated depleted UF_6 will be stored on site prior to conversion; whether the Portsmouth Depleted UF_6 conversion facility has the capacity to process ACP-generated depleted UF_6 in an expedient timeframe; whether there are off-site facilities that have the capacity to process ACP-generated Depleted UF_6, cost data, financial responsibilities and liabilities; and any NRC requirements for financial assurance or surety funds that will ensure that depleted UF_6 and other wastes generated due to ACP activities are properly managed, processed and disposed, without the cost passed on to other federal agencies and the public. Specifically, the commenter stated the Final EIS should include and address the following:

a) Detailed information on the Portsmouth Depleted UF_6 conversion facility since conversion of Depleted UF_6 is really an integral part of the overall enrichment process, with conversion of the mostly unmarketable depleted UF_6 being necessary for the long-term stability and management of that waste stream. Does the Portsmouth Depleted UF_6 conversion facility have adequate capacity to process the depleted UF_6 that the ACP will generate, in addition to the depleted UF_6 already in DOE's inventory? Is there off-site Depleted UF_6 conversion capacity in case that the Portsmouth Depleted UF_6 conversion facility cannot meet demand?

b) Section 3113 of the 1996 United States Enrichment Corporation Privatization Act that states the DOE "shall accept for disposal low-level radioactive waste, including depleted uranium if it were ultimately determined to be low-level radioactive waste, generated by [...] any person licensed by the Nuclear Regulatory Commission to operate a uranium enrichment facility under Sections 53,63, and 193 of the Atomic Energy Act of 1954 (42 U.S.C. 2073, 2093, and 2243)." If the gas centrifuge facility proposed by Louisiana Energy Services near Eunice, New Mexico is licensed by the NRC, is DOE obligated to accept its waste and Depleted UF_6? Could accepting Louisiana Energy Services wastes impact the capacity of the Portsmouth Depleted UF_6 conversion facility and the ACP's ability to deal with the depleted UF_6 that it generates?

c) How long is the ACP-generated depleted UF_6 expected to be stored or accumulate on the Portsmouth Reservation prior to its conversion and off-site disposal? Information should be provided on a total inventory and per cylinder basis.

d) Considering the number of depleted UF_6 cylinders stored on the Portsmouth Reservation, and the number that will be generated by the ACP, is the Portsmouth Reservation the most suitable environment for the long-term storage of depleted UF_6, whether prior to or after conversion?

e) What are all of the facilities available for the off-site storage and/or disposal of the post-conversion depleted UF_6, both currently available and anticipated for licensing in the future? Will they have the capacity to accept all of the post-conversion depleted UF_6 generated as a result of ACP and historic ACP operations? Are there any issues that could affect DOE's ability to dispose of post-conversion Depleted UF_6 off-site from the Portsmouth reservation?

f) The Portsmouth Depleted UF_6 conversion facility is stated to have an operating life of 18 years, while the ACP is expected to operate for 30 years. Where will the ACP-generated depleted UF_6 be converted after operation of the Portsmouth depleted UF_6 conversion facility ceases? Does DOE have an obligation to operate a conversion facility to accommodate depleted UF_6 generated by the ACP and other enrichment facilities licensed by the NRC?

Response: a) DOE has stated that, with routine facility and equipment maintenance, periodic equipment replacements, or upgrades, the Portsmouth conversion facility could be operated safely beyond the 18-year planned life-time period to process the additional depleted UF_6 from the proposed ACP (DOE Portsmouth site specific EIS, 2004a). In addition, DOE indicates the estimated impacts that would occur from prior conversion facility operations would remain the same when processing the proposed ACP wastes. The overall cumulative impacts from the operation of the conversion facility would extend proportionately with the increased life of the facility. The NRC believes that this added inventory of depleted UF_6 coming from the proposed ACP should not change the nature or magnitude of the impacts from the DOE conversion facility operations, but it would extend those impacts for some additional years.

b) Under the USEC Privatization Act, DOE must accept the depleted uranium tails if Louisiana Energy Services reqests such transfer under the USEC Privatization Act. However, Louisiana Energy Services has stated that its preferred disposal option is to utilize a private deconversion facility. If Louisiana Energy Services does use the DOE option, however, DOE would have options for the management of depleted UF_6 conversion from outside sources. DOE could apply both the Paducah and Portsmouth conversion facilities to process the depleted UF_6 from the proposed National Enrichment Faclity. The Portsmouth conversion facility could process 129,600 metric tons (142,860 tons) of depleted UF_6 waste from 2024 to 2036 at its planned capacity of 10,800 metric tons (11,800 tons) per year. The Paducah conversion facility could process 71,500 metric tons (78,815 tons) of depleted UF_6 from 2031 to 2036 at

its planned capacity of 14,300 metric tons (15,800 tons) per year. Combined, both DOE conversion facilities could process over 200,000 metric tons (220,500 tons), which exceeds the 197,000 metric tons (217,000 tons) from the proposed National Enrichment Facility. Therefore, DOE could process the depleted UF_6 prior to the end of the proposed National Enrichment Facility license of 2036 if DOE processed only the proposed National Enrichment Facility wastes. If DOE must also process USEC-generated depleted UF_6, which would amount to 571,000 metric tons (629,420 tons) then DOE would have to install additional conversion lines at either or both the Paducah and Portsmouth conversion facilities to complete the conversion prior to the end of both the proposed ACP and National Enrichment Facility licenses, 2039 and 2036, respectively.

c) Detailed numbers are not available for the exact length of time depleted uranium cylinders would be stored on site prior to conversion and disposal. The DOE could take title to the depleted uranium and store the tails onsite until conversion capacity is available. If it is assumed that all USEC tails are converted at the Portsmouth conversion facility it would extend this facility's operating life from 2024 to 2077 at its planned capacity of 10,800 metric tons (11,800 tons) per year.

d) Section 3.14 of the EIS addresses waste management issues at the DOE reservation at Piketon, Ohio. All of the depleted uranium is the responsibility of DOE under memoranda of agreement between USEC and DOE. The depleted uranium stored at the DOE reservation is managed in accordance with applicable requirements, including those found in 40 CFR Part 266 and the Ohio Administrative Code 3745-266. The depleted uranium generated by operation of the ACP would be added to the existing inventory. As noted in EIS section 4.2.13, DOE has begun construction of a facility at the DOE reservation to convert depleted uranium into a more stable form for long-term storage and disposal. Impacts to the public associated with depleted uranium conversion and disposal are MEDIUM to SMALL. Impacts associated with storage are SMALL. As noted in EIS section 2.4, Table 2-8, overall waste management impacts are expected to be SMALL.

e) As discussed above, DOE has previously analyzed at least two disposal sites for the depleted uranium tails after the tails have been converted to a more stable form. The two sites previously analyzed were Envirocare (DOE's proposed disposition site) and the Nevada Test Site (DOE's optional disposal site). Additionally, the NRC reviewed the DOE's analysis and looked at the licensing requirements of Envirocare as well as the capacity impacts at Envirocare, approximately 11 percent of remaining capacity.

f) Under the USEC Privatization Act, DOE must accept the depleted uranium tails as waste if USEC requests such transfer under the USEC Privatization Act. DOE could apply both the Paducah and Portsmouth conversion facilities to process the depleted UF_6 from the proposed National Enrichment Facility. Additionally, DOE has stated that, with routine facility and equipment maintenance, periodic equipment replacements, or upgrades, the Portsmouth conversion facility could be operated safely beyond the 18-year planned life-time period to process the additional depleted UF_6 from the proposed ACP (DOE Portsmouth site specific EIS, 2004).

Comment: 014-25

A commenter observed (Page 2-48, Line 23) the Draft EIS states: "The NRC staff has determined that unless USEC can demonstrate a use for uranium in the depleted tails as a potential resource, the depleted UF_6 generated by the proposed ACP should be considered a waste product." The commenter noted the Final EIS should state who has the authority to make the waste determination: NRC, DOE or USEC? The Final EIS should state when that determination is required to be made, or whether that determination should be made immediately upon depleted UF_6 generation. The Final EIS should define "depleted

uranium" in terms of its uranium-235 content for the purposes of management and waste disposition. The commenter questioned that although depleted uranium is commonly referred to as uranium having a percentage of uranium-235 smaller than the 0.7 percent found in natural uranium, does that definition hold true for the purposes of management and waste disposition, and DOE's acceptance of depleted uranium materials generated by NRC-licensed enrichment plants.

Response: The NRC has no authority to make this classification. Currently, there is no specific regulatory requirement for when this determination must be made. Section 3113(a) paragraph 4 of the USEC Privatization Act states that DOE must take title/possession of the depleted uranium tails if requested, regardless of whether a determination as to the material being a waste or resource has been made. The NRC does not have the regulatory authority to set a precise definition for depleted uranium relative to the USEC Privatization Act, nor does the Act itself place specific limits on uranium-235 in depleted uranium.

Comment: 014-31
A commenter suggested (Page 2-28, Line 20) considering the emissions from the former gaseous diffusion plant, the processing of recycled material and the processing of former Russian materials, ACP emissions should also be analyzed for transuranic radionuclides routinely.

Response: USEC intends to initially use natural uranium in the form of UF_6 for the proposed ACP. Feed material that meets the American Standards for Testing and Materials specification for recycled feed may be used in the future, and may contain small quantities of radionuclides such as uranium-236 and technetium-99. Based on USEC's license application, no transuranic elements such as plutonium, americium, or neptunium are expected to be processed by the ACP in other than trace quantities. USEC does plan on analyzing effluents for technetium-99 because of the isotope's historic presence on the reservation. Analysis of expected dose from air releases of isotopes of the transuranic elements can not be performed in the EIS because there is no expected release source of the isotopes from the ACP.

Comment: 014-32
A commenter observed (Page 2-28, Line 20) that the Draft EIS states that recycled feed may be used, and that four radionuclides will be analyzed, in the ACP emissions routinely, although this paragraph discusses five radionuclides (uranium-234, uranium-235, uranium-236, uranium-238 and technetium-99). The commenter suggested that the Final EIS should clearly state which radionuclides will be analyzed, as well as any non-radioactive hazardous emissions.

Response: Feed material that meets the American Standards for Testing and Materials specification for recycled feed may be used, and may contain radionuclides such as uranium-236 and technetium-99. Due to historic contamination of the nuclear feed cycle and of the site, however, technitium-99 may eventually appear in some gaseous effluents. The radionuclides anticipated to be present in liquid effluents are, uranium-234, -235, -238, and technitium-99 due to historic contamination of the site. Consequently, ACP emissions will be analyzed for these four nuclides routinely.

Comment: 014-44
A commenter stated (Alternatives, Section 2.1.4.3 Facility Operations, Air Emissions Monitoring and Treatment Systems, Page 2-28, paragraph 3) that the appropriate regulations should include 40 CFR 61, Subpart H for this facility. The commenter noted this facility is subject to this regulation and must meet all of the requirements of this rule before construction of this project can begin.

A commenter stated (Alternatives, Section 2.1.4.3 Facility Operations, Liquid Effluent Collection and Treatment Systems, Page 2-29, paragraph 4) the appropriate regulations have not included 40 CFR 61, Subpart H for this facility. The commenter noted this facility is subject to this regulation and must meet all of the requirements of this rule before construction of this project can begin.

Response: The EIS states the applicability of the National Emission Standards for Hazardous Air Pollutants regulations of 40 CFR Part 61, Subpart H in several locations. The commenter is referred to Table 1-3, Section 4.2.4.1, 4.2.4.2, Section 4.2.12.3, and Section 4.3.2 which specifically reference the appropriate National Emission Standards for Hazardous Air Pollutants regulations of 40 CFR 61 Subpart H. For clarity, a reference to 40 CFR 61 Subpart H was added in Section 2.1.4.3.

Comment: 014-48
A commenter stated that (Page 2-6, Line 1) under DOE's RCRA Corrective Action activities, various facilities across the Portsmouth Reservation had their environmental assessment and restoration activities "deferred" until the time when the gaseous diffusion plant decontamination and decommissioning work is performed. The commenter stated the Final EIS should state whether any of the facilities under Table 2-1 are considered "deferred," and if so, whether RCRA corrective actions have been performed at those facilities. This table should also state which facilities will have NRC-licensed activities occurring.

Response: The purpose of Table 2-1 is to list the facilities and their size that would be associated with the ACP. Section 2.1.4.1, Refurbishment, Site Preparation, and Construction states that all construction activities would comply with all applicable permits; therefore, should any of the facilities be considered "deferred" the applicable RCRA corrective actions would be completed at such facilities, as appropriate, prior to construction of the ACP.

Comment: 014-49
A commenter stated (Page 2-7, Line 2) the Final EIS should list and describe the primary facilities, and areas leased by DOE for the proposed ACP.

Response: A list of primary facilities along with descriptions were provided in the EIS from pages 2-7 through 2-13. All facilities are leased from DOE.

Comment: 015-03
A commenter suggested changing "48X source cylinder" on lines 13 and 23 of page 2-10 to "10-ton source cylinder," as shown on page 105 of the License Application, Revision 1.

Response: The NRC staff has revised the text to reflect the commenter's suggestion.

Comment: 015-04
A commenter suggests changing "The X-7725B building..."on line 47 of page 2-14 to "The X-7725C building..." as shown on page 2-5 of the Environmental Report.

Response: The NRC staff has revised the text to reflect the commenter's suggestion.

Comment: 015-05
A commenter suggests adding clarity to the text so that it cannot be misinterpreted as saying that the vent monitors have the capacity to monitor hydrogen fluoride gas in realtime. The commenter indicates that the text should state that the "gas flow monitoring instrumentation with local readouts" refers to total gas flow and accumulated radioactivity in the sample traps on lines 40-42 of page 2-27.

Response: NRC agrees with the commenter that the sentence referring to the "gas flow monitoring instrumentation with local readouts" could be misinterpreted to imply a real-time effluent release monitoring system as opposed to an integral readout for those instruments. The follow-on sentence on lines 42 and 43 of page 2-27 of the EIS should reduce much of that potential for misinterpretation, as it explicitly refers to additional analytical instrumentation that will continuously monitor, sample, and alarm if UF_6 should escape in the effluent gas stream. Section 9.2.1.2.1 of the USEC's License Application provides the reference for these airborne effluent monitoring systems. The EIS text was revised to include the word "integral" before the phrase "gas flow monitoring."

Comment: 015-06
A commenter noted that the description of the emission control systems on lines 43 to 2 on pages 2-27 and 2-28 is correct only for the X-3346, X-3356, and X-3366 buildings (the feed and withdrawal buildings). The commenter explained that the process building emission controls do not directly connect to process gas piping, do not have cold traps, and the alumina traps can be bypassed by the Evacuation Vacuum system.

Response: NRC agrees with the commenter that the description on pages 2-27 and 2-28 of the EIS is most applicable to the feed and withdrawal buildings. In particular, the air emissions monitoring and treatment systems in the process buildings do not include cold traps. It is also true that the EV system can be used to bypass the alumina traps, but the USEC License Application on page 9-4, section 9.2.1.2.1, states that this mode of alignment for the system is only used during the initial pump down of the centrifuges prior to their exposure to UF_6. If this protocol is adhered to then this bypass should not be a potential release pathway for UF_6 during operation. The EIS should therefore not be concerned with this potential system alignment when describing the airborne emissions control systems. The EIS text was revised to provide greater clarification.

Comment: 015-07
A commenter pointed out that the liquid effluent As Low As Reasonably Achievable goal USEC proposed in the License Application is different than that for gaseous radioactive effluent releases, and is ten percent of the value presented (0.05 mrem/year) on lines 32-36 of page 2-29.

Response: For liquid effluents, the applicant proposes an As Low As reasonably Achievable goal of 10 percent of the air effluent goal, or 0.05 mrem/year to the most exposed member of the public. This is much less than the 10 mrem/year goal recommended in NRC Regulatory Guide 8.37, Regulatory Position C.1.2. This change has been made in section 2.1.4.3.

Comment: 015-08
A commenter suggested that lines 40 to 43 of page 2-29 should state, "Satellite accumulation areas would be established throughout the proposed ACP as necessary... Waste is then moved to the XT-847 Waste Management Staging Facility to be sampled and measured..."

Response: The NRC staff has revised the text to reflect the commenter's suggestion.

Comment: 015-09
A commenter suggested changing "OAC 37455-103" to "OAC 3745-51-03" on line 33 of page 2-30.

Response: The NRC staff has revised the text to reflect the commenter's suggestion.

Comment: 015-10
A commenter suggested changing "19,040" to "19,030" and changing "(21,000 tons)" to "(20,980 tons)" on line 33 of page 2-34 as indicated on page 4-130 of the Environmental Report, Revision 5.

Response: The NRC staff has revised the text to reflect the commenter's suggestion.

Comment: 015-11
A commenter suggested changing "42,800" to "41,105" and "571,200" to "512,730" on line 34 of page 2-34 as indicated on page 4-130 of the Environmental Report, Revision 5.

Response: The NRC staff has revised the text to reflect the commenter's suggestion.

Comment: 015-12
A commenter suggested changing "(630,000 tons)" to "(535,200 tons)" on line 35 of page 2-34.

Response: The NRC staff has revised the text to reflect the commenter's suggestion.

Comment: 015-13
A commenter suggested changing "$1,433 million" to "$1,842 million" and delete the footnote on line 39 of page 2-34, reflecting Revision 5 of the Decommissioning Funding Plan that assumes $4.83/kg U for disposal cost of tails.

Response: The NRC staff has revised the text of the EIS to reflect a tails disposal cost as $1.8 billion.

Alternatives Considered but Eliminated

Comment: PMT-015-6; 014-16
Two commenters stated the Draft EIS does not adequately address alternatives. One commenter suggested the potential benefits of cleaning the site and using Enterprise Zone incentives to reindustrialize the site. Another alternative, the commenter suggested, would be to locate laser isotope separation units at major power stations. A commenter stated the Final EIS should either (1) document a detailed analysis for the Paducah site, or (2) offer a more thorough justification for why the Paducah site was not studied in detail in the Draft EIS.

Response: As discussed in Section 2.3 of the EIS, USEC undertook a site selection process to identify viable locations for the proposed ACP. The purpose of the NRC staff's review of USEC's site selection process is to determine whether an alternative site the applicant considered is obviously superior to the proposed ACP. The staff specifically considered Paducah site in Section 2.3.1. The NRC staff has determined that the ACP site selection process has a rational, objective structure and appears reasonable and that none of the candidate sites were obviously superior to the USEC preferred site in Piketon, Ohio; therefore no other site was selected for further analysis.

Comment: PMT-017-1
A commenter encouraged the Federal government to consider the alternative of developing the site as an historic site.

Response: NRC evaluated a range of reasonable alternatives in the EIS. However, the alternatives considered were those that satisfied the purpose and need for the facility, which is to produce enriched

uranium. Because the potential development of the site as an historic site would not satisfy the need for the facility, it was not considered a reasonable alternative.

Comment: 002-2
A commenter noted that on Page 2-42, the Draft EIS states that Alternate Locations B and C within the Reservation were graded during construction of the Gaseous Diffusion facility. The commenter suggested the majority of both of these areas lie outside of the area that was disturbed by previous construction, and therefore, supports the selection of Location A as the preferred site.

Response: As discussed in Section 2.3 of the EIS, USEC undertook a site selection process to identify viable locations for the proposed ACP. The purpose of the NRC staff's review of USEC's site selection process is to determine whether an alternative site the applicant considered is obviously superior to the proposed ACP. The staff specifically considered alternate locations within the Piketon site in Section 2.3.2. The NRC staff has determined that the ACP site selection process has a rational, objective structure and appears reasonable and that none of the candidate sites were obviously superior to the USEC preferred site in Piketon, Ohio; therefore no other site was selected for further analysis.

Comment: 014-17
A commenter noted that the Draft EIS states: "The DOE-USEC Agreement stipulates that USEC deploy the ACP at either the DOE reservation in Piketon or Paducah. Also, no other sites offered the unique combination of (1) readily accessible environmental data; (2) past history and experience in uranium enrichment; and (3) the availability of skilled labor with uranium enrichment industry experience." The commenter asked whether the DOE-USEC Agreement was the appropriate legal means for determining the location of the ACP in the absence of an EIS. Considering that the Piketon plant ceased enrichment operations in 2001, the ACP would not begin operations until 2009, and that the gas centrifuge facility proposed by Louisiana Energy Services near Eunice, New Mexico would be located at a "green field" site where there have been no prior enrichment operations, are the three reasons provided for siting the ACP at Piketon truly valid for the purposes of an EIS?

Response: The reasons stated in the DOE-USEC agreement are not within the NRC's regulatory authority. As discussed in Section 2.3 of the EIS, USEC undertook a site selection process to identify viable locations for the proposed ACP. The purpose of the NRC staff's review of USEC's site selection process is to determine whether an alternative site the applicant considered is obviously superior to the proposed ACP. The staff specifically considered alternate locations within the Piketon site in Section 2.3.2. The NRC staff has determined that the ACP site selection process has a rational, objective structure and appears reasonable and that none of the candidate sites were obviously superior to the USEC preferred site in Piketon, Ohio; therefore no other site was selected for further analysis.

Comparison of Predicted Environmental Impacts

Comment: 010-1-2
A commenter strongly challenged the Draft EIS statement that "the impacts to historic and cultural resources identified onsite and around the site's perimeter would be small" (p. 2-38) and stated the document does not address the impacts in a way that is "historically responsible." The commenter suggested that substantial potential exists for the development of historical attractions, tourism, and sites of economically sustained commemoration at Sargents.

The commenter suggested several reasons for the Federal government to seriously consider the site's historical importance. The commenter cited the three historic homes of the Barnes, Sargent and Rittenour

families, the Scioto River history, the site's "unique" geological features, the passenger pigeon history (centered on the Barnes home), and the long-standing Native American presence, including a number of significant prehistoric earthworks as historically significant. The commenter also noted that there is no national memorial to the passenger pigeon and there are no current plans for building X-326. The commenter stated the building and operating of a uranium enrichment plant over the fence-line from the Barnes Home would severely impact prospects for a public center for education, tourism, and long term commemoration. Among the impacts listed by the commenter: fences; roads; traffic; security surveillance (including security gates and closed access to some roads); restrictions on movement; diminishment of attractiveness to visitors; risk of terrorist attack (keeping people away); compromises from noise; diminishment of the aesthetics of the site, public worries (real or justified) to the dangers of uranium enrichment near such a site; vulnerability of buildings, land and people to catastrophic accidents, toxic emissions and potential damage from decontamination activities.

Response: The NRC staff considered the effects of construction and operations activities on the attributes that contribute to the historic significance and cultural values of historic structures and archaeological sites near the proposed ACP facility within the reservation fence-line as well as houses, other historic structures, archaeological sites and earthworks beyond the fenceline. The analysis found that constructing and operating the ACP "over the fence-line from the Barnes Home" would not harm the cultural, historical or architectural values of the Barnes Home or other individual sites, structures and places that may be linked in the future by an effort to commemorate and promote tourism associated with local history. The NRC staff also considered the potential impacts from land use changes, but did not identify any land use conflicts with existing zoning or formal development plans.

General Comments

Comment: 015-14
A commenter suggested changing "United States Enrichment Corporation" to "USEC Inc." on lines 13,16, 19, 22, and 25 of page 2-64.

Response: The NRC staff has revised the text to reflect the commenter's suggestion.

Comment: 015-15
A commenter suggested changing "NRC Docket No. 70-2004" to "NRC Docket No. 70-7004" on lines 14, 17, and 20 of page 2-64.

Response: The NRC staff has revised the text to reflect the commenter's suggestion.

Comment: 015-16
A commenter suggested changing the text on line 27 of page 2-88 to read as, "...activity would involve a filament winding process, which will not..."

Response: The NRC staff has revised the text in Chapter 4 to reflect the commenter's suggestion.

J.10 Affected Environment

Historic and Cultural Resources

Comment: 008-2
One commenter asked NRC to explain the basis for the definition of the term cultural resources (Section 3.3). The commenter stated that the definition is important since it limits the range of phenomena upon which impacts are analyzed. The commenter stated that it does not appear that the definition is based on any United States or international guidance. The commenter noted that NRC should look at the concerns expressed and recommendations provided by the United Nations Educational, Scientific, and Cultural Organization in its Convention for the Safeguarding of the Intangible Cultural Heritage -- 2003.

Response: The definition is not intended to be exclusive of intangibles such as those identified in the cited convention (oral traditions, performing arts, social practices, knowledge and practices concerning nature, traditional craftsmanship). By pursuing consultation with tribes that might have information or concerns, NRC attempted to identify elements of intangible cultural heritage that might be affected by ACP construction or operation, but no further information was provided by the tribes that provided initial expressions of concern. NRC described the proximity to the DOE reservation boundary of the kill site and exhibition site of the last passenger pigeon and considered the effects of ACP construction and operation on those locations in its analysis.

Comment: 008-3
A commenter stated that the review process under Section 106 of the National Historic Preservation Act is inaccurately characterized as a process "done in consultation with the State Historic Preservation Officer (page 3-5);" later, passing reference is made to "provid(ing) Indian tribes the opportunity to identify concerns." The commenter stated that, in fact, the Section 106 regulations (36 CFR 800) make it abundantly clear that the process is done in consultation with the State Historic Preservation Officer, Tribal Historic Preservation Officers, Indian tribes, and other interested parties. The commenter indicated that the failure of NRC to engage in such consultation is at the heart of the Draft EIS' inadequacies. The commenter suggested that NRC re-read the Section 106 regulations and relevant guidance from the Advisory Council on Historic Preservation and the Secretary of the Interior, and recast the discussion in the EIS to accurately reflect their direction.

Response: The NRC staff agrees with the commenter that the Section 106 consultation potentially involves multiple parties. The NRC staff has attempted to consult with many Indian tribes with possible ties to southern Ohio as indicated by the Ohio Historic Preservation Office and the National Park Service. The NRC takes its Section 106 responsibilities seriously. The text of the EIS (sections 3.3.5 and 1.5.6.2) was updated to reflect the NRC's efforts at communicating and consulting with the various tribes.

Comment: 008-4
A commenter stated that page 3-6 of the Draft EIS discusses an "area of potential effects" defined by the NRC staff for the project. The commenter believed the Area of Potential Effect appears to be based solely on the potential for direct and selected indirect physical effects and sees no evidence that direct or indirect visual, auditory, olfactory, or other non-physical effects were given any consideration, nor any evidence that cumulative effects on "cultural resources" of any kind were considered, in defining the Area of Potential Effect. The commenter requested that NRC reconsider the Area of Potential Effect with reference to all types of potential effects.

Response: The Area of Potential Effect was selected to include the potential for effects that would alter the feeling or setting of cultural resources. This is why the Area of Potential Effect extends beyond the direct footprints for new construction which fall into two areas within the perimeter road, and includes the entire DOE reservation. Noise and visual effects of construction and operations, including associated vehicular traffic, were considered in the evaluation.

Comment: 008-5
A commenter noted that the discussion of historic properties is overwhelmingly weighted toward specific archaeological sites and historic structures. The commenter argued that, particularly given the proximity of the project site to the Scioto Township Works, and the extensive cultural landscape modifications represented by such earthworks, it seems strange that so little consideration seems to have been given to cultural landscapes, and to relict landforms that may reflect such landscapes amid the damage caused to the area in the past by the DOE Reservation. The commenter requested that NRC consider attempting a more coherent, landscape-based approach to analysis of the area's historic properties.

Response: As indicated in the EIS, the Scioto Township Works at its closest is within 250 meters from the reservation boundary and approximately 1 kilometer from the Perimeter Road, within which construction and operations activities will take place. As also indicated therein, the earthworks had suffered substantial damage by 1902 and the 1997 archaeological survey report indicated that "recent gravel quarrying and cultivation has destroyed virtually all of this earthwork complex." The EIS demonstrates that no ground disturbing effects will extend to land this far from the ACP and there will be no noticeable change to the visual or aural setting during operations. Thus, this remnant landform and others that might be linked in a historic or cultural landscape analysis will not be harmed by the ACP. Because of the distance of these from the Area of Potential Effect, consideration of a landscape that includes them and others even more distant is outside the scope of the EIS analysis.

Comment: 008-6
A commenter indicated that page 3-9 of the Draft EIS describes unidentified “(i)nvestigators” who determined that 22 of the 36 previously unidentified archaeological sites “did not meet National register eligibility criteria.” The commenter questioned the basis for these determinations, and the “investigator’s” qualifications to make them. The commenter also asked how Indian tribes and other interested parties were consulted in the course of these evaluations. The commenter had the same questions pertaining to the evaluation discussed in the final paragraph on page 3-9.

Response: The investigators were professional archaeologists working as contractors to the DOE under the direction of the authors of the reports cited in the text, i.e., Schweikert 1997, DuVall and Associates 2003.

The reports cited in the Draft EIS provide professional evaluations of eligibility with reference to National Register of Historic Places Criterion D. The bases for the reports' determinations of ineligibility include site integrity, potential informational value, and site type. Some of the sites were sparse lithic scatters with no culturally diagnostic artifacts and others were considered ineligible site types (cemeteries and isolated finds were not considered eligible under Criterion D). The reports did not indicate any consultation with tribes, but did indicate contact and coordination with the Ohio Historic Preservation Office. The NRC provided information from the Schweikert report in its initial consultation letters to tribes and local government agencies and provided copies of the report to those parties that requested it.

Comment: 008-7
A commenter asked NRC to explain how it has completed its responsibilities under the Archaeological and Historic Preservation Act of 1974 (16 USC 469-469c-2) with respect to the individual archaeological sites discussed in section 3.3.3, and with respect to the prehistoric cultural landscape of which they are arguably parts.

Response: As discussed in 4.2.2, the NRC determined that none of these sites would be adversely affected by its action in licensing the project. None of these sites fall within the construction footprint and so are not within the area of potential effect for direct effects. The vast majority of new construction falls entirely on lands that were previously cleared and graded during construction of the Portsmouth Gaseous Diffusion Plant in the 1950s.

Comment: 008-8
A commenter asked how interested parties were consulted during the evaluation of the Gaseous Diffusion Plant discussed on page 3-10.

Response: The evaluation of the Gaseous Diffusion plant was carried out by the DOE and their contractor. The NRC is not aware of the specifics of how DOE consulted interested parties. It is noted that the Ohio Historic Preservation Office expressed the opinion that the proposed ACP would not adversely affect the Portsmouth Gaseous Diffusion Plant historic property (see Ohio Historic Preservation Office letter on page B-3).

Comment: 008-9
A commenter requested that NRC address the possible impacts of the proposed ACP on the landscape in the area of the location where the last passenger pigeon was killed, arguing that the location would likely be eligible for inclusion in the National Register of Historic Places.

Response: As indicated in Section 4.2.2, ACP-related construction and operations activities will not change the existing setting or feeling of the DOE reservation or lands outside it. New construction would be consistent with existing buildings and facilities, and operation of the ACP would not result in noticeable changes in auditory environment from processing noise.

Comment: 008-10
A commenter indicated that the discussion of the Barnes House is confusing in section 3.3.4. The commenter stated that if it is adjacent to the boundary of the reservation, it would seem that it must be subject to at least possible visual, auditory, or other non-physical effects, and impacts on its use, if not long-term physical impacts. The commenter asked for an explanation as to why NRC has not evaluated its eligibility for the National Register, and considered possible effects on it. The commenter further asked for an explanation of the relevance of the Ohio Historic Preservation Office's recommendation to the property owner regarding nomination of the site for the National Register of Historic Places.

Response: The NRC assumed that the property is eligible for the National Register for purposes of its analysis based in part on the feedback from members of the public and the letter from the Ohio Historic Preservation Officer. The potential impacts to the Barnes Home were considered in the context of its assumed eligibility under Criteria A and C, as described on page 4-6 of the Draft EIS. The Draft EIS neglected to state explicitly that the topography (rolling hillside with trees) between the Barnes Home and the construction locations within the Perimeter Road means that a person in the Barnes Home would not see the new construction. Furthermore, the new construction is consistent with the existing setting and feeling of the DOE reservation and the Portsmouth Gaseous Diffusion Plant Historic District within it; so

even a person viewing the ACP from the fence line behind the Barnes Home would not see a landscape setting and feeling different from present conditions.

Comment: 008-11

This commenter noted that Section 3.3.5 of the Draft EIS states that the Absentee Shawnee Tribe has indicated a concern about the Scioto Township Works and perhaps other earthworks in the area, but there is no evidence that the Tribe has been consulted about this concern. The commenter stated that there are copies of letters to various tribes appended to the Draft EIS (Appendix B), but these do not represent consultation; they merely inquire about whether the tribes have "specific knowledge of any sites that you believe have traditional religious and cultural significance." The commenter requested that NRC review pertinent guidance from the Advisory Council on Historic Preservation, the National Register of Historic Places, and the U.S. Environmental Protection Agency's Interagency Native American Environmental Justice Task Force, and explain the consultation with potentially concerned Indian tribes with reference to such guidance.

Response: The staff has attempted to consult with many Indian tribes with possible ties to southern Ohio as indicated by the Ohio Historic Preservation Office and the National Park Service. The NRC agrees that the initial letters do not constitute consultation; rather they are the first step in finding additional information and consulting parties. The NRC staff followed up the letters with numerous phone calls to elicit information from the Tribes regarding their interest in participating in the Section 106 consultation process. The vast majority of these tribes indicated that they had no specific information or were not interested. Though the Absentee Shawnee never responded to our letter or phone messages the NRC designated them a consulting party based on a letter submitted on their behalf. The NRC also designated the Seneca Nation as a consulting party based on their interest in the project. The NRC is well aware of its responsibilities under the National Historic Preservation Act and the commenter's reference to various tribal consultation guidance. The NRC takes these responsibilities very seriously as noted by the amount of staff effort that was expended in seeking information in this Section 106 consultation process. However, the NRC can not force a tribe to participate. After the initial letters were sent to the tribes, a follow-up phone call in June 2005 was placed to each tribe that had not responded or electronic communication was continued with some tribes that requested such methods. This process was repeated in August 2005. Through these various phone and electronic communications the NRC was able to determine that 13 of 15 recognized tribes either had no additional information or no interest in participating in the Section 106 process. The Seneca Nation expressed interest and the Absentee Shawnee never responded. The NRC staff's efforts to communicate and consult with the various tribes is consistent with the guidance the commenter references.

Comment: 008-12

A commented stated that the purpose of Section 3.3.6 of the Draft EIS is unclear. The commenter asked for an explanation of what information this section, as opposed to those sections preceding it, is supposed to convey. The commenter also asked for clarification of the phrase "potential historic property," and a description of properties that are not "potentially" historic.

Response: The purpose of Section 3.6.6 is to present a list of properties identified as historic properties (properties listed on the National Register) as well as properties that NRC would consider to be eligible for Register listing in its assessment of project effects. NRC has revised the section heading to read "Historic Properties and Properties Considered Eligible for Listing on the National Register."

Climatology, Meteorology, and Air Quality

Comment: 014-20
A commenter expressed concern about the use and/or disposal of chlorofluorocarbons at the Portsmouth Reservation. The commenter stated there was a large use of chlorofluorocarbons at the reservation, and that a significant amount of the Nation's chlorofluorocarbons emissions came from the reservation. Therefore, the commenter suggested the Final EIS should describe the types and amounts of chlorofluorocarbons at the reservation, and it should describe the planned use and/or disposal of chlorofluorocarbons at the reservation. The commenter requested that this discussion describe how chlorofluorocarbons management will comply with the Clean Air Act.

Response: USEC has indicated that it will not use Freon TA (or other chlorofluorocarbons).

Comment: 014-38
A commenter observed (Affected Environment Section 3.5 3.1 Current Emissions at the DOE Reservation, Radiological Emissions, Page 3-20) that the regulations for the radionuclide National Emission Standards for Hazardous Air Pollutants are dose standards from emissions, so the notation of the becquerel and/or curie emissions is misleading. A variety of radionuclides are potential contributors, each with different doses associated with each becquerel or curie amount. The standard is a maximum dose to the potential Maximally Exposed Individual of 10 millirem per year in excess of background exposures. The 2004 values should be referenced, since this is an annual compliance demonstration and earlier demonstrations are not relevant to the current compliance status of the Portsmouth Reservation.

Response: Using the released activity as a number can be misleading when trying to compare that to a dose-based standard, but in all cases for the Portsmouth site the values are well below the regulatory limits in the National Emission Standards for Hazardous Air Pollutants during the period of 2001-2003. According to the DOE Site Environmental Report for 2003 (DOE, 2004b), DOE emissions of radionuclides to the air in 2003 comprised a total of 0.00016 curies. This resulted in a maximum estimated dose of 0.0066 millirem. DOE also estimates the dose attributable to airborne releases from those facilities leased to USEC, the gaseous diffusion facilities and associated support buildings. The maximum estimated dose resulting from airborne releases in 2003 at the USEC operated facilities was approximately 0.033 millirem, providing a total maximum estimated dose from all sources of 0.04 millirem per year. The comparable value for 2002 was 0.031 millirem per year, consistent with the estimate for 2003. Both of these values are far below the 10 millirem per year limit in the National Emission Standards for Hazardous Air Pollutants rule. Based on the similarity of results for the period 2001-2003, which reflect a negligible dose well below regulatory limits, NRC does not believe changes were needed in the EIS.

Geology, Minerals, and Soil

Comment: 015-17
A commenter noted that technetium-99 is misspelled on line 19 of page 3-24.

Response: The NRC staff has revised the text to reflect the commenter's suggestion.

Water Resources

Comment: 015-18
A commenter noted that the Draft EIS is misleading when it states on line 40 of page 3-25 that Little Beaver Creek receives "treated process wastewater...ditch)." The commenter indicated that "process wastewater" is not received there, and the only treatment the water (except the groundwater) receive is a settling period in the X-230J-7 East Holding Pond; thus no decontamination solutions, or a comparable material are discharged to the creek.

Response: The text of the EIS has been changed to reflect this comment.

Comment: 015-19
A commenter suggested deleting the word "process" on line 40 of page 3-25.

Response: The NRC staff has revised the text to reflect the commenter's suggestion.

Comment: 015-20
A commenter suggested changing "612" to "012" on line 49 of page 3-25.

Response: The NRC staff has revised the text to reflect the commenter's suggestion.

Comment: 015-21
A commenter suggested changing "19 permits" to "19 permitted outfalls" on line 15 of page 3-27.

Response: The NRC staff has revised the text to reflect the commenter's suggestion.

Comment: 015-22
A commenter suggested changing "19 permits" to "19 permitted outfalls" on line 16 of page 3-27.

Response: The NRC staff has revised the text to reflect the commenter's suggestion.

Comment: 015-23
A commenter suggested changing "permits" to "permitted outfalls" on line 28 of page 3-27.

Response: The NRC staff has revised the text to reflect the commenter's suggestion.

Comment: 015-24
A commenter suggested changing "1" to "001" on line 5 of page 3-28 in the Outfall Column.

Response: The NRC staff has revised the text to reflect the commenter's suggestion.

Comment: 015-25
A commenter suggested changing "2" to "002" on line 7 of page 3-28 in the Outfall Column.

Response: The NRC staff has revised the text to reflect the commenter's suggestion.

Comment: 015-26
A commenter suggested changing “0.125" to “003" on line 9 of page 3-28 in the Outfall Column.

Response: The NRC staff has revised the text on page 3-28 *to reflect the commenter’s suggestion.*

Comment: 015-27
A commenter suggested changing “4" to “004" on line 11 of page 3-28 in the Outfall Column.

Response: The NRC staff has revised the text to reflect the commenter’s suggestion.

Comment: 015-28
A commenter suggested changing “5" to “005" on line 13 of page 3-28 in the Outfall Column.

Response: The NRC staff has revised the text to reflect the commenter’s suggestion.

Comment: 015-29
A commenter suggested changing “0.375" to “009" on line 15 of page 3-28 in the Outfall Column.

Response: The NRC staff has revised the text to reflect the commenter’s suggestion.

Comment: 015-30
A commenter suggested changing “0.4167" to “010" on line 17 of page 3-28 in the Outfall Column.

Response: The NRC staff has revised the text to reflect the commenter’s suggestion.

Comment: 015-31
A commenter suggested changing “11" to “011" on line 19 of page 3-28 in the Outfall Column.

Response: The NRC staff has revised the text to reflect the commenter’s suggestion.

Comment: 015-32
A commenter suggested changing “0" to “012" on line 21 of page 3-28 in the Outfall Column.

Response: The NRC staff has revised the text to reflect the commenter’s suggestion.

Comment: 015-33
A commenter suggested changing “0.042" to “013" on line 22 of page 3-28 in the Outfall Column.

Response: The NRC staff has revised the text to reflect the commenter’s suggestion.

Comment: 015-34
A commenter suggested changing “0.125" to “015" on line 23 of page 3-28 in the Outfall Column.

Response: The NRC staff has revised the text to reflect the commenter’s suggestion.

Comment: 015-35
A commenter suggested deleting “manganese” from the Parameters column on line 7 of page 3-30.

Response: The NRC staff has revised the text to reflect the commenter’s suggestion.

Comment: 015-36
A commenter suggested adding "Cadmium" to the Parameters column on line 7 of page 3-30.

Response: The NRC staff has revised the text to reflect the commenter's suggestion.

Comment: 015-37
A commenter suggested deleting "Fluoride, manganese," from the Parameters column on line 9 of page 3-30.

Response: The NRC staff has revised the text to reflect the commenter's suggestion.

Comment: 015-38
A commenter suggested adding "Cadmium, mercury," to the Parameters column on line 9 of page 3-30.

Response: The NRC staff has revised the text to reflect the commenter's suggestion.

Comment: 015-39
A commenter suggested changing "weekly composite" to "monthly grab" on line 8 of page 3-31.

Response: The NRC staff has revised the text to reflect the commenter's suggestion.

Comment: 015-40
A commenter suggested adding "are taken quarterly" to the end of the sentence on line 11 of 3-31.

Response: This information has been updated to reflect the correct information pertaining to sampling.

Comment: 015-41
A commenter suggested adding "are taken quarterly" to the end of the sentence on line 15 of page 3-31.

Response: This information has been updated to reflect the correct information pertaining to sampling.

Ecological Resources

Comment: 005-8
A commenter noted (Page 3-36, Section 3.8 Ecological Resources, line 1) that all ecological resources should be managed appropriately. The ACP should limit disturbance to only those areas in and around the facilities needed for production.

Response: The purpose of Section 3.8 is to define the ecological resources potentially affected by the proposed action. Section 4.2.7, Ecological Impacts, discusses the potential impacts which would be limited to only those areas in and around the facilities needed for production.

Comment: 005-9
A commenter noted (Page 3-40, Section 3.8.3 Rare, Threatened, and Endangered Species, line 42) Ohio EPA has recently completed a stream survey of the creaks and streams surrounding the facility. The commenter suggested the EIS should include the recent data in the report for evaluations.

Response: NRC consulted with the Ohio Department of Natural Resources, Division of Wildlife and Division of Natural Areas and Preserves and with the U.S. Fish and Service to identify both State and

Federally-listed threatened and endangered species. Through the publication and review of the EIS, the Ohio EPA and the Ohio Department of Natural Resources, Division of Wildlife and Division of Natural Areas and Preserves and with the U.S. Fish and Service all had the opportunity to comment on the Draft EIS. Those agencies did not indicate any deficiencies in the data that would alter the analysis or conclusions.

Comment: 015-42
A commenter suggested changing "X-611a" to "X-611A" on line 34 of page 3-40.

Response: The NRC staff has revised the text to reflect the commenter's suggestion.

Comment: 015-43
A commenter suggested changing "X-611b" to "X-611B" on line 35 of page 3-40.

Response: The NRC staff has revised the text to reflect the commenter's suggestion.

Comment: 015-44
A commenter suggested deleting the Q1 and Q4 on line 37 of page 3-41 in Table 3-12 since they are not used.

Response: The NRC staff has revised the text to reflect the commenter's suggestion.

Environmental Justice

Comment: 014-45
A commenter (Affected Environment Section 3.10.2 Low-Income Populations, Table 3-25, Page 3-59) observed there appears to be a typographical error in the Weighted Average Threshold for "One Person" in the table. The commenter suggested this needs to be clarified for any type of comparability.

Response: NRC has revised the text accordingly.

Comment: 008-20
A commenter asked why the environmental justice analysis gave no consideration to disproportionate adverse environmental impacts to the cultural interests of such minority groups as the Absentee Shawnee and other tribes. The commenter suggested that NRC review pertinent EPA guidance and address these impacts.

Response: The NRC staff used both demographic data and scoping to identify minority and low-income populations. The analysis used to identify the location of minority and low-income persons and the results are presented in Section 3.10 of the EIS. The environmental justice guidance provided by the Executive Order 12898, the NRC, or the Council on Environmental Quality requires that any disproportionate impacts to minority and low-income populations near the site be identified and addressed. The NRC staff also examined environmental pathways to determine if any minority or low income populations appear to be disproportionately at risk. None of the impacts that were greater than SMALL were found to disproportionately affect minority or low income populations as detailed in Section 4.2.9 of the EIS.

Public and Occupational Health

Comment: **014-46**
A commenter stated (Affected Environment Section 3.13.1 Background Radiological Exposure, Page 3-65 paragraph 1) the standard is a maximum dose to the potential Maximally Exposed Individual of 10 millirem per year in excess of background exposures. The 2004 values should be referenced since this is an annual compliance demonstration and earlier demonstrations do not reflect the current compliance status of the facility. The commenter stated that neither of the new proposed facilities at the Portsmouth Reservation has submitted information to demonstrate their potential compliance status in an opening status to date. The estimates provided cannot be considered to be adequate until such time as they have been fully evaluated.

Response: Data from 2002 and 2003 show no significant changes in the compliance status for the site under National Emission Standards for Hazardous Air Pollutants. USEC included expected operating releases in their license application to NRC, and these numbers were used by the NRC staff to model the expected maximum doses from operation of the ACP. These results are discussed in Chapter 4 of the EIS. Future compliance for the ACP will be demonstrated by an annual National Emission Standards for Hazardous Air Pollutants report filed by USEC.

Comment: 015-45
A commenter suggested changing "healthy work effect" to "healthy worker effect" on line 24 of page 3-69.

Response: The NRC staff has revised the text to reflect the commenter's suggestion.

Waste Management

Comment: 014-26
A commenter observed (Page 3-71, Line 42) the Draft EIS states: "Section 3113(a) of the USEC Privatization Act (Public Law 42 104-134) requires DOE to accept low-level radioactive waste, including depleted uranium that has been determined to be low-level waste, for disposal, upon the request of, and reimbursement of costs by, the United States Enrichment Corporation. To date, this provision has not been invoked, and the form in which the depleted uranium would be transferred to DOE has not been specified."

The commenter stated the Final EIS should state who makes the low-level waste determination. Considering that during its operation the ACP is expected to generate about 571,000 metric tons of depleted UF_6, nearly as much as DOE generated during its 50 years of enrichment operations, the Final EIS should clearly specify how ACP will manage depleted UF_6 throughout the full term of the NRC license, including the form in which the depleted uranium would be transferred to DOE. The Final EIS should describe an implementable and legally defensible disposition path for all of the wastes that the ACP will generate.

Response: On January 18, 2005, the Commission issued its ruling that depleted uranium is considered a form of low-level radioactive waste. The Commission also stated that disposal of depleted uranium tails at a DOE facility represents a plausible strategy for the disposition of depleted uranium tails. The tails most likely will be transferred to DOE in the form of depleted UF_6.

Comment: 014-27
A commenter observed (Page 3-75, Line 5) the Draft EIS states: "Classified/sensitive waste is any waste considered as such for security reasons. These materials may be classified due to configuration, composition, contamination, or contained information. Classified waste may be categorized as non-hazardous waste or as low-level radioactive depending upon its point of and method of generation."

A commenter stated the ACP will be a commercial facility operating on leased federal property for commercial production purposes. The Final EIS should state and describe: 1) who will have the authority at the ACP to make "classified/sensitive" determinations; 2) third party federal reviews of the "classified/sensitive" waste determinations that are made; 3) whether any of the "classified/sensitive" wastes are exempt in any way from U.S. Environmental Protection Agency, Ohio Environmental Protection Agency, or NRC regulatory authority; 4) whether it is possible for ACP personnel to make "classified/sensitive" waste determinations; 5) whether ACP personnel will have authorities delegated to it by DOE, such as under the Atomic Energy Act; 6) whether there will be activities at the ACP that are subject to DOE oversight and exempt from NRC regulation; and 7) why a commercial facility with a civilian mission would generate "classified/sensitive" wastes requiring "classified/sensitive" determinations. Also, the Final EIS should state whether RCRA-regulated mixed wastes could be generated that are considered classified.

Response: The classified/sensitive waste is primarily classified machine parts from the ACP process equipment and secondarily documents and electronic or other media containing classified/sensitive information. The machine parts may be radioactively contaminated (i.e., low-level waste), but are not expected to be a hazardous waste. The documents and media are normal office waste except for the classified/sensitive information and will be disposed of as such, following destruction in accordance with the ACP Security Program.

There is no regulatory time limit associated with accumulation and disposal of classified/sensitive waste. Classified material that is to be shipped off-site to an approved facility for disposal is placed in, and accumulated within, approved secure storage containers or attended until such time that the shipping off-site is deemed necessary (i.e., until an economically practical amount for a shipment to a disposal facility is available). The current generation rate for classified/sensitive waste is very low, so it is anticipated that a single shipment may require an extended period to accumulate. Consequently, the storage time could range from a month to years before USEC Inc. accumulates enough classified waste to fill a single disposal container. Classified/Hazardous waste will have a 90-day accumulation time limit. Shipments of low-level mixed waste will occur approximately every 90 days. Any classified Low-level mixed waste will remain on-site and managed in accordance with the Low-level mixed waste rules in Ohio Administrative Code 3745-266 until shipments can be scheduled to an approved Treatment, Storage, Disposal, Recycling Facility.

Comment: 014-28
A commenter observed (Page 3-75, Line 12) the Draft EIS states: "Classified waste is stored onsite prior to disposal in classified offsite disposal facilities." The Final EIS should state the duration that classified waste is stored on site prior to offsite disposal and who has the regulatory authority for classified waste generated by ACP personnel or any other personnel at the USEC-leased areas.

Response: Classified wastes would be stored in accordance with the appropriate security and regulatory requirements and would be disposed at an appropriate site in accordance with regulatory requirements.

Comment: 015-46
A commenter suggested changing “16,190" to “16,109" on line 38 of page 3-74 in Section 3.14.3.1 in order to be consistent with Table 3-31.

Response: The NRC staff has revised the text to reflect the commenter’s suggestion.

Comment: 015-47
A commenter suggested changing “XT847" to “XT-847" on line 13 of page 3-74.

Response: The NRC staff has revised the text to reflect the commenter’s suggestion.

Comment: 015-48
A commenter suggested changing “United States Enrichment Corporation” to “USEC Inc.” on lines 33, 36, and 42 of page 3-80.

Response: The NRC staff has revised the text to reflect the commenter’s suggestion.

Comment: 015-49
A commenter suggested adding “NRC Docket No. 70-7003" before the date on line 34 of page 3-80.

Response: The NRC staff has revised the text to reflect the commenter’s suggestion.

General Comments

Comment: PMT-008-1
A commenter asked what happened with the centrifuge plant in the seventies and were there environmental impacts then.

Response: Section 2.1 briefly discusses the former gas centrifuge plant that was developed in the 1970's in terms of dismantling the former facility and disposing of the material. The environmental impacts of the development and operation of the former gas centrifuge plant were discussed in the Final Environmental Statement, Portsmouth Gaseous Diffusion Plant Expansion, Piketon, Ohio. (ERDA-1549, September 1977, section 5.1.3 pages 5-8 through 5-39).

J.11 Environmental Impacts

Historic and Cultural Resources

Comment: PMT-010-2
A Commenter expressed frustration over the description of the Barnes home in the Draft EIS as qualifying under criteria A and C, and then not explaining from where those criteria came.

Response: The National Register eligibility criteria are listed in the second paragraph of Section 3.3.

Comment: PMT-010-4
A commenter expressed concern that he was not made a consulting party with respect to historic and cultural resources review during the development of the Draft EIS even though the commenter had made his interests known to the NRC starting in December 2004. The commenter noted that he had information that he would make available to the NRC and would also be happy to give NRC a tour of his property.

Response: The NRC used the information supplied by the commenter in its analysis of effect on historic properties. For example, the commenter provided extensive scoping comments in February 2005 as well as multiple submittals to the NRC's Atomic Safety and Licensing Board in the ongoing formal hearing. The commenter requested to be a consulting party on August 9, 2005. The NRC, as required by the Section 106 regulations, consulted with the Ohio Historic Preservation Office who concurred with making the commenter a consulting party. The NRC transmitted notice of the commenter's consulting party status in a formal letter dated September 6, 2005. Further attempts were made to solicit information from the commenter in emails dated October 24, November 23 and December 7, 2005.

Comment: PMT-010-4-1
A commenter noted that there were only three properties listed in the Draft EIS as being historic properties. The commenter stated that information submitted to the Atomic Safety and Licensing Board with detailed information about all the historic properties in the affected area, including the Sargent Home, and the Rittenour home.

Response: The NRC focused its identification and evaluation effort on the Area of Potential Effect (see box on page 4-5). The Sargent home and Rittenour home fall outside the Area of Potential Effect.

Comment: PMT-010-4-2
A commenter stated that the importance of the Rittenour estate were the numerous Indian earthworks. The commenter noted that one of the earthworks, a long, linear earthwork seized by DOE in 1983 by eminent domain and is one of the places where DOE and then USEC has placed their water field from which they will draw the water to supply ACP. The commenter stated that the Draft EIS lacks data on the earthworks located on the water field site, called the Gas Centrifuge Enrichment Plant water field down along the Scioto river. The commenter indicated that there is a statement available from three experts certifying that there is an earthwork there, right underneath the wells from which USEC will draw water.

The commenter stated that the problem in the Draft EIS analysis is that it follows the USEC model of analyzing only the overall water usage of the plant. The commenter stated that the real question is what is the impact of water usage at the earthworks site where the earthworks are located. The commenter stated that the National Historic Preservation Act mandates that studies be done when such a cultural resource is found on Federal land. The commenter argued that part of the Section 106 review that the Draft EIS completely neglects and overlooks is the requirement to mandate studies of the hydrological impacts on those cultural resources that have been identified on Federal land.

Response: The commenter is referred to Sections 4.2.2.2 and 4.2.6.2 of the Draft EIS for discussion of the potential that subsidence and associated alterations in ground surface would occur around water wells used to supply ACP operations. It is also noted that, subsequent to publication of the Draft EIS, the NRC received a statement from Mr. Blaine Beekman, a local resident and President of the Piketon Chamber of Commerce, who described construction of three levees along the Scioto River after a 1959 floo (see comment 011-1 in the Water Resources section). Two levees were constructed to protect agricultural fields. One, in and around the area of the Gas Centrifuge Enrichment Plant well field, was constructed in the 1980s and 1990s of quarry overburden to clear space for additional excavation and to protect the lower terrace against flooding for future quarrying activities.. From this information, it appears that the earthworks of concern to the commenter are flood control levees constructed within the past 50 years. The NRC agrees with the commenter that Section 106 does require identification of historic properties and a good faith effort to carry out appropriate identification efforts within the Area of Potential Effects The NRC does not agree that it is required to either fund or carry out further studies if

adequate information is available to identify historic properties. The NRC believes adequate information is available about these flood control levees to determine that they are not historic properties. It is still the NRC's position that there would be no effect on these structures from continued pumping at this DOE well field .

Comment: PMT-017-2
A commenter stated that the extinction of the passenger pigeon is an incredible historical tale and right here, in Pike County, at the site of the Barnes house, and on that property, is where that last bird was shot, and that makes this location quite important in the history of the environment of the United States, the history of Pike County, the history of southern Ohio, the history of Ohio, the history, really, of our nation. The commenter noted that the Draft EIS states that there are no large impacts on historic and cultural resources. The commenter believes that the proposed ACP would have a large impact and that the facility will continue to desecrate Native American sacred spaces.

Response: The NRC does not disagree with the commenter about the importance of the passenger pigeon extinction; however, there is no evidence, either through the NRC's review or presented by the commenter, that there are any possible effects on the attributes that would make the passenger pigeon kill site eligible for the National Register. The existing DOE Gaseous Diffusion Plant is part of the cultural landscape and has been for over 50 years. The proposed ACP would not change that landscape as all proposed structures are similar in stature, color, shape, to the existing Portsmouth Gaseous Diffusion Plant. ,The proposed ACP would serve the exact same purpose as the Portsmouth Gaseous Diffusion Plant and operations activities would not be noticeably different from previous activities at the plant, when viewed or heard from outside plant buildings. With regard to Native American concerns, as indicated on pages 3-9 and 4-9 of the Draft EIS, the distance of the Scioto Township Works from the construction area and the fact that new operations activity would not be noticeably different lead to the conclusion that ACP construction and operations would not change the existing setting and feeling of this site that was mentioned in a letter from the Absentee Shawnee Tribe of Oklahoma .

Comment: 002-1
A commenter stated that throughout the discussions of cultural resources and consultation with the Ohio Historic Preservation Office, the Draft EIS offers the impression that there is concurrence that there will be no historic properties affected by the proposed and cumulative project development. The commenter noted: 1) the inset table on Page xxii defines "Small" as "...effects that are not detectable or are so minor that they would neither destabilize nor noticeably alter any important attribute of the resource;" 2) Table 2-7 (Page 2-38), presents the finding that the impacts to historic and cultural resources would be small. This finding is repeated in Table 2-8 (Page 2-50); 3) on Pages 4-5 and 4-6, the Draft EIS states that there is concurrence with the OHPO on a finding of "no effect" for the undertaking and that the impacts would be "SMALL." The commenter stated that it was the intent of the letter dated May 20, 2004, to set forth as part of ongoing consultation the commenter's interpretation that the proposed project would not adversely affect historic properties. That is, there are historic properties in the Area of Potential Effects, but the proposed project will not diminish the qualities and characteristics that make them significant. The commenter believed that the changes will be noticeable and in some ways the immediate impacts from the proposed undertaking are perhaps more along the lines of MODERATE as compared to SMALL impacts. The commenter stated that from a philosophical perspective, as the Gaseous Diffusion technology is replaced there will be changes to the Cold War buildings but since science is not static we shouldn't expect our recognition of significance based on science and technology to require static preservation.

Response: NRC did not intend to imply that there are no historic properties in the Area of Potential Effects. We agree that there are historic properties within the APE, and we agree with the commenter

that "the proposed project will not diminish the qualities and characteristics that make them significant," or, as the regulations specify in the definition of "effect" at 800.16(i), there will be no project-related "alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register."

The document has been changed to reflect commenter's interpretation that the proposed project would not adversely affect historic properties.

The characterization of impacts on a scale from SMALL to LARGE is a departure from National Historic Preservation Act Section 106 evaluation of effect, referring rather to Council on Environmental Quality guidance as explained on DEIS page 4-1. NRC believes that under those definitions, "important" attributes equate to "characteristics of a historic property qualifying it for eligibility for the National Register," or, in the terms of the commenter, "the qualities and characteristics that make a property significant." Thus a characterization of MODERATE would apply if an undertaking were to noticeably alter "important" attributes, that is, attributes that qualify a property for the National Register. Given the commenter's statement that "there are historic properties in the Area of Potential Effects, but the proposed undertaking will not diminish the qualities and characteristics that make them significant," NRC believes that the characterization of a SMALL level of impact under the CEQ guidance is appropriate.

Comment: 002-5
The commenter noted that on Page 3-7, the Draft EIS states that an initial archaeological survey of the DOE reservation was completed in 1952 and reportedly found no evidence of archaeological materials with reference to a 1977 Environmental Impact Statement. The commenter requested a copy of relevant portions of this 1977 document. The commenter suggested that it might be helpful to include copies of selected portions in the Final EIS report for this undertaking. The commenter further stated that it can be difficult to compare meaningfully work completed in 1952 when there was no authority to take into account affects of undertakings on historic properties with work being conducted today (and since 1986) under authority of the National Historic Preservation Act of 1966, as amended, and its implementing regulations at 36 CFR 800.

Response: NRC agrees that it is difficult to rely on early work as a basis for archaeological inventory but included the 1952 information in the EIS for completeness.

Comment: 002-6
A commenter stated that there are several places where the Draft EIS refers to sites, buildings, structures, and districts with potential National Register eligibility. For instance, the Draft EIS states that identified archaeological sites that have not yet been fully evaluated for National Register eligibility (and refers to them as potentially eligible) be treated as eligible for inclusion in the National Register (Page 4-5 - inset text box). There are also references to the potentially eligible Barnes Home and potentially contributing elements within the historic district. The commenter believed that there is a slight and subtle shift in the meaning of the word potential differentiating potential effects and potential impacts from potential significance and potential eligibility, and that this shift in meaning could lead to some confusion if not clarified. Regarding the 14 identified archaeological sites that have not been fully evaluated for National Register eligibility, the commenter suggested that NRC consider language that establishes the specific measures that will be taken to protect the sites from effects during this undertaking until such time as sufficient information is available to complete the evaluation; that is, treat them as archaeological sites that are being protected not as historic properties that are being protected. For the Bames House, and for the listed Scioto Township Works I archaeological site, the commenter suggested assessing the potential

for the undertaking to have effects based on those qualities and characteristics that are known and understood to contribute to the importance of these properties recognizing that we may have a better understanding of these properties in the future.

Response: The NRC agrees that the use of "potential historic properties" appeared to confuse readers, and the heading of Section 3.3.6 will be revised to read "Historic Properties and Properties Considered Eligible for Listing on the National Register." The NRC chose to treat unevaluated sites as if they were Register-eligible in order to provide decision makers with a conservative estimate of project effects. As indicated in the evaluation, there are no expected direct effects on these sites, and indirect effects of worker vandalism would be controlled through standard best management practices. Thus, the ACP project will have no effect on these unevaluated sites, and the DOE and State Historic Preservation Officer can continue to define what is needed to complete their evaluation. NRC attempted in its impact assessment for the Barnes Home and the listed Scioto Township Works site to address precisely what the commenter suggests, the qualities and characteristics currently known to contribute to their importance (architectural and associational qualities of the Barnes Home; informational values and traditional cultural values of the Scioto Township Works). The basis for NRC's finding that the project would not alter the characteristics currently known to qualify the sites for listing or eligibility for the National Register - the distance of the sites from project-related changes from existing conditions - should encourage those who expect that the understanding of these properties will be improved in the future, for it means that this project is unlikely to jeopardize other characteristics that may come to be known as significant.

Comment: 002-7
A commenter stated that the Draft EIS carefully considers the use of existing wells and finds that this will not result in changes to the ground around the wells and will not result in increased maintenance activities around the wells that has the potential to adversely affect historic properties. The commenter further noted that if the wells immediately west of the Reservation are on an embankment that is part of an earthwork complex dating to some 2,000 years ago and if this archaeological site meets National Register criteria, the commenter would agree with NRC's inclusion of this area with the project's finding, that the use of the existing wells will not adversely affect historic properties, provided that sufficient safeguards and conditions are in place to continue consultation if future work is proposed around these wells, or becomes necessary around these wells, that would have the potential to adversely affect historic properties. The commenter recommended that NRC develop appropriate conditions to provide for preservation the areas around the wells until such time as these areas can be more fully evaluated.

Response: Subsequent to publication of the Draft EIS, the NRC received a statement from Mr. Blaine Beekman, a local resident and President of the Piketon Chamber of Commerce, who described construction of three levees along the Scioto River (see comment 011-1 under Water Resources). Two levees were built to protect agricultural fields after a 1959 flood.The embankment to which the commenter is referring was constructed of quarry overburden dumped between the DOE wells and the riverbank to free space for more excavation and to protect the adjacent terrace for future quarrying. Thus it appears that there is no need for additional evaluation of the embankment around the wells.It is still the NRC's position that there would be no effect on this embankment from continued pumping at this DOE well field.

Comment: 002-8
The commenter is in general agreement with the conclusions and findings presented in the Draft EIS. Within the integrated NEPA review process, this reaffirms the commenter's interpretation that the proposed ACP undertaking will not adversely affect historic properties. The commenter noted that there

are some places in the Draft EIS where it would be helpful for the documentation to provide greater clarity and precision to facilitate the discussion of archaeological sites, architectural properties and other kinds of cultural resources, within the overall assessment of effects. The commenter believes it would also be helpful to reinforce language that establishes conditions to restrain effects from rising to adverse levels.

Response: For greater clarity, the NRC staff has created a summary table of the historic properties and properties considered eligible for listing on the National Register, and the historic values associated with them. All of these properties were evaluated within the overall assessment of effects regardless of whether or not they are actually listed on the National Register.

The NRC has established no formal conditions for USEC regarding effects on historic and cultural resources; however, USEC would only be licensed to conduct activities in the form described in Chapter 2 of the EIS. In other words, site preparation and construction would only be permitted in the southwest quadrant of the central area of the DOE reservation and in the cylinder storage yard area just north of the Perimeter Road in the northeast part of the DOE reservation. Operations activities would only take place in the primary and secondary facilities described in Chapter 2. The net result is that USEC's proposed action would not cause ground disturbance in areas where there are properties potentially eligible for the National Register under Criterion D, and would not cause any change in feeling or setting in areas where there are properties potentially eligible under Criteria A or C.

Table J-1 Historic Properties and Properties Considered Eligible for Listing on the National Register

Resource Name	Description of Historic Value
Portsmouth Gaseous Diffusion Plant Historic District	This site is eligible for listing on the National Register under Criterion A, "associated with events that have made a significant contribution to the broad patterns of our history." The specific buildings and other elements that contribute to the district's eligibility under Criterion A and the precise boundaries of the district have not yet been defined.
Prehistoric lithic scatter (33 Pk 210)	This site was thought to be eligible for listing on the National Register under Criterion D, "have yielded, or may be likely to yield information important in prehistory or history." However, further archaeological survey results indicated that the site does not meet this criterion and thus is not Register-eligible (DuVall & Associates, 2003; DOE, 2003a). For the purposes of this impact analysis, however, the site was treated as if it were eligible.
Thirteen historic farmsteads	These sites may be eligible for listing on the National Register under Criterion D, "have yielded, or may be likely to yield information important in prehistory or history," but a final determination has not been made. For the purposes of this impact analysis, the site was treated as if it were eligible.
Scioto Township Works	This site is listed on the National Register under Criterion D for its archaeological values. In addition, the Absentee Shawnee Tribe has indicated that this site has cultural values.
Barnes Home	This site may be eligible for listing on the National Register under Criterion A for the historical significance associated with the Sargent's Passenger Pigeon and Criterion C for the property's architectural significance. However, a final determination has not been made. For the purposes of this impact analysis, the site was treated as if it were eligible.
Bailey Chapel	Portsmouth Gaseous Diffusion Plant Historic District

Comment: 008-13
A commenter stated that Section 4.2.3; Page 4-5 again includes NRC's definition of Area of Potential Effect but provides no justification for the definition (denying the possibility of other-than-physical impacts). The commenter again asked NRC to reconsider its Area of Potential Effect definition with reference to contemporary best practice.

Response: The Area of Potential Effect was selected to include the potential for effects that would alter the feeling or setting of cultural resources. This is why the Area of Potential Effect extends beyond the direct footprints for new construction which fall into two areas within the perimeter road, and includes the entire DOE reservation. Noise and visual effects of construction and operations, including associated vehicular traffic, were considered in the evaluation.

Comment: 008-14
A commenter stated that Section 4.2.2.1 of the Draft EIS first suggests that various activities could have effects on historic properties by destroying or altering contributing elements of the Gaseous Diffusion Plant, but then vaguely implies that such effects will be "properly controlled" and hence will have "no effect." The commenter argued that this is not a possible determination under the Section 106 regulations. The regulations permit "conditional" determinations of "no adverse effect," but not conditional determinations of "no effect" (strictly speaking, determinations of "no historic properties subject to effect"). The commenter stated that if actual procedures are to be put in place, developed in consultation with the SHPO and other interested parties, by which to "properly control" damage or destruction of historic properties and their elements, then perhaps a determination can be made that there will be no adverse effect, but not no effect. The commenter suggested that NRC review the requirements contained in 36 CFR 800.5 and reconsider this section of the EIS.

Response: The NRC did not include conditions in its conclusion that there would be no direct or indirect effect on the contributing elements of the Portsmouth Gaseous Diffusion District. Language in the second sentence of Section 4.2.2.1 has been clarified to remove the reference to "control" of construction activities. Nevertheless, in response to Comment 002-1, NRC has changed the finding in the FEIS to "no adverse effects on historic properties." Please see the response to Comment 002-1 for discussion of the change.

Comment: 008-15
A commenter suggested that NRC's determination with respect to the archaeological sites continues to express ignorance of any cultural landscape values or traditional cultural values that may be ascribed to the landscape by Indian tribes or others. The commenter requested that NRC review the pertinent regulations and guidance and reconsider this analysis.

Response: The EIS demonstrates that no ground disturbing effects will extend to land outside of the construction footprint and there will be no noticeable change to the visual or aural setting during operations. Thus, Scioto Township Works and other earthworks that might be linked in a historic or cultural landscape would not be harmed by the ACP. Because of the distance of these from the Area of Potential Effect, consideration of a landscape that includes them and others even more distant is outside the scope of the EIS analysis.

Comment: 008-16
A commenter stated that on page 4-6 of the Draft EIS, NRC concludes that there will be no effect on the Scioto Township Works, but it does so (a) without any clear definition of the actual boundaries of the Works or their possible relationship to other cultural landscape features, and (b) without any consultation

with the Absentee Shawnee or other tribes that may (and in the case of the Absentee Shawnee, say they do) ascribe cultural significance to the Works and other landscape features in the area. The commenter requested that NRC review pertinent Advisory Council, National Register, and EPA guidance and reconsider this casual dismissal of effects on the site.

Response: Distance to the closest portion of the Scioto Township Works is specified on pages 3-9 and 4-5 of the EIS. The NRC staff has attempted to consult with many Indian tribes with possible ties to southern Ohio as indicated by the Ohio Historic Preservation Department and the National Park Service. The NRC staff sent letters and made phone calls to elicit information from the Tribes regarding their interest in participating in the Section 106 consultation process. The vast majority of these tribes indicated that they had no specific information or were not interested. Though the Absentee Shawnee never responded to our letter or phone messages, the NRC designated them a consulting party based on a letter submitted on their behalf. No further comments were received from the Absentee Shawnee Tribe of Oklahoma after the initial letter submitted as part of a petition for intervention, although two letters were sent to the attention of the Ohio Historic Preservation Office at the address provided on the initial letter.

Comment: 008-17
A commenter expressed concern over the discussion of the Barnes Home. The commenter stated that NRC has provided no evidence that it has performed any sort of analysis of the Barnes Home's eligibility -- suggesting instead that it is the property owner's responsibility to nominate the place to the National Register. The commenter argued that NRC has developed no basis whatever to say anything about the eligibility of the Barnes Home, the elements that may contribute to that eligibility, or the effects of the project (direct, indirect, or cumulative) on such elements. The commenter requested that NRC develop such a basis, in consultation with interested parties and in a manner consistent with pertinent guidance.

Response: As indicated on EIS page 3-10, correspondence from the Ohio Historic Preservation Office indicated that the property may be eligible under criteria A and C. Information about the property was also provided as part of a submittal in support of an intervention. Although it is not the responsibility of NRC staff to nominate it, the staff treated it as eligible for purposes of analysis.

Comment: 008-18
A commenter noted that Section 4.2.2.2 of the Draft EIS seems to be predicated on the assumption that the only possible “indirect” effects of facility operation would be vandalism by workers within the facility boundaries. Please explain the rationale for this assumption. The commenter asked if there will be no other long-term indirect or cumulative effects on the local environment that might alter historic properties, and why should vandal workers stay within the fence? The commenter also questioned why NRC considers only the “information values” of the Scioto Township Works, considering that the Absentee Shawnee Tribe, at least, has indicated concerns that may well go beyond information values?

Response: Section 4.2.2.2 is a series of paragraphs exploring potential operations effects to different site types. Sources of effects are identified as regular presence of operations personnel on the DOE reservation and movement of trucks in and out and within the reservation. Of these sources, it is expected that truck movements would not affect archaeological sites, workers might. The NRC considered both the effects on information values at Scioto Township Works, and also effects on existing setting or feeling of the site; please see the entire first paragraph on page 4-7 of the EIS.

Comment: 008-19
A commenter noted that throughout the discussion of impacts on historic and cultural resources, potential impacts are referred to as "SMALL." The commenter asked what this means with reference to (a) the significance of impacts under NEPA and (b) the criteria of adverse effect found in 36 CFR 800?

Response: The characterization of impacts on a scale SMALL to LARGE is a departure from National Historic Preservation Act Section 106 evaluation of effect, referring rather to Council on Environmental Quality guidance as explained on EIS page 4-1."

Comment: 008-26
The commenter argued that NRC simply dismissed the potential impacts to cultural resources in the Draft EIS, making a determination that no significant impacts would occur, and then writing the Draft EIS to justify this assertion.

Response: The NRC takes its responsibilities under National Historic Preservation Act and related guidance very seriously. The NRC believes that it identified cultural resources within the area of potential effect and objectively evaluated possible project-related impacts. As discussed in 4.2.2, the NRC determined that its action in licensing the project would have no effect as defined at 36 CFR 800.4.d.1 on cultural resources within the Area of Potential Effect.

Comment: 010-2-1
A commenter stated that no analysis was ever done on the potential historic properties in the area in accordance with the National Historic Preservation Act.

Response: The NRC identified both properties listed on the National Register and properties that may be eligible for listing. The NRC focused its identification effort to the Area of Potential Effect, which excluded some historic structures in the surrounding area that some of the commenters brought to NRC's attention.

Comment: 010-2-2
A commenter stated that the existing site has been a detriment to the community and enlarging it will continue that degradation. The commenter went on to state that, in the process, it will destroy more Hopewell Indian relics and more of the early history of Ohio will be lost.

Response: The analysis did not identify Hopewell Indian sites in any area where there will be ground disturbance. As discussed in 4.2.2, the NRC determined that none of the archaeological sites discussed in the EIS would be adversely affected by its action in licensing the project.

Visual and Scenic Resources

Comment: PMT-010-3
A commenter disagreed that the Draft EIS states there are no aesthetic or visual impacts to the commenter's personal property.

Response: As indicated in Section 4.2.2, ACP-related construction and operations activities will not change the existing setting or feeling of the DOE reservation or lands outside it. New construction would be consistent with existing buildings and facilities, and operation of the ACP would not result in noticeable visible changes. The topography (rolling hillside with trees) between the Barnes Home and the construction locations within the Perimeter Road prevents a direct line of sight between the Barnes

Home and the new construction sites. Furthermore, since the new construction is consistent with the existing setting and feeling of the DOE reservation and the Portsmouth Gaseous Diffusion Plant Historic District within it, a person viewing the ACP from the fence line behind the Barnes Home would not see a landscape setting and feeling different from present conditions.

Climatology, Meteorology, and Air Quality

Comment: 014-29
A commenter (Page 4-11, Table 4-1) expressed concern that modeling data for air contaminants was missing from the Draft EIS. The Draft EIS provides predicted concentrations for some criteria pollutants during site preparation and construction activities at the project site. The Draft EIS, however, omits data for ozone and lead. The commenter recommended that the Final EIS should include this information. The ozone forecast data should be presented as an 8-hour average, and the lead forecast data should be presented as a quarterly average, in order to compare the data to the National Ambient Air Quality Standards for these pollutants.

Response: The proposed action will not emit any lead emissions to the atmosphere. Thus no modeling for lead is needed. The Piketon facility is located in an attainment region for ozone. Ozone is formed as a result of precursor emissions of nitrous oxide (NO_x) and volatile organic compounds. The maximum rate of emissions that may occur is the operation of the facilities twenty-six 900 horse power diesel-powered emergency generators and daily commute and delivery truck trips. The generators are for emergency use only and will only be permitted to operate for a maximum of 500 hours per year. Total annual emissions from the operations are 143 tons per year of oxides of nitrogen and 4.9 tons per year of volatile organic compounds. These emission rates are well below the threshold amount for New Source Review trigger of 250 tons per year of any regulated New Source Review pollutant. Because ozone formation is a regional issue affected by emissions for an entire area, the small additional cumulative contribution to the county total would be unlikely to substantially alter the ozone levels of the county.

Comment: 014-34
A commenter (Page 4-10) commended NRC for proposing mitigation measures during construction of the proposed project to reduce air quality impacts. According to the Draft EIS, the NRC staff determined that the majority of particulate emissions emitted during construction would come from construction vehicle exhaust. Therefore, in order to reduce particulate emissions from construction vehicle exhaust, NRC recommended that USEC: (1) use Tier 2 construction-related vehicles, which would reduce diesel particulate emissions by about 40 percent; and (2) use ultra-low sulfur diesel fuel. The commenter urged NRC to establish these mitigation measures in the construction contracts for the proposed project, and to document these mitigation measures in the Record of Decision.

Response: The NRC acknowledges the commenters support for the proposed mitigation measures. However, is should be noted that the NRC is not involved in USEC's contracting process. Because the percentage reduction in particulate matter emissions due to implementation of this measure is expected to be small, and because the site is located in an area that is exempt from restrictions on emissions from fugitive dust, the NRC staff does not believe inclusion of this mitigation measure as a license condition for the proposed ACP is warranted.

Comment: 014-35
A commenter observed (Environmental Impacts Section 4.2.4.2, Facility Operation, Radiological Emissions, Pages 4-14, 4-15) that several different isotopes are mentioned in this discussion, but emissions appear to be aggregated without a clear discussion of the relative percentages of each

radionuclide's contribution to the total emissions. Disaggregating should be done in the Final EIS, so that a more accurate determination of potential exposures can be made and evaluated for the resulting health consequences, if any, attributable to ACP.

Response: Section 4.2.4.2 provides a description of the radiological release sources and the methods in place to monitor the releases. It also lists the expected isotopes on page 4-14, but as noted in the comment does not break them out by contribution to the total emission. The activity of the isotopes of uranium were retained as a single total in this discussion because that was necessary to compare the total uranium activity airborne concentration to the concentration limit in the applicable regulation, 10 CFR part 20, Appendix B Table 2. We agree that the contribution by isotope is important for the demonstration of compliance with the National Emission Standards for Hazardous Air Pollutants air release standards, and to estimate public health effects. The release amounts by isotope are discussed in section 4.2.12.3 as part of the analysis of Public and Occupational Health Impacts. These individual isotopic values are not important to the discussion in section 4.2.4.2; including them in this section would introduce unnecessary redundancies in the document.

Comment: 014-39
A commenter observed (Environmental Impacts Section 4.2.4.1 Site Preparation and Construction. Radiological Emissions, Page 4-11 paragraph 1) the statements here regarding 40 CFR 61, Subpart H are potentially misleading as to the potential health effects from exposures, by subtly indicating that the data and standard are not based on any measured data. The commenter stated this is incorrect and should be either discussed in the Final EIS, or the Final EIS should state the standard's requirements or demonstration of compliance.

Response: Section 4.2.4 is concerned with compliance with various air quality standards; 40 CFR Part 61 Subpart H is a dose based standard rather than an air permit limit stated in pounds or concentration. The point of paragraph 1 on page 4-11 of the EIS is simply to identify that fact. Demonstrating compliance with a standard based on radiation dose includes not just information about the amount and type of radiological source, but must also include knowledge regarding transport of the radioisotope to the receptor, the uptake methods for the receptor, and the relative effectiveness of the radioisotope in question for delivering dose for that given uptake method. In all cases, some of the knowledge required comes from measurements and is then augmented by modeling. The dose analysis for site preparation and construction is provided in section 4.2.12.2 of the EIS. Including the standard and the analysis for estimating compliance with the standard for the ACP during site preparation and construction would be redundant to the analysis in 4.2.12.2 of the EIS.

Comment: 015-50
A commenter suggested revising bulletized item as “X-3356 and X-3366 Product and Tails Withdrawal Buildings;” on line 7 of page 4-14.

Response: The NRC staff has revised the text to reflect the commenter’s suggestion.

Comment: 015-51
A commenter suggested adding “X-3366" after “X-3356" on line 25 of page 4-14.

Response: The NRC staff has revised the text to reflect the commenter’s suggestion.

Water Resources

Comment: PMT-015-5
A commenter stated that the ACP models the highest possible flood using the low rate five times that of the historical flood of 1937, the highest possible flood actually reached a lower height than the 1937 flood.

Response: The floodplain was based on the latest version of the Federal Emergency Management Agency Flood Insurance Rate Maps (ODNR, 2005).

Comment: 004-5
A commenter asked about the quality of the water as a result of the previous USEC plant at Piketon, and whether there were testing procedures and reports regarding the quality of the water.

Response: The EIS discusses both surface water and groundwater quality within and around the Piketon facility. DOE issues an annual environmental report for the facility that includes both groundwater and surface water sampling results.

Comment: 005-1
A commenter (Page xxiii, Water Resources, line 29) requested a description of what type of best management practices would be utilized to minimize the impact to water resources from construction activities. The commenter stated the Ohio EPA has completed stream sampling from around the DOE reservation. The data should be included in the EIS to evaluate the impact potential construction activity may have upon the streams and creeks surrounding the facility. USEC must ensure that there is limited impact to the streams.

Response: Section 3.7, Water Resources, and Section 4.2.6 Water Resource Impacts discuss the best management practices that would be used, which are further described in Section 4.2.6.1, Site Preparation and Construction. Section 3.7 presents the most recent surface water sampling results from the 2003 annual environmental report issued in 2004.

Comment: 005-2
A commenter (Page xxiii, Water Resources, line 29) requested a description of how the ACP intends to utilize a Spill Prevention and Control and Counter measure plan when they do not control all the holding ponds at the site. Please describe how coordination between USEC, DOE and UDS would be implemented to prevent a spill from leaving the site.

Response: Details of the ACP spill control measures and an assessment of the impacts are presented in Section 4.2.6 Water Resource Impacts. Page xxiii, Water Resources is part of the executive summary and does not contain the a detailed analysis and description of the impacts.

Comment: 011-1
A commenter provided a report on the origin of a series of levees along the Scioto River in southern Pike County. There are three separate levees. The northernmost is on the Nier property at the U.S. Route 23 entrance to Piketon DOE facility. The middle levee is partially located on a DOE well field located next to the Scioto River on the old Billy Cutlip farm. The third levee extends across 10 farms beginning at the Barnes property and extending south along the river to the Will Acord farm. The northern and southern levees were built in response to 1959 floods to protect agricultural fields from future flooding. The middle levee was built for technical and economic reasons. When the DOE wells were being drilled in the

1980s, the pipeline from the river to the steam plant required the addition of concrete and ground cover over the original concrete anchors in order to hold the line in place. According to the commenter, the "result is a levy-like [sic] appearance." Concurrently, and into the 1990s, the Standard Slag company, owners of a sand and gravel quarry on the former Cutlip farm, moved its overburden down to the river and built a levee between the wells and river to make space for expansion. At first the levee was kept mowed and it was possible to drive on it, but when Standard Slag determined that it would not be able to quarry the terrace next to the levee, the levee was no longer maintained.

Response: This comment provides information about the age and origin of the embankment observed in one of the DOE well fields. Other commenters expressed concern that the embankment might be a Native American earthwork related to others in the area, such as the Scioto Township works; and that continued use of the well field might affect such an earthwork (see comments PMT-010-4 and 008-5). NRC addressed the potential for effects on the embankment in the Draft EIS in Section 4.2.6.2.. NRC added information received in this comment to Section 3.3.4 of the FEIS, in association with the concern expressed by other commenters.

Comment: 014-41
A commenter observed (Page 6-9, Line 3) the ACP Draft EIS states that due to historical operations, The DOE reservation has multiple plumes of groundwater contamination. The Final EIS should also describe: 1) whether any of these plumes reside in areas leased for the ACP facilities; 2) whether the ACP facilities and areas have been certified as being free of environmental media contamination (soil, groundwater, etc.); 3) whether ACP operations are expected to contribute to groundwater contamination and to what extent; and 4) whether the ACP will have its own groundwater monitoring program independent of DOE's. The Final EIS should include maps of groundwater contamination at the Portsmouth complex to aid in the description.

Response: Sections 3.7 and 4.2.6, Water Resources discuss the nature and extent of groundwater contamination and its impacts associated with the ACP.

Comment: 015-52
A commenter suggested changing "012" to "013" on line 17 of page 4-21.

Response: The NRC staff has revised the text to reflect the commenter's suggestion.

Comment: 015-53
A commenter suggested changing "013" to "012" on line 18 of page 4-21.

Response: The NRC staff has revised the text to reflect the commenter's suggestion.

Comment: 015-54
A commenter suggested changing "weekly composite" to monthly grab" on line 33 of page 4-23.

Response: The NRC staff has revised the text to reflect the correct information.

Comment: 015-55
A commenter suggested adding "are taken quarterly" to the end of the sentence on line 37 of page 4-23.

Response: The NRC staff has revised the text to reflect the correct information.

Ecological Resources

Comment: 003-7
A commenter expressed concern about wildlife and groundwater contamination, and the need for better protective measures at the site. The commenter noted that a three-strand barbed wired fence surrounding the facility was not sufficient and reported that uranium had been found in the liver of a deer that had been tested from on site. The commenter also questioned what provisions were being provided for unplanned releases and whether the Draft EIS considers existing contamination in addition to what USEC may produce in the future.

Response: NRC reviewed the impacts on wildlife in Section 4.2.7, and found that the impacts would be small. Section 4.2.7.2 states that radiological emissions associated with the ACP are safe for humans, which is adequate for the protection of wildlife. In addition, the environmental measurement and monitoring programs described in Section 6 are adequate protective measures.

In accordance with the requirements of Subpart H of 10 CFR Part 70, the NRC evaluated the potential consequences associated with an unplanned release in Appendix H, for the proposed ACP, and summarized the results in Section 4.2.12. When combined with the likelihood of the accident, as evaluated in the staff's Safety Evaluation Report, the NRC found that the accidents pose an acceptably low risk and would result in small to moderate impacts to workers, the environment, and the public.

Comment: 005-10
A commenter stated (Page 4-26, Section 4.2.7.2 Facility Operation, line 37) the EIS should discuss the impact to rare, threatened and endangered species should an air release or incident occur which could release hydrogen fluoride or radioactivity into the atmosphere. The EIS should also discuss deposition and potential areas of the site which would be impacted.

Response: NRC evaluated the potential risk associated with an unplanned release in Appendix H, Accident Analysis for the Proposed ACP, and summarized the results in Section 4.2.12. NRC found that the accidents pose an acceptably low risk and would result in small to moderate impacts on workers, the environment, and the public.

Comment: 013-1
The U.S. Department of the Interior submitted a statement that it has reviewed the Draft EIS, NUREG-1834, for the Possession and Use of Source, Byproduct, and Special Nuclear Materials at USEC Inc.'s American Centrifuge Plant, Pike County, Ohio (Docket No. 70-7004). The Draft EIS adequately addresses the concerns of the Department of the Interior regarding fish and wildlife resources, as well as species protected by the Endangered Species Act. The Department of the Interior concurred with the conclusions of the U. S. Nuclear Regulatory Commission staff with respect to the potential impacts of the proposed action and its reasonable alternatives on these resources and species. The Department of the Interior had no comment on the adequacy of other resource discussions presented in the document.

Response: The comment is noted.

Socioeconomics

Comment: PMT-002-6
A commenter stated that the proposed ACP is not fiscally responsible and that taxpayers are ultimately subsidizing the nuclear industry.

Response: The fiscal implications and impact on taxpayers of licensing the ACP is outside the scope of this EIS. The NRC is responsible for protecting public health and safety and the common defense and security by establishing requirements for the possession and use of radioactive materials. As part of its licensing evaluation, the NRC considers the financial qualifications of a license applicant to safely perform the activities for which the license is sought and the financial commitments the applicant is making to carry out decommissioning. The NRC, however, does not evaluate the overall profitability of the applicant's proposed activities.

Comment: PMT-011-2
One commenter discussed the positive impacts the proposed USEC plant would have on the local economy. The commenter noted that the NRC evaluated both the direct and indirect economic impacts from the plant determined that there would be small to moderate impacts. Most are positive impacts, such as jobs and tax revenues. This conclusion seems reasonable, the commenter stated, based on the understanding of USEC project.

Site preparation and construction is estimated to cost $1.4 billion between 2006 and 2010. USEC, the commenter noted, states it will spend approximately $1.7 billion on the plant from 2002 until its completion. The commenter noted "that's a lot of money" for the local economies here in Piketon, Chillicothe, and all of southern Ohio. It means up to 500 jobs, both direct for the reservation and indirect for contractors in the region.

In addition to the multiplier effect on the local economy, the commenter noted, these workers will be supporting our local businesses and "that's good for everyone."

The cost estimates to construct and operate the plant were based on a facility that would generate 3.5 million SWU per year, as you just heard, but the draft environmental impact statement and USEC's environmental report anticipated growing the plant's output to 7 million SWU per year and that means more machines, more jobs, and more money into your local economy. The Draft EIS does not anticipate any additional problems from increasing the plant's output to 7 million SWU.

During the site preparation, refurbishment, and construction, it is anticipated that there will be 3,362 new full-time jobs created in the local economy. There is also an anticipated increase of $2.3 million in annual state income tax revenues and an increase of $3.7 million in annual state tax receipts. During American Centrifuge operation, 1,500 jobs are anticipated to be created as a ripple effect into the community. The state will potentially benefit from $1.8 million to $2.4 million in additional annual income in sales tax receipts, respectively.

At the end of the life of the centrifuge plant, there would be a decommissioning phase. When the plant is closed, that time frame could be much longer as the experience from the gaseous diffusion plant shows. The gaseous diffusion plant began operation in 1956 and was not shut down until 2001 and it still has not

been decommissioned, but when it is, there will be jobs for that work as well. The NRC estimates that $435 million will be spent over six years to decommission the ACP.

Response: The NRC acknowledges the commenter's information.

Comment: PMT-014-1, 004-7, 007-2, 009-2
A commenter stated the Draft EIS contains enough information for us to predict that the ACP would create 374 new jobs over the short-term building period, followed by a net loss of 1,358 jobs in the operations period.

A commenter stated that according to the Draft EIS, the ACP would cost about $3 billion to construct the centrifuges. The Enterprise Zone program of the state of Ohio would expect about 15 thousand new jobs to be created for that scale of capital investment. The commenter stated that it appears from the Draft EIS that there would be a net loss of jobs rather than an increase in jobs while jobs would be lost at Paducah. The commenter asked NRC to clarify this discrepancy and asked whether there be an overall loss of jobs with a great capital investment.

A commenter stated that the Draft EIS claims are made about the net gain of jobs for our community if USEC is licensed to proceed with the ACP. Figures as high as a net gain of 3,000 jobs are alluded to in the Draft EIS. However, using USEC's own data, we see that after the decommissioning of the old Portsmouth Gaseous Diffusion Plant and with the operation of the proposed ACP there will actually be a net loss of jobs in the community. Even if we had no other concerns about the USEC proposal, we would have grave concerns about a project that promises to cost the community so much and pay back so little.

A commenter stated that according to calculations by Portsmouth/Piketon Residents for Safety and Security, the new facility would create a total net loss of 1,558 jobs. If the site were converted to Enterprise Zone type of manufacturing, spending the same amount of money would create 25 times the 600 jobs projected by USEC. The commenter stated the Draft EIS treats alternatives poorly. For example, there was very little discussion of the benefits of cleaning up the site and using Enterprise Zone initiatives to industrialize the site. The commenter stated the Sierra Club would like to see this type of analysis in the Draft EIS.

Response: The commenter does not specify what baseline is being used in concluding there will be a "net loss" in jobs as a result of building and operating the ACP. It would be inappropriate to compare total employment at the ACP with total employment at the Portsmouth Gaseous Diffusion Plant because the decision to place the Portsmouth Gaseous Diffusion Plant in cold storage status was independent of the decision to build the ACP. The cessation of operations at the Paducah Gaseous Diffusion Plant will result in the termination of most operations phase jobs at that plant and the associated indirect jobs. These losses would be temporarily mitigated to some extent by the hiring of decommissioning workers in the event that the Paducah plant was to be decontaminated and decommissioned.

In each year between 2006 and 2010, average annual employment in the region of influence resulting from site preparation, refurbishment, and construction activities is estimated at 3,362 full-time jobs. This estimate includes both direct and indirect employment. In each year between 2004 and 2013, average annual employment as a result of centrifuge manufacturing and assembly activities is estimated at 2,130 full-time jobs. This estimate includes both direct and indirect employment. During each year of the 30-year operations phase of the ACP commencing approximately in 2011, average annual employment as a result of operations phase activities is estimated at 600 full-time jobs and 900 indirect jobs in the region of influence.

These are all "new" jobs which would not exist if the ACP was not built and operated.

Continuing DOE activities at the site may provide separate sources of employment, other than those listed above; however, it is out of the scope of the EIS to speculate on these activities.

It is not within the scope of the EIS to assess the labor intensiveness of the uranium enrichment industry versus other types of industry. However, it is notable that the ACP represents an upstream infrastructure industry. It is the output of such industries that create the infrastructure to support a competitive manufacturing and services sector (and the associated employment), both nationally and locally. From an economic perspective, the replacement of resource-intensive gaseous diffusion technology by state-of-the-art centrifuge technology will substantially lower the cost of nuclear fuel and thereby improve the competitiveness of the domestic manufacturing and services sectors, which support large numbers of jobs.

The site preparation and construction phase of the ACP is estimated to cost $1.45 billion for a 7 million SWU capacity plant. The centrifuge manufacturing and assembly phase is estimated to cost $1.4 billion for a 7 million SWU capacity plant.

Comment: PMT-016-3
A commenter stated the Draft EIS overlooks a possibility that USEC may have misled the State of Ohio in order to win various incentives. For example, on page 7-1 of USEC's ACP Environmental Report, the commenter noted that on August 15 USEC issued requests for proposals to the Commonwealth of Kentucky and State of Ohio to site the ACP at the respective gaseous diffusion plant. Both States were offered an opportunity to provide financial or other incentives to reduce the cost of the ACP. By all accounts, the cost of the ACP as understood by the State of Ohio was $1.5 billion; however, page 7-2 of the Draft EIS gives the cost of building the ACP and manufacturing centrifuges at $2.872 billion.

The commenter stated the Draft EIS does not consider that the cost of the ACP is unlikely to be met by private investors. For example, in addition to the costs mentioned above, this position would cost $2.758 billion based on 571,000 metric tons of tails for a 7 million SWU plant, and -- at $4.83 per kilogram disposition cost, this compares with a license application's estimate of $0.72 billion for tails disposition.

Further, the commenter indicated that decommissioning would cost $0.435 billion, according to Draft EIS page 7-2 (estimated in the license application as $0.130 billion). The commenter stated that USEC appears to have uniformly underestimated costs by a factor of between three and four, so the total cost, without the withheld information about running cost, is about $6.65 billion. By comparison, when USEC went public, it raised just $1.5 billion in its initial public offering. This was $1.0 billion short of the $2.5 billion required for its atomic vapor laser isotope separation program. The commenter noted the atomic vapor laser isotope separation program was cancelled.

Response: The difference in cost estimates for construction and centrifuge manufacturing arises because the cost estimates in the Environmental Report are based on a 3.5 million SWU capacity plant, whereas the cost estimates in the EIS are for a 7.0 million SWU capacity plant.

Since the preparation of the Draft EIS, USEC has updated the estimate of total tails that will be generated by a 7.0 million SWU plant over the 30-year license period as well as updated the unit cost of disposal of tails. The total amount of tails generated by a 7.0 million SWU plant over the 30-year license period is now estimated at 512,730 metric tons. The unit cost of tails disposal is now estimated at $4.83/kg U. This estimate of unit cost is expected to reflect a conservative upper bound and is higher than previously used to estimate tails disposal costs. These revisions have been recorded in the latest versions

of the Environmental Report, License Application and Decommissioning Funding Plan. Based on the updated estimates, NRC estimates a total tails disposition cost of $1.8 billion (2004 dollars) and based on USEC's assumption of a 10 percent contingency. The EIS has been updated to reflect these changes. (It is important to note that the unit cost of tails disposal is cited in terms of costs per kilogram of uranium. Tails are not pure uranium. To calculate the total costs, it is necessary to apply a conversion factor which computes the amount of uranium per unit weight of tails. This conversion factor is 0.67612 kilograms uranium/kilogram tails.)

USEC estimates decommissioning costs at $435 million (2004 dollars) for a 7 million SWU capacity plant; this reflects the most current and precise cost estimate available. The decommissioning cost estimate in the license application is for a 3.5 million SWU plant.

Comment: 006-1
A commenter stated the plant will not have a positive impact on the economic environment. The commenter observed that given all the tax breaks USEC is being given, it will cost money. The number of jobs created will be minimal in spite of the huge financial investment. There are other healthier jobs could be created in Southern Ohio.

Response: NRC presented its analysis in Section 7, Cost Benefit Analysis. The comment does not provide NRC with substantiated information that would alter the findings presented in Section 7.

Comment: 003-9
A commenter requested information on the electricity requirements of USEC's operation. The commenter also asked whether an EIS is being conducted for the local communities for coal-fired power plants that produce the electricity. The commenter noted that the Gavin plant has been converted to residential use and is no longer available. The commenter also noted that the first centrifuge plant required took the same amount of electricity to operate as the city of Los Angeles. The commenter asked where the energy to run ACP is coming from, who is paying for any cost for construction of an electric plant, and how will the plant's operation impact communities?

Response: The ACP, which is based on the latest centrifuge technology, will consume less than 5% as much electricity per SWU as the Portsmouth Gaseous Diffusion Plant, which was based on gaseous diffusion technology. Dedicated utilities, including power plants, were constructed in the 1950s solely to support the needs of the Portsmouth Gaseous Diffusion Plant. The ACP would continue to procure electricity through existing resources. No new power plants will be constructed. No separate EIS is being performed for the existing dedicated power plants. At the reduced levels of power required by the ACP compared to the Portsmouth Gaseous Diffusion Plant, no impact is expected to local communities. USEC will bear the cost of power generated to operate the ACP as an operational expense.

Environmental Justice

Comment: 007-4
A commenter questioned whether the community and NRC would be having dialogue if the area were not a poor, rural, Appalachian community.

Response: Public dialogue plays a significant role in enhancing public confidence in the NRC and its ability to carry out its mission — to protect public health and safety in commercial uses of nuclear energy. The NRC has long recognized the importance and value of public communication and involvement as a key cornerstone of strong, fair regulation of the nuclear industry. As a result, the agency

has sought, over time, with the assistance of members of the public and other stakeholders, to ensure full and fair consideration of issues that are brought to NRC's attention.

Comment: 008-20
A commenter stated that (section 4.2.9) the section on environmental justice, gives no consideration whatever to disproportionate adverse environmental impacts on the cultural interests of such minority (and probably low-income) groups as the Absentee Shawnee and other tribes. The commenter requested NRC review the pertinent EPA guidance and address these impacts.

Response: NRC completed its review of environmental justice impacts in accordance with EPA's guidance. Section 4.2.2, Historic and Cultural Resources Impacts found no effects on historic and cultural sites. Because there are no high and adverse human health or environmental effects associated with historic or cultural resources no minority or low-income population would be disproportionately affected.

Transportation

Comment: PMT-006-4
A commenter noted that the Draft EIS does not mention accidents with enriched, radioactive material leaving the plant to become fuel for nuclear plants and other critical safety concerns.

Response: Section 4.2.12.1 of the EIS describes the impacts of accidents associated with the transportation of product from the ACP. Table 4-15 provides the results of the analysis.

Comment: PMT-015-7
A commenter observed the Draft EIS purports to assess unknowable risk and cited a footnote on page 4-53 stating that no 2.5 ton cylinder is currently certified to ship uranium enrichment to higher than 5 weight percent of uranium-235. The commenter stated that the Draft EIS goes on to assess the risks associated with the transport of 10 percent enriched uranium in a cylinder that does not exist.

Response: The commenter is correct that no 2.5-ton cylinder is currently certified to ship uranium enriched to higher than 5 weight percent of uranium-235. Although it is currently believed to be unlikely, sometime in the future, a demand may be created for enriched product up to 10 weight percent of uranium-235. In the event this higher enrichment is generated at the ACP, USEC would have to gain the appropriate certification before it shipped 10 percent product in either an existing 2.5-ton cylinder or in a new 2.5-ton cylinder. The EIS's analysis of direct radiation surrounding Type 30B cylinders containing enriched product is reasonable for shipping in another type of approved 2.5-ton cylinder because direct radiation levels for such alternate containers are expected to be similar. Also, the EIS's analysis is conservative as the radioactivity levels for uranium gradually increase with enrichment

Comment: PMT-016-1
A commenter stated the Draft EIS has incompetent data entry. For example, Table 4-15, estimated latent cancer fatalities from the transportation of radioactive materials for one year of operation is seriously messed up. None of the totals is the sum of its column or row. Moreover, by comparison to Table D-12 we can see that the risk to the public, whether following a cylinder on the road, living by a road where cylinders are transported, or pulling into a rest stop where a cylinder truck is, the risks have obviously been grossly understated by a factor of 10,000. The commenter stated the Draft EIS shows insufficient modeling. For example, in Tables D-12 and D-14, the trip from Piketon to Clive, Utah, indicates that the trip includes rest stops and inspection stops. The modeling is based on the WebTRAGIS system, but the

WebTRAGIS manual only mentions rest stops and inspection stops in association with road transport, not the rail transport, as indicated. So, the Piketon-Clive trip is clearly modeled for road transport, yet on page D-5, it is clearly stated that this is a trip -- is a rail trip. Furthermore, the commenter tried to register with the Oak Ridge National Laboratory WebTRAGIS system on September 23, but received no reply. The commenter suggested the system admits only classified access and that the system is, in any case, not available for public scrutiny. The commenter stated the risk analysis is, therefore, unverifiable by the public.

Response: The total estimated number of annual latent cancer fatalities from incident free transport and accidents presented in Table 4-15 is consistent with results presented in Appendix D, however, Table 4-15 of the Draft EIS does contain a number of data entry errors, including some of the totals in the last row of the table. Table 4-15 has been revised in the EIS to correct these errors.

Modeling of the transport of conversion products from the ACP to a disposal site was performed using the "Rail" vehicle mode of RadTran 5.5 and input parameters appropriate for transportation by rail. Stops for rail transport were assumed to occur for purposes of classification, but were reported in the "Rest Stop" column of Table D-12. Appendix D and Table D-12 have been revised to clarify that stops made for rail transport are for purposes of classification.

While access to WebTRAGIS may not be available to members of the general public, information about each route used for modeling purposes, generated by WebTRAGIS, is provided in Table D-6. This information allows members of the public to verify that the route related inputs to the risk assessment modeling are reasonable.

Comment: 002-4
A commenter stated the Draft EIS carefully considers the potential impacts from increased vehicular traffic and finds that the increased traffic will be small and will not introduce adverse effects. Within the limits defined in the Draft EIS, the commenter agreed with this finding provided that appropriate conditions are developed to reopen consultation if vehicular traffic increases above this level or if new construction of roads or railroads becomes necessary as a direct and foreseeable consequence of the development of this project.

Response: NRC acknowledges the commenter's statements.

Comment: 003-8
A commenter stated that there is not an adequate analysis of transportation of uranium from overseas facilities. The commenter stated that with the U.S. having only two percent of the world's uranium reserves, any meaningful examination of transport of this material should include such an analysis. The commenter noted a recent shipment from Libya, and how the material was shipped as a matter of national security. The commenter expressed concern that these transportation impacts from overseas locations are not being adequately considered.

Response: USEC intends to use natural uranium in the form of UF_6 for the proposed ACP. The intention is to not introduce feedstock contaminated with significant concentrations of other nuclides into the process. Feed material that meets the American Standards for Testing and Materials specification for recycled feed may be used, and may contain radionuclides such as uranium-236 and technetium-99. The UF_6 would be transported to the plant in 48-inch (48X or 48Y), 10-ton or 14-ton cylinders that are designed, fabricated, packaged and shipped in accordance with American National Standards Institute N14.1, Uranium Hexafluoride-Packaging for Transport. Feed cylinders would be typically transported to

the site by 18-wheeled tractor-trailer trucks. It is anticipated that approximately 1,100 shipments of feed cylinders per year would arrive at the proposed ACP (USEC, 2005b). Expected feed suppliers include the Cameco Corporation (Ontario, Canada) and Honeywell Specialty Chemical Plant (Metropolis, Illinois). No uranium feed for the ACP is anticipated from overseas vendors.

Comment: 004-6
A commenter noted the Draft EIS concluded that traffic on the highway near the plant would have a short term moderate impact. This is in comparison to other areas evaluated. All received a small environmental impact. The commenter asked what will the transportation problems be and will hazardous waste be transported on the highways of Ohio to the ACP. If so, the commenter stated this is unacceptable.

Response: Transportation impacts of interest are the potentials for delays, accidents, injuries, or fatalities associated with the movements of people and goods into and out of the proposed ACP. A moderate impact was found for the potential increase in traffic accidents resulting in injuries. These impacts may occur during site preparation and construction, facility operations, and cessation of activities and decommissioning in the future. In each of these stages, raw materials and equipment would be brought to the site, wastes of various types would leave the site, and workers would travel back and forth to their places of residence. During facility operations, enriched UF_6 would also leave the site. Hazardous waste will not be transported to the ACP. Some hazardous waste will be generated during facility operations and it will be handled in accordance with applicable State and Federal regulations. A moderate impact was also identified for level of service based on estimated increases in traffic volumes. NRC found that a moderate impact would occur as a result of an accident involving the release of uranium. Although the health risk is low, the consequences, should such an accident occur, would be high, resulting in an overall potential health impact of moderate.

Public and Occupational Health

Comment: PMT-002-1; PMT-002-2
A commenter asked how the potential dose to the public from the ACP compares to the dose to the public surrounding nuclear power plants? The commenter stated that cancer rates have gone up since nuclear testing has been going on in the atmosphere and the radioactivity in the air does affect cancer rates. The commenter stated that there is more radioactivity around nuclear plants and cancer rates around nuclear plants are higher than the cancer rates away from the nuclear power plants. The commenter questioned then, that if the rates are similar, it would be reasonable to expect to see the same thing at the Piketon site.

Response: The maximum potential dose to a member of the public from operation of the ACP is expected to be be approximately 0.01 millisieverts (1 millirem), of which 90 percent is predicted to come from direct gamma exposure and 10 percent is predicted to come from exposure to radionuclides emitted to the air. These results are based on conservative assumptions (see Appendix C), and it is anticipated that actual exposure levels would be less than presented here. The total annual dose from all exposure pathways would be less than the limit of 1 millisievert per year (100 millirem per year) established in the NRC's regulations in 10 CFR § 20.1301. All exposures are also expected to be significantly below the U.S. EPA limit of 0.25 millisieverts per year (25 millirem per year), as set in 40 CFR Part 190 for uranium fuel-cycle facilities. The typical average dose to nearby members of the public will be significantly less than the potential maximum; this typical average is expected to be 0.1 millirem per year or lower. This expected dose range is similar to that for nuclear plants based on the annual effluent and environmental reports submitted by nuclear power stations in North America to their regulatory bodies. The causes and risk contributors of cancer are complex, and have been the subject of decades of study and medical research. Based on the best available currently published risk factors for cancer from

radiation, such as the BEIR V report, the maximum possible doses expected from operation of the ACP result in a risk of approximately 1 in 1,000,000 per year. The typical expected average doses to members of the nearby public from operation of the ACP will produce risks approximately 10 times lower than the maximum.

Comment: PMT-003-6; 007-1
A commenter stated that during their time of employment at the DOE facility, there were over 570 violations that were never addressed. In particular the commenter stated that there were alpha daughter isotopes in the lunchroom, and suggested that none of those workers were ever notified of this. Another commenter described USEC's safety record as "disgraceful." This commenter asked why this record was not factored into NRC's analysis.

Response: NRC is aware of past violations. The EIS focuses on environmental impacts of the proposed action. Consideration of violations of the terms of the license are beyond the scope of this document. However, should a licensee violate the terms of its license, which includes compliance with all applicable laws and regulations pertaining to uranium enrichment operations and environmental protection, then the NRC, as the Federal oversight agency, may impose penalties, including financial and civil penalties and license revocation. Other Federal and State agencies can also impose requirements and penalties for violations of laws and regulations under their purview.

Comment: PMT-003-9
A commenter indicated concern about the offsite radium-226 at the facility. The commenter questioned the veracity of the analysis being conducted at the plant, if it indicates that radium-226 is not present offsite.

Response: The NRC staff agrees that radium-226 is certainly present in and around the ACP location. Radium-226 is a member of the decay chain for uranium-238. Because uranium-238 is a naturally occurring isotope in the soils of southern Ohio radium-226 will also be present in those soils, typically at concentrations approximating that of the uranium-238. This same uranium-238 chain is the source of the radon-222 that is ubiquitous in the homes of Ohio and that is the primary source of background radiation to most Ohioans. Many years are required for the isotopes in the uranium-238 decay chain to build in to significant concentrations. The decay chain products from naturally occurring uranium-238 have had millions of years to build in to a concentration that is essentially equivalent to that of the uranium-238. Because the enrichment facility has only been in existence for less than 60 years, there is not yet any significant build in of radium-226 or its daughters in the chain relative to the concentrations of uranium-238 that may have been deposited by releases from the enrichment facility. Hundreds or thousands of years will be required before any uranium released by the ACP will have decayed to produce sufficient radium-226 to warrant testing for this radium-226. Until that time, such tests will only identify the natural background of radium-226 resulting from decay of naturally occurring uranium-238.

Comment: PMT-005-3
A commenter identified a possible typographical error in the Draft EIS indicating that the number of cancer deaths will probably be, according to the Draft EIS, higher for routine non-accident issues (0.013 deaths per year), than for accidental releases, which appears to be 0.008, or half of the number of cancer deaths.

Response: The EIS has been revised to correct any typographical error. The EIS correctly states that the probability of cancer death from an accidental release is about one-half that of the probability of a cancer death from routine non-accident scenarios. In a case where the primary radiological hazard is

external exposure and the accident rate is low, the risk from incident-free transport would more likely exceed the risk from accidents. In another case where the primary radiological hazard is inhalation or ingestion and the accident rate is high, the risk from accidents would more likely exceed the risk from incident-free transport.

Comment: PMT-011-1
A commenter expressed confidence that the NRC's evaluation that potentially there could only be very minimal impact to the public and occupational safety and health, especially given USEC's history of safe operation. The commenter also stated that the plant is consistently below the national average in the number of Occupational Safety and Health Administration-recordable illnesses and injuries. Further, the commenter noted that as with the gaseous diffusion plant, the centrifuge's commercial plant will also be a highly regulated facility, requiring strong safety programs in order to maintain strict compliance with all State and Federal regulations for the safety and health of the employees, as well as the public.

Response: NRC acknowledges the commenter's statements.

Comment: PMT-014-2
A commenter stated that the Draft EIS neglects to express the injury rates in several significant categories related to routine and accidental radiological exposures in both the occupational and transport categories of both the operations stage and in the decommissioning stage. The commenter further notes that the Draft EIS treatment of occupational injury rates depends on statistics from the Bureau of Labor Statistics but overlooks an important statement in a study by the Bureau that indicates that some conditions, for example, long-term latent illnesses caused by exposure to carcinogens, are often difficult to relate to the workplace and are not adequately recognized and reported. These long-term latent illnesses are believed to be understated in the survey's illness measures.

Response: Occupational injury from radiological exposure is traditionally assigned to acute exposure during radiological accidents. The only potential source of such exposures at the ACP would be inadvertent criticality incidents. Criticality control at U.S. nuclear facilities is well understood, and there have been no inadvertent criticality incidents in the U.S. at enrichment facilities. This is particularly true for a facility that only handles low enrichments such as the ACP. The primary latent illness of interest is cancer; therefore the risk values used in radiological assessments are those for the risk of inducing a fatal cancer from the given radiation dose. Note that since the EIS includes the expected radiation dose for many scenarios, an interested party can get an estimate of risk for both fatal and non-fatal cancer induction by examining reports such as BEIR V to identify a dose-to-risk conversion factor.

Comment: PMT-014-3
A commenter noted that on page 4-62, the Draft EIS describes that workers may be exposed to puff releases of UF_6 gas which is exactly the type of puff -- of exposure that would result in a long-term latent illness. The commenter also notes that the Draft EIS does show in Table 3-29 that mortality rates in Pike County, due to renal failure, are between two and four times that of the rates in Ross County and Scioto County; however, although renal failure is associated with uranium poisoning, the Draft EIS suggests that this death rate may instead be associated with diabetes and hypertension. The commenter stated that the NRC staff has made no attempt to determine whether uranium poisoning has, in fact, caused those deaths.

Response: Determining a causative relationship between renal failures and puff exposures at the enrichment facility would require an independent targeted study of those workers with records of puff exposures versus their rate of renal failures, and bio-sampling to determine if these persons had significant body burdens of uranium. Such a study is outside the scope of the EIS.

Comment: PMT-014-4; 004-4
Two commenters stated that the Draft EIS compares potential ACP occupational injury rates to those from the broad and now obsolete Standard Industrial Classification. The commenter also argued that this is inappropriate, and the ACP occupational injury rates are projected using Piketon (i.e., DOE) operations in the years 2002 and 2003. One commenter also asked who will be responsible for the health care needs related to the uranium enrichment process of employees and residents of the Piketon area who are impacted? Will it be the responsibility of USEC or the Federal government (NRC)? Uranium is implicated in huge health risks. It appears unacceptable that the NRC approves of such a process and plant.

Response: The 2002 North American Industry Classification System for industry classification puts uranium enrichment in NAICS code 325188, cross referenced to Standard Industrial Classification code 2819. The Bureau of Labor Statistics 2004 data for North American Industry Classification System code 32518 shows 3 fatal injuries for North American Industry Classification System code 35218, which is similar to that presented in Table 4-18 of the EIS. Health impacts to workers from uranium exposure are addressed in section 4.2.12.3 separately from industrial accident risks. It is outside the scope of this EIS to address health care coverage for USEC employees and contractors.

Comment: PMT-014-5: 007-1
Two commenters stated that uranium enrichment operations at the DOE reservation in Piketon, Ohio, ceased in May, 2001, and as measured by the NRC's enforcement action notices, USEC has, by far, the worst safety record of all NRC materials licensees. Of 516 materials licensees that have been issued with NRC enforcement notices, USEC has the most, with 16, followed by Mallinckrodt Incorporated, with nine, and Westinghouse Electric, with six. The commenter noted that most other licensees have just one or two violations.

Response: NRC is aware of past violations. The EIS focuses on environmental impacts of the proposed action. Consideration of violations of the terms of the license are beyond the scope of this document. However, should a licensee violate the terms of its license, which includes compliance with all applicable laws and regulations pertaining to uranium enrichment operations and environmental protection, then the NRC, as the Federal oversight agency, may impose penalties, including financial and civil penalties and license revocation. Other Federal and State agencies can also impose requirements and penalties for violations of laws and regulations under their purview.

Comment: PMT-015-3; 007-1
Two commenters noted that the Draft EIS states that the calendar year 2003 Bureau of Labor Statistics average incidence rate of nonfatal occupational industries -- injuries and illnesses are not currently published. One commenter stated that, in fact, these statistics were published in December, 19 -- 2004, and reissued in June, 2005.

Response: Page 4-61 of the EIS, beginning at line 6 states, "Incident rates for Total Recordable Cases and Lost Workday Cases for calendar year 2003, in units of incidents per 100 full-time equivalents, for North American Industry Classification System Code 325188 were obtained from the Bureau of Labor Statistics Publication Table 1, Incident Rates of Nonfatal Occupational Injuries and Illnesses by Industry and Case Types 2003 (BLS, 2004a). Fatality incident rates for Manufacturing (North American Industry Classification System Code 325) for calendar year 2003, in units of incidents per 100,000 full-time equivalents, were obtained from Bureau of Labor Statistics Publication National Census of Fatal Occupational Injuries in 2003 (BLS, 2004b)."

Comment: 003-6
A commenter noted that the last published DOE annual report for site cleanup progress at the Piketon site documented plutonium contamination and several uranium isotopes found in fish sampled in streams known to be fishing holes for local people - all supposedly at "safe" consumption levels. The commenter was not aware that there was a safe level of plutonium for human consumption. The commenter suggested that there are many unanswered questions about the transport of materials to and from the plant as well as the operations within and the clean-up of the old plant. The commenter believes that long-term latent illnesses are understated in the report.

Response: As discussed in section 1.5 of the EIS, all emissions, whether to the air or water, must meet Federal and State regulations to ensure the safety and health of the public. As presented in section 4.2 of the EIS, releases from the proposed ACP would be within regulatory limits and would not endanger members of the public.

Comment: 014-3
A commenter stated that while the Draft EIS provides estimated latent cancer fatality data, but does not include non-fatal cancer rate data. The commenter suggested that the Final EIS should provide more comprehensive cancer rate data.

Response: The radiological analysis used in the EIS is designed to identify the impact of the facility on occupational and public health. The analysis does so by comparing the expected radiation doses and risks to the applicable regulatory limits on dose and risk. The does and risk limits defined by the cognizant Agencies are based on the protection of public health. The dose and risk estimates below these standards are therefore considered to have small impacts upon occupational or public health. The risk standards used are for induction of fatal cancer, so that is the risk data used in the EIS.

Comment: 014-4
A commenter suggested that the Final EIS should reference the most current annual radiological emissions data for 2004.

Response: The 2002 and 2003 site radiological emissions reports show similar results, so the 2004 data is not expected to significantly alter the values in the draft EIS.

Comment: 014-36
A commenter stated that in the statement of standards that protect the health and safety of the public, 40 CFR 61, Subpart H, has been left out of the Draft EIS. The commenter stated that the reference should be properly incorporated throughout the document. The commenter also stated that this regulation was used to determine public health protection, whereas the NRC regulations deal more with occupational levels for exposures rather than a public health exposure level.

Response: The EIS properly incorporates the National Emission Standards for Hazardous Air Pollutants regulations of 40 CFR Part 61, Subpart H. The commenter is referred to Table 1-3, Section 4.2.4.1, 4.2.4.2, Section 4.2.12.3, and Section 4.3.2 which specifically reference the appropriate National Emission Standards for Hazardous Air Pollutants regulations of 40 CFR 61 Subpart H. The NRC's regulations at 10 CFR 20, Subpart D, provide safe exposure limits for members of the public. This NRC dose limit of 100 mrem/yr considers all pathways, whereas the EPA regulation cited by the commenter, 40 CFR Subpart H, provides a dose limit of 10 rem/yr from airborne exposure pathway.

Comment: 015-56
A commenter noted that no foodstuffs are being produced on the DOE reservation, thus the food sources for the on-site tenants should be adjusted to reflect this on lines 9 through 31 of page 4-61. The commenter added that CAP88-PC does allow this.

Response: Lines 2 and 3 of page 4-65 in the EIS describe the food consumption patterns for on-site tenants. These tenants are not assumed to have any locally produced foodstuffs (food produced on the DOE reservation). They are assumed to consume foodstuffs produced within the 80 kilometer assessment radius used in the CAP88-PC model.

Waste Management

Comment: 007-3
A commenter stated that the problem of safe, permanent storage of radioactive wastes generated over the past 50 years at the Piketon site and those wastes projected to be generated over the next 50 years at the site is still unsolved.

Response: Sections 4.2.13.2 and 4.2.15.13 of the EIS describes USEC's plans for managing wastes generated during operation and decommissioning of the ACP. Wastes generated at the site in prior years are considered in Section 4.3.10 of the EIS.

Comment: PMT-005-1
A commenter asked whether USEC or NRC determines the safety of spent fuel.

Response: The NRC has specific regulations and requirements for both the storage and ultimate disposal of spent nuclear fuel. However, the license application in question is for the enrichment of uranium for use as a fuel in nuclear reactors. Spent nuclear fuel would not be directly generated as a result of this licensing action.

Comment: 003-1-3; PMT-002-8; **PMT-004-3; 009-1**
Two commenters expressed a concern that there is no safe place to permanently and safely dispose of radioactive waste that would be generated at the ACP. One of these commenters also stated that the people of Nevada do not want this waste, and neither do the people of Ohio.

A commenter asked whether the approximately 200,000 tons of uranium tailings that USEC's proposed ACP facility currently under NRC licensing consideration would create would also be sent to Envirocare The commenter also requested information on the number of facilities and the total volume of waste, existing and proposed, that is currently slated for shipment to Envirocare. A commenter also asked about environmental ability to handle the waste.

Response: As described in section 2.1.4.3, the disposition of the depleted triuranium octaoxide (U_3O_8) generated from the DOE conversion facilities at Paducah and Portsmouth would be either at the Envirocare site (DOE's proposed disposition site) or at the Nevada Test Site (DOE's optional disposal site). Depleted U_3O_8 generated from the adjacent or offsite private conversion process would be disposed at a site licensed to accept this material. For example, under its Radioactive Materials License issued by the State of Utah, Envirocare is authorized to accept for disposal the quantities of depleted uranium oxides expected to be generated by the conversion of the proposed ACP's depleted UF_6. Further, section 4.2.13 .2 describes the capacity impacts of the disposal of the converted U_3O_8 on the Envirocare facility. As

stated, NRC estimates that the U_3O_8 from the proposed ACP would take up approximately 11 percent of the remaining disposal capacity at Envirocare.

Comment: PMT-007-5
A commenter noted that the waste material at issue, depleted UF_6, once converted, is most suitable for disposal in the ground. The commenter also noted that potential spills associated with this material would not migrate offsite because it is not volatile. The only material of concern would be hydrogen fluoride. The commenter also noted that converting the tails material and subsequently disposing of it in the ground is the most environmentally responsible method for managing the waste.

Response: NRC acknowledges the comments concerning the suitability of land disposal of converted depleted UF_6..

Comment: PMT-010-6; 006-2; 009-1
A commenter charged that NRC, in its Draft EIS, has gone beyond being a regulatory body and has actually solved USEC's waste problem for it. The commenter stated that while USEC did not specifically indicate where it would dispose of its waste, NRC indicated that the waste will be treated, or will probably be treated, or can be treated at the deconversion facility that's now being built on site by DOE. Two commenters questioned whether DOE can even accept the ACP waste for conversion. One commenter stated that DOE, in their reports to the community at their semiannual environmental assessment meetings has said repeatedly that the deconversion plant can not be used to treat a USEC waste, to use that facility would completely violate the letter and spirit of the USEC Privatization Act. The commenter stated that the purpose of the Privatization Act was to separate private facilities from legacy government facilities and the deconversion facility was built to treat the legacy waste that is of public responsibility and at public expense, and is not available, legally, to treat USEC's private waste. The commenter goes on to state that, barring a new act of congress to change the law, the deconversion plant is not capable and was not designed to treat all of the USEC waste. Another commenter stated that USEC is a private company and they should not be given the right to use the Conversion plant for their own economic purposes.

Response: USEC indicated in its Environmental Report that it does not wish to foreclose potential future commercial uses of depleted uranium tails and thus was not classifying the depleted uranium tails as a waste at this time. USEC then goes on to describe a method, via the USEC privatization Act whereby they could transfer the tails to DOE for conversion and disposal. The NRC staff have elaborated on this proposal in order to fully inform the NRC's decision maker and the public as to the likely impacts of depleted uranium tails conversion and disposal as required by NEPA and the NRC's implementing regulations at 10 CFR Part 51. Section 3113(a) of the USEC Privatization Act (Public Law 104-134) requires DOE to accept low-level waste, including depleted uranium that has been determined to be low-level waste, for disposal upon the request and reimbursement of costs. DOE has stated that depleted uranium transferred under this provision of law in the future, would most likely be in the form of depleted UF_6, thus adding to the inventory of material needing conversion at a depleted UF_6 conversion facility. DOE has stated that, "…it is reasonable to assume that the conversion facilities could be operated longer than specified in the current plans in order to convert this material" (DOE, 2004a).

Comment: PMT-016-2; 006-2
Two commenters raised concerns about the use of the DOE conversion facility to address ACP waste issues. One commenter stated that the Draft EIS indicates that the DOE conversion facility is designated to operate until 2024 and to handle a capacity of 243,000 metric tons of depleted UF_6, but that the ACP is designed to operate until 2040 and to generate 571,000 metric tons, thus the DOE conversion facility is designed to be decommissioned 16 years too early and to have a capacity that is less than one-third of all

ACP waste expected to be generated. One of the commenters stated that there are some scientists who believe that the conversion plant itself is not a perfect solution to the nuclear waste problem. The commenter said that even though the material in the canisters will be converted to a less dangerous form, the conversion process too will create waste, and at the present time it's not clear where it will be taken. The commenter stated that the fear is that the waste will simply stay at the Piketon site and because of this, no more uranium should be processed because the country is already dying from the existing nuclear waste.

Response: The Piketon conversion facility is planned to operate for 18 years beginning in 2006. The existing inventory planned for conversion is 243,000 metric tons (267,862 tons) of depleted UF_6 (DOE, 2004a). The projected maximum amount of 512,730 metric tons (535,200 tons) of depleted UF_6 generated by the proposed ACP represents a significant increase in this existing inventory. Converting the depleted UF_6 from the proposed ACP would require DOE to significantly extend the life of the conversion facility, or to construct a second conversion facility on the site. DOE has maintained that, with routine facility and equipment maintenance, periodic equipment replacements, or upgrades, the conversion facility could be operated safely beyond the 18-year planned life-time period to process the additional depleted UF_6 from the proposed ACP. In addition, DOE indicates the estimated impacts that would occur from prior conversion facility operations would remain the same when processing the proposed ACP wastes. The overall cumulative impacts from the operation of the conversion facility would extend proportionately with the increased life of the facility (DOE, 2004a). Based on this, the added inventory of depleted UF_6 coming from the proposed ACP should not change the nature or magnitude of the impacts from the DOE conversion facility operations, but it would extend those impacts for several additional years.

Comment: 003-1-1

The commenter indicated that the transcript of the conversation between the NRC and Utah Department of Radiation Control included calculations for eventual discharges into the Great Salt Lake, that Envirocare did not have to comply with the usual water regulations because the ground water was not potable beneath the landfill, and that Envirocare did not have to comply with agriculture regulations because it was not surrounded by agricultural activity (even though the transcript documented livestock grazing around the perimeter of the landfill).

Response: The transcript noted by the commenter does indicate that Envirocare is exempted from groundwater regulations, however, it must be emphasized that the context for this exemption is the extremely saline groundwater that underlies the facility that is incompatible with any human use. The State of Utah has the regulatory oversight for Envirocare and has conducted numerous performance assessments and hydrogeological studies. These documents are available directly from the State. Likewise, the transcript only indicated the potential for livestock grazing on the surrounding land as the extremely arid environment does not support sufficient vegetation for grazing on a regular basis.

Comment: 003-1-2

The commenter stated that existing waste is not just coming from Piketon, Ohio and the public does not have access to all of the applications currently under licensing consideration with the NRC. The commenter argued that in light of this the NRC has a responsibility to take inventory of this situation immediately. The commenter also stated that Envirocare should not be rubber stamped as being a feasible option for long-term storage of nuclear waste for USEC's ACP licensing - or any other proposed facilities - until this inventory is taken and that information is available to the public for public comment and input.

Response: The NRC has two licensing actions related to uranium enrichment. Both actions are for gas centrifuge facilities, one proposed by Louisiana Energy Services at Eunice, NM and one by USEC at

Piketon, OH. Both actions have been publicly noticed and have provided substantial opportunity for public involvement. In the case of Envirocare and the DOE tails conversion facility at Piketon the NRC does not have a licensing role. The State of Utah has regulatory authority over Envirocare and the DOE has responsibility for the conversion facilities (both at Piketon and Paducah). In terms of document availability, three environmental impact statements were completed by the DOE for the conversion facilities following DOE's public involvement process. A programmatic EIS for handling of depleted uranium was completed in 1999 and has a document number of DOE/EIS-0269. Subsequently, two site-specific EIS's were completed in 2004 for both Paducah and Piketon with document numbers of DOE/EIS-0359 and DOE/EIS-0360, respectively. These documents can be found at: http://www.eh.doe.gov/nepa/documents.html. Likewise, numerous performance assessments and hydrogeological studies have been carried out by the State of Utah following there public involvement procedures and are available directly from the State.

Comment: 005-3

A commenter asked the NRC to describe the agreement the ACP has with the DOE to accept the depleted UF_6 cylinders for the centrifuge facility. The commenter stated that currently, Ohio EPA is not aware that such an agreement exists. The commenter also stated that if the ACP anticipates that DOE will be responsible for converting all depleted UF_6 cylinders from the centrifuge plant, Ohio EPA should be contacted so that proper agreements are in place and orders may be modified to allow the transfer of waste material. Additionally, the commenter requested that the cost for conversion for the depleted UF_6 should be included in the costs of the facility.

Response: The 2002 agreement between USEC and DOE addressed DOE taking title to depleted uranium through 2005. The parties are currently working on an agreement to replace the expired agreement under which DOE would continue to take title to depleted uranium generated by USEC operations. DOE is currently storing approximately 700,000 metric tons of depleted uranium in approximately 60,000 cylinders stored at various locations on the DOE portions of the Gaseous Diffusion Plant sites. USEC is responsible for decommissioning costs, including the approximately $1.8 billion cost for dispositioning depleted uranium tails (as noted in Section 2.1.4.4 of the EIS). The cost for conversion of the depleted uranium tails will be included in the costs of the facility as described in Chapter 7 of the EIS (see Table 7-1).

Comment: 009-1

A commenter expressed concern with the amount of radioactive material being brought to and generated at the Piketon site. The commenter requested that the Final EIS state limits to the importation of uranium and the amount of waste and tailings that will result from the ACP enrichment process. The commenter also requested a plan for disposal of the depleted UF_6 that will be a byproduct of the ACP. The commenter noted that there is already a very large backlog of depleted UF_6 waiting to be converted, since the conversion plant is behind schedule in its construction. The commenter asked that the Final EIS state how the depleted UF_6 from the ACP will be converted and the oxides disposed.

Response: The proposed ACP must be decommissioned and all depleted UF_6 properly disposed of prior to license termination. As discussed in section 2.1.4.3 of the EIS, USEC has indicated that the depleted UF_6 generated at the ACP will be sent for conversion at the planned DOE conversion plant at Portsmouth, Ohio. The disposal options presented in the EIS satisfy the Commission rulings concerning a disposal strategy and the classification of depleted UF_6.

Comment: 014-2
A commenter stated that the Final EIS should describe what the NRC is doing to ensure that funding sufficient for the ACP's decontamination and decommissioning, as well as waste management, is in place prior to issuing a license.

Response: As discussed in section 2.1.4.4 of the EIS, USEC is required to put in place a financial surety bonding mechanism to assure that adequate funds would be available to fully decommission the proposed ACP, including disposing of all depleted UF_6 generated during facility operations. Adequacy of decommissioning funding is addressed in the Safety Evaluation Report.

Decontamination and Decommissioning

Comment: 003-3; 003-10
A commenter noted that the cost of decommissioning described in Table 7-1 ($435 million) is not described clearly enough to determine how the value was arrived at. The commenter suggested that additional information needs to be provided to the public. This commenter noted that taxpayers have almost totally funded these costs for the former facility's operation at the DOE site to the tune of $300,000,000 (million) annually. The commenter argued that the cost provided in the Draft EIS would not be sufficient. The commenter also stated that taxpayers need solid assurance that they will not be left holding the bag if the facility is shut down, or does not have sufficient funding set aside to cover decontamination and decommissioning costs and long term storage and monitoring of radioactive waste it is responsible for generating. The commenter asked how much taxpayer funding is currently being spent to do this work at Paducah and other sites. The commenter further requested that these funds be in place prior to issuance of a license.

Response: Decontamination and decommissioning costs were estimated as the sum of the costs incurred for various activities including: planning and preparation; decontamination and/or dismantling of radioactive facility components; restoration of contaminated areas of facility grounds; final radiation survey; site stabilization and long-term surveillance; packaging, shipping, and waste disposal costs; equipment/supply costs; laboratory costs; miscellaneous costs; NRC staff review and approval; NRC fees; DOE lease; business insurance; taxes; contractor profitability; and a contingency buffer. The EIS provides the most updated cost estimates available. The decontamination and decommissioning costs and funding of previous projects is out of the scope of the EIS.

USEC presently intends to utilize a surety bond to provide financial assurance for decommissioning, pursuant to 10 CFR 70.25(f). The surety bond will provide an ultimate guarantee that decommissioning costs will be paid in the event USEC is unable to meet its decommissioning obligations at the time of decommissioning. The surety bond will require that the surety company will deposit any funds paid under its terms directly into either an external trust or a standby trust. However, USEC may choose to utilize alternate financial assurance funding methods. Upon finalization of the specific funding instruments to be utilized and at least 90 days prior to the commencement of enrichment operations, USEC will supplement its application to include the signed, executed documentation.

Comment: 003-4
A commenter noted that the Draft EIS does not appear to contain information on costs related to long term waste storage. The commenter believes that consideration needs to be given to this cost and provision made in advance as this is the most expensive cost involved in decontamination and decommissioning. The commenter stated that a request was made of DOE to provide the total amount of taxpayer funding spent to date for long term waste storage, but that information was never received.

Response: USEC's total decommissioning liability is the sum of the total plant decommissioning costs and the tails disposition costs. Depleted uranium tails will be stored in steel cylinders at the site until they can be processed in accordance with the disposal strategy established by USEC. For the purpose of storage, additional cylinder storage yards will be constructed at the site. The costs associated with the construction of cylinder storage yards are included in the construction costs of the ACP and will be borne by USEC.

Comment: 005-4
A commenter asked for a description of how the DOE/USEC lease would work once DOE has completed its mission at the site. The commenter believes it is highly likely that the decontamination and decommissioning of the gaseous diffusion plant will be completed, and rather, the site will require long term surveillance and maintenance.

Response: As noted in the Executive Summary and Chapter 1 of this EIS, the site for the ACP facility is to be located on a small portion (approximately 1 percent) of the DOE reservation at Piketon, Ohio. The Gaseous Diffusion Plant, which is in cold standby is located on the reservation. The Portsmouth plant is owned by DOE but operated by USEC's wholly owned subsidiary, the United States Enrichment Corporation. The NRC has regulatory authority over the United States Enrichment Corporation for its activities associated with the Gaseous diffusion plant and for the proposed ACP. At the end of ACP operations, USEC will decommission the ACP. Under its proposed decommissioning plan, USEC will decontaminate (clean up) the ACP site to a level that would qualify the site for unrestricted use. Section 10.3 of the Safety Evaluation Report provides a description of the USEC decommissioning plan. Although USEC is responsible for decommissioning the ACP, DOE is responsible for decommissioning the remainder of the reservation containing the Gaseous diffusion plant. DOE will be responsible for long-term monitoring of the entire reservation, including the ACP site, when the reservation is returned to DOE. DOE, not USEC, will have the responsibility to conduct any required surveillance and maintenance once the ACP site is transferred back to DOE.

Comment: 005-11
A commenter asked for clarification of how the ecological impacts from the site most likely will change during the life span of the ACP and how these changes will be accounted for during decontamination and decommissioning. The commenter asked whether USEC will be responsible for conducting ecological surveys and whether there is money set aside during the decontamination and decommissioning process for these types of surveys to be conducted?

Response: NRC evaluated the ecological impacts associated with decontamination and decommissioning in Section 4.2.15.7, Ecological Impacts. Because NRC assumed that the footprint associated with decontamination and decommissioning would be bounded by those used to construct the proposed ACP, the impacts would be the same or less than those described under site preparation and construction.

Because the site would be located on a DOE reservation, DOE would maintain current information on the ecological conditions to include Federally-listed threatened and endangered species.

Comment: 014-18
A comment noted that the Draft EIS states that the intent of decommissioning is to return the proposed ACP site to a state that meets NRC requirements for release for unrestricted use after decontamination and decommissioning is completed. The commenter stated that the Final EIS define and discuss what NRC considers "unrestricted use" to mean, including: are the NRC requirements consistent with Comprehensive Environmental Response Compensation and Liability Act standards for free release of property without

institutional, controls? Who owns the ACP buildings? Are they owned by DOE and leased to USEC, or does USEC have ownership of buildings on the Portsmouth Reservation? If USEC or a subsequent owner goes bankrupt, would DOE then be the primary responsible party responsible for cleanup and have priority access to the cleanup funds in the ACP's surety bond (or other financial mechanisms) over other entities such as lax authorities and commercial lenders?

Response: The NRC requirements for unrestricted release are provided in at 10 CFR 20.1402. These standards relating for free-release (i.e., no institutional controls) require that doses to members of the public are less than 25 mrem/year. If non-radiological contaminants are found the site would be referred to the appropriate state agency and the EPA. As previosly stated, USEC leases all buildings from the DOE and USEC is responsible for decontamination and decommissioning. The NRC requires decommissioning financial assurances (see 10 CFR § 40.36 and 70.25) before issuing a license. The NRC's objective is to ensure that NRC-licensed sites (unlike Superfund sites) never require taxpayer funds to complete decommissioning. In the event that the licensee is unable to carry out decommissioning due to bankruptcy or some other reason, the financial assurance provisions provide the funding for decommissioning, and the NRC would ensure that proper site remediation takes place. For uranium enrichment facilities, applicants must provide a decommissioning funding plan consisting of a site-specific cost estimate for decommissioning and a financial instrument, such as a surety bond or letter of credit. USEC has chosen to use a surety bond for its financial mechanism. Further, as stated in 10 CFR § 40.36(d) and 70.25(e), decommissioning cost estimates must be adjusted at intervals not to exceed 3 years. The NRC staff reviews this issue in the Safety Evaluation Report.

Comment: 014-19
A commenter noted that the Draft EIS states that the decontamination and decommissioning activities for the proposed ACP are anticipated to occur approximately 30 years in the future, and therefore only a general description of the activities that would be conducted for the proposed ACP can be developed at this time for the Draft EIS. The commenter asked whether NRC will review and approve the ACP engineering design prior to its construction? The commenter further asked if NRC requires the concurrent development of a decontamination and decommissioning plan while the facility is being designed, and whether NRC regards issues such as cost, implementability and ease, worker safety, waste minimization during decontamination and decommissioning to be considerations in the design of radiological facilities such as the ACP?

Response: The NRC reviews this information in the Staff's Safety Evaluation Report. USEC, as part of their license application, provided information about decommissioning which describes specific features that serve to minimize the level and spread of radioactive contamination during operation that simplify the eventual plant decommissioning and minimize worker exposure.

Comment: 014-2
A commenter suggested that the Final EIS should describe what the NRC is doing to ensure that funding sufficient for the ACP's decontamination and decommissioning, as well as waste management, is in place prior to issuing a license.

Response: As discussed in section 2.1.4.4 of the EIS, USEC is required to put in place a financial surety bonding mechanism to assure that adequate funds would be available to fully decommission the proposed ACP, including disposing of all depleted UF_6 generated during facility operations. The NRC staff evaluates the adequacy of the proposed funding in the Safety Evaluation Report.

Cumulative Impacts

Comment: 008-5-1
A commenter stated that the cumulative impacts section of the Draft EIS is deficient for its lack of treatment of effects on historic properties or any other kinds of "cultural resources." The commenter stated that a cumulative impact analysis is supposed to consider the effects (even the "SMALL" effects) of the project under review in the context of other past, present, and reasonably foreseeable future actions. Serious impacts on the cultural character of the area that includes the project Area of Potential Effect (however defined) have obviously taken place in the past; they may be going on in the present, and what the future holds remains to be analyzed. The commenter requested that NRC address the cumulative impacts of the project on cultural resources of all kinds, notably including historic properties.

Response: In Section 4.3, NRC evaluated the cumulative impacts associated with the proposed action and other actions that would affect the same resources. As stated in Section 4.3, because the proposed action would result in no effect on cultural or historic resources, implementation of the proposed action would not lead to additional cumulative impacts on such resources.

Comment: 008-5-2, **010-8**
A commenter9 believed that further investigation of the DOE Water Field is warranted in order to determine the origin of the earthworks with confidence. The commenter noted that a field trip to the Water Field had been conducted, and the results of that field trip indicate a research protocol is needed to determine the identity and age of this structure. That protocol should begin with access to all previous reports of cultural resource investigations conducted at the Water Field property prior to the development of the Water Field, investigations that would have been required by Section 106 of the National Historic Preservation Act. The commenter stated that if the structure is determined to have historic significance, an evaluation should be made of the visual and physical impact of the American Centrifuge Project on that structure. Finally, the commenter stated that the Gas Centrifuge Enrichment Plant Water Field site lies close enough to the Barnes Works to warrant a close examination of its historic significance. Any prehistoric earthworks that may be identified at that location deserve the utmost attention and protection. Therefore, the commenter urged a program of research at that site as rapidly as possible, in compliance with Federal preservation law. Commenters declared that on a site visit to Gaseous Centrifuge Enrichment Plant Water Field, they observed what appears to be prehistoric earthworks.

Response: NRC evaluated the use of the DOE Well Field in Section 4.2.6, Water Resource Impacts and found that the operation of the wells would not alter the current physical conditions at the well fields.

As described in Comment 011-1 in Section J.11, a commenter provided a report on the origin of a series of levees along the Scioto River in southern Pike County. There are three separate levees. The northernmost is on the Nier property at the U.S. Route 23 entrance to Piketon DOE facility. The middle levee is partially located on a DOE well field located next to the Scioto River on the old Billy Cutlip farm. The third levee extends across 10 farms beginning at the Barnes property and extending south along the river to the Will Acord farm. The northern and southern levees were built after the 1959 floods, to protect agricultural land from subsequent floods The middle levee was built for technical and economic reasons. When the DOE wells were being drilled in the 1980s, the pipeline from the river to the steam plant required the addition of concrete and ground cover over the original concrete anchors in order to hold the line in place. According to the commenter, the "result is a levy-like [sic] appearance." Concurrently, and into the 1990s, the Standard Slag company, owners of a sand and gravel quarry on the former Cutlip farm, moved its overburden down to the river and built a levee between the wells and river to make space for expansion. At first the levee was kept mowed and it was possible to drive on it, but when Standard Slag

determined that it would not be able to quarry the terrace next to the levee, the levee was no longer maintained.

This information indicates that the embankment of concern to the commenter was constructed less than 50 years ago for flood protection purposes. Text has been added to the EIS at Section 3.3.4 to provide this information.

Comment: 014-40-1
A commenter is concerned about cumulative erosion and sedimentation impacts which could be caused by construction of Cylinder Storage Yard X-745H. The commenter notes that according to the Draft EIS, the cylinder storage yard would be constructed in an area characterized by steep slopes. The commenter also noted that the Draft EIS states, "During excavation and grading, the steep slopes would be more susceptible to soil erosion, and the streams at the bottom of the slopes may receive an increased amount of silt." The commenter stated that construction activities would be close to Little Beaver Creek, an impaired stream. Presently, siltation and sedimentation are two causes of the creek's impairment. Additional erosion and sedimentation from the construction of the cylinder storage yard could result in cumulative impacts to Little Beaver Creek. The commenter believed that Draft EIS did not perform a cumulative impact analysis for this case and that such an analysis should be included in the Final EIS.

Response: NRC evaluated the potential site preparation and construction impacts on Little Beaver Creek in Section 4.2.6.1 and reference the best management practices that would be implemented to maintain a small impact on Little Beaver Creek. In completing the cumulative impact analysis, NRC evaluated the other activities occurring on the Portsmouth reservation and their specific location as listed in Table 4-24, Other Activities Considered for Cumulative Impacts. No changes to the cumulative impact analysis are warranted, because no other large scale land disturbing activities with the potential to increase erosion or sedimentation in Little Beaver Creek were identified.

General Comments

Comment: 006-3
One commenter asked how anyone in government can make a claim that there will be no significant impacts from the facility given the disastrous history of the nuclear industry the last 60 years, and the contamination that exists at all the nuclear sites, which is costing billions to clean. The commenter stated that the legacy of radioactive contamination is now in the soil and water of the whole country. The commenter also stated that USEC's assertion that there will never be any kind of accident, or technical malfunction, or computer error, or human error, which will cause the release of radioactive materials is hard to believe. The commenter said that nuclear plants are dangerous and unnecessary. The commenter believes there are much better sources of energy which are not laden with all the dangers of nuclear power.

Response: The NRC staff recognizes that some commenters are opposed to the proposed ACP and to nuclear power. These comments are beyond the scope of the EIS.

Comment: 015-57
A commenter suggested adding "NRC Docket No. 70-7004" before the date on line 31 of page 4-123.

Response: The NRC staff has revised the text to reflect the commenter's suggestion.

Comment: 015-58
A commenter suggested changing "USEC, Inc." to "USEC Inc." on line 42 of page 4-123.

Response: The NRC staff has revised the text to reflect the commenter's suggestion.

Comment: 015-59
A commenter suggested changing "USEC,, Inc." to "USEC Inc." on line 46 of page 4-123.

Response: The NRC staff has revised the text to reflect the commenter's suggestion.

J.12 No-Action Alternative

No comments received on this section.

J.13 Mitigation

Comment: 014-40-2
A commenter commended NRC for proposing the use of best management practices to mitigate erosion and sedimentation impacts (e.g., silt fences, straw bales, re-seeding disturbed areas, etc.). The commenter requested that in addition, NRC should commit to evaluating significant characteristics for the Little Beaver Creek habitat (e.g., fish spawning periods, mussel locations), and conducting appropriate mitigation activities to preserve these characteristics. The commenter urged NRC to establish such mitigation commitments in the construction contracts for the proposed project, and to document these mitigation measures in the Record of Decision.

Response: Because the potential impacts on Little Beaver Creek are small, the development of additional mitigation measures beyond the best management practices identified by USEC in its Environmental Report are not warranted. NRC notes, that under the proposed Environmental Measurement and Monitoring programs, USEC would collect and analyze weekly and monthly surface water and sediment samples from Little and Big Beaver creeks, which would detect any significant changes in its characteristics. See Section 6.1.4, Surface Water and Sediment Monitoring, for details.

Comment: 015-60
A commenter suggested changing "United States Enrichment Corporation" to "USEC Inc." on lines 31 and 34 of page 5-4.

Response: The NRC staff has revised the text to reflect the commenter's suggestion.

J.14 Environmental Measurement and Monitoring Programs

Comment: PMT-007-3
A commenter noted that the correct formula for uranyl fluoride (page 6-3) is UO_2F_2 not UF_2.

Response: The NRC staff has revised the text to reflect the commenter's suggestion.

Comment: 014-33
A commenter noted that on page 6-3, line 14, the Draft EIS states that uranium isotopes anticipated to "be released as airborne emissions would include uranium-234, uranium-235, uranium-236, and uranium-238. The commenter asked that the Final EIS also include the isotopes of americium, neptunium, plutonium,

and technetium (listed on the bottom of page 3-31) that have been known emissions from the former Portsmouth Gaseous Diffusion Plant, which had uranium feed similar to what is anticipated for the ACP.

Response: The gaseous diffusion plants during their history processed feed from a variety of sources, resulting in the presence of the additional isotopes listed on page 3-31. USEC intends to use natural uranium in the form of UF_6 for the proposed ACP. The intention is to not introduce feedstock contaminated with significant concentrations of other nuclides into the process. Feed material that meets the American Standards for Testing and Materials specification for recycled feed may be used, and may contain radionuclides such as uranium-236 and technetium-99. Based on USEC's license application, no transuranic elements such as plutonium, americium, or neptunium are expected to be processed by the ACP in other than trace quantities. USEC does plan on analyzing effluents for technetium-99 because of the isotope's historic presence on the reservation. Analysis of expected dose from air releases of isotopes of the transuranic elements can not be performed in the EIS because there is no expected release source of the isotopes from the ACP.

Comment: 015-61
A commenter suggested revising bulletized item to read, "X-3001, X-3002, X-3003, and X-3004 Process Buildings;" on line 7 of page 6-3.

Response: The NRC staff has revised the text to reflect the commenter's suggestion.

Comment: 015-62
A commenter suggested revising bulletized item to read, "X-3356 and X-3366 Product and Tails Withdrawal Buildings;" on line 8 of page 6-3.

Response: The NRC staff has revised the text to reflect the commenter's suggestion.

Comment: 015-63
A commenter suggested revising the subtitle to read, "X-3001, and X-3002, and X-3004 Process Buildings" on line 4 of page 6-4.

Response: The NRC staff has revised the text to reflect the commenter's suggestion.

Comment: 015-64
A commenter suggested revising the sentence to read, "The X-3001, X-3002, X-3003, and X-3004 Process Buildings would..." on line 6 of page 6-4.

Response: The NRC staff has revised the text to reflect the commenter's suggestion.

Comment: 015-65
A commenter suggested revising the subtitle to read, "X-3356 and X-3366 Product and Tails Withdrawal Buildings" on line 25 of page 6-4.

Response: The NRC staff has revised the text to reflect the commenter's suggestion.

Comment: 015-66
A commenter suggested revising the sentence to read, "The X-3356 and X-3366 buildings would..." on line 26 of page 6-4.

Response: The NRC staff has revised the text to reflect the commenter's suggestion.

Comment: 015-67
A commenter suggested changing "012" to "013" on line 6 of page 6-6.

Response: The NRC staff has revised the text to reflect the commenter's suggestion.

Comment: 015-68
A commenter suggested changing "013" to "012" on line 7 of page 6-6.

Response: The NRC staff has revised the text to reflect the commenter's suggestion.

Comment: 015-69
A commenter suggested changing "United States Enrichment Corporation" To "USEC Inc." on line 34 of page 6-12.

Response: The NRC staff has revised the text to reflect the commenter's suggestion.

J.15 Cost-Benefit Analysis

Comment: 005-12
A commenter indicated that on Page 7-1, Section 7.1.1 costs of the Proposed Action are not clear and questioned if USEC would be responsible for the decontamination and decommissioning of the facilities once the life cycle is completed. The commenter stated that USEC is currently leasing the facilities from a federal agency and the EIS should make it clear if the federal government will be ultimately responsible for the decontamination and decommissioning of the facilities to be used by the ACP.

Response: USEC's total decommissioning liability includes both the total plant decommissioning and decontamination costs and the tails disposition costs. USEC presently intends to utilize a surety bond to provide financial assurance for decommissioning, pursuant to 10 CFR 70.25(f). The surety bond will provide an ultimate guarantee that decommissioning costs will be paid in the event USEC is unable to meet its decommissioning obligations at the time of decommissioning. The surety bond will require that the surety company will deposit any funds paid under its terms directly into either an external trust or a standby trust. However, USEC may choose to utilize alternate financial assurance funding methods. Upon finalization of the specific funding instruments to be utilized and at least 90 days prior to the commencement of enrichment operations, USEC will supplement its application to include the signed, executed documentation.

Comment: 015-70
A commenter suggested changing "United States Enrichment Corporation" to "USEC Inc." on lines 43 and 46 of page 7-10.

Response: The NRC staff has revised the text to reflect the commenter's suggestion.

J.16 Summary of Environmental Consequences

Comment: 015-71
A commenter suggested changing "3324" to "3346" on line 13 of page 8-4.

Response: The NRC staff has revised the text to reflect the commenter's suggestion.

Comment: 015-72
A commenter suggested changing "United States Enrichment Corporation" to "USEC Inc." on line 3 of page 8-5.

Response: The NRC staff has revised the text to reflect the commenter's suggestion.

J.17 List of Preparers

Comment: 008-1
A commenter asked for an explanation of the basis for regarding NRC's analyst for historic and cultural resources as qualified to analyze the impacts of the proposed ACP.

Response: The analyst meets the standards for archeology in The Secretary of the Interior's "Standards and Guidelines for Archeology and Historic Preservation" (48 FR 44716) and has conducted evaluations for historic and cultural resources for NEPA documents and other environmental studies since 1978. She has also conducted information gathering efforts with many American Indian tribes for a variety of infrastructure projects and has supported federal agencies in government-to-government consultations with federally-recognized tribes.

J.18 Appendices

Comment: PMT-007-4
One commenter noted that in Appendix B, page 1, the term uranium hexafluoride is misspelled.

Response: The NRC staff acknowledges the comment, however, Appendix B is a reproduction of correspondence that has already been completed.

Comment: 014-30
A commenter stated that throughout Appendix C the isotope list should include technetium and transuranic isotopes such as those listed on page 3-31 to reflect activities anticipated at the ACP.

Response: Technetium is included in the Appendix C analyses that deal with disturbance of existing sources such as on-site soil. The activity levels for the airborne sources in Appendix C were taken from the sampling results in the 2003 site environmental report, and technetium-99 is included as one of the isotopes identified by the site sampling. Isotopes of the transuranic elements were not listed as being detected in the soils at the locations of interest, such as the ambient air monitoring stations. These isotopes were accordingly not included in the calculations of dose resulting from soil disturbance. For the dose assessment from operations, USEC has stated in section 9.2.2 of their license application that they intend to use natural feedstock at the ACP that does not contain significant quantities of isotopes other than uranium-234, uranium-235, and uranium-238. USEC also intends to adhere to the American Society of Testing and Materials specification for recycled feed, which will limit the presence of other isotopes such as uranium-236 and technetium-99. Based on USEC's license application, no transuranic elements

such as plutonium, americium, or neptunium are expected to be processed by the ACP in other than trace quantities. The analysis accordingly did not include those isotopes in the airborne release inventory.

J.19 Other Comments

Accidents

Comment: 004-8
A commenter asked what the plans are for managing a radioactive accident at the facility?

Response: In the EIS, the impacts of selected potential accidents were evaluated to assess the potential human health impacts associated with accidents. The accident sequences selected vary in severity from high- to low-consequence events, and include accidents initiated by operator error and equipment failure. NRC regulations and USEC's operating procedures for the proposed ACP are designed to ensure that the high and intermediate accident scenarios would be highly unlikely. The NRC staff's Safety Evaluation Report assesses the safety features and operating procedures required to reduce the risks from accidents. The combination of Items Relied on for Safety that mitigate emergency conditions, and the implementation of emergency procedures and protective actions in accordance with the proposed Emergency Plan for the ACP, would limit the impacts of accidents that could otherwise extend beyond the proposed ACP boundaries. The Items Relied on for Safety include such measures as active and passive engineered controls.

Security/Terrorism Issues

Comment: PMT-014-3
One commenter claimed that uranium enrichment plants have a poor security history. The commenter identified the Urenco plant as being responsible for allowing the Con Network access to the centrifuge technology behind the enrichment programs of Pakistan, Iran, Iraq, and Libya. The commenter also noted that some of USEC's violation notices have involved lax control over classified computers.

Response: In accordance with the requirements of 10 CFR Part 95, USEC submitted to the NRC, as part of its license application, its plan for the protection of classified matter, including classified computers, at the ACP. The NRC's review of this plan is being documented in the NRC's safety evaluation report. As part of the NRC's process for approving the plan, prior to USEC's receipt of any classified matter at the ACP, the NRC will conduct an inspection to ensure that USEC will adequately implement the NRC's classified matter protection requirements and the commitments contained in the plan. In addition, during the time USEC possesses classified matter, the NRC will conduct periodic inspections to ensure that USEC is complying with the regulatory requirements and the commitments contained in the plan.

Comment: 004-9
A commenter questioned what assurances there are that this plant will not encourage a terrorist act in our own rural backyard?

Response: As stated in the Commission's Memorandum and Order CLI-02-241, although the NRC has determined that issues of terrorism in the context of NEPA should not be addressed, the NRC is devoting substantial time and attention to terrorism-related matters. For example, as part of fulfilling its mission to protect public health and safety and common defense and security pursuant to the Atomic Energy Act, *the NRC staff is conducting security assessments of commercial uses of radioactive material.*

Comment: 003-5
A commenter indicated that because the Envirocare facility is currently not able to accommodate the radioactive waste shipped to it and that there is no confidence that the waste generated by the USEC facility will ever be removed from the site. The commenter stated that this is an environmental hazard and creates a terrorist target in southeast Ohio.

Response: As described in section 2.1.4.3, the disposition of the depleted U_3O_8 generated from the DOE conversion facilities at Paducah and Portsmouth would be either at the Envirocare site (DOE's proposed disposition site) or at the Nevada Test Site (DOE's optional disposal site). Depleted U_3O_8 generated from the adjacent or offsite private conversion process would be disposed at a site licensed to accept this material. For example, under its Radioactive Materials License issued by the State of Utah, Envirocare is authorized to accept for disposal the quantities of depleted uranium oxides expected to be generated by the conversion of the proposed ACP's depleted UF_6 .

Comment: 003-5
A commenter noted that there is currently a 3-strand barbed wire fence surrounding the facility, which does not provide much assurance against potential terrorist entry to the facility.

Response: As stated in the Commission's Memorandum and Order CLI-02-241, although the NRC has determined that issues of terrorism in the context of NEPA should not be addressed, the NRC is devoting substantial time and attention to terrorism-related matters. For example, as part of fulfilling its mission to protect public health and safety and common defense and security pursuant to the Atomic Energy Act*, the NRC staff is conducting security assessments of commercial uses of radioactive material.*

Highly Enriched Uranium

Comment: PMT-017-3; **PMT-002-5**; **PMT-005-2**
Two commenters expressed concern over the use of centrifuge technology to manufacture weapons-grade material. One commenter stated that centrifuge technology is the very same technology the U.S. government is concerned about Iran possessing. One of the comments noted that the resulting environmental impacts would be extremely different and would change the whole impact of the plant. Another commenter questioned whether there is any possibility that this plant would manufacture materials at high enough concentrations for use in other applications, such as bomb manufacturing.

Response: The license application under review is limited to the construction and operation of a plant to enrich uranium up to 10 percent by weight of uranium-235, with an initial production capacity of 3.5 million SWUs potentially expandable to 7 million SWUs, using gas centrifuge technology. Any significant changes to this license would require prior approval by the NRC, and would be subject to additional review. As described in Section 1.2, page 1-2 of the EIS, the proposed ACP would produce only low-enriched uranium for shipment to commercial nuclear power fuel fabricators; expected product recipients are listed in Section 2.1.4.3, page 2-27. The production of highly-enriched uranium for the Department of Defense is not considered part of the proposed action and is not under consideration in the NRC licensing review (see Section 1.3.1).

Comment: PMT-007-1; PMT-003-7
One commenter stated that another commenter stated that the material was manufactured from 1954 to 1964 and the building was shut down around 1992. Another commenter indicated that production of the material did not actually cease until 1992.

Response: NRC appreciates the commenter's clarification of the time period during which highly enriched uranium was produced at the Portsmouth facility.

Violations

Comment: PMT-004-1
A commenter wondered if USECs previous violations were taken into account in the Draft EIS.

Response: NRC is aware of past violations. The EIS focuses on environmental impacts of the proposed action. Consideration of violations of the terms of the license are beyond the scope of this document. However, should a licensee violate the terms of its license, which includes compliance with all applicable laws and regulations pertaining to uranium enrichment operations and environmental protection, then the NRC, as the Federal oversight agency, may impose penalties, including financial and civil penalties and license revocation. Other Federal and State agencies can also impose requirements and penalties for violations of laws and regulations under their purview.

Historic and Cultural Resources

Comment -010-2-1: Commenter stated that the requirements of the National Historic Preservation Act were not followed when the DOE took part of his land in the 1950s. Commenter also states that his property should be eligible for inclusion in the National Register of Historic Places.

Response: These comments are acknowledged and do not provide significant new information relevant to this EIS.

Comment 010-3: Commenter stated that safety, security, and environmental fears could negatively impact public visitation to and appreciation of the historic sites surrounding the DOE reservation.

Response: These comments are acknowledged and do not provide significant new information relevant to this EIS.

Comment 010-4: Commenter suggested that the site would better serve the public as a historic memorial to both the passenger pigeon and to the various historically significant buildings that are found in the surrounding areas.

Response: This comment is acknowledged and does not provide significant new information relevant to this EIS.

Comment 010-5: Commenter described the historical significance of the Barnes Works, also known as the Seal Works.

Response: This comment is acknowledged and does not provide significant new information relevant to this EIS.

Comment 010-6: Commenter stated that her tribe was not contacted about the construction of the centrifuge plant and they want to be included as a consulting party.

Response: Information in the commenter's letter was included in Section 3.3.5. NRC attempted several times to reach the commenter's tribe to consult, but received no response.

Comment 010-7: Commenter stated that his tribe was not contacted about the construction of the centrifuge plant and they want to be included as a consulting party.

Response: NRC sent a letter and copy of the Draft EIS to the commenter and requested further input, but received no response.

J.20 Late Filed Comments

Just prior to publication of the Final EIS (from approximately March 3, 2006 to March 11, 2006), NRC received several comments concerning the possible discovery of a new prehistoric earthwork located near the main entrance to the DOE Reservation. A general summary of those comments, along with responses, is provided below.

Comment:
A commenter expressed concern about an apparent prehistoric earthwork located near the West Access road to the DOE reservation and next to a highway off-ramp where the commenter reports that work is scheduled to be conducted by the Ohio Department of Transportation. The commenter believes that the road work is being done in connection with the proposed ACP project and, therefore, that NRC must consider the effects of the work as part of the undertaking under consideration in the EIS.

Response: NRC queried the applicant, USEC, and was informed that USEC had not requested improvements to the off-ramp or the West Access road. USEC stated that the Ohio Department of Transportation had informed them of the work in advance to allow time for access to be established via an alternate route. USEC indicated that it understood the work to be maintenance based on Ohio Department of Transportation inspection records, and noted that repavement south of the cloverleaf took place two years ago and, north of the cloverleaf, last year. NRC contacted the Ohio Department of Transportation and verified that its work in the area was unrelated to the proposed ACP. Based on this information, NRC finds that the Ohio Department of Transportation work is not part of its undertaking and that the highway off-ramp and road outside the DOE reservation is not part of the area of potential effects to be considered in assessing impacts of the undertaking on historic properties.

Comment:
A commenter expressed concern about traffic accidents that might affect an archaeological site in the location of the possible prehistoric earthwork location, specifically an accident involving release of radioactive materials that would require soils cleanup that would adversely affect an archaeological site.

Response: The EIS analyzes the effects of transportation related to the proposed ACP during construction and operations in section 4.2.11. Current (2004) daily trips on U.S. Route 23 and State Road 32 average 15,110 and 8,830, respectively (see Table 4-5). ACP construction would generate 2,639 daily highway trips and operations would generate 1,137; the bulk of these trips would be workers in cars, while daily truck trips would average 27 during construction and 24 during operations (see Tables 4-5 and 4-9). The likelihood of accidents involving ACP-related trucks occurring anywhere along the transportation routes is small, resulting in an estimated 3.61 injuries per year during construction and less than one per year during operations (see Tables 4-8 and 4-11).

The likelihood of an accident involving the release of radioactive material that might affect an archeological site near the location of the possible prehistoric earthwork location is small. It is estimated that there will be approximately 1,565 truck shipments of radioactive material per year, including feed material cylinders, product material cylinders, heel cylinders, and radioactive waste. Assuming an

accident rate of 3×10^{-7} accidents per vehicle per km (see Table D-8), there is estimated to be an average of 0.005 accidents per year involving a radioactive material shipment along a ten kilometer stretch of road near the prehistoric earthworks, or about one accident every 200 years. Only a fraction of these accidents would involve the release of any radioactive material. If an accident were to occur, it is estimated that there is a 55 percent probability that no radioactive material will be released, a 36 percent probability that only 1 percent of the radioactive material will be released, a 7 percent probability that 10 percent of the material will be released, and only about 2 percent that all the radioactive will be released (see Tables D-9 and D-11).

Comment:
A commenter expressed the opinion that a reported discovery of a prehistoric earthwork next to the West Access road to the DOE reservation would trigger the Native American Graves Protection and Repatriation Act provisions for inadvertent discoveries on Federal lands and would require NRC to notify those tribes with whom it had consulted who requested to be notified if any Native American Graves Protection and Repatriation Act items were encountered during construction.

Response: NRC notes that the reported discovery is not on Federal lands and that the proposed ACP is not under construction. The commenter asserts that the area of the reported discovery is beside a highway exit ramp where a large number of trucks will pass. As indicated in the response above, the location of the reported discovery does not fall within the area of potential effects of NRC's licensing activity. The previous response summarizes the transportation impacts and accidents associated with ACP construction and operations as analyzed in the EIS. It should be noted that the commenter's numerical count of trucks is incorrectly attributed to the ACP; it applies to current (2004) daily traffic counts on U.S. Route 23 and State Route 32 (see Table 4-5).

J.21 References

(DOE, 2004a). U.S. Department of Energy. "Final Environmental Impact Statement for Construction and Operation of a Depleted Uranium Hexafluoride Conversion Facility at the Portsmouth, Ohio Site." DOE/EIS-0360. Office of Environmental Management. June 2004.

(DOE, 2004b). U.S. Department of Energy. "Portsmouth Annual Environmental Report for 2003." DOE/OR/11-3153 & D1. Office of Environmental Management. June 2004.

(ERDA, 1977). Energy Research and Development Administration. "Final Environmental Statement, Portsmouth Gaseous Diffusion Plant Expansion, Piketon, Ohio." ERDA-1549. September 1977.

(NRC, 2005). U.S. Nuclear Regulatory Commission. Commission Order CLI-05-05. January 18, 2005.

(ODR, 2205). Ohio Department of Natural Resources. "100-Year Flood Hazard Areas - Pike County." 2005. <http://www.dnr.state.oh.us/gims/report.asp> (Accessed 6/8/2005).

(USEC, 2005a). United States Enrichment Corporation. "Responses to Request for Additional Information on the Environmental Report, AET-05-0061." July 29, 2005.

(USEC, 2005b). USEC Inc. "Environmental Report for the American Centrifuge Plant in Piketon, Ohio." NRC Docket No. 70-7004. Revision 6. November 2005.

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APPENDIX K
PUBLIC COMMENT LETTERS AND TRANSCRIPT

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9/8/05
70 FR 53396

(1)

From: <Vjcimprich@aol.com>
To: <nrcrep@nrc.gov>
Date: Mon, Oct 3, 2005 12:26 PM
Subject: DOCKET NUMBER: 70-7004.

To the Nuclear Regulatory Commission:

001-1 This is to convey that I and my household are opposed to a new uranium enrichment plant at Piketon, Ohio. The benefits being touted seem to me nowhere near the damage and potential damage to the community and beyond.

Sincerely,

Vickie Cimprich
John Cimprich
331 Highland Avenue
Ft. Mitchell, KY 41017

CC: <aegran@yahoo.com>, <kbaker@zslaw.com>, <pbarnes44@comcast.net>, <becher@fuse.net>, <CPEDRO76@aol.com>, <dcimprich@seacove.net>, <jcimpric@bright.net>, <srdorothy@insightbb.com>, <hmmayfield@fuse.net>, <jimvogt2@yahoo.com>, <letters@enquirer.com>, <paolucci@one.net>, <msnruscov@yahoo.com>, <kpls@msn.com>, <postedits@cincypost.com>, <rainey531@juno.com>, <Mia.Schmitt@oh.etest.com>, <mhstein@one.net>, <tsuit@challengernky.com>

SISP Review Complete
Template = ADM-013

E-RIDS = ADM-03
Add = M. Blevins (MXB6)

Mail Envelope Properties (43415BB0.0E6 : 8 : 57574)

Subject: DOCKET NUMBER: 70-7004.
Creation Date: Mon, Oct 3, 2005 12:25 PM
From: <Vjcimprich@aol.com>

Created By: Vjcimprich@aol.com

Recipients
nrc.gov
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NRCREP

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tsuit CC

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Files	Size	Date & Time
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Mime.822	2547	

Options

Expiration Date:	None
Priority:	Standard
Reply Requested:	No
Return Notification:	None

Concealed Subject: No
Security: Standard

9/8/05
70FR53396
(3)

OHIO HISTORY

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October 5, 2005

Ron Linton
Environmental and Performance Assessment Branch
Nuclear Regulatory Commission
Washington, DC 20555-0001

Re: Draft Environmental Impact Statement, Docket No. 70-7004, American Centrifuge Commercial Plant Portsmouth Gaseous Diffusion Plant (PORTS), Pike County, Ohio

Dear Mr. Linton,

This is in response to correspondence from your office dated September 6, 2005 (received September 9) providing a copy of the Environmental Impact Statement for the Proposed American Centrifuge Plant in Piketon, Ohio, Draft Report for Comment, U.S. Nuclear Regulatory Commission, dated August 2005, regarding the above referenced project. The comments of the Ohio Historic Preservation Office (OHPO) are submitted in accordance with provisions of the National Historic Preservation Act of 1966, as amended (16 U.S.C. 470 [36 CFR 800]); the Department of Energy serves as the lead federal agency.

The draft Report provides detailed discussions of many factors under consideration during the review for the proposed project. Our comments are intended to provide some clarification regarding the discussions of cultural resources. We are substantially in agreement regarding consideration of cultural resources. The differences in phrasing and interpretation, and clarification recommended, should not be interpreted as disagreement.

002-1

Throughout the discussions of cultural resources and consultation with the Ohio Historic Preservation Office, the Report offers the impression that there is concurrence that there will be no historic properties affected by the proposed and cumulative project development. The inset table on Page xxii defines "Small" as "...effects that are not detectable or are so minor that they would neither destabilize nor noticeably alter any important attribute of the resource." In Table 2-7 (Page 2-38), the report presents the finding that the impacts to historic and cultural resources would be small. This finding is repeated in Table 2-8 (Page 2-50). On Pages 4-5 and 4-6, the report states that there is concurrence with this office on a finding of "no effect" for the undertaking and that the impacts would be "SMALL". It was the intent of our correspondence, specifically our letter dated May 20, 2004, to set forth as part of ongoing consultation our interpretation that the proposed project would not adversely affect historic properties. That is, there are historic properties in the Area of Potential Effects, but the proposed project will not diminish the qualities and characteristics that make them significant. We believe that the changes will be noticeable. In some ways we feel that the immediate impacts from the proposed undertaking are perhaps more along the lines of MODERATE as compared to SMALL impacts. From a philosophical perspective, as the Gaseous Diffusion technology is replaced there will be changes to the Cold War buildings but since science is not static we shouldn't expect our recognition of significance based on science and technology to require static preservation.

E-RIDS = ADM-03
Add = M. Blevins (MXB6)

SISP Review Complete

OHIO HISTORICAL SOCIETY
Ohio Historic Preservation Office
567 East Hudson Street, Columbus, Ohio 43211-1030 ph: 614.298.2000 fx: 614.298.2037
www.ohiohistory.org

Template = ADM-013

002-2

Also, here are some additional points for consideration. On Page 2-42, the Report states that Alternate Locations B and C within the Reservation were graded during construction of the Gaseous Diffusion facility. From my limited understanding of this area, it appears to me that the majority of both of these areas lie outside of the area that was severely disturbed by previous construction. In my opinion, the lack of severe disturbance throughout the entirety of Alternate Locations B and C increases concerns for historic preservation, and likely for other factors as well, and thus the lack of severe disturbance further supports your selection of Location A as the preferred site for the undertaking.

002-3

The Report provides information on the size of the Reservation in several places and it appeared to me that the numbers aren't always the same. For instance, on Page 2-2 the Reservation is described as encompassing 3,700 acres with 1,300 acres inside the perimeter loop road while on Page 3-1 (and also see Page 3-5) the report states that within the Reservation there are 750 security-fenced acres with 550 acres in the central area surrounded by the Perimeter Road.

On Page 3-7, the Report states that an initial archaeological survey of the DOE reservation was completed in 1952 and reportedly found no evidence of archaeological materials with reference to a 1977 Environmental Impact Statement. Is it possible to obtain a copy of relevant portions of this 1977 document? It might be helpful to include copies of selected portions in the final EIS report for this undertaking. It can be difficult to compare meaningfully work completed in 1952 when there was no authority to take into account affects of undertakings on historic properties with work being conducted today (and since 1986) under authority of the National Historic Preservation Act of 1966, as amended, and its implementing regulations at 36 CFR 800.

002-1

There are several places where the Report refers to sites, buildings, structures, and districts with potential National Register eligibility. For instance, the Report states that identified archaeological sites that have not yet been fully evaluated for National Register eligibility (and refers to them as potentially eligible) be treated as eligible for inclusion in the National Register (Page 4-5 – inset text box). There are also references to the potentially eligible Barnes House and potentially contributing elements within the historic district. We believe that there is a slight and subtle shift in the meaning of the word potential differentiating potential effects and potential impacts from potential significance and potential eligibility, and that this shift in meaning could lead to some confusion if not clarified. Regarding the 14 identified archaeological sites that have not been fully evaluated for National Register eligibility, we suggest that you consider language that establishes the specific measures that will be taken to protect the sites from effects during this undertaking until such time as sufficient information is available to complete the evaluation. That is, treat them as archaeological sites that are being protected not as historic properties that are being protected. For the Barnes House, and for the listed Scioto Township Works I archaeological site, assess the potential for the undertaking to have effects based on those qualities and characteristics that are known and understood to contribute to the importance of these properties recognizing that we may have a better understanding of these properties in the future.

The Report carefully considers the use of existing wells and finds that this will not result in changes to the ground around the wells and will not result in increased maintenance activities around the wells that has the potential to adversely affect historic properties. If the wells immediately west of the Reservation are on an embankment that is part of an earthwork complex dating to some 2,000 years ago and if this archaeological site meets National Register criteria, we would agree with your inclusion of this area with the project's finding, that the use of the existing wells will not adversely affect historic properties, provided that sufficient safeguards and conditions are in place to continue consultation if future work is proposed

around these wells, or becomes necessary around these wells, that would have the potential to adversely affect historic properties. We recommend that you develop appropriate conditions to provide for preservation the areas around the wells until such time as these areas can be more fully evaluated.

002-4

The Report carefully considers the potential impacts from increased vehicular traffic and finds that the increased traffic will be small and will not introduce adverse effects. Within the limits defined in the Report, we agree with this finding provided that appropriate conditions are developed to reopen consultation if vehicular traffic increases above this level or if new construction of roads or railroads becomes necessary as a direct and foreseeable consequence of the development of this project.

002-1

In general we are in agreement the conclusions and findings presented in the Report. Within the integrated National Environmental Policy Act review process, this reaffirms our interpretation that the proposed American Centrifuge Plant undertaking will not adversely affect historic properties. There are some places in the Report where it would be helpful for the documentation to provide greater clarity and to provide greater precision to facilitate the integration the discussions on archaeological sites, architectural properties, and other kinds of cultural resources within the overall assessment of effects. It would also be helpful to reinforce language that establishes conditions to restrain effects from rising to adverse levels.

Any questions concerning this matter should be addressed to David Snyder at (614) 298-2000, between the hours of 8 am. to 5 pm. Thank you for your cooperation.

Sincerely,

David Snyder

David Snyder, Archaeology Reviews Manager
Resource Protection and Review

DMS/ds (OHPO Serial Number 1002038)

Enclosed: OHPO letter dated May 20, 2004
OHPO letter dated November 17, 2003

xc: Geoffrey Sea, 1832 Wakefield Mound Road, Piketon, OH 45662
Karen Kanlatobe, Absentee Shawnee Tribe of Oklahoma, 2025 S. Gordon Cooper Drive, Shownee, OK 74801-9381

Ohio Historic Preservation Office

567 East Hudson Street
Columbus, Ohio 43211-1030
614/ 298-2000 Fax: 614/ 298-2037

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OHIO HISTORICAL SOCIETY
SINCE 1885

May 20, 2004

Peter J. Miner
USEC, Inc.
6903 Rockledge Drive
Bethesda, MD 20817-1818

Re: Installation and Operation of the American Centrifuge Commercial Plant
Portsmouth Gaseous Diffusion Plant (PORTS), Pike County, Ohio

Dear Mr. Miner,

This is in response to correspondence from your office dated March 2, 2004 (received March 5) regarding the above referenced project. The comments of the Ohio Historic Preservation Office (OHPO) are submitted in accordance with provisions of the National Historic Preservation Act of 1966, as amended (16 U.S.C. 470 [36 CFR 800]); the Department of Energy serves as the lead federal agency.

Your correspondence offers the position that the proposed new construction will include buildings of similar design and size to the nearby buildings and that there will be similar functions carried out in these new buildings. Although not specifically stated in your correspondence, it appears that your discussion is to conclude that the qualities and characteristics that make PORTS significant will not be diminished by the proposed new construction. While we believe that clarification of those qualities that make PORTS significant would be helpful, given the available information on the size, design, and function of the existing and the proposed buildings, we are able to offer our opinion that the proposed project will not adversely affect the Portsmouth Gaseous Diffusion Plant historic property.

As you are aware, private citizens have raised concerns about the potential for this project to affect historic properties, including prehistoric archaeological sites. The National Historic Preservation Act strongly encourages federal agencies to include comments and concerns from the public throughout the Section 106 review process. It is our understanding the area of proposed new construction has been previously severely disturbed by previous construction, that the topsoil in this area was removed to a depth well into the subsoil and the contours were completed regraded during previous construction. However, we believe that it is an important responsibility to listen carefully to public concerns and to provide thoughtful and sensitive responses.

Any questions concerning this matter should be addressed to David Snyder at (614) 298-2000, between the hours of 8 am. to 5 pm. Thank you for your cooperation.

Sincerely,

Mark J. Epstein, Department Head
Resource Protection and Review

MJE:DMS/ds (OHPO Serial Number 100903)

xc: Gary S. Hartman, DOE - Oak Ridge, P.O. Box 2001, Oak Ridge, TN 37831

-- Ohio Historic Preservation Office

567 East Hudson Street
Columbus, Ohio 43211-1030
614/ 298-2000 Fax: 614/ 298-2037

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OHIO HISTORICAL SOCIETY
SINCE 1885

November 17, 2003

Russell J. Vranicar, Acting Site Manager
U.S. Department of Energy, PORTS
Portsmouth Site Office
P.O. Box 700
Piketon, OH 45661-0700

Re: Review of report, Testing at site 33-PK-210
Portsmouth Gaseous Diffusion Plant, Scioto Township, Pike County, Ohio

Dear Mr. Vranicar,

This is in response to correspondence from your office dated September 19, 2003 (received September 24) transmitting the report titled "Phase II Archaeological Testing at Site 33PK210, Scioto Township, Pike County, Ohio" by Christopher M. Hazel, July 2003. The comments of the Ohio Historic Preservation Office (OHPO) are submitted in accordance with provisions of the National Historic Preservation Act of 1966, as amended (16 U.S.C. 470 [36 CFR 800]); the Department of Energy serves as the lead federal agency.

The archaeological testing was restricted to the portion of site 33-PK-210 on Department of Energy property. It appears that more than half of the site extends south of Department of Energy property. The testing included background review, pedestrian walk-over, and shovel testing. Although the extent of site exposed through a combination of shovel testing, excavation units, and auger testing was quite small, we agree that the research design was sufficient to identify any pattern of artifacts or features within the tested portion of the site. We agree with the conclusions that no sensitive archaeological deposits were identified in the tested portion of site 33-PK-210 and that no further archaeological investigations are warranted within this portion of the site. We do not concur that sufficient testing has been conducted to conclude that the entire site doesn't meet the criteria for National Register eligibility. Given the modest assemblage recovered from site 33-PK-210 we do not believe that additional testing at this site is a preservation priority. Assuming that all development within PORTS takes place north of the fence line marking the southern boundary of the tested portion of the site, we concur that no further archaeological testing at site 33-PK-210 is necessary and that no further coordination with this office is necessary for this site.

Any questions concerning this matter should be addressed to David Snyder at (614) 298-2000, between the hours of 8 am. to 5 pm. Thank you for your cooperation.

Sincerely,

David Snyder

David Snyder, Archaeology Reviews Manager
Resource Protection and Review

DMS:ds

xc: Gary Hartman, DOE - Oak Ridge, P.O. Box 2001, Oak Ridge, TN 37831
Kristi Wiehle, DOE – PORTS, P.O. Box 700, Piketon, OH 45661-0700

From: "Elisa Young" <elisay@earthlink.net>
To: <NRCREP@nrc.gov>, "Yawar Faraz" <YHF@nrc.gov>, "Matt Blevins" <mxb6@nrc.gov>
Date: Tue, Oct 25, 2005 12:12 AM
Subject: Fw: ACP DEIS comments

In addition to the questions I sent regarding Envirocare's off-site waste accumulation, I sent an e-mail to the NRC prior to the deadline questioning if the additional DU generated by USEC would be enough to request additional EIS consideration. I believe UDS processing did not have EIS done originally because it was deemed to be of no significant impact. I had asked the DOE before if the additional 200,000 tons from USEC and/ or shipments to Ohio as outlined in LES proposed facility's application, would be sufficient to trigger additional EIS consideration and I was told that it would be. I did not hear a response back from the NRC prior to the 10/24 deadline, only that the person I sent it to was out of town and returning the day after EIS deadline for comments, so I will attach and re-send.

003-2

I have been having trouble with my computer. Can you please confirm that you received these by the deadline and that they will be given consideration for the DEIS?

Thank you,
Elisa Young

COMMENTS ON DEIS NUREG-1834

1. Decontamination and decommissioning costs - In table 7-1 it estimates decontamination and decommissioning costs to be $435 million. There is not a breakdown in the appendix of how this figure was determined and more investigation needs to be done and shared with the public. Taxpayers have almost totally funded these costs for the former facility's operation at the DOE site to the tune of $300,000,000 (million) annually. The figure provided in this table would not be sufficient. USEC is a private business, generally believed to be in poor financial standing, that recently laid off 150 employees. Approximately the same number of "new" jobs we have been told will be employed in Pike County by the new facility. Taxpayers need solid assurance that we will not be left holding the bag if the facility is shut down, or does not have sufficient funding set aside to cover D&D costs and long term storage and monitoring of radioactive waste it is responsible for generating. How much taxpayer funding is currently being spent to do this work at Paducah and other sites? $435 million does not reflect the reality of what we are seeing at Piketon. It is grossly inadequate. Since the DOE owns the site that USEC would be operating from, if the company folds, taxpayers would be left with this expense and that is unacceptable.

003-3

This table also does not include any cost analysis for long term waste storage. Serious consideration needs to be given and provision made in advance as this is the most expensive cost involved in D&D. The $300 million taxpayers are currently paying for clean-up does not even begin to touch long-term storage, monitoring, and safety precautions. I asked the DOE for a total of how much taxpayer funding has been spent to date on clean-up, but have never received that information.

003-4

The report lists Envirocare as being able to accept unlimited amounts of low-level waste. This contract needs to be signed in advance and paid for. Envirocare is currently accepting so much radioactive waste that they cannot accommodate it - it is being stacked by the side of the road and left for processing. I do not have confidence that by the time this waste is ready to be shipped from Piketon and all of the other sites that are utilizing this landfill have sent what they have there that there will be enough space to accept what USEC would generate and Ohio would be left in the same position it's in now - a stockpile of radioactive waste. This is an environmental hazard and creates a terrorist target in SE Ohio. I sent questions on this earlier to the NRC and was told that the correspondence would be included for consideration in the DEIS, so I won't repeat all of the questions I sent previously.

003-5

2. Water resources- The last published DOE annual report for site cleanup progress documented

003-6 plutonium contamination and several uranium isotopes found in fish sampled in streams known to be fishing holes for local people - all supposedly at "safe" consumption levels. I had not known previously that there was a safe level of plutonium for human consumption. Uranium was also found in the liver of a deer that had been tested from on site. Currently there is a 3-strand barbed wire fence surrounding the

003-5 facility. This is not sufficient to keep contaminated water traveling off site, or keeping deer and other wildlife from traveling back and forth, even though the deer hunt was canceled that year. Not much against assurance against potential terrorist entry, either.

A resident that I spoke with told me that he had seen eagles returning to the area, flying over the site boundaries, and feeding from radioactive landfills. What protection is being provided for them, and for people in communities where they may travel off site aside from hunting to die, leaving radioactive contamination to accumulate off-site?

003-7 The draft states that groundwater withdrawals would increase by 10 percent over current usage rates, where is it being released? It says that USEC does not anticipate any liquid discharges or radioactive materials from the proposed ACP. What protection or provision is being provided in case of unplanned releases, etc., that may contaminate the water and wildlife traveling on and off-site differently than what was done before? It was apparently inadequate and needs to be addressed. The barbed-wire fence isn't working. Does this study take into account the current level of contamination and that what USEC contributes will be additional?

3. Transportation impacts - With the US having only 2% of the worlds uranium reserves, I believe any meaningful examination of transport of this material needs to include transportation of uranium to the USEC facilitiy from overseas sites it would be coming here from. We had a shipment of uranium for Libya a short time ago and when I asked why this was not included in the EIS for the facility, or UDS facility, they

003-8 said it was shipped here as a matter of national security and was exempt from that process. Without environmental impact consideration, I believe presents a threat to the security of the communities it is transported across. I know that NRC provides waivers in cases of national security, but if we already know that there is a limited amount of uranium to work with in the US, I believe it is safe to assume some will be coming from overseas, and these impacts need to be considered in the overall picture. I don't see adequate analysis of this in the current DEIS.

I live in an area where coal fired power plants are negatively impacting my community. What electricity is

003-9 going to be required for USEC's operation? Is EIS being done for our communities from coal-fired power plants? We already have high rates of asthma and cancer. The Gavin plant has been convered to residential use and is no longer available. The first centrifuge took the same amount of electricity to operate as the city of Los Angeles. Where will the energy come from to run ACP, who is paying for it's construction costs, and how will it's operation impact those communities?

No license should be granted for the larger-scale commercial facility under any circumstances until the

003-10 experimental facility has been constructed, is operating, and proven to be safe and within a realistic budget that USEC can adhere to so that taxpayers are not forced to subsidize private industry. All D&D and long term storage costs should be paid into an account in advance to insure USEC covers these costs.

003-11 I have not been able to read through the entire DEIS, and would like additional time to look at the document and submit comments if that is possible.

Elisa Young
48360 Carmel Road
Racine, Ohio 45771

Mail Envelope Properties (435DB0A6.9A8 : 12 : 63912)

Subject: Fw: ACP DEIS comments
Creation Date: Tue, Oct 25, 2005 12:12 AM
From: "Elisa Young" <elisay@earthlink.net>

Created By: elisay@earthlink.net

Recipients
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NRCREP

nrc.gov
twf4_po.TWFN_DO
YHF (Yawar Faraz)
MXB6 (Matthew Blevins)

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Mail		
Mail		
Mime.822	43292	

Options
Expiration Date: None
Priority: Standard
Reply Requested: No
Return Notification: None

Concealed Subject: No
Security: Standard

From: "Elisa Young" <elisay@earthlink.net>
To: "Yawar Faraz" <YHF@nrc.gov>, "Matt Blevins" <mxb6@nrc.gov>
Date: Thu, Oct 6, 2005 11:41 AM
Subject: Envircare/Piketon waste issues

Yawar/Matt:
When I read the transcript of the conversation between Utah Division of Radiologic Control and the Nuclear Regulatory Commission stating that Envirocare was now able to legally accept unlimited amounts of uranium tails/uranium oxides from Piketon, I wrote to the NRC questioning this.

You confirmed that there is no regulatory limit on Envirocare for the total volume of this waste.

This article was forwarded to me from the front page of the Salt Lake City Tribune.

http://www.sltrib.com/search/ci_3077850

003-5 Envirocare is receiving so much nuclear waste at this point that they cannot process it, and it is sitting along the side of the road.

Does this violate any department of transportation, storage or other NRC regulations? If not, this needs to be addressed.

In our earlier conversation, you said that applicants are not required to have long-term waste storage contracts in place as part of NRC's licensing process. For approval, the company need only list a site that is accepting the waste.

The Department of Energy stated at a public meeting last year that Envirocare is the site UDS chose to send close to 1 million tons of uranium oxide waste from their DUF6 waste processing facility. They told me that they would provide me with a copy of the letter of acceptance from Envirocare at the meeting, but after repeated requests I have still not received that.

USEC's proposed ACP facility currently under NRC licensing consideration would create approximately 200,000 tons of uranium tailings - also to be sent to Envirocare?

003-1-3 How many facilities, and how much total waste, existing and proposed is currently slated for shipment to Envirocare?

Even if the NRC does not have a regulatory limit, can Envirocare accomodate the total volume of waste being sent (or proposed to send)?

003-2 At what volume/threshold can we request environmental impact studies?

003-1-1 The transcript of the conversation that I read between the NRC and UDRC included calculations for eventual discharges into the Great Salt Lake, that Envirocare did not have to comply with the usual water regulations because the ground water was not potable beneath the landfill, and that Envirocare did not have to comply with agriculture regulations because it was not surrounded by agricultural activity (even though the transcript documented livestock grazing seasonally - I would assume for human consumption - around the perimeter of the landfill).

According to the article below, the existing waste is not just coming from Piketon, Ohio. The general public does not have access to all of the applications currently under licensing consideration with the NRC.

003-1-2 In light of this, the NRC has a responsibility to take inventory of this situation immediately.

Envirocare should not be rubber stamped as being a feasible option for long-term storage of nuclear waste for USEC's ACP licensing - or any other proposed facilities - until this inventory is taken and that information is available to the public for public comment and input.

http://www.sltrib.com/search/ci_3077850

Sincerely,

Elisa Young

48360 Carmel Road

Racine, Ohio 45771

CC: "Diane D'Arrigo" <dianed@nirs.org>, "Michael Mariotte" <nirsnet@nirs.org>, "Pat Marida" <marida@wideopenwest.com>, "Ewan Todd" <ewan@mathcode.net>, "jean puchstein" <puch2_1999@yahoo.com>, "Deborah Baker New" <deborahbaker@care2.com>, "Bill Price" <bill.price@sierraclub.org>, <marilyn.wall@env-comm.org>, "Earl Clausson" <earlclausson@yahoo.com>

From: "Elisa Young" <elisay@earthlink.net>
To: "Matt Blevins" <mxb6@nrc.gov>, "Yawar Faraz" <YHF@nrc.gov>
Date: Fri, Oct 21, 2005 2:17 PM
Subject: Tailings

I am reading through the DEIS, and see that it lists the additional tailings generated by ACP would be processed on site.

003-2

Has this already been approved? When we attended the last public meeting with DOE/USEC, we asked if the conversion facility EIS had been done just for the waste on site, or the additional that would be generated. Bill Murphy said it was just for what was currently accumulated. I asked if the additional 200,000 tons either from Ohio or New Mexico (in LES application) would be enough to trigger an additional EIS since the conversion facility is not even built and proven to operate safely yet. Mr. Murphy said that volume could trigger another EIS if we requested.

I would like to request an EIS be done. If there is a formal process or another person I need to address this request to, please send me that information before the opportunity to request it passes.

Elisa Young

From: Elisa Young [elisay@earthlink.net]
Sent: Tuesday, October 25, 2005 11:53 AM
To: Yawar Faraz; Matt Blevins
Cc: Pat Marida; Lindsay Lovejoy; Michael Mariotte; Ewan Todd; Deborah Baker New; LORRY SWAIN; KateKerr@aol.com; Vina Colley; Johanson; Carol Rainey; Bill Price
Subject: Re: Notice of availability of NRC's Draft EIS for USECInc.'sAmerican Centrifuge Plant

Yawar/Matt:

003-2 In the e-mail that I sent last week I asked what we need to do to request an EIS on the additional DU tailings that would be generated. On top of what is already stored on site at Piketon, USEC and LES are both proposing in their licensing applications that the additional waste they would generate be processed by the UDS facility.

There was never an EIS done, just a finding released of no significant impact based on the original volume that existed on site. I asked Bill Murphy at a public meeting almost a year ago if the additional waste from either USEC or LES would be sufficient to trigger an EIS, and he said yes.

Many of us feel that the existing waste and the potential additional stockpile of radioactive waste generated by USEC and/or LES requires EIS before licensing of either facility is granted approving storage and processing at the UDS facility. The facility is not operating yet, so we don't know how that will work, and there are already over 300,000 tons sitting on site in deteriorating cylinders waiting for processing.

The additional waste poses potential risk to the community where it will be stacked, the communities the waste will be transported through, as well as a risk to taxpayers if we end up getting stuck footing the bill for processing, transport and storage should things fall through and advanced funding is not set aside to cover these costs. This deserves consideration.

I am requesting public meetings to discuss this and work on EIS before licensing is granted for either USEC or LES.

Elisa

----- Original Message -----
From: "Yawar Faraz" <YHF@nrc.gov>
To: <elisay@earthlink.net>
Cc: <vcolley@earthlink.net>; <ewan@mathcode.net>; "Matthew Blevins" <MXB6@nrc.gov>; <marida@wideopenwest.com>
Sent: Tuesday, October 25, 2005 12:20 PM
Subject: Re: Notice of availability of NRC's Draft EIS for USECInc.'sAmerican Centrifuge Plant

Elisa, your comments were received and will be considered. Yawar

>>> "Elisa Young" <elisay@earthlink.net> 10/25/05 1:25 AM >>>
I wanted to double check on DEIS comment deadline.

The notification below said the deadline to submit comments is October 24.
There was no time given. I work second shift and was not able to submit comments until close to 11:58 pm, with the assumption that anytime before midnight was accepted - same as for scoping comments.

Please let me know if my comments were received for consideration.

Thanks,
Elisa Young

----- Original Message -----
From: "Yawar Faraz" <YHF@nrc.gov>
To: <GeoffreySeaNYC@aol.com>; <KateKerr@aol.com>; <Mwren@aol.com>; <SargentsPigeon@aol.com>; <Kloecker@att.net>; <JMalherek@citizen.org>; <elisay@earthlink.net>; <VColley@earthlink.net>; <AnchorBrothers@fuse.net>; <Jfriedland@fuse.net>; <Lightheart@fuse.net>; <VCB@fuse.net>; <DebrBaker@hotmail.com>; <minterdj@intelliwave.com>; <Lindsay@lindsaylovejoy.com>; <Ewan@mathcode.net>; <NIRSNET@NIRS.ORG>; <Friedman@stat.ohio-state.edu>; <LPStansbery@wideopenwest.com>; <marida@wideopenwest.com>; <friendlygardener@yahoo.com>; <Mary_Elisa_Young@yahoo.com>; <PUCH2_1999@yahoo.com>
Cc: "Brian Smith" <BWS1@nrc.gov>; "Francis Cameron" <FXC@nrc.gov>; "James Clifford" <JWC@nrc.gov>; "Marian Zobler" <MLZ@nrc.gov>; "Matthew Blevins" <MXB6@nrc.gov>
Sent: Thursday, September 01, 2005 4:49 PM
Subject: Notice of availability of NRC's Draft EIS for USEC Inc.'sAmerican Centrifuge Plant

This email is to inform you that the NRC has completed its preliminary environmental review and is in process of distributing its Draft Environmental Impact Statement (DEIS) for the USEC Inc. license application for the American Centrifuge Plant (ACP) proposed to be constructed and operated in Piketon, Ohio.

The DEIS may be accessed on the Internet at: http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/ by selecting "NUREG-1834."

Paper copies of the DEIS are being mailed to those previously on the distribution list.

The official comment period begins on September 9, 2005, and ends on October 24, 2005.

Yawar Faraz
Sr. Project Manager
Gas Centrifuge Facility Licensing Section
Special Projects Branch
Division of Fuel Cycle Safety and Safeguards
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
Washington DC 20555
ph: 301-415-8113
e-mail: yhf@nrc.gov

59 Elmwood Place
Athens, Ohio 45701

October 24, 2005

Chief, Rules and Directives Branch
Division of Administrative Services
Mailstop T-6D59
U.S. Nuclear Regulation Commission
Washington, D.C. 20555-0001

Dear NRC representative,

I would like to submit comments on the Piketon Uranium Enrichment Plant in Piketon, Ohio.

004-1 Firstly, I found little in the way of independent investigation in the DEIS, and little to open the details of the project to public scrutiny from under classified information and proprietary information.

004-2 There is concern that the NRC staff has been negligent under 40 CFR 1503, not responding in a satisfactory manner to the scoping comments submitted by opponents of the ACP for the Draft Environmental Impact Statement.

004-3 The DEIS contradicts itself. The annual number of feed cylinders in different on page 2-22 than it is on page 4-47.

004-4 Health concerns

The DEIS displays that mortality rate in Pike County due to renal failure are between two and four times that of Ross and Scioto county. Renal failure may be associated with uranium poisoning although the DEIS suggests that this may instead be associated with diabetes and hypertension.

The DEIS compares potential ACP occupational injury rates to those from the obsolete Standard Industrial Classification. It uses occupational injury rates projected from years 2002-2003 of Piketon operations. Uranium enrichment operations at the DOE reservation in Piketon, Ohio ceased in May 2001!

Who will be responsible for the health care needs related to the uranium enrichment process of employees and residents of the Piketon area who are impacted? Will it be the responsibility of the company or federal government (NRC)?

Uranium is implicated in huge health risks. It appears unacceptable that the NRC approves of such a process and plant.

004-5

Water

What is happening to the quality of the water as a result of the previous USEC plant at Piketon? Are there testing procedures and reports regarding the quality of the water?

004-6

Transportation

The DEIS concluded that traffic on the highway near the plant will have a short term moderate impact. This is in comparison to other areas evaluated. All received a small environmental impact. What will the transportation problems be? Will hazard waste be transported on the highways of Ohio to the ACP? This is unacceptable.

004-7

Jobs

According to the DEIS, the ACP would cost about $3 billion to construct the centrifuges. The Enterprise Zone program of the state of Ohio would expect about 15 thousand new jobs to be created for that scale of capital investment. It appears from the DEIS that there would be a net loss of jobs rather than an increase in jobs while jobs would be lost at Paducah. Please clarify this discrepancy. Will there be an overall loss of jobs with a great capital investment?

004-1

Safety

USEC's application seems to be the blueprint for the DEIS, not allowing for its own evaluation.
The DEIS presents little evidence that it contains the results of independent investigation. For example, Piketon and Portsmouth Residents for Environmental Safety and Security (PRESS) have released the results of two analysis of radioactivity in Big Run Creek Water to cast doubt that DOE, USEC and Ohio EPA data from offsite sampling locations may be flawed. However, the DEIS uses data from these sources.
Such discrepancies would encourage an independent evaluation of these waters and their radioactivity content.

004-8

Accidents

What are the plans for managing a radioactive accident? During this time of terrorism, how can we be assured that this plant will not encourage a terrorist act in our own rural backyard?

004-9

In conclusion, it is unknown whether there is any recognition by the NRC of the problems enriched uranium poses for the planet? It appears to be unknown how to make a safe product once it is enriched and used for energy or weapons.
Depleted uranium lasts far into the future and can be contained only with vigilance.

I express my deep concern and disagreement with USEC's application for the American Centrifuge Plant at Piketon. I urge the Nuclear Regulatory Commission to further scrutinize and reject such an application.

Sincerely,

Loraine McCosker R.N., B.S.N.
Appalachian Ohio Group of the Sierra Club Chair

OhioEPA
State of Ohio Environmental Protection Agency

Southeast District Office

2195 Front Street
Logan, OH 43138

TELE: (740) 385-8501 FAX: (740) 385-6490
www.epa.state.oh.us

Bob Taft, Governor
Bruce Johnson, Lieutenant Governor
Joseph P. Koncelik, Director

October 21, 2005

Chief, Rules Review and Directives Branch
U.S. Nuclear Regulatory Commission
Mail Stop T6-D59
Washington, DC 20555-0001

RE: Ohio Environmental Protection Agency Comments on the Environmental Impact Statement for the Proposed American Centrifuge Plant in Piketon, Ohio

Dear Sir/Madam:

Enclosed are the Ohio EPA comments on the Environmental Impact Statement for the Proposed American Centrifuge Plant in Piketon, Ohio.

If you have any questions, please do not hesitate to contact me at (740) 380-5289.

Sincerely,

Maria Galanti
Site Coordinator
Division of Emergency and Remedial Response

MG/jg

Enclosure

cc: Melody Stewart, OEPA-DHWM

Comments Draft EIS

005-1

1) Page xxiii, Water Resources, line 29: Please describe what type of best management practices would be utilized to minimize the impact to water resources from construction activities. The Ohio EPA has completed stream sampling from around the U.S. DOE reservation. The data should be included in the EIS to evaluate the impact potential construction activity may have upon the streams and creeks surrounding the facility. USEC must ensure that there is limited impact to the streams.

005-2

2) Page xxiii, Water Resources, line 29: Please describe how the ACP intends to utilize a Spill Prevention and Control and Counter measure plan when they do not control all the holding ponds at the site. Please describe how coordination between USEC, U.S. DOE and UDS would be implemented to prevent a spill from leaving the site.

005-3

3) Page xxvi, Waste Management, line 47: Please describe the agreement the ACP has with the U.S. DOE to accept the DUF6 cylinders for the centrifuge facility. Currently, Ohio EPA is not aware that such an agreement exists. If the ACP anticipates that U.S. DOE will be responsible for converting all DUF6 cylinders from the centrifuge plant, Ohio EPA should be contacted so that proper agreements are in place and orders may be modified to allow the transfer of waste material. Additionally, the cost for conversion for the DUF6 should be included in the costs of the facility.

005-4

4) Page 1-2, Line 4-8: Please describe how the lease with the federal government would work once U.S. DOE has completed its mission at the site. It is highly likely that the D&D of the gaseous diffusion plant will be completed and the site will be in long term surveillance and maintenance.

005-5

5) Page 2-14, Section 2.1.3.2 Secondary Facilities: The document does not discuss the potential to utilize additional buildings currently leased by USEC, Inc. Please describe what other facilities may be used including those currently leased by USEC, Inc. to support the centrifuge program.

005-6

6) Page 2-29, Solid Waste Handling, Storage, and Transport, Line 30: What are the NRC regulatory requirements for the management of low level mixed wastes? Where in the CFR are these requirements cited?

005-7

7) Page 2-30 and 2-31, Management and Disposal of Depleted UF6 from Facility Operation, line 45: If USEC-ACP and U.S. DOE have reached agreement concerning the management of UF6 cylinders, please provide the information within the text. Additionally, the USEC-ACP and U.S. DOE should discuss the potential to insert a 4th process line within the conversion facility to limit the amount of time needed to complete the conversion process for the number of cylinders USEC will create over time. The U.S. DOE and USEC should be proactive in this matter and associated cost should be examined in this EIS.

005-8

8) Page 3-36, Section 3.8 ecological Resources, line 1: All ecological resources should be managed appropriately. The ACP should limit disturbance to only those areas in and around the facilities needed for production.

005-9

9) Page 3-40, Section 3.8.3 Rare, Threatened, and Endangered Species, line 42: Ohio EPA has recently completed a stream survey of the creaks and streams surrounding the facility. The EIS should include the recent data in the report for evaluations.

005-10

10) Page 4-26, Section 4.2.7.2 Facility Operation, line 37: The EIS should discuss the impact to rare, threatened and endangered species should an air release or incident occur which could release HF or radioactivity into the atmosphere. Discuss deposition and potential areas of the site which would be impacted.

005-11

11) Page 4-93, Section 4.2.15.7, line 21, Ecological Impacts: The ecological impacts from the site most likely will change during the life span of the ACP. Please discuss how these changes will be accounted for during D&D. Will USEC-ACP be responsible for conducting ecological surveys? Is there money set aside during the D&D process for these types of surveys to be conducted?

005-12

12) Page 7-1, Section 7.1.1 Costs of the proposed Action: It is unclear from the report if the ACP (USEC) would be responsible for the D&D of the facilities once the life cycle is completed. USEC is currently leasing the facilities from a federal agency. This document should make it clear if the federal government will be ultimately responsible for the D&D of the facilities to be used by the ACP.

9/08/05
70FR53396
(5)

From: "rainey531@juno.com" <rainey531@juno.com>
To: <nrcrep@nrc.gov>
Date: Fri, Oct 21, 2005 8:02 AM
Subject: Docket Number 70-7004

TO: The Nuclear Regulatory Commission
FROM:. Dr. Carol Rainey, 1497 Beacon St., Cincinnati, Ohio 45230
RE: Docket Number: 70-7004
The proposed uranium centrifuge plant in Piketon, Ohio
MESSAGE:
I attended the Environmental Impact hearing a few weeks ago in Piketon about the proposed centrifuge plant. Several of the points made at the hearing made a strong impression on me.

006-1 1. The plant will NOT have a positive impact on the economic environment. In fact, given all the tax breaks USEC is being given, it will cost money. The number of jobs created will be minimal in spite of the huge financial investment. There are other healthier jobs could be created in Southern Ohio.

006-2 2. USEC has not solved the question of what to do with the waste the enrichment plant will create. As was said at the meeting, the Conversion Plant was designed to deal with the waste from all the nuclear weapons production plants. Simply taking care of this waste will take 20 years. USEC is a private company. They should not be simply given the right to use the Conversion plant for their own economic purposes. There are also some scientists who believe that the Conversion plant itself is not a perfect solution to the nuclear waste problem. Even though the material in the canisters will be converted to a less dangerous form, the conversion process too will create waste, and at the present time it's not clear where it will be taken. The fears of the people of Piketon are that it will simply stay here. NO more uranium should be processed; the country is dying from the nuclear waste we have already.

006-3 3. Finally, I was appalled to read in the (long) impact statement that the NRC is convinced that there will be no danger to the physical environment from a nuclear plant. How can anyone in government make such a claim, given the diastrous history of the nuclear industry the last 60 years, the contamination that exists at all the nuclear sites, which is costing billions to clean? The legacy of radioactive contamination which is now in the soil and water of the whole country? USEC would have us believe that they will run a "perfect" plant, despite their own history of violations and coverups, that there will never be any kind of accident, or technical malfunction, or computer error, or human error, which will cause the release of radioactive materials. Such a claim is hard to believe. Nuclear plants are dangerous and they are unnecessary. There are much better sources of energy which are not laden with all the dangers of nuclear power.

006-4 I am strongly against the NRC granting USEC this license. Piketon is not yet cleaned up from the last enrichment endeavor; fish in the river are still radioactive; people are still sick and dying. This plant is not healthy for the environment of southern Ohio or anywhere else.

Sincerely,
Dr. Carol Rainey

SISP Review Complete
Template = ADM-013

E-RIDS = ADM-03
Cee = M. Blevins (MXB4)

Mail Envelope Properties (4358D8DD.341 : 21 : 13121)

Subject:	Docket Number 70-7004
Creation Date:	Fri, Oct 21, 2005 8:00 AM
From:	"rainey531@juno.com" <rainey531@juno.com>
Created By:	rainey531@juno.com

Recipients
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twf2_po.TWFN_DO
NRCREP

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MESSAGE	2920	Friday, October 21, 2005 8:00 AM
TEXT.htm	3464	
Mime.822	8093	

Options

Expiration Date:	None
Priority:	Standard
Reply Requested:	No
Return Notification:	None
Concealed Subject:	No
Security:	Standard

9/8/05
70 FR 53396
(18)

From: LORRY SWAIN <lorryswain@yahoo.com>
To: <yhf@nrc.gov>
Date: 10/24/05 9:15PM
Subject: Comments on the DEIS related to the USEC application for the ACP proposed for construction and operation in Piketon Ohio

Please consider our following comments and concerns in response to your DEIS on the USEC, Inc application for license to construct and operate a centrifuge diffusion uranium enrichment facility in Piketon, Ohio.

We live nearby and downwind from the PGDP which is the site of the proposed ACP. As community members who will be affected by the environmental impacts of this proposed plant, we are strongly opposed to its construction and operation for the following reasons:

007-1 In projecting safety risks you have painted a rosy picture of USEC operations using injury rates from the old PGDP operations in 2002 and 2003. But operations at that USEC facility shut down in 2001 and have been on cold standby since that time. As you know, USEC has a disgraceful safety record. During the time that operations were in effect at Piketon (and Paducah) USEC received many NRC violations notices; many more than other nuclear materials handlers licensed by you. Why is this not factored into your assessment of the safety risks?

007-2 In the DEIS claims are made about the net gain of jobs for our community if USEC is licensed to proceed with the ACP. Figures as high as a net gain of 3,000 jobs are alluded to in the DEIS. However, using USEC's own data, we see that after the decommissioning of the old PGDP and with the operation of the proposed ACP there will actually be a net loss of jobs in the community. Even if we had no other concerns about the USEC proposal, we would have grave concerns about a project that promises to cost the community so much and pay back so little.

007-1 007-3 We are not convinced by your risk assessment of accidents, injuries and illnesses. Many unanswered questions remain about the transport of materials to and from the plant as well as the operations within and the clean-up of the old plant. We believe that long-term latent illnesses are understated in the report. We believe that the problem of safe, permanent storage of radioactive wastes generated over the past 50 years at that site and projected to be generated over the next 50 years at the site are still unsolved.

007-4 We wonder if we would even be having this conversation with you if we were not a poor, rural, Appalachian community that looks very much like the other poor communities that have been exploited by the energy corporations for the benefit of a few and to the detriment of the many.

007-5 We repeat, we are strongly opposed to the licensing of USEC for their propsed project and we urge you to deny the application.

Sincerely,

Lornita R. Swain and Eric P. O'Neil
385 Franklin Road,
South Shore, Kentucky 41175

E-RIDS=ADM-03
Add=M. Blevins (AIXB4)

SESP Review Complete
Template=ADM-013

Mail Envelope Properties (435D8722.190 : 19 : 57744)

Subject:	Comments on the DEIS related to the USEC application for the ACP proposed for construction and operation in Piketon Ohio
Creation Date:	10/24/05 9:14PM
From:	LORRY SWAIN <lorryswain@yahoo.com>
Created By:	lorryswain@yahoo.com

Recipients
nrc.gov
twf4_po.TWFN_DO
YHF (Yawar Faraz)

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TEXT.htm	3491	
Mime.822	7973	

Options

Expiration Date:	None
Priority:	Standard
Reply Requested:	No
Return Notification:	None
Concealed Subject:	No
Security:	Standard

From: <TFKing106@aol.com>
To: <NRCREP@nrc.gov>
Date: Mon, Oct 24, 2005 12:15 PM
Subject: Comments on Draft EIS, American Centrifuge Plant, Piketon, OH, NUREG-1834

(7)
9/8/05
70FR53396

Thomas F. King, PhD
P.O. Box 14515, Silver Spring MD 20911, USA
Telephone (240) 475-0595 Facsimile (240) 465-1179 E-mail
tfking106@aol.com (mailto:tfking106@aol.com)

Consultation, training, and textbooks in cultural resource management

Date: October 24, 2005

To: Chief, Rules Review and Directives Branch
U.S. Nuclear Regulatory Commission
Mail Stop T6-D59
Washington DC 20555-0001

RECEIVED
2005 OCT 24 PM 12:31
RULES AND DIRECTIVES BRANCH USNRC

Via email to _NRCREP@nrc.gov_ (mailto:NRCREP@nrc.gov)

I write to comment on your draft Environmental Impact Statement for the Proposed American Centrifuge Plant in Piketon, Ohio, NUREG-1834, published in August 2005 (hereinafter, DEIS). These comments are transmitted electronically to the NRC at its specified email address on October 24, 2005, within the comment period specified in the DEIS. My comments will be restricted to the manner in which the DEIS addresses "cultural resources." My qualifications for offering the comments I do are outlined in the attached resume.

Qualifications of EIS analyst:

008-1 The list of preparers given on pages 10-1 through 10-3 identifies only one individual as responsible for the analysis of impacts on "historic and cultural resources." That individual, Dr. Polly McW. Quick, is to my knowledge a specialist in the prehistoric archaeology of central California, who according to promotional literature from her employer, ICF Consulting, has in the last 30 years worked primarily on environmental remediation programs and development projects in Iceland, Brazil, Costa Rica, and California. Please explain the basis upon which she is regarded as qualified to analyze the impacts of the American Centrifuge Plant on prehistoric and historic "cultural resources" in Ohio.

Section 3.3:

008-2 This section begins with a definition of the term "cultural resources." This is an important definition, since it limits the range of phenomena upon which impacts are analyzed. Please explain the basis for this definition, whose source is not cited and which I do not believe is based on any United States or international guidance. Please note the concerns expressed and recommendations provided by UNESCO in its Convention for the Safeguarding of the Intangible Cultural Heritage -- 2003.

008-3 Near the bottom of page 3-5 the review process under Section 106 of the National Historic Preservation Act is inaccurately characterized as a process "done in consultation with the State Historic Preservation Officer;" later, passing reference is made to "provid(ing) Indian tribes the opportunity to

E-RIDS=ADM-03
Add = M. Blevins (MXB6)

SISP Review Complete
Template = ADM-013

identify concerns." In fact, the Section 106 regulations (36 CFR 800) make it abundantly clear that the process is done in consultation with the State Historic Preservation Officer (SHPO), Tribal Historic Preservation Officers, Indian tribes, and other interested parties. The NRC staff seems to have difficulty understanding that the regulations require actually communicating with, listening to, and discussing the concerns of interested parties; the failure to engage in such consultation is at the heart of the DEIS' inadequacies. Please re-read the Section 106 regulations and relevant guidance from the Advisory Council on Historic Preservation and the Secretary of the Interior, and recast your discussion to accurately reflect their direction.

008-4 On page 3-6, the DEIS discusses an "area of potential effects" (APE) defined by the NRC staff for the project. This APE appears to be based solely on the potential for direct and selected indirect physical effects. I see no evidence that direct or indirect visual, auditory, olfactory, or other non-physical effects were given any consideration, nor do I see any evidence that cumulative effects on "cultural resources" of any kind were considered, in defining the APE. Please reconsider your APE with reference to all types of potential effects.

008-5 The discussion of historic properties that takes up the remainder of this section is overwhelmingly weighted toward specific archaeological sites and historic structures. Particularly given the proximity of the project site to the Scioto Township Works, and the extensive cultural landscape modifications represented by such earthworks, it seems strange that so little consideration seems to have been given to cultural landscapes, and to relict landforms that may reflect such landscapes amid the damage caused to the area in the past by the DOE Reservation. Please consider attempting a more coherent, landscape-based approach to analysis of the area's historic properties.

008-6 On page 3-9 we are told that unidentified "(i)nvestigators" determined that 22 of the 36 previously unidentified archaeological sites "did not meet National register eligibility criteria." Upon what basis or bases were these determinations made, and how were the "investigators" qualified to make them? How were Indian tribes and other interested parties consulted in the course of these evaluations? The same questions pertain to the evaluation discussed in the final paragraph on this page.

008-7 Please explain how NRC has completed its responsibilities under the Archaeological and Historic Preservation Act of 1974 (16 USC 469-469c-2) with respect to the individual archaeological sites discussed in this section, and with respect to the prehistoric cultural landscape of which they are arguably parts.

008-8 How were interested parties consulted during the evaluation of the Gaseous Diffusion Plant discussed on page 3-10?

008-9 Section 3.3.4 on page 3-10 mentions in passing that the Barnes House, adjacent to the project area, is associated with the location where the last passenger pigeon was reportedly killed. This suggests that this representative of a famous species that figured significantly in American conservation history may have been killed within or near the project area, but I see no evidence that this possibility was in any way considered in your analysis. Clearly, the landscape within which the last passenger pigeon was killed would very likely be eligible for inclusion in the National Register of Historic Places. Please address this possibility, and the possible impacts of the project on this landscape.

008-10 The discussion of the Barnes House is confusing. If it is adjacent to the boundary of the reservation, it would seem that it must be subject to at least possible visual, auditory, or other non-physical effects, and impacts on its use, if not long-term physical impacts. Please explain why NRC has not evaluated its eligibility for the National Register, and considered possible effects on it. What is the relevance of the SHPO's recommendation to the property owner regarding nomination to the National Register?

008-11 Section 3.3.5 indicates that the Absentee Shawnee Tribe has indicated a concern about the Scioto Township Works and perhaps other earthworks in the area, but I see no evidence that the Tribe has been consulted about this concern. There are copies of letters to various tribes appended to the DEIS (Appendix B), but these do not represent consultation; they merely inquire about whether the tribes have "specific knowledge of any sites that you believe have traditional religious and cultural significance." Please review pertinent guidance from the Advisory Council on Historic Preservation, the National Register of Historic Places, and the U.S. Environmental Protection Agency's Interagency Native American Environmental Justice Task Force, and explain your consultation with with potentially concerned Indian tribes with reference to such guidance.

008-12 The purpose of Section 3.3.6 is unclear. Please explain what information this section, as opposed to those preceding it, is supposed to convey. Please explain what you mean by a "potential historic property." What property is NOT "potentially" historic?

Section 4.2.3:

008-13 The highlighted text at the top of page 4-5 further describes the APE as NRC has defined it, but provides no justification for it, and like the previous description appears to deny the possibility of any kind of other-than-physical impact. Please reconsider your APE definition with reference to contemp orary best practice.

008-14 Section 4.2.2.1 first suggests that various activities could have effects on historic properties by destroying or altering contributing elements of the Gaseous Diffusion Plant, but then vaguely implies that such effects will be "properly controlled" and hence will have "no effect." This is not a possible determination under the Section 106 regulations. The regulations permit "conditional" determinations of "no adverse effect," but not conditional determinations of "no effect" (strictly speaking, determinations of "no historic properties subject to effect"). IF you have actual procedures to put in place, developed in consultation with the SHPO and other interested parties, by which to "properly control" damage or destruction of historic properties and their elements, then perhaps you can determine that there will be no adverse effect, but not no effect. Please re-read 36 CFR 800.5 and reconsider this section.

008-15 The next paragraph is even vaguer about NRC's determination with respect to the archaeological sites, and continues to express total ignorance of any cultural landscape values or traditional cultural values that may be ascribed to the landscape by Indian tribes or others. Again, please review pertinent regulations and guidance and reconsider this paragraph.

At the top of page 4-6 the NRC staff concludes that there will be no effect

008-16 on the Scioto Township Works, but it does so (a) without any clear definition of the actual boundaries of the Works or their possible relationship to other cultural landscape features, and (b) without any consultation with the Absentee Shawnee or other tribes that may (and in the case of the Absentee Shawnee, say they do) ascribe cultural significance to the Works and other landscape features in the area. As requested above, please review pertinent Advisory Council, National Register, and EPA guidance and reconsider this casual dismissal of effects on the site.

008-17 The next paragraph, on the Barnes House, is equally peculiar. Here we have NRC confidently asserting that the Barnes House may be eligible for the National Register only under National Register Criteria A and C, and casually assuring the reader that the project cannot affect the attributes that may make it eligible under these criteria, when it has provided no evidence that it has performed any sort of analysis of the Barnes House's eligibility -- suggesting instead that it is the property owner's responsibility to nominate the place to the National Register. As far as I can tell, you have developed no basis whatever to say anything about the eligibility of the Barnes House, the elements that may contribute to that eligibility, or the effects of the project (direct, indirect, or cumulative) on such elements. Please develop such a basis, in consultation with interested parties and in a manner consistent with pertinent guidance, and try again.

008-18 Section 4.2.2.2 seems to be predicated on the assumption that the only possible "indirect" effects of facility operation would be vandalism by workers within the facility boundaries. Please explain the rationale for this assumption. Will there be no other long-term indirect or cumulative effects on the local environment that might alter historic properties? Why should vandal workers stay within the fence? Why does NRC staff consider only the "information values" of the Scioto Township Works, considering that the Absentee Shawnee Tribe, at least, has indicated concerns that may well go beyond information values?

008-19 Throughout this section, potential impacts are referred to as "SMALL." What does this mean with reference to (a) the significance of impacts under NEPA and (b) the criteria of adverse effect found in 36 CFR 800?

Section 4.2.9:

008-20 This section, on environmental justice, gives no consideration whatever to disproportionate adverse environmental impacts on the cultural interests of such minority (and probably low-income) groups as the Absentee Shawnee and other tribes. Please review pertinent EPA guidance and address these impacts.

Section 4.3:

008-21 This section, on cumulative impacts, is notable for its utter lack of treatment of effects on historic properties or any other kinds of "cultural resources." This is particularly striking considering that the reservation on which the project is proposed has clearly had very serious impacts on the cultural landscape of which the Scioto Township Works are a part. A cumulative impact analysis is supposed to consider the effects (even the "SMALL" effects) of the project under review in the context of other past, present, and reasonably foreseeable future actions. Serious impacts on the cultural character of the area that includes the project APE (however defined) have obviously taken place in the past; they may be going on in the present, and what the future

holds remains to be analyzed. Please address the cumulative impacts of the project on cultural resources of all kinds, notably including historic properties.

Appendices

008-22 Appendix B contains several form letters to Indian tribes asking them about "specific knowledge of any sites" that they believe "have traditional religious and cultural significance." The text indicates that the Absentee Shawnee reported knowledge of such a site -- the Scioto Township Works -- though the documentation expressing this concern, supposed to be in Appendix B, is not there. In any event, the letters do not reflect any sort of real consultation with the tribes; they are mere formletters that do not seem to have been followed up in any way. Please review the findings of the Tenth Circuit Court of Appeals in Pueblo of Sandia v. United States, 50 F.3d 856 (10th Cir. 1995), as well as pertinent Advisory Council, National Register, and EPA guidance, and initiate real consultation with tribes.

008-23 Appendix B also includes correspondence with the SHPO in which the SHPO suggests a variety of representations, studies and consultations that NRC should undertake. It is not clear what, if anything, NRC has done in response to these suggestions.

008-24 Appendix B also contains a letter to the Advisory Council on Historic Preservation in which NRC mentions, rather in passing, that it intends to "use the NRC's NEPA review processes for Section 106 purposes," and later indicates that the former will be used "in lieu of" the latter. This suggests an attempt by NRC to comply with 36 CFR 800.8(c) and substitute its NEPA compliance for completion of standard Section 106 review, but NRC has done virtually none of the things that 36 CFR 800.8(c) requires in order to effect such a substitution. It has notified the Advisory Council of its attempt to substitute, but I see no evidence that it has similarly notified the SHPO. The notification to the Advisory Council came only very late in the NEPA process, and in such a stealthy way (a short, vague paragraph buried in the middle of a longer missive) that it is easy to imagine the Council misunderstanding its intent. More importantly, NRC has engaged in virtually none of the consultation with interested parties required by 36 CFR 800.8(c), and there are, as indicated above, many questions about the quality of its efforts to identify and address historic preservation issues. I strongly suggest that you abandon your attempt to substitute your NEPA compliance for standard Section 106 review, and initiate proper consultation with all concerned parties in accordance with 36 CFR 800.4.

008-25 Beyond properly complying with Section 106 of the National Historic Preservation Act, I suggest your attention to Section 110(d) of the same statute, to the requirements of the Archaeological and Historic Preservation Act of 1974, the American Indian Religious Freedom Act, the Native American Graves Protection and Repatriation Act and its implementing regulations (43 CFR 10), Executive Order 13175, and Executive Order 13352, and to the requirement of 40 CFR 1508.27(b)(3) and (8) that effects on cultural resources -- NOT only National Register eligible historic properties -- be considered in determining the significance of environmental impacts.

008-26 The overwhelming impression conveyed by the DEIS with respect to "cultural resources" is one of ignorant dismissal. It appears that the NRC staff and the DEIS authors have convinced themselves that there will be no impact on

anything of importance, and has then written the DEIS to demonstrate that this is the case. The demonstration, however, is a perfectly amateurish one. I devoutly hope that the DEIS is not similarly flawed with respect to other kinds of environmental impacts; if it is, it would speak very poorly for NRC's attention to its responsibilities toward the public and the environment.

Thank you for the opportunity to comment; I look forward to your responses.

Sincerely,

Thomas F. King, PhD

cc: OH SHPO
ACHP
National Trust for Historic Preservation
Geoffrey Sea

CC: <tmcculloch@achp.gov>, <Betsy_Merritt@nthp.org>, <dsnyder@ohiohistory.org>, <SargentsPigeon@aol.com>

Mail Envelope Properties (435D0881.9CE : 16 : 47566)

Subject:	Comments on Draft EIS, American Centrifuge Plant, Piketon, OH, NUREG-1834
Creation Date:	Mon, Oct 24, 2005 12:14 PM
From:	<TFKing106@aol.com>
Created By:	TFKing106@aol.com

Recipients

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Files	**Size**	**Date & Time**
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TFKshort2005.doc	55296	
Mime.822	124157	

Options

Expiration Date:	None
Priority:	Standard
Reply Requested:	No
Return Notification:	None

Concealed Subject: No
Security: Standard

Thomas F. King, PhD

P.O. Box 14515, Silver Spring MD 20911 **Professional Resumè**
Telephone (240) 475-0595 Facsimile (240) 465-1179 E-mail tfking106@aol.com

Cultural Resource Impact Assessment and Negotiation, Writing, Training

Employment

Presently: Private consultant, educator, writer, facilitator in cultural resource management and environmental review; Trainer/Consultant, SWCA Environmental Consultants; Archeologist, The International Group for Historic Aircraft Recovery Amelia Earhart Project. Member, Sussex Archaeological Executive, advising the Government of Great Britain regarding archaeological recovery of HMS *Sussex* off Gibraltar.

Formerly: Senior Instructional Consultant, National Preservation Institute. Expert consultant to U.S. General Services Administration, program director for Advisory Council on Historic Preservation, Consultant to the High Commissioner, Trust Territory of the Pacific Islands, Archeologist with the National Park Service, consulting archeologist, head of archeological surveys at San Francisco State University, UCLA, University of California Riverside.

Education

PhD, University of California, Riverside, Anthropology, 1976.
BA, San Francisco State University (then College), Anthropology, 1968.
Certificate: Mediator, Bowie State University Center for Alternative Dispute Resolution, 1997.

Recent and current Clients

Government Agencies: Bureau of Land Management California State Office; Bakersfield Field Office; USDA Forest Service. USDA Farm Service Agency, U.S. Fish and Wildlife Service. U.S. Navy, U.S. Air Force, U.S. Army, Federal Aviation Administration. Grand Canyon Monitoring and Research Center. City of Newport News, Virginia.

Indian Tribes and Organizations: Klamath River Intertribal Fish and Water Commission; Mole Lake Sokaogon Community of Lake Superior Chippewa Indians; Bad River and Red Cliff Bands of Lake Superior Tribe of Chippewa Indians. Hualapai Tribe. Quechan Indian Nation. Round Valley Indian Tribes. Penobscot Tribe.

Private Sector: Blythe Energy Corp., Cingular Wireless. Odyssey Marine Exploration.

Non-profit organizations: National Preservation Institute.

Thomas F. King: Courses Taught

Short courses for SWCA Environmental Consultants, National Preservation Institute, University of Nevada, Reno, General Services Administration, Advisory Council on Historic Preservation, Environmental Protection Agency, National Park Service, and Department of Defense in cultural resource law and policy, Section 106 review, National Environmental Policy Act implementation, identification and protection of traditional cultural properties, Native American consultation, environmental justice, conflict resolution, and related subjects.

Thomas F. King: Publications (Selected)

Books and Monographs

- *Doing Archaeology: a Cultural Resource Management Perspective.* Left Coast Press 2005.
- *Cultural Resource Laws and Practice: An Introductory Guide.* AltaMira Press 2004 (First edition 1998)
- *Amelia Earhart's Shoes.* With R. Jacobson, K. Burns, and K. Spading. AltaMira Press, 2004 (First edition 2001).
- *Places that Count: Traditional Cultural Properties in Cultural Resource Management.* AltaMira Press 2003
- *Thinking About Cultural Resource Management: Essays From the Edge.* AltaMira Press 2002.
- *Federal Projects and Historic Places: the Section 106 Process.* AltaMira Press, 2000
- *Piseken Nóómw Nóón Tonaachaw: Archeology in the Tonaachaw Historic District, Moen Island, Truk.* With P.L. Parker, Southern Illinois University, Carbondale and Micronesian Archeological Survey, Saipan 1984.
- *Anthropology in Historic Preservation.* With P.P. Hickman and G. Berg, Academic Press, New York 1977.
- *The Archeological Survey: Methods and Uses.* Interagency Archeological Services, Heritage Conservation and Recreation Service (National Park Service), Department of the Interior, Washington DC 1977 (Republished 2003 by California Division of Forestry).

Articles

- Considering the Cultural Importance of Natural Landscapes in NEPA Review: The *Mushgigagamongsebe* Example. *Environmental Practice* 5:4, Oxford University Press, 2003
- "I Learned Archaeology From Amelia Earhart: Using a Famous Mystery to Teach Scientific Methods." In *Strategies for Teaching Anthropology,* 3rd Edition, Patricia Rice and David McCurdy, eds., Prentice Hall, New York; 2003..
- "Cultural Resources in an Environmental Assessment Under NEPA." *Environmental Practice* 4(3):137-144, National Association of Environmental Professionals, September 2002.

- "Historic Preservation Laws" in *Encyclopedia of Life Support Systems.* EOLSS Publishers for UNESCO, 2002.

Articles (continued)

- "What Should Be the 'Cultural Resources' Element of an Environmental Impact Assessment?" *Environmental Impact Assessment Review* 20(2000):5-30, 2000.
- "Archaeology in the Search for Amelia Earhart." With Richard Gillespie. In *Lessons from the Past: An Introductory Reader in Archaeology,* Kenneth L. Felder, ed., Mayview Press, Mountain View CA, 1999
- "How the Archeologists Stole Culture: a Gap in American Environmental Impact Assessment and What to Do About It." *Environmental Impact Assessment Review,* January 1998.
- "The Nature and Scope of the Pothunting Problem." In *Protecting the Past: Readings in Archaeological Resource Management.* J.E. Ehrenhard and G.S. Smith, eds., The Telford Press, Caldwell NJ 1991.
- "AIRFA and Section 106: Pragmatic Relationships." In *Preservation on the Reservation,* A. Klesert and A. Downer, eds., Navajo Nation Publications in Anthropology 26, Window Rock 1991.
- "Prehistory and Beyond: The Place of Archeology" In *The American Mosaic: Preserving a Nation's Heritage.* R.E. Stipe and A.J. Lee, eds., US/ICOMOS, Washington DC, 1987.
- "Intercultural Mediation at Truk International Airport." With P.L. Parker. In *Anthropological Praxis: Translating Knowledge Into Action.* R.W. Wulff and S.J. Fiske, eds., Washington Association of Professional Anthropologists, Westview Press, Boulder 1987.
- "The Once and Future Drought." *American Archeology* 5:3:224-8, Ridgefield, CT 1985
- "Professional Responsibility in Public Archeology." *Annual Review of Anthropology* 12, Palo Alto 1983.
- "Recent and Current Archeological Research on Moen Island, Truk." With P.L. Parker. *Asian Perspectives* xxiv(1):11-26, Honolulu 1981.
- "The NART: A Plan to Direct Archeology Toward More Relevant Goals in Modern Life." *Early Man,* Evanston, winter 1981.
- "Don t That Beat the Band? Nonegalitarian Political Organization in Prehistoric Central California." In *Social Archeology,* C. Redman, Editor, Academic press, New York 1978.
- ""The Evolution of Complex Political Organization on San Francisco Bay". In *'Antap: California Indian Political and Economic Organization.* L.J. Bean and T.F. King, eds., Ballena Press, Ramona, CA 1974.

Government Guidelines and Regulations

- Regulations, guidelines, and plain-language brochures on environmental and cultural resource management, NEPA review, Section 106, and related topics, for Department of Agriculture Farm Service Agency (FSA) (unattributed, with FSA NEPA and Cultural Resource staff). FSA, 2004.

Government Guidelines and Regulations (Continued)

- Orders, Guidelines, and Fact Sheets: Cultural Resource Management, Floodplain Impact Management, Wetlands Impact Management, Federal Real Property Disposal, Archeological Collections Management, Indian Sacred Sites Management, Historic Document and Artifact Management, Environmental Justice, and Social Impact Assessment (unattributed, with GSA NEPA Call-In Staff). General Services Administration, Washington DC, 1998.
- *NEPA Desk Guide* and related orders (unattributed, with L.E. Wildesen and GSA Environmental Quality Working Group). General Services Administration, Public Buildings Service, Washington DC, 1997.
- *Guidelines for Evaluating and Documenting Traditional Cultural Properties.* With P.L. Parker. National Register Bulletin 38, National Register of Historic Places; National Park Service, Washington DC, 1990
- *Preparing Agreement Documents.* Advisory Council on Historic Preservation, Washington DC, 1989.
- *Public Participation in Section 106 Review: a Guide for Agency Officials.* Advisory Council on Historic Preservation, Washington DC 1989.
- *Identification of Historic Properties: a Decisionmaking Guide for Managers.* Advisory Council on Historic Preservation and National Park Service, Washington DC 1988.
- *The Section 110 Guidelines: Guidelines for Federal Agency Responsibilities Under Section 110 of the National Historic Preservation Act.* With S.M. Sheffield. 53 FR 4727-46, National Park Service, Washington DC 1988
- *Regulations for the Consideration and Use of Historic and Cultural Properties* (Unattributed). Commonwealth of the Northern Mariana Islands Historic Preservation Office, 1983
- *Treatment of Archeological Properties: a Handbook.* Advisory Council on Historic Preservation, 1980.

Popular

- "Archaeology and the Fate of Amelia Earhart." *About.com,* June 2005. http://archaeology.about.com/od/pacificislands/a/king_ae.htm
- "Amelia Earhart: Archaeology Joins the Search." *Discovering Archaeology* 1:1:40-47, El Paso; January-February 1999
- "Sea Changes: l4th Century Micronesia." *Glimpses of Micronesia and the Western Pacific* 25:1, Honolulu 1985.
- "Tonaachaw: a Truk Village Rediscovers its Past." With P. Parker. *Glimpses of Micronesia and the Western Pacific* 21:4, Honolulu 1982.
- "How You Can Help the Archeologists." *Boys Life,* Boy Scouts of America, 1971.

Other

- Videotapes on "historic contexts" and "traditional cultural properties," for National Park Service
- "E-Book" environmental review software, for General Services Administration
- "NEPA for Historic Preservationists and Cultural Resource Managers," worldwide web pages for National Preservation Institute.

CENTRAL OHIO SIERRA CLUB GROUP
Patricia A. Marida, Chair
36 West Gay Street, Suite 314
Columbus, OH 43215
614-890-7865

10-24-2005

Chief, Rules and Directives Branch
Division of Administrative Services Mailstop: T-6D59
US Nuclear Regulatory Commission
Washington, DC 20555-0001
NRCREP@nrc.gov

DOCKET 70-7004

COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE UNITED STATES ENRICHMENT CORPORATION'S PROPOSED AMERICAN CENTRIFUGE PLANT

009-1

The Central Ohio Sierra Club is concerned with the amount of radioactive material being brought to and generated at the Piketon site. We would like to have the EIS state limits to the importation of uranium and the amount of waste and tailings that will result from the ACP enrichment process. We would like to see a plan for disposal of the DUF6 that will be a byproduct of the ACP. There is already a very large backlog of DUF6 waiting to be converted to DU oxide, since the conversion plant is behind schedule in its construction. We would like the EIS to state if or how the DUF6 from the ACP will be converted and the DU oxides disposed of. The planned DOE conversion facility cannot accept private waste from ACP. Envirocare, who has been named as the recipient of the ACP waste, is not currently able to store the amounts of radioactive materials being sent there, and they are sitting beside the road.

009-2

The according to calculations by PRESS (Portsmouth/Piketon Residents for Safety and Security), the new facility would create a total net LOSS of 1,558 jobs. If the site were converted to Enterprise Zone type of manufacturing, spending the same amount of money would create 25 times the 600 jobs projected by USEC. The DEIS treats alternatives poorly. For example, there was very little discussion of the benefits of cleaning up the site and using Enterprise Zone initiatives to industrialize the site. The Sierra Club would like to see this type of analysis in the DEIS.

009-3

The DEIS blindly follows USEC's analyses. The DEIS based its conclusions without adequate investigation, on faulty assessments and studies (including assessing unknowable risks), on false statements, on incompetent modeling, and on bad advice. In short, the DEIS has done little in the way of independent investigation of the USEC application.

Patricia A. Marida

09/08/05

70FR53396

13

From: <SargentsPigeon@aol.com>
To: <mxb6@nrc.gov>, <nrcrep@nrc.gov>
Date: Thu, Oct 27, 2005 9:58 AM
Subject: USEC DEIS Comments

Matthew Blevins
Nuclear Regulatory Commission

Dear Mr. Blevins,

Attached are the attachments to my comments on DEIS NUREG-1834.

I've had two problems. One is getting the file to transmit given the large file size. I've been trying to send most of the night but as I have a dial-up connection only, it's very difficult and keeps quitting. Please be understanding.

Second, I have two other imposing deadlines this week....the appeal of the ASLB ruling in the USEC case was due Monday and new contentions as per the ASLB ruling are due very shortly. I did call on Monday and received an extension but am afraid it will take another day to get my full comments in. Attached are the attachments only, not the text. If for some reason you cannot accept the text, I still wish the attachments submitted...they are self explanatory as they contain mainly letters from others pertaining to historic and cultural resource issues.

I will send the text ASAP.

You will note that the first item is a DEIS comment from Professor Robert Proctor at Stanford. Unfortunately, Dr. Proctor made the mistake on Monday of e-mailing his comment to me instead of to NRC, and I did not realize it until Tuesday, when he was already on a plane to Germany. Therefore please accept his testimony as timely. His e-mail address is included. Other contact info. can be provided if necessary.

Thanks for your consideration,

Geoffrey Sea
The Barnes Home
P.O. Box 161
Piketon, OH 45661
Tel: 740-289-2473
Cell: 740-835-1508
E-mail: SargentsPigeon@aol.com

SISP Review Complete

Template = ADM-013

E-RIDS = ADM-03

Add = M. Blevins (MXB6)

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Subject:	USEC DEIS Comments
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From:	<SargentsPigeon@aol.com>
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Files	**Size**	**Date & Time**
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TEXT.htm	4494	
Attachments to NRC DEIS Comments.doc	1674752	
Mime.822	2303097	

Options

Expiration Date:	None
Priority:	Standard
Reply Requested:	No
Return Notification:	None
Concealed Subject:	No
Security:	Standard

Index to Attachments submitted by Geoffrey Sea

(note: Exhibit designations refer to exhibits submitted to NRC as attachments to Geoffrey Sea's petition for intervention and subsequent filings)

1. DEIS Comment of Robert Proctor, PhD., Professor of History, Stanford University, 10/24/05

2. Map of Historic Sites in relation to American Centrifuge Project created by Petitioner Geoffrey Sea.

3. Exhibit B. Statement of Charles W. Beegle, former Professor of Education at the University of Virginia, widower of Jean Rittenour and owner of the historic Rittenour Home and Scioto Trail Farm that adjoins the DOE reservation in Piketon.

4. Exhibit E. Statement of Jerome C. Tinianow. Executive Director of Audubon Ohio and Vice President of the National Audubon Society.

5. Exhibit F. E-mail correspondence from Roger G. Kennedy, former director of the National Park 5. Service and Director Emeritus of the National Museum of American History, author of *Hidden Cities: The Discovery and Loss of Ancient American Civilization.*

6. Exhibit H. Statement of John E. Hancock, Professor of Architecture and Associate Dean at the University of Cincinnati, Project Director of "EarthWorks: Virtual Explorations of the Ancient Ohio Valley"

7. Exhibit M. Letter from Linda A. Basye, Executive Director of the Pike County Convention and Visitors Bureau, 10/21/04

8. Exhibit N. Statement of Karen Kaniatobe, Tribal Historic Preservation Officer of the Absentee Shawnee Tribe of Oklahoma in Shawnee, Oklahoma.

9. Exhibit O. Plate XXIV from Ephraim Squier and Edwin Davis, *Ancient Monuments of the Mississippi Valley*, 1848.

10. Exhibit Q. Statement of Thomas F. King, preservation consultant, author of four books on federal preservation including *Federal Planning and Historic Places: the 106 Process*

11. Exhibit V. Statement of Thomas F. King, preservation consultant, author of four books on federal preservation including *Federal Planning and Historic Places: the 106 Process*, dated March 30, 2005.

12. Exhibit W. Letter from Chief Hawk Pope, Shawnee Nation, United Remnant Band, undated, received March 29, 2005.

13. Declaration by John Hancock, Frank L. Cowan, and Cathryn Long Regarding August 5, 2005 Visit to GCEP Water Field

14. Photographs in order: 1. The Barnes Home close-up, 2. The Barnes Home landscape 3. Surviving remnant of the Barnes Works, 4. View of the Scioto River at the point where the creek of the Barnes Works joins it, which USEC and NRC say “is not a scenic river” 5. The kill-site of the Sargents Pigeon (remnants of the home where Press Clay Southworth lived in 1900)

15. Photograph of ACP Buildings across fence-line of Barnes Home property (previously provided.)

Comment on the Draft Environmental Impact Statement for the Proposed American Centrifuge Plant in Piketon, Ohio

By Robert N. Proctor, PhD.

Submitted Oct. 24, 2005

I am Professor of the History of Science at Stanford University, and a tenured member of the faculty of the History Department at that University. I hold a doctoral degree in the History of Science from Harvard University and am the author of four books on the history of science, dozens of articles in peer-reviewed academic journals, including historical, scientific, and medical journals. I have won several prizes for my academic scholarship, including the Viseltear Prize from the American Public Health Association and the American Anthropological Association. I have held fellowships from the Guggenheim Foundation, the National Science Foundation, the National Institutes of Health, the Holocaust Memorial Museum in Washington, D.C., the Max Planck-Institute for the History of Science in Berlin, the National Library of Medicine, the Howard Foundation, the Hamburg Institute for Social Research in Germany, the National Center for Human Genome Research, the National Endowment for the Humanities, the Center for Advanced Study in the Behavioral Sciences at Stanford, the American Council of Learned Societies, the Andrew Mellon Foundation, the Woodrow Wilson Foundation (Charlotte W. Newcome Fellow), and the Shelby Cullom Davis Center for Historical Studies at Princeton University. I am also an elected Fellow of the American Academy of Arts and Sciences, the oldest scientific academy in the U.S., founded in 1780 by John Adams, John Hancock, and other American scholar-patriots.

I have visited the Piketon facility and am familiar with the historic and cultural value of the overall site, and the history of the uranium enrichment processes that have been operated there since the 1950s. I am also familiar with the work and writings of Mr. Geoffrey Sea, resident in the Barnes Home in Sargents, Ohio. I have reviewed the “Historic and Cultural Resources” section and the corresponding “impacts” and “alternatives” sections of the Draft Environmental Impact Statement for the facility.

I want to briefly note here my disappointment with the NRC assessment of the potential historical and cultural impacts of the proposed centrifuge facility. The report repeatedly states that the expected impacts to historical and cultural resources of the proposed facility are "small," "insignificant," negligible,” etc., when in fact we can expect the impact to be very significant.

Historians in recent years have become increasingly aware of the importance of preserving the integrity of historic and prehistoric sites, this includes protection of such sites in their landscape settings from noise, visual insults, traffic, access obstacles, commercial development, intrusion from physical and electronic security, threats to the safety of visiting members of the public, “aesthetic” or psychological impacts that might discourage tourism, and many other factors, and these concerns have been reflected in strengthened federal legislation and regulation starting with the 1966 National Historic Preservation Act. Sites such as Gettysburg and other parks valued for their historical significance have resisted efforts to compromise such values, and here, in Piketon, we have an instance where there is a threat of

significantly compromising unique historical and cultural values by going ahead with construction, operation and eventual decommissioning of the centrifuge facility.

In his published writing, with a rather unique literary style, Geoffrey Sea exemplifies a certain model of history that sees historical persons and events as interwoven over long spans of time. The locale of what used to be called Sargents, Ohio, has become a model for his analysis, and an ideal one, for the various individual locations in close proximity in Sargents weave together in that seamless fabric we call history.

Historians will be troubled by the shallow and cavalier treatment offered by NRC Staff's assessment of the impact of this proposed plant on historical and cultural resources. The site of the last passenger pigeon slaying and the Barnes family experience and homestead, together with the important earthworks, and the recently-closed Gaseous Diffusion Plant could be part of an important public historical site with both educational and recreational value. The integrity of this site must be protected for future generations; indeed it is precisely the kind of site our preservation laws are designed to protect.

The Barnes Home is at the center of this matrix, for the Barnes family brought to world attention the enormous prehistoric earthwork complex to the west of the house, which became known as the Barnes Works. South of the home is the kill-site of the last known wild passenger pigeon, which was mounted in the home. North is the Sargent Home, which was occupied by a family that married into the Barnes clan and brought Abraham Lincoln in to view the earthworks. East of the home is the centrifuge plant, close to the excavated site of a burial mound that became a waste pit for the Department of Energy; and the X-326 building, which has historic value as America's only dedicated facility for the production of bomb-grade uranium.

It makes no sense to analyze these locations individually, as is done in the DEIS, neglecting some of them entirely, at each step blind to the historic panorama that links and surrounds. That's an approach that intends to be dismissive of discovered impacts, and dismiss them it does, cutting the historical matrix into little segregated insignificant bits.

For example, the earthwork discovered at the Well Field site is considered separately from discussion of the Scioto Township Works (Barnes Works), even though a glance at the map and a consideration of known Hopewell patterns of construction leads to a reasonable conclusion that these once were connected. (Eminent historian Roger Kennedy has in fact suggested that they were connected and that the Great Hopewell Road extended through the Barnes Works in his book, *Hidden Cities: The Discovery and Loss of Ancient North American Civilization*, Free Press, 1994.")

Too, there is no suggestion from the DEIS that the Barnes Home and the Barnes Works have any connection whatsoever, as absurd as this segregation is on its face. The DEIS enforces this segregation by using the term "Scioto Township Works" – though "Barnes Works" was the name used in the last extensive survey and description by Gerard Fowke in *The Archaeological History of Ohio*. The name "Barnes Works" is also least confusing since the historical name, "Seal Township Works," no longer corresponds to the township jurisdiction.

NRC apparently would not like to acknowledge that the building where bomb-grade uranium was produced and the extinction of the passenger pigeon might have any connection. But they are connected, and that connection served as the basis for Geoffrey Sea's long meditation on extinction and survival published in the *American Scholar*, "A Pigeon in Piketon." At the end of that piece, which was published before USEC chose Piketon as site for its centrifuge plant, Mr. Sea proposed that the X-326 building, now awaiting decommissioning, be

dedicated as a monument to the passenger pigeon.

This is a serious proposal for a number of reasons. First, there is no national memorial to the passenger pigeon, though the species was the most abundant vertebrate species on the continent and its passing is considered to be the exemplar of man-made extinction. The famous ecologist Aldo Leopold erected an extraordinary monument at the site of the last passenger pigeon kill in Wisconsin. A national monument rightfully should be located at or near the last kill site of all, in Sargents. Arguably it has not happened only because that location was not precisely known. But now Mr. Sea has found it, within a mile or two of X-326 and the Barnes Home, and that is of paramount importance to environmental history.

Second, there are no current plans for the X-326 building, which may not be easily demolished owing to the high degree of radioactive contamination inside. Entombment of the building might be the only technically viable and cost-effective solution, and if safe entombment can serve the larger purpose of a national monument, as a structure to spur reflection upon the folly and avarice of Man, so much the better. That is the essence of Mr. Sea's proposal, as was perhaps anticipated by Aldo Leopold when he wrote,in 1949, in *A Sand County Almanac*, of human superiority lying in our capacity to remember and mourn the passenger pigeon, "rather than…in Mr. Vannevar Bush's bombs."

Remembrance and memorial are at the vanguard of historical thinking and historical preservation at the moment. I have served as an advisor to the Holocaust Museum, which set the trend, and there is now an active program, sponsored in part by the Department of Energy, to memorialize the cold war and Manhattan Project sites around the nation. Mr. Sea's proposal should be analyzed in the context of this program.

Which obviously is inconsistent with licensing and completion of USEC's centrifuge plant. The USEC plant would sit in between the Barnes Home and the X-326 building, physically obstructing the possibility of connecting these locations as a memorial site and visitor attraction. How on earth can that be considered as minimal impact?

The potential for a historical landmark site that encompasses the kill-site of the Sargents Pigeon, the Barnes Works, the Sargent and Rittenour homes, and the X-326 building – with the Barnes Home at its center – is great. But only if there is no centrifuge plant at the middle of it, obstructing passage with security fences, scaring visitors away with the potential for catastrophic events and toxic releases, obviating the memorial message that we have learned our lesson to overcome folly and greed.

The building and operating of a uranium enrichment plant right over the fence-line from the Barnes Home will severely impact prospects for a public center to develop this as a place for education, tourism, and long term commemoration. Archaeologists here at Stanford and elsewhere are developing models for how this can be done at sites designated by UNESCO as being of historic significance.

Threats to this integrated set of sites from construction of the centrifuge plant are of several types, including (but not limited to): fences; roads; traffic; security surveillance (including security gates and closed access to some roads); restrictions on movement; diminishment of attractiveness to visitors; risk of terrorist attack (keeping people away); compromises from noise; diminishment of the aesthetics of the site, public worries (real or justified) to the dangers of uranium enrichment near such a site, just to name a few; vulnerability of buildings, land and people to catastrophic accidents, toxic emissions and pontential damage from decontamination activities. The USEC report does not grapple with the potential impacts

in a way that is historically responsible.

There is no evidence from the DEIS that NRC actually studied these impacts on-site, only that lots of papers were shuffled to rule out impacts by fiat of definition. For example, did NRC staff visit the Barnes Home to see if the ACP site activities could be heard at night? (Mr. Sea reports they can.) Did NRC staff visit the Barnes Home at all, or the kill site of the Sargents Pigeon, or the Sargent Home? (Apparently not.) Did NRC consult any experts on the development of historic commemoration sites? (Apparently not.)

The DEIS contains another fundamental flaw in its approach to assessing impact in that it compares life with the centrifuge plant to life as it exists today. If this were a green-field site, that would be a proper approach, because, if the plant were not built, the green-field would continue on as is, as far as we know.

In this case, however, the massive Gaseous Diffusion Plant on the site has just shut down. The site is now maintained by DOE as a production site, with all the attendant apparatus of infrastructure and security, in anticipation of USEC's plant. Thus it is a tautology that the centrifuge plant will have little impact on a site already in preparation for a centrifuge plant.

But if the plant is not licensed and built, then the site will not be a DOE production site any longer. It would revert to cleanup, environmental restoration, and alternative use, as has occurred at other closed DOE production plants like Fernald and Rocky Flats. Site ownership would pass from DOE to the Department of Interior, and DOI would implement a mixed-use development plan for the site as it has done elsewhere. That near future must be the baseline for comparison in any impact assessment, under both NEPA and NHPA.

010-1-2

Substantial potential exists for the development of historical attractions, tourism, and sites of economically sustained commemoration at Sargents. It is not true, as NRC reports, that "the impacts to historic and cultural resources identified onsite and around the site's perimeter would be small" (p. 2-38). The combination of the three historic homes of the Barnes, Sargent and Rittenour families, the Scioto River history, unique geological features, the passenger pigeon history (centered on the Barnes home), and the long-standing Native American presence--including a number of significant prehistoric earthworks--make this a site of substantial historical importance. There is an integrity to these various historical and cultural aspects taken together that is not reflected in the DEIS; these sites have to be evaluated as a whole.

010-1-1

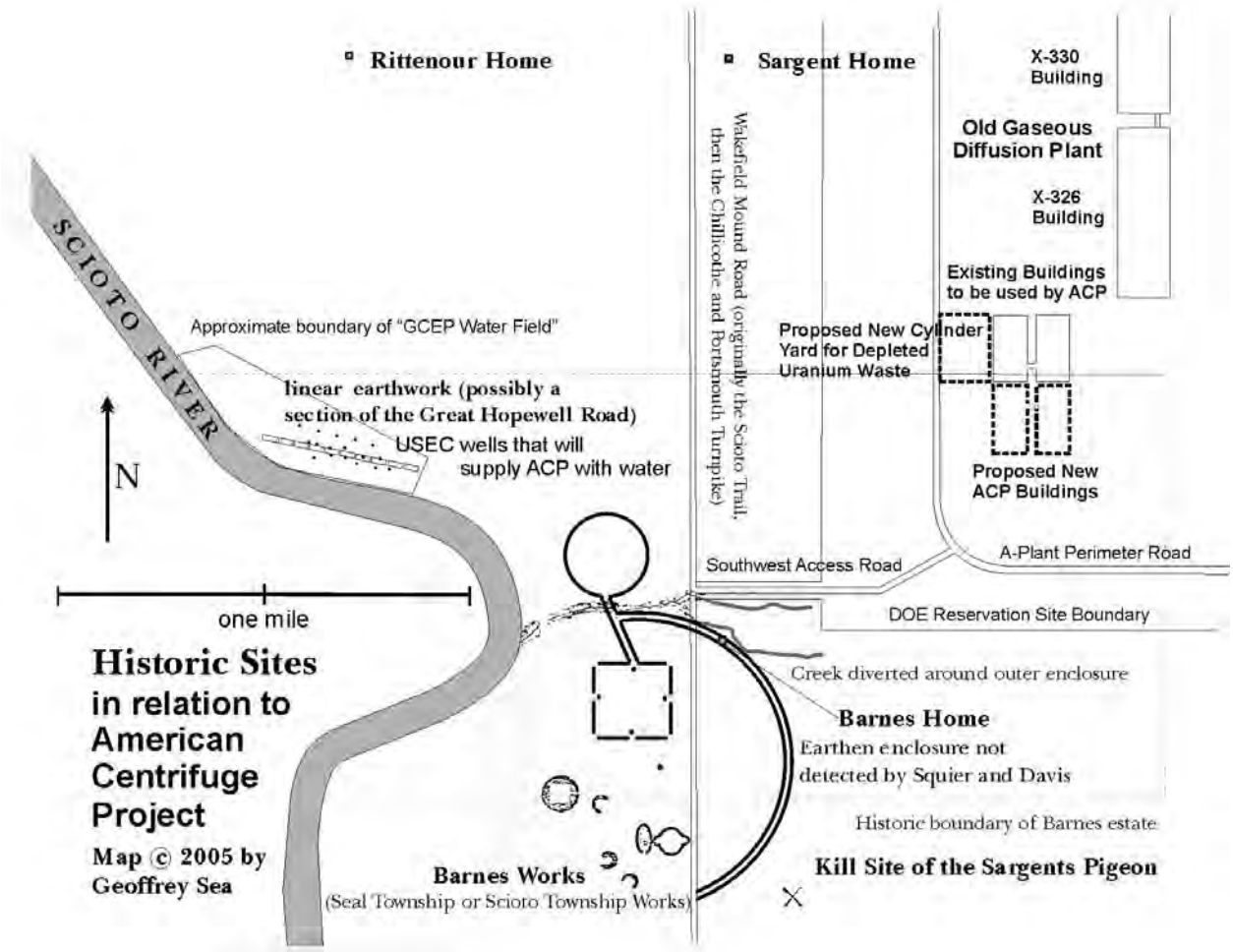
I have visited the Piketon site, and have some understanding of its history and integrity. I have consulted with Mr. Sea, and have confidence in his assessment of the potential historic value of this site, and the threats posed to it by the expansion of the USEC facility. Mr. Sea has lectured at Stanford University on his research into this topic, and there is strong interest here and elsewhere in the story he has to tell. I should say that I was surprised--astonished in fact--to find his name not even mentioned in the DEIS, despite the fact that he knows more about the cultural history of this area than anyone alive. Mr. Sea has done important work evaluating the history and significance of this site, and it is <u>absolutely essential</u> that he be consulted in any effort to assess the potential impact of the centrifuge construction.

In conclusion, this site must be considered as an integrated whole, and should not be looked at piecemeal. Our federal preservation laws require that sites under consideration be studied for potential impacts on historical and cultural value, and the draft EIS certainly does not do an adequate job in exploring that potential impact.

Robert N. Proctor
Professor of the History of Science
Stanford University

e-mail: rproctor@stanford.edu

Map of Historic Sites in relation to American Centrifuge Project created by Geoffrey Sea. This map shows the historic sites as they once existed in conjunction with the current and proposed buildings of the ACP. It is intentially anachronistic to give a sense of respective locations and distances. This map has been updated on the basis of new information as of 10/24/05.



010-2

Exhibit B
[hand-written original transmitted via facsimile]

Brookhill Farm
2163 Scottsville Rd.
Charlottesville, VA 22902
27 February 2005

Nuclear Regulatory Commission

To Whom it may concern

Re: Piketon, Ohio Centrifuge Operation

As a neighboring landowner, I raise the following concerns about the expansions of the centrifuge operation at the Piketon, Ohio Plant.

1. I own the Scioto Trail Farm on State Route 23. Presently the farm is approximately 370 acres. The major portion is on the west side of State Route 23 and goes to the Scioto River.

2. The farm has been in my wife's family for generations. The Rittenours, Seargents, and Barnes were influential in the history of the Scioto Valley. From the oral history of the indian culture of the Scioto Valley, stories are told of the indian foot races along the lower portion of the farm. The historic nature of the property should qualify it for the National Historic Registry.

010-2-1

3. During 1966, the NHPA legislation was passed which mandated that government agencies had a moral and legal obligation to weigh the impact that projects have on historic surroundings. The government took 31.421 acres for a permanent easement in 1982. This was for a well field along the Scioto and for pipe lines and a road. Never was the NHPA legislation addressed.

010-2-2

4. At one time the farm was over five hundred acres. The DOE took a large portion of the farm during the early 1950s. There was a great projection on the financial benefits and jobs that would be gained with the nuclear energy project. The only thing that it did was ruin a once beautiful farming valley. There are few, if any, large landowner farmers remaining on their land. From my perspective, the plant has been a detriment and enlarging it will continue that degradation. In the process, it will destroy more Hopewell Indian relics and more of the early history of Ohio will be lost.

5. As an out of state land owner, I was not aware of the enlargement of the centrifuge plant. I would have objected earlier. This letter is written in support of Geoffrey Sea's intervention.

Sincerely,

Charles W. Beegle

Exhibit E. Statement of Jerome C. Tinianow, Executive Director of Audubon Ohio and Vice President of the National Audubon Society

Audubon Ohio
692 North High Street, Suite 303
Columbus, OH 43215-1585
Tel: 614-224-3303
Fax: 614-224-3305
www. Audubon.org

February 24, 2005

Dear Friends,

I am the Executive Director of Audubon Ohio, a conservation and wildlife advocacy organization with over 14,000 members throughout the state, some of whom live in and around Pike County, Ohio. We currently have 18 past and present donors living in Piketon itself.

Audubon Ohio is the Ohio office of the National Audubon Society, a 100-year-old conservation organization with over 400,000 members nationwide. Our mission is to conserve and restore ecosystems, focusing on birds, other wildlife and their habitats, for the benefit of mankind and the Earth's biological diversity. Geoffrey Sea is one of our members.

In pursuit of our mission, Audubon Ohio and the National Audubon Society believe it is important to protect, preserve and commemorate sites that have a special place in the history of conservation and ecology. Two such sites are in Pike County, where the last passenger pigeon ever sighted in the wild was shot by Press Clay Southworth on March 22, 1900. Over the years, investigators have tried to locate the precise scene of the shooting, without success until Geoffrey Sea did find the former residence of the Southworths and the nearby Sargents Grain Mill along Wakefield Mound Road, approximately one mile south of the A-Plant southwest access road. An affiliated site is the Barnes Home at 1832 Wakefield Mound Road, where the bird was mounted and displayed between 1900 and 1915, when it was donated to the Ohio Historical Society. The specimen is now prominently displayed at the OHS Museum in Columbus.

The extinction of the passenger pigeon, once the most populous bird in the world, over the course of a single century, is generally regarded as the most important and most instructive of all extinctions made by man. That is one reason that preservation and commemoration of the Pike County sites are so crucial. The other reason is that this is the only place on earth where the slaying of the last-seen wild survivor of a species has been located. The sites should be preserved so that they can be properly marked and made available for public education. At the scene of the last passenger pigeon shooting in Wisconsin, the great American ecologist Aldo Leopold erected a famous bronze

statue. Pennsylvania also has its passenger pigeon memorial, erected by the Boy Scouts of America at Pigeon Hills. The proper place for a national memorial is in Pike County, Ohio, as proposed by Geoffrey Sea in his essay in *The American Scholar*.

John James Audubon himself was moved to conservation activism by his witness of pigeon hunts, and his description of them stands as one of the earliest and most compelling bits of ecological writing. Audubon described a raid on a nesting of passenger pigeons this way:

"The tyrant of the creation, man, interferes, disturbing the harmony of this peaceful scene. As the young birds grow up, their enemies, armed with axes, reach the spot, to seize and destroy all they can. The trees are felled, and made to fall in such a way that the cutting of one causes the overthrow of another, or shakes the neighbouring trees so much, that the young Pigeons, or squabs, as they are named, are violently hurried to the ground. In this manner also, immense quantities are destroyed." (John James Audubon, *Bird Biographies*, "The Passenger Pigeon.")

The proposed construction and operation of a uranium enrichment plant at the southwest corner of the Department of Energy reservation would impact these historic sites and potential future projects in a number of ways. The location of the new enrichment plant borders on the Barnes Home property, and some of the land was originally taken from the Barnes estate. Safety and environmental fears, along with the conspicuous security regime, if not crafted with sensitivity to the historic importance of the neighboring property, could certainly deter public visitation to and appreciation of the historic sites.

The National Historic Preservation Act provides mechanisms for averting and ameliorating such impact. Unfortunately, the Department of Energy has not complied with its obligation to implement the various provisions of the act, creating now a monumental challenge for how to bring the proposed project into accord with federal preservation law.

Audubon Ohio supports Geoffrey Sea's intervention in this case. There must be an advocate for preservation and ecological interests involved in the proceedings.

Sincerely,

Jerome C. Tinianow
Vice President and Ohio Executive Director

Exhibit F. Statement of Roger G. Kennedy, former director of the National Park Service and Director Emeritus of the National Museum of American History, author of *Hidden Cities: The Discovery and Loss of Ancient American Civilization*

Subject: Intervention support
Date: 2/24/2005 12:20:18 PM Eastern Standard Time
From: roger@rkennedy.net
To: GeoffreySeaNYC@aol.com

To the Commissioners, Secretary and Atomic Safety and Licensing Board of the US Nuclear Regulatory Commission and to Whom it May Concern.

I am traveling away from home and letterhead, lecturing at Stanford University and for a group of private foundations in San Francisco. However, I wish to use this electronic means to support the intervention of Geoffrey Sea in the USEC American Centrifuge Plant licensing action.

Mr. Sea is entirely correct as to the importance of the Barnes works to American history and to our living cultures. It is among the half-dozen most important pre-Columbian sites in the Ohio Valley, and when more work is done on it by competent archaeologists it may turn out to be among the half dozen most important in the United States. If the people of Louisiana can save Poverty Point, and the people of East St. Louis can save Cahokia, surely the more affluent people of Ohio can rally to protect their heritage from desecration. The balance is hardly even between a mere adjustment for convenience of an atomic energy plant which can go anywhere within a hundred mile radius, and a precious place with no equals, no counterparts, and no chance of replication. This generation would be disgraced if further damage were done to an inheritance from the ages. The Barnes site must be saved.

For that to happen, it might be well for the site ultimately to be placed in responsible public hands, such as the National Park Service or the Ohio State Park System, or within the jurisdiction of the United States Forest Service.

I would be happy to verify the authenticity of this commendation by responding to an email sent the sending address.

Roger G. Kennedy

Director Emeritus, National Museum of American History

Former Director, the United States National Park Service

Exhibit H. Statement of John E. Hancock, Professor of Architecture and Associate Dean at the University of Cincinnati, Project Director of “EarthWorks: Virtual Explorations of the Ancient Ohio Valley”

University of Cincinnati
College of Design, Architecture, Art, and Planning
Office of the Dean
P.O. Box 210016
Cincinnati OH 45221-0016

Phone (513) 556-4933 / Fax (513) 556-3288
Web http://www.daap.uc.edu

February 21, 2005

To: The Commissioners, Secretary and Atomic Safety and Licensing Board of
the US Nuclear Regulatory Commission, and Whomever it May Concern

From: John E. Hancock, Professor of Architecture and Associate Dean
Project Director “EarthWorks: Virtual Explorations of the Ancient Ohio Valley”

Re: Support of the Intervention of Geoffrey Sea in the USEC American Centrifuge Plant licensing action.

One of North America's richest prehistoric legacies lies mostly buried or destroyed, and nearly invisible, beneath the modern landscapes of southern Ohio. The first settlers in this region stood in awe, amidst the largest concentration of monumental earthen architecture in the world. These included effigies like the Great Serpent Mound, and hilltop enclosures like Fort Ancient; but the most spectacular were the many embankments and enclosures formed into huge, perfect, geometric figures. Two centuries of archaeological research have shown that these were created by ancient Native cultures dating back as far as about 2000 years.

Apart from three of these figures at Newark, Ohio (two circles and an octagon), no others exist in complete, visible form, though several survive in ways still useful to archaeological research. The circle-and-square at Piketon, also known as the Barnes Works or the Seal Earthworks, despite its scant remains, is significant for several reasons:

- it is among the least known or investigated to date by archaeologists;

- its double-figure shape links it to two of the most culturally-revealing earthworks that have been investigated (Newark and High Bank), suggesting similarly-precise astronomical functions akin to those at Stonehenge;

- it is at the center of the thickest concentration of these works, between Portsmouth and Chillicothe, undoubtedly part of a culturally important series, and possibly linked by an extension of “The Great Hopewell Road”;

- through its connections with the Barnes family it holds special significance in the history of the State of Ohio, its early links to Virginia, and the early importance of its earthworks in the birth of American archaeology and national identity;

- it may include as part of its design a heretofore unrecorded earthen circle, of a size unknown anywhere else in the world.

The preservation of this site has at least two major benefits:

- it will enable the continuing study of a unique asset from this ancient Ohio Valley culture, now beginning to make its way back into the public consciousness in our region and beyond.

- it will strengthen the resource base for the increasingly-lucrative cultural heritage tourism industry and its associated high-quality, non-intrusive economic development in southern Ohio.

The goal of our multimedia “EarthWorks Project” is make these hidden or vanished sites visible again, and offer them in new ways, to new audiences, in new electronic media such as museum exhibits, computer discs, and a Website. Three times funded in this work by the National Endowment for the Humanities, we have confirmed the national cultural and historical significance of this ancient culture and their spectacular architectural monuments. Numerous inquiries from Europe attest to the international significance of this unique Ohio heritage, and public awareness and interest here at home is also clearly increasing.

The opportunity to preserve a unique resource that sheds light on our predecessors in this valley should not be missed.

Yours sincerely,

John E. Hancock

Exhibit N. Statement of Karen Kaniatobe, Tribal Historic Preservation Officer of the Absentee Shawnee Tribe of Oklahoma

Absentee Shawnee Tribe of Oklahoma
Cultural/Historic Preservation Department
2025 S. Gordon Cooper
Shawnee, Oklahoma 74801-9381
(405) 275-4030 Fax: 405-878-4533

February 24, 2005

RE: Support of Geoffrey Sea's intervention in the USEC American Centrifuge Plant Licensing Action

To the Commissioners, Secretary and Atomic Safety and Licensing Board of the US Nuclear Regulatory Commission and to Whom it May Concern:

I am writing in support of the intervention of Geoffrey Sea in the USEC American Centrifuge Plant licensing action. I am the Tribal Historic Preservation Officer for the Absentee Shawnee Tribe. Our interest in supporting Mr. Sea is based on the fact that Ohio is part of our ancestral homelands. Through historical research we have identified a number of village sites in the Ohio Valley. In fact, quite a few are located along the Scioto River. Furthermore, if you look at a map, you will notice that the names of towns, cities and counties reflect the Shawnee's historical presence within the state of Ohio.

We are part of the Algonquian family of Native American peoples, and the Algonquian tribes of the Ohio/Great Lakes region are collectively believed to be descended from the culture called Ft Ancient. In turn the Ft Ancient are considered descendants of the Hopewell culture. The people of the Hopewell Culture built the many astounding geometric earthworks, including those called the Barnes Works in Scioto Township.

All of the historic and prehistoric sites in the region of Scioto Township have great meaning and significance. The Barnes Works, being one of the largest and most beautiful prehistoric architectural works in North America, is a site that has already suffered desecration and destruction--but what remains can be saved.

Many more historic sites may exist in the area, remaining to be found for lack of extensive survey. Surveys to find such sites should be conducted as part of any 106 review for the ACP.

The American Centrifuge Project may impact all these sites in many ways that have not been studied or considered.

Physical destruction caused by new buildings is only one concern. We also need to consider potential destruction of earthworks along the river caused by additional water pumping, the impacts of herbicides used to defoliate a security zone around the DOE site perimeter, the impacts of keeping the area under national-security restriction, rather than opening the area to study and tourism, and the aesthetic impacts of marring a sacred area with security fences, more roads, and shipments of radioactive fuel and waste.

Our tribe has not been contacted by DOE about the American Centrifuge Project for consultation. We first learned about the American Centrifuge Project from Geoffrey Sea. Please note that we count on being included as a consulting party in future 106 and 110 reviews at the Piketon site.

We understand that the NRC has initiated a section 106 review as part of its licensing process. That is good. However this is an important test for preservation law. If a major federal nuclear project involving two different federal agencies can proceed without any consideration of one of the largest sacred sites in North America next door, then it means that the provisions of the National Historic Preservation Act have become meaningless.

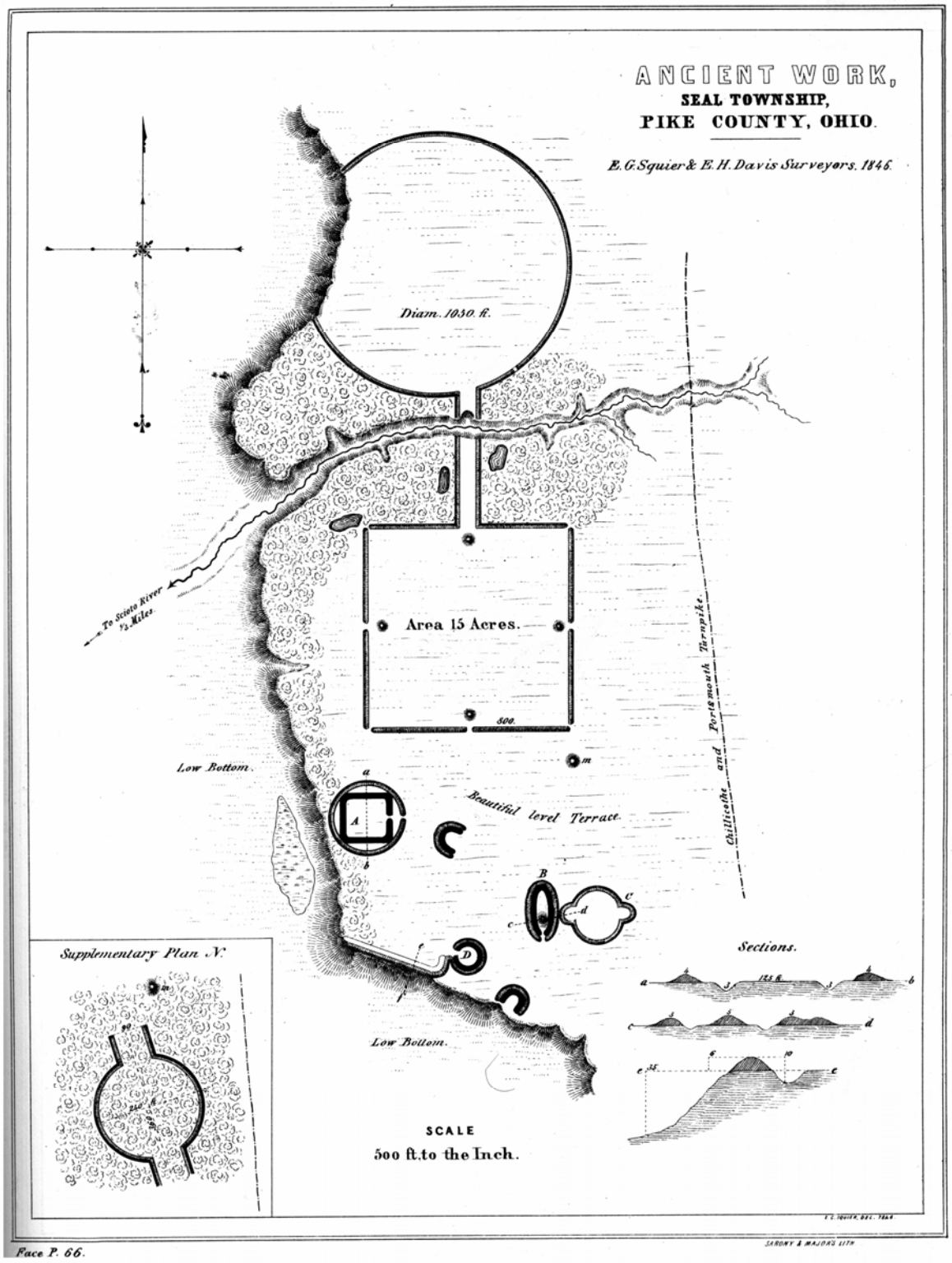
Many alternatives to the proposed action deserve full study and consideration. USEC's environmental report mentions the possible alternatives of moving ACP to the north side of the Piketon site or moving it from Piketon to Paducah, Kentucky. Since the current site at the southwest corner of the DOE reservation involves many potential impacts, those alternatives among others need careful review.

Respectfully,

Karen Kaniatobe
Tribal Historic Preservation Officer

Exhibit O. The Seal Township Works, later called the Barnes Works or Scioto Township Works. Plate XXIV from Ephraim Squier and Edwin Davis, *Ancient Monuments of the Mississippi Valley*, 1848. (Note that the more accurate measurements given by Cyrus Thomas and Gerard Fowke half a century later are substantially different, making the areas of circle and square between 10% and 15% larger.)

XXIV.



Face P. 66.

008

Exhibit Q. Thomas F. King, preservation consultant, author of four books on federal preservation including *Federal Planning and Historic Places: the 106 Process*

Thomas F. King, PhD.
P.O. Box 14515 Silver Spring MD 20911, USA
Telephone (240) 475-0595 Facsimile (240) 465-1179 E-mail tfking106@aol,com

Cultural Resource Impact Assessment and Negotiation, Writing, Training

February 24, 2005

To: The Commissioners, Secretary and Atomic Safety and Licensing Board of
the US Nuclear Regulatory Commission, and Whom it May Concern.

I am writing in support of the intervention of Geoffrey Sea in the USEC American Centrifuge Plant licensing action. As a professional practitioner of archaeology and historic preservation in the United States, I am deeply concerned about the potential impacts of the proposed action on historic properties, and about the adequacy of NRC's and the Department of Energy's (DOE's) compliance with Section 106 and 110 of the National Historic Preservation Act and other federal environmental and cultural resource legal requirements.

A copy of my professional resume is attached. I hold a PhD in Anthropology from the University of California, Riverside, and have been practicing in historic preservation and environmental impact review for almost forty years, both within and outside the Federal government. I have some twenty years experience as a government official with the Advisory Council on Historic Preservation, the National Park Service, and the General Services Administration, and am currently self-employed as a consultant, writer, mediator, and trainer in historic preservation, tribal consultation, and environmental review. I am the author of four textbooks and numerous journal articles on these subjects, as well as a number of federal regulations and guidelines. My particular specialty lies in working with Section 106 of the National Historic Preservation Act, which requires Federal agencies to take into account the effects of their actions on places included in and eligible for the National Register of Historic Places.

It is because of my concern for the proper application of Section 106 and related authorities, and for the proper management of historic places, that I support Mr. Sea's intervention. Mr. Sea has, I believe, uncovered significant problems with NRC's and DOE's compliance with the historic preservation and environmental

laws, and identified significant potential impacts on places eligible for inclusion in the National Register. His intervention should be given your very close attention.

Respectfully,

Thomas F. King

EXHIBIT V

Thomas F. King, PhD
P.O. Box 14515, Silver Spring MD 20911, USA
Telephone (240) 475-0595 Facsimile (240) 465-1179 E-mail tfking106@aol.com

Cultural Resource Impact Assessment and Negotiation, Writing, Training

March 29, 2005

Geoffrey Sea
340 Haven Ave., Apt. 3C
New York NY 10033

Dear Geoffrey:

You've asked me for my observations on how the Nuclear Regulatory Commission (NRC) staff's positions on the scope of its responsibilities in the USEC matter, and on the tests that you must meet in order to intervene, relate to the purposes and requirements of the National Environmental Policy Act (NEPA) and National Historic Preservation Act (NHPA). I provide these observations based on some 40 years of professional practice under both statutes, including participation in the development of amendments to the latter and federal regulations and guidelines implementing both.

Both NEPA and NHPA were enacted in order to protect the public interest in the human environment in general (in the case of NEPA) and historic resources in particular (NHPA). It follows that the interested public – made up of people like yourself – has a large role to play in implementation of these laws, and this is reflected in the regulations that agencies must follow in complying with them. Both the NEPA regulations (40 CFR 1500-1508) and the Section 106 NHPA regulations (36 CFR 800) provide for participation in review by interested parties and the general public. The Section 106 regulations are particularly directive in this regard, providing both for general public involvement and participation and for identifying particular "consulting parties" whose interests in the undertaking under review, or its effects, entitle them to ongoing active involvement in the negotiation of ways to resolve adverse effects on historic properties.

It appears that the NRC staff has a much, much more restrictive notion of public involvement than that underlying either NEPA or NHPA. I suspect that this reflects the fact that the staff's policies and procedures for environmental review spring from a different intellectual tradition than do those underlying laws like NEPA and NHPA. A thought-provoking (though rather turgid) recent book that explores this sort of

dichotomy is *Citizens, Experts, and the Environment: The Politics of Local Knowledge,* by Frank Fischer (Durham, Duke University Press, 2000). Fischer discusses the world-view that is common among environmental engineers and others involved in the sort of environmental review that is driven by the toxic, hazardous, and radiological substances laws, in which environmental impact analysis is construed to be a matter of rigorous, generally quantitative, scientific analysis. It is a matter for scientific experts to concern themselves with, and is viewed as far too complicated for ordinary citizens to understand. In this world-view, public involvement is a troublesome requirement imposed by the political system, which should be kept to a minimum so the experts can get on with their work. Fischer documents that this sort of thinking is widespread in the environmental specialist community from which agencies like NRC draw their staffs, and from which their personnel derive their intellectual direction. He also documents how thoroughly wrongheaded it is, but that's another matter. My point is simply that the NRC staff's thinking on how people like you should be involved and issues like yours should be considered in its decision making has much more to do with the philosophical biases of its members than it does with any actual legal requirements.

The NRC staff seeks to limit your access to its decision making process in a variety of ways – for example by insisting that to be recognized as having "presumptive standing" you not only be "injured," but be a resident of the surrounding vicinity, and at the same time insisting that your "injury" must be of a particular kind. Let's look at the last of these first.

The staff asserts that "(i)n Commission proceedings, the injury must fall within the zone of interests sought to be protected by the AEA or the National Environmental Policy Act ("NEPA")." It is not clear to me why only these two laws are pertinent and not, for instance, NHPA, but for the moment let's assume the staff is correct; your "injury" must relate to the "zone of interests sought to be protected" by the AEA and NEPA. I claim no expertise in the AEA, but I do know about NEPA, and it appears to me manifestly obvious that your "injury" falls well within the sphere of NEPA's "protected interests."

NEPA directs agencies to consider the impacts of their actions on "the quality of the human environment." At 40 CFR 1508.27(b) the NEPA regulations of the Council on Environmental Quality (CEQ) list a range of factors to be considered in judging the significance of impacts on the quality of that environment. It is a long and varied list, and it repeatedly refers to "cultural" and "historic" resources. It surely follows that "interests" in such resources are "protected" to the extent NEPA affords

protection to anything. Thus your interests in protecting the historic character of the area subject to effect by NRC's permit action are entirely within NEPA's "sphere of protection."

Why does the NRC staff not understand this? I suspect that – based on the intellectual tradition from which they come – the staff's experts honestly believe that the quality of the human environment is not affected by anything that fails to irradiate someone to a hazardous degree. It follows from that line of reasoning that your interests in the historic character of the area are irrelevant to the potential for environmental impacts.

It also follows, of course, that only actual residents of the vicinity can be "injured," because only residents are likely to suffer a high enough dosage of something emanating from the proposed facility to affect their health and safety. Therefore, it is logical within the staff's likely framework of assumptions, that only nearby residents should be recognized as having presumptive standing. But NEPA isn't about only health and safety. The great bulk of NEPA cases that have been litigated have been brought by parties whose injuries involved damage to places and things they enjoyed and thought important – forests, mountains, animals, bodies of water, beautiful vistas, wilderness, fish, sacred sites, historic places, archaeological sites. Courts routinely grant standing to plaintiffs under NEPA on such grounds; can the staff be seriously proposing that the Commission adhere to a more exclusive standard?

It is also difficult to understand why, if an "injury" within NEPA's "zone of protected interests" is a legitimate topic for NRC consideration, an "injury" within NHPA's "zone" is not equally legitimate. Both laws were enacted by Congress; both apply to all federal agencies; both impose rather similar requirements. To the best of my knowledge, NRC has never been granted an exemption from NHPA's requirements. Your interests clearly fall within NHPA's "zone," since they concern historic properties and effects on them. Under the Section 106 regulations, your interests entitle you to consult about the significance of such properties and how to resolve adverse effects on them. Why does the NRC staff think the Commission can or should deprive you of this entitlement?

Here again, I suspect that the culprit is the world-view of NRC's staff experts. If one believes that environmental impacts are limited to things that scientific experts can quantify, and ordinary citizens have nothing useful to contribute to the discussion, then it follows that all NRC need do to address impacts on historic properties under NHPA is to have expert surveys done and consult with the State's designated expert, the State Historic Preservation Officer. If further follows that the Commission's staff can and should

keep the results of its expert studies secret, as it has in this case, and simply present the public with its conclusions. Within this framework of assumptions, the fact that the Section 106 regulations call repeatedly for participation by interested parties and the public is irrelevant; such requirements are mere politico-regulatory hoops to be gotten through with as little effort as possible.

But this interpretation of NHPA's requirements is inconsistent not only with the letter of the regulations but with routine practice in Section 106 review and with the record of case law. Courts have generally been quite liberal in recognizing the standing of interested parties in Section 106 litigation, and certainly have never imposed anything like a residency requirement. In the recent *Bonnichsen et.al.* ***v.*** *US* (Civil No. 96-1481JE, District of Oregon), for example, the court found that a group of physical anthropologists, none of whom lived in the vicinity of the discovery, not only were sufficiently "injured" by the Corps of Engineers' treatment of a human skeleton found on the bank of the Columbia River to give them standing to sue, but that the Corps had violated the NHPA by failing to consult them under Section 106. Here again, NRC's staff seems to be establishing for the Commission a more exclusive standard than that imposed by courts of law; I have to wonder about the basis for this.

In summary then, what I think we see in the NRC staff's conclusions about your intervention is the expression of a world-view that is common among experts in toxic, hazardous, and radiological impact analysis, that may be sensible in some contexts but thoroughly warps the process of review under NEPA and NHPA. To narrowly limit the range of interests in the public with whom one will engage in environmental impact analysis, and then to insist that these interests themselves demonstrate the existence of impacts ("injuries"), stands the process of environmental review on its head. It is the responsibility of the Commission and its staff to ascertain what impacts its permit action may have on the quality of the human environment under NEPA, and on historic properties under Section 106; it is not your responsibility to do so for them.

I realize that the NRC staff would doubtless argue that all the above factors might give you "regular" standing but not "presumptive" standing – you might have standing, but it would not be automatic unless you actually lived adjacent to the facility. But this distinction still reflects the assumption that one cannot be really "injured" unless one is likely to be subjected to irradiation. Setting aside the question of whether, as a near-term prospective resident, you are not likely to be subjected in the future to this kind of "injury," it seems to me that NHPA (among other laws) provides the basis for other standards for awarding "presumptive standing" that

are as good as nearby residency; one merely needs to recognize that exposure to radiation is not the only way one can be "injured" by a project like USEC's. Surely the owner of a National Register or Register-eligible property that is subject to potential effect by the project, who appreciates the historic qualities of the property, must be presumed to be subject to injury by the project. Similarly, I would suggest, someone whose cultural identity is tied up in a property that might or might not be eligible for the National Register, or who has research interests in such a property, or who traditionally uses or enjoys such a property, must be presumed to be subject to injury, and hence should be recognized as having presumptive standing. People in all these categories and others are routinely included as consulting parties under the Section 106 regulations; why should the Commission, acting in the public interest, not do the same?

Although the NRC staff does not comment on it, I have to believe that its beliefs about the environmental review process are in line with those of USEC, which in its response to your petition summarily rejected the earlier letter I provided you. USEC wrote:

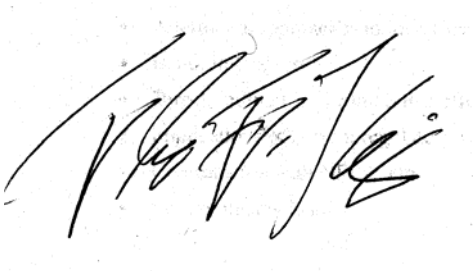
"(4) Finally, Petitioner cites a letter from Dr. Thomas F. King (Exhibit Q), which makes no reference to any specific aspect of the ACP application and therefor (sic) does not provide meaningful support for the contention."

My letter, of course, was intended simply to advise NRC that, in my fairly well-informed professional opinion, you had a point in your allegations, which I thought (and think) it appropriate for the Commission to consider further in its decision making. Under NHPA and NEPA it is not my job, or yours, to go out and conduct the studies necessary to identify and address the impacts of NRC's permit actions; it is NRC's job to do so, or to cause the applicant to do so, with our advice and assistance. You have provided substantive information indicating that NRC needs to take a further look at the historic preservation implications of its permit decision; I was advising NRC that I thought you had a good point, that I didn't think you were an eccentric who could safely be ignored. But because I did not refer to a "specific aspect" of the application, in the eyes of USEC my opinion – like yours – can be rejected out of hand. And of course, as you know, it was impossible for me (or anyone else trying to figure out how USEC had considered impacts on historic places) to address "a specific aspect of the ACP application" because neither the application nor the accompanying Environmental Report refer to the requirements of NHPA or to the National Register of Historic Places. The absence of specific evidence in my statement merely reflects the absence of specifics in USEC's application. To judge from the available record, at least (such as it is), USEC has not thoroughly identified historic properties subject to possible effect by its actions

– to say nothing of other kinds of cultural resources that ought to be considered under NEPA. This creates a flawed record for use by NRC in making its permit decision. I trust the Commission will understand this, and appreciate your efforts to provide it with a broader and more complete basis for its deliberations.

Good luck in your continuing efforts.

Sincerely,



010-7

EXHIBIT W

(original handwritten on letterhead)

SHAWNEE NATION, UNITED REMNANT BAND

TUKEMAS/HAWK POPE—PRINCIPLE CHIEF

ZANE SHAWNEE CAVERNS AND SOUTHWIND PARK
SHAWNEE-WOODLAND NATIVE AMERICAN MUSEUM
2911 ELMO PLACE, MIDDLETOWN, OHIO 45042

Nuclear Regulatory Commission and whomever it may concern,

Dear Sirs,

We were only recently informed of plans to further develop the nuclear project in Pike County, Ohio. I represent the Shawnee Nation, United Remnant Band. The U.R.B is recognized as a descendant group/Tribe of the historic Shawnee Nation in Ohio—SUB. AM. H.S.R.8-1980. Our people do have historic and cultural ties to the site in Pike County, near the Scioto river. We do consider the earth works and the other ceremonial and cultural features there to be sacred. We do, therefore object to the proposed project, for reasons of the project's incompatible and inappropriate use of the land. Any destruction of features on the site, further poisoning of the ground, or limits to access to the site would be very disturbing and considered by us, wrong.

We are regularly informed of sites for proposed transmission towers and pipe lines. We were not told of this project, similarly. In the future we want to be a consulting source. We await your response.

Chief Hawk Pope

P.S. We were informed by Jeffrey Sea, and we do support his intervention in this matter. In the Shawnee language Scioto means "Hair in the Water" as the river passes through so many burial sites and is so prone to flooding. Again, this place is sacred to Shawnee People.

Thank you for your time and consideration.

Chief Hawk Pope

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before the Administrative Law Judges:
Lawrence G. McDade, Chairman
Paul B. Abramson
Richard E. Wardwell

	)	Filed August 15, 2005
In the Matter of	)	
	)	
USEC Inc.	)	Docket No. 70-7004
(American Centrifuge Plant)	)	
	)	
	)	

Declaration by John Hancock, Frank L. Cowan, and Cathryn Long Regarding August 5, 2005 Visit to GCEP Water Field

Under penalty of perjury, we the undersigned do jointly declare as follows:

Statement of Qualifications

1. My name is John Hancock. I am Professor of Architecture and Project Director of the "EarthWorks Project" being produced by the Center for the Electronic Reconstruction of Historical and Archaeological Sites (CERHAS) at the University of Cincinnati. I am an expert in ancient architectural history and in particular the forms, and the problems of visualization, of these earthen structures. A copy of my curriculum vitae is attached.

2. My name is Frank L. Cowan. I am a consulting archaeologist with the company of F. Cowan & Associates. I am a leading expert in the study and excavation of Hopewell earthwork sites with twenty-five years experience in Hopewell archaeology, including nine years of Hopewell research in Ohio. A copy of my curriculum vitae is attached.

3. My name is Cathryn Long. I am a writer and researcher with the Center for the Electronic Reconstruction of Historical and Archaeological Sites (CERHAS) at the University of Cincinnati. My expertise derives from eight years interviewing experts on

the Hopewell culture for CERHAS. A copy of my curriculum vitae is attached.

Purpose of Declaration

5. The purpose of this declaration is to describe the results of our August 5, 2005, visit to a site near to but not contiguous with the Piketon atomic reservation known as the GCEP Water Field or the X-6609 Raw Water Wells. We went to the GCEP Water Field to examine and evaluate the potential historical significance of earthworks reported to be on the site. As discussed below, we identified a human-made earthwork on the site, whose origin is unknown but which appears to pre-date the U.S. Department of Energy ("DOE") water system which is also visible on the site. We believe that further investigation is warranted in order to determine the origin of the earthworks with confidence. (JH, FLC, CL)

Description of Site Visit

6. The GCEP Water Field lies on the east bank of the Scioto River, due west of the main atomic reservation at Piketon. The Water Field is owned by the DOE and leased to USEC. It is our understanding that the DOE installed a water supply system on the Water Fields site in the early 1980s to supply a future centrifuge enrichment plant. The acronym GCEP stands for Gas Centrifuge Enrichment Plant, a project that later became known as ACP or American Centrifuge Plant. (JH, FLC, CL)

7. Though maps of the GCEP Water Field were requested, they were not provided, and we were not allowed to bring cameras or take pictures. Therefore, we are not able to provide a map or pictorial evidence of our observations and conclusions. Therefore, our observations and conclusions are described solely in narrative form. (JH, FLC, CL)

8. We were dropped off by a USEC van at the northern end of the Water Fields site, and walked towards the southern end, with well-heads evident all along the way. The site extends along the Scioto River, with a forested strip adjoining the river bank, and a cleared strip with a road adjoining that. We observed a DOE water supply system in the area, consisting of DOE well heads which appear as either single pipes coming vertically out of the ground, or groups of four larger pipes arranged in a cross-shape. Most of the well heads line the west side of the road, but many extend into the forested area at irregular intervals. (JH, FLC, CL)

9. The forested strip along the river contains a series of natural levee embankments that parallel the river. However, as we moved south about a half mile, the embankment closest to the road straightened out and became level on top. The further south we moved, the straighter and more level it became, with perfectly uniform width at the level top. The structure continues south as far as we could see. Because our escorts gave us no maps or clues about the site boundaries, and because we ran short of time, we could not investigate the southern terminus of the structure. (JH, FLC, CL)

10. From the top of this structure, looking in either direction, the structure was dead straight and regularly formed with a consistent width to the level upper surface, unlike the natural levee formations closer to the river and possible remnants of this structure as it presently appears further north. Given the linearity, we all are of the opinion that this is an artificial structure. We cannot say if other earthworks might lie on parts of the site we could not get to. (JH, FLC, CL)

11. Though the structure is man-made, it is impossible to say upon partial visual inspection what this structure is, how old it is (though it is not very recent), or who built it. However, it is within the realm of possibility that the structure is an Indian earthwork of the Middle Woodland period (about 300 B.C. to A.D. 500). The Ohio Hopewell culture of that period built large scale geometric earthworks, including long straight earthen walls; and their constructions once lined the valley of the Scioto River. (JH, FLC, CL)

12. The southern end of the structure we observed at the GCEP Water Field is very close (within a quarter of a mile) of the northern end of the great Hopewell circle-square complex known as the Barnes Works (also called the Seal Township Works or Scioto Township Works). The Barnes Works is listed on the National Register of Historic Places and is one of the large earthworks along the Scioto recorded in 1848 by E.G. Squier and E.H. Davis (*Ancient Monuments of the Mississippi Valley*, Smithsonian). (JH, FLC, CL)

13. It is also possible that the structure is a 19th or 20th century construction, although we are not aware of any major structures that were built in the area during this time. It is unlikely to be a modern levee because there has been no development in this area worthy of such elaborate protection. It is unlikely to be a remnant of the Erie Canal system, because the canal went along the west side of the Scioto River and this structure lies along the east side. It is unlikely to be part of an early pioneer road or railroad because those were built on dry ground to the east, not in the flood zone. (JH, FLC)

14. We believe it is highly unlikely that this structure could have been made by DOE or USEC, because there are trees on either side of it. Neither USEC nor DOE has identified this structure as related to the water field, and it appears unrelated as the structure is most evident at the south end of the site, while the pipes leading to the pump house and road extend from the north end of the site. In addition, it appears that as the structure proceeds north, it actually crosses the well field, which would negate its usefulness as a protective levee. There is also a report from a former land-owner, Charles Beegle, that earthworks at the site predated DOE's acquisition of the land, and that his deceased wife's family, the Rittenauer family, recognized these earthworks as ancient. This letter from Charles Beegle is attached as Exhibit A. (JH, FLC)

15. A research protocol is needed to determine the identity and age of this structure. That protocol should begin with access to all previous reports of cultural resource investigations conducted at the Water Field property prior to the development of the

Water Field, investigations that would have been required by Section 106 of the National Historic Preservation Act. Access will also be needed to the maps and survey records for the Water Field Site in possession of the DOE and USEC. This should be accompanied by historical research to determine if any known engineering work took place in that area prior to the DOE land purchase, and if the structure was noted on any older survey maps or in any archeological works. If the historical research draws a blank, a cross-sectional excavation of the structure and/or a series of soil cores through the structure would reveal much about its age and identity. (JH, FLC, CL)

16. If the structure is determined to have historic significance, an evaluation should be made of the visual and physical impact of the American Centrifuge Project on that structure. DOE well-heads, by the dozen, line both sides of the structure and some are in the midst of it. Whether pumping of water from beneath the structure damages the structure is a question that should be evaluated by hydrology experts. Further surveys of the entire Water Field Site, with maps, cameras, survey equipment, and unrestricted time are also warranted. (JH, FLC, CL)

17. The GCEP Water Field site lies close enough to the Barnes Works to warrant a close examination of its historic significance. Any prehistoric earthworks that may be identified at that location deserve the utmost attention and protection. Therefore, we urge a program of research at that site as rapidly as possible, in compliance with federal preservation law. (JH, FLC, CL)

___[signed]_____

John Hancock

___[signed]_____

Frank L. Cowan

___[signed]_____

Cathryn Long

August 11, 2005

PIKE COUNTY
CHAMBER OF COMMERCE
P.O. BOX 107 • 12455 STATE ROUTE 104
WAVERLY, OHIO 45690
740-947-7715 • FAX 740-947-7716
www.pikechamber.org

September 30, 2005

9/8/05
70FR53396
(2)

United States Nuclear
Regulatory Commission
Matthew Blevins, Project manager
Mail Stop: T7J-8
Washington, DC 20555-0001

Dear Matt,

I am enclosing a copy of the report the Chamber submitted to the Department of Energy and USEC. As we told Brian Smith yesterday, part of the dilemma we have experienced this summer has been deciding who should receive the information.

There are a couple of points that I want to emphasize. First, none of the people who contributed information received any monetary rewards. This was strictly a case where a number of people wanted to make the history of events clear.

Second, in Jeffery Sea's testimony last night he referred to an earthwork on the Rittenour property. That earthworks is referred to in the report as the Nier property levy. This was designed after the 1959 flood by the soil conservation service.

Should you desire, we would be happy to submit statements from the Pike Countians who knew about or who participated.

I appreciate your interest in this matter.

Sincerely,

Blaine Beekman
Executive Director

E-RIDS=ADM-03
Add=M. Blevins (MXB6)

SISP Review Complete

Template=ADM-013

PIKE COUNTY
CHAMBER OF COMMERCE
P.O. BOX 107 • 12455 STATE ROUTE 104
WAVERLY, OHIO 45690
740-947-7715 • FAX 740-947-7716
www.pikechamber.org

September 28, 2005

United States Nuclear
Regulatory Commission
Matthew Blevins, Project Manager
Mail Stop T7J-8
Washington, DC 20555-0001

Dear Mr. Blevins,

011-1

In response to our conversation, I am submitting a brief report on the origin of a series of levies along the Scioto River in southern Pike County. There are three separate levies. The northernmost is on the Nier property at the U.S. Route 23 entrance to Piketon Department of Energy facility. The middle levy is partially located on a Department of Energy well field located next to the Scioto River on the old Billy Cutlip farm. The third levy extends across 10 farms beginning at the Barnes property and extending south along the river to the Will Acord farm.

The confusion about the origins of these levies was surprising to the Scioto Township residents with whom I spoke. All three were manmade, constructed within the past half-century. No levies had previously existed on the properties. Many of the people involved in the projects are still available to share the record of their experiences. The levy on the Nier property and the levy covering the 10 lower properties were built in direct response to a catastrophic 1959 flood. The third levy near the DOE well field was in response to an economic need rather than a need for flood control.

Each of the levies is located on the east side of the Scioto River. To the west of the river, south of Piketon, the terrain is hilly. To the east, the land rises in a terraced manner from the river bottoms. The lowest level is only a few feet above the Scioto River water level. The second level is about 50 feet higher in elevation and occurs from a few feet to a quarter mile from the river's edge. Flooding along the Scioto River has never reached the top of this second level. Much of the area in question also has a third terrace level, again rising a few feet above the second level.

Historically, the land at river level has been utilized for farming. Late winter flooding on a periodic basis made the construction of residences at this level impractical. Floods on the Scioto River in 1913 and 1937 were considered major, but farmers in our target area either lacked the means or did not feel the need to construct levies to protect their properties.

The 1959 flood had a disastrous effect on the lowest level of land. The current was so strong that it devastated the soil. Art Nelson a farm employee of Layton and Everett Hammond, saw areas were several feet of topsoil had literally washed away, leaving the slate underlay exposed. A mile to the south, deposits of sand left by the flood, measured as much as 25 feet in depth.

Everett and Layton Hammond decided they needed to build a levy. They contacted the Pike Soil and Water Conservation District for assistance. Vince Scott and Jim Steiner were employees of the Federal Soil Conversation Service on loan to the Pike SWCD. Vince and Jim provided technical assistance the Hammond brothers, recommending that the levy be built perpendicular to the river to protect against current damage should another flood of the magnitude of the 1959 flood occur again. Paul "Bunk" Adams, a skilled bulldozer operator who completed a hundred projects for the Soil Conversation Service, completed the work under the supervision of Vince Scott and Jim Steiner. This is the levy on the Nier farm.

Everett and Layton Hammond also were instrumental in organizing the levy along the 10 farms further south. Several hundred acres of land at river level had basically been made untillable by the sand deposits. The final plan included reducing the sand piles by mixing them with soil to farm the levies. There was still plenty of sand left after the levy was completed. Art Nelson remembered that Bill Trusty, a Wakefield businessman hauled sand from one of the largest deposits. Teddy West, a local farmer, learned that much of the sand was sold to the Goodyear Atomic Corporation for use as backfill on a sewer project. Steve Acord, whose family farm was one of those involved in the levy project, stated that it took years to return to land to farm production.

The levy on the Cutlip farm was an entirely different situation. In 1968, Billy Cutlip sold his 390 acre farm to the Standard Slag Company of Youngstown. Standard Slag developed a sand and gravel quarry that eventually covered two-thirds of the property. In the early 1980s the Department of Energy built a series of wells at the river's edge of the Standard Slag property to furnish surface water for the centrifuge process being developed by Goodyear Atomic Corporation at the Piketon DOE facility. Teddy West farmed the lowest and second levels of the Standard Slag property from the 1970s to the early 1990s. He was farming the land when the DOE wells were being drilled. According to Bob Childers who was in charge of operations at the steam plant, the line was a 36" line which ran all the way from the river to the DOE facility. The project was engineered and the contracts were handled by DOE at Oak Ridge so there was not a lot of local DOE contact. Teddy West remembered that the line was not stable at its base. Ralph Beabout an employee at the plant's water system learned that pressure on the line at its source was too great for the concrete anchors designed to hold the line in place. Modifications included more concrete and ground cover. The result is a levy-like appearance.

The second factor was the need for Standard Slag to find a place to put a sizeable amount of overburden when it expanded its quarry operation. One solution, according to Don Nelson, the manager of the Standard Slag operation until 1992, was to take the overburden down to the river

and build a levy, essentially hooking it to the DOE well site. The dirt was placed between the wells and the river because Standard Slag hoped to begin quarrying at the level next to the river. However, when the company ran extensive tests near the river, Don discovered the overburden was to deep and the water table was too high to make quarrying of that area economically feasible.

At first, the levy was kept mowed and it was possible to drive on it. When the quarrying idea was discarded, the levy was left pretty much to itself.

I hope this will answer some of the questions.

Sincerely,

Blaine Beekman
Executive Director

9/8/05
70FR53396

(10)

From: "Elisa Young" <elisay@earthlink.net>
To: <NRCREP@nrc.gov>
Date: Mon, Oct 24, 2005 10:57 PM
Subject: Fw: Important/USEC ACP DEIS deadline

> Dear Yawar Faraz:
>
> The DEIS seems to omit any information or analysis about the product of
> the Centrifuge Facility.
>
> We believe the process will not be complete until the NRC evaluates the
> impacts of the use of the product of the facility, and therefore cannot
> logically or legally yield the favorable finding suggested in the
> Statement.
>
> Sincerely,
>
> E.D. Arnold
> Executive Director,
> Physicians for Social Responsibility/Atlanta
> P.O.Box 95190
> Atlanta, GA 30347
>

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2005 OCT 25 AM 9:47
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USNRC

SISP Review Complete

Template = ADM-013

E-RIDS = ADM-03

Add = M. Blevins (MXB6)

Mail Envelope Properties (435D9F10.5EF : 9 : 62959)

Subject:	Fw: Important/USEC ACP DEIS deadline
Creation Date:	Mon, Oct 24, 2005 10:57 PM
From:	"Elisa Young" <elisay@earthlink.net>
Created By:	elisay@earthlink.net

Recipients
nrc.gov
twf2_po.TWFN_DO
NRCREP

Post Office	Route
twf2_po.TWFN_DO	nrc.gov

Files	Size	Date & Time
MESSAGE	508	Monday, October 24, 2005 10:57 PM
Mime.822	1728	

Options

Expiration Date:	None
Priority:	Standard
Reply Requested:	No
Return Notification:	None
Concealed Subject:	No
Security:	Standard

From: Ed Arnold [edarnold@mindspring.com]
Sent: Monday, October 24, 2005 8:25 PM
To: yhf@nrc.gov
Subject: RE: DEIS, Gas Centrifuge Facility

Dear Yawar Faraz:

012-1

The DEIS seems to omit any information or analysis about the product of the Centrifuge Facility.

We believe the process will not be complete until the NRC evaluates the impacts of the use of the product of the facility, and therefore cannot logically or legally yield the favorable finding suggested in the Statement.

Sincerely,

E.D. Arnold
Executive Director,
Physicians for Social Responsibility/Atlanta
P.O.Box 95190
Atlanta, GA 30347

United States Department of the Interior

OFFICE OF THE SECRETARY
Office of Environmental Policy and Compliance
Custom House, Room 244
200 Chestnut Street
Philadelphia, Pennsylvania 19106-2904

TAKE PRIDE IN AMERICA

IN REPLY REFER TO:

October 12, 2005

ER 05/800

Chief, Rules Review and Directives Branch
U.S. Nuclear Regulatory Commission
Mail Stop T6-D59
Washington, DC 20555-0001

9/6/05
70FR53396
(4)

RECEIVED
2005 OCT 18 AM 9:30
RULES AND DIRECTIVES BRANCH USNRC

Attention: Mr. Matthew Blevins

Dear Mr. Blevins:

013-1

The U.S. Department of the Interior (Department) has reviewed the Draft Environmental Impact Statement (EIS), NUREG-1834, for the Possession and Use of Source, Byproduct, and Special Nuclear Materials at USEC Inc.'s American Centrifuge Plant, Pike County, Ohio (Docket No. 70-7004).

The Draft EIS adequately addresses the concerns of the Department regarding fish and wildlife resources, as well as species protected by the Endangered Species Act. We concur with the conclusions of the U. S. Nuclear Regulatory Commission staff with respect to the potential impacts of the proposed action and its reasonable alternatives on these resources and species. We have no comment on the adequacy of other resource discussions presented in the document.

We appreciate the opportunity to provide these comments.

Sincerely,

Michael T. Chezik
Regional Environmental Officer

cc:
L. MacLean, FWS, Ft. Snelling, MN

SFSP Review Complete
Template = ADM-013

E-RFDS = ADM-03
Cald = M. BLEVINS (MXB4)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGIONS 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

OCT 31 2005

REPLY TO THE ATTENTION OF:
B-19J

RECEIVED
2005 NOV -8 AM 9:50
RULES AND DIRECTIVES
BRANCH
USNRC

9/8/05
70FR53396
(16)

Chief, Rules Review and Directives Branch
U.S. Nuclear Regulatory Commission
Mail Stop T6-D59
Washington, D.C. 20555-0001

Re: Draft Environmental Impact Statement for the Proposed American Centrifuge Plant, Pike County, Ohio, NUREG-1834, EIS No. 20050365

Dear Sir or Madam:

In accordance with Section 309 of the Clean Air Act and the National Environmental Policy Act (NEPA), the U.S. Environmental Protection Agency (U.S. EPA) has reviewed the Draft Environmental Impact Statement (DEIS), issued by the U.S. Nuclear Regulatory Commission (NRC), for the project listed above.

The DEIS states that the proposed Federal action under consideration in the DEIS is for the NRC to issue a license that would authorize USEC Inc. to possess and use special nuclear material, source material and byproduct material at the American Centrifuge Plant (ACP), a gas centrifuge uranium enrichment facility, proposed to be located on the U.S. Department of Energy Portsmouth Reservation (Portsmouth Reservation), near Piketon, Ohio. The enriched uranium produced at the proposed ACP would be used to manufacture nuclear fuel for commercial nuclear power reactors.

The DEIS appears to evaluate this project as a generic case. However, the Portsmouth Reservation is a unique facility with extensive data documenting a variety of past uses and sources. Therefore, the DEIS should have provided a much more thorough background for this case. We urge the project proponents to document a more thorough site-specific evaluation in the final environmental impact statement (FEIS).

We are concerned about the project scope documented in the DEIS. The project proponents exclude security issues from the scope of the DEIS. The project scope, as documented in the DEIS, should include all of the activities planned at ACP. If the DEIS does not include certain planned activities, then they must be evaluated in a supplemental document. Given the historic production activities at the Portsmouth Reservation for military, as well as civilian uses, the FEIS should explicitly state whether the facility will be used for military purposes.

We are concerned about the alternatives screening process. Two alternate locations for a gas centrifuge uranium enrichment plant were evaluated in the DEIS (Paducah, Kentucky and Piketon, Ohio). Apparently, both sites are suitable for the project, but the Paducah site is eliminated from detailed evaluation, based on environmental, socioeconomic, and regulatory factors. While we do not dispute the project proponents' selection of Piketon as the preferred

SESP Report Complete

E-RIDS = ADM-03

Template = ADM-013

Add = M. Blevins (MXB6)

site, the FEIS needs to either (1) document a detailed analysis for Paducah, or (2) present a more thorough explanation as to why Paducah was dropped as a viable alternative.

We are concerned about the management of depleted uranium fluoride (DUF6) at the Portsmouth Reservation. The United States has produced DUF6 since the early 1950's as part of the process of enriching uranium for both civilian and military applications. DOE's Portsmouth DUF6 conversion facility will process that site's estimated 250,000 metric tons of DUF6, stored in about 16,000 cylinders onsite; an additional 4,800 cylinders will be transferred for processing from the Oak Ridge ETTP facility. The DEIS states that 571,000 metric tons of DUF6 will be generated in 30 years at ACP, producing nearly as much DUF6 as DOE has over nearly 50 years. Management of this large amount of DUF6 material was not fully accounted for in the DEIS. Therefore, the FEIS should include detailed information about DUF6 management and disposal from ACP operations, within the context of all DUF6 management and disposal activities at the Portsmouth Reservation.

We are concerned about cumulative erosion and sedimentation impacts from the construction of the Cylinder Storage Yard X-745H. According to the DEIS, excavation and grading activities in the future cylinder storage yard would make the area more susceptible to erosion. Little Beaver Creek would receive stormwater runoff from the construction area. Currently, Little Beaver Creek is impaired from siltation and sedimentation. Additional erosion and sedimentation from construction activities would cumulatively impact this creek. However, the DEIS does not document a cumulative impact analysis for this case. Such an analysis should be included in the FEIS. In addition, we urge the project proponents to commit to evaluating significant characteristics for the Little Beaver Creek habitat (e.g., fish spawning periods, mussel locations), and conducting appropriate mitigation activities to preserve these characteristics.

Based on our review of this DEIS, we have given the project an EC-2 rating. The "EC" means that we have environmental concerns with the proposed action, and the "2" means that additional information needs to be provided in the FEIS. Our concerns relate to the documentation of the following issues:

1. Purpose and need of the proposed project,
2. Project scope,
3. Alternatives screening process,
4. Description of preferred alternative,
5. Product Management,
6. Modeling data,
7. Proposed monitoring scheme,
8. Proposed mitigation,
9. Environmental impacts,
10. Cumulative impacts,
11. Applicable regulations,
12. Affected environment, and
13. Agency Involvement.

We have enclosed our comments and the U.S. EPA rating system summary. If you have any questions or wish to discuss any aspect of the comments, please contact Michael Murphy (for radiation-related issues) at (312) 353-6686, Eugene Jablonowski (for Superfund-related issues) at (312) 886-4591, or Newton Ellens (for NEPA-related issues) at (312) 353-5562.

Sincerely,

Newton A. Ellens, for KAW

Kenneth A. Westlake, Chief
NEPA Implementation Section
Office of Science, Ecosystems, and Communities

Enclosures

cc: Maria Galanti
Ohio Environmental Protection Agency
Southeast District Office

Kenneth Dewey
Ohio Environmental Protection Agency
Southeast District Office

U.S. Environmental Protection Agency Comments on Environmental Impact Statement for the Proposed American Centrifuge Plant, Pike County, Ohio

General Comments:

014-1 The draft environmental impact statement (DEIS or EIS) appears to evaluate this project as a generic case. This is not actually appropriate as this is the sole facility of this type with the variety of past uses and sources that are linked with this facility. Over fifty years of data have been collected on this site which can provide a much more thorough background, as well as provide a basis for a site specific document format. We recommend the final environmental impact statement (FEIS) be focused on site-specific analyses, impacts, and mitigation.

Some of the general descriptions of how the materials, source materials, product materials, and the waste materials will be handled and controlled at the U.S. Department of Energy's (DOE's) Portsmouth, Ohio Reservation (Portsmouth Reservation) appear to be incomplete and fragmented, which made it difficult to properly evaluate whether or not requirements under other Federal regulations can be met with the necessary degree of completeness to authorize this project.

014-2 The FEIS should describe what the Nuclear Regulatory Commission (NRC) is doing to ensure that funding sufficient for the American Centrifuge Plant's (ACP's) decontamination and decommissioning, as well as waste management, is in place prior to issuing a license.

014-3 We are concerned about the cancer rate data provided in the DEIS. The DEIS provides estimated latent cancer fatality data, but does not include non-fatal cancer rate data. The FEIS should provide more comprehensive cancer rate data.

014-4 We are concerned about dated annual radiological emission data in the DEIS. In some cases, data is provided for radiation emitted several years ago. The FEIS should reference the most current annual radiological emissions data—for 2004, in this case.

Specific Comments:

Purpose and need of the proposed project

014-5 1) (Page xix, Line 41 and Page 1-5, Line 34) The justification of the rationale used for the purpose and need of the proposed project is insufficient. The DEIS states that the proposed ACP is needed because only one uranium enrichment plant currently operates in the United States, the Paducah, Kentucky Gaseous Diffusion Plant (Paducah Plant). A supply disruption with the Paducah Plant would leave the nation's

commercial nuclear reactors fully dependent on foreign sources for enriched uranium—a situation which could impact national security. However, the DEIS also states that the Paducah Plant would be shut down, decontaminated, and decommissioned after ACP begins operating. Therefore, ACP would not satisfy the national security facet of the purpose and need of the proposed project, because the project would merely replace, instead of supplement, the nation's only operating uranium enrichment plant. Therefore, we urge NRC to reevaluate this aspect of the stated Purpose and Need.

014-6

2) (Page 1-2, Line 38 and footnote of Page 4-53) We are concerned about the lack of a justification in the DEIS for the need to enrich uranium up to 10% by weight of uranium-235. According to the DEIS, the license issued by NRC would authorize USEC Inc. (USEC) to produce enriched uranium up to 10% by weight of uranium-235. However, the DEIS also states that most power plants use enriched uranium with less than 5.5% of uranium-235 by weight, and that it would be unlikely for USEC to enrich uranium up to the higher weight. Finally, the DEIS states that, of the cylinders used to ship enriched uranium, none of them are certified to ship uranium enriched to higher than 5% by weight of uranium-235. Given that it would not be feasible for USEC to enrich uranium above 5% by weight of uranium-235 (for civilian use), NRC should explain why the proposed license would authorize a higher level of enrichment. If the project proponents foresee a scenario under which USEC would need to enrich uranium up to 10% of uranium-235, then that scenario should be documented in the Purpose and Need Section of the FEIS. Otherwise, we would urge NRC to reconsider the limit of uranium enrichment cited in its license for USEC.

014-7

3) (Executive Summary, Purpose and Need For the Proposed Action, Page xx, paragraph 1) The description appears to be incomplete and does not address the range or possibilities of materials that can be reasonably assumed to be produced at this facility. This is based on the type and range of enrichments that have been conducted in past operations at the gaseous diffusion facility at this site.

014-8

4) (Introduction, Section 1.3.2 The Need for Domestic Supplies of Enriched Uranium for National Energy Security, page 1-5, paragraph 1) It is unclear whether future inclusion of additional nuclear power plants and their needs for enriched fuel is taken into account in this evaluation. It would be reasonable to include at least one to two new plants and their potential needs to be included in this evaluation to assure that a more representative range of possible customers for this facility's output is evaluated.

Project scope

014-9

5) (Page 2-1, Line 44) The scope of the DEIS does not include decommissioning and related activities of the Paducah, Kentucky Gas Diffusion Plant. The DEIS states that

after uranium enrichment operations begin at ACP, the Paducah Plant would cease its uranium enrichment operations. According to the DEIS:

> For the purposes of this analysis, cessation of uranium enrichment operations at Paducah would include stopping uranium enrichment plant operations, but would not include decommissioning of the Paducah Gaseous Diffusion Plant, changes to any other activities at that site, or any alternative uses of that site in the future. Those other actions at Paducah would be the subject of other decisions and other environmental reviews.

The scope of DEIS should have included the cessation of all uranium enrichment operations at the Paducah Plant, because it is a connected action under the National Environmental Policy Act (NEPA). The start of ACP's uranium enrichment operations and the cessation of uranium enrichment operations at the Paducah Plant are closely related—the Paducah Plant's operations would not cease if ACP's operations did not start. Therefore, the FEIS should document a comprehensive evaluation of the cessation of all uranium enrichment operations at the Paducah Plant.

014-10 6) (Page 2-35, Line 19) The ACP FEIS should discuss the former Portsmouth, Ohio gaseous diffusion plant, and any ACP interactions with it, considering that the Portsmouth plant is either in cold standby or cold iron and that the ACP will be in close proximity to it.

014-11 7) (Introduction, Section 1.2, The Proposed Action, Page 1-2, paragraph 5) The potential range of produced materials does not include the possibility of production for the Department of Defense. If this is potentially a reasonably assumed product, it needs to be included for evaluation.

014-12 8) (Introduction, Section 1.4, Scope of the Environmental Analysis, Page 1-7, paragraph 3) The scope of the environmental analysis may not meet the actual needs to be addressed for the new facility to be created and put into operation. The scope may need to be expanded to assure that all of the environmental issues are adequately addressed.

014-13 9) (Introduction, Section 1.4.4 Issues Outside the Scope of the EIS, Page 1-9) This section artificially narrows the scope of this evaluation to exclude security issues relevant to this facility. Safety and Security, Credibility and Terrorism must be addressed in any project of this type. The DEIS is incomplete and inadequate to properly address these issues.

014-14 10) (Page 2-2, Line 26) The ACP FEIS should identify: 1) all of the uranium enrichment projects expected for the facility; 2) all of the projects that the facility is capable of

performing; 3) whether this facility will be reprocessing feed materials from spent nuclear fuel; and 4) whether this FEIS encompasses all of the activities that an enrichment facility may be called to perform.

014-15

11) (Page D-5) Considering the exceptionally large amount of depleted uranium that will be generated by ACP operations, and since it's a credible option, the ACP FEIS should also assess the transportation of depleted uranium and other radioactive wastes to Andrews, Texas, and the location of another disposal facility that should have an Agreement State license for disposal within the next year.

Alternatives screening process

014-16

12) (Page 2-37, Line 4) We are concerned about the lack of a sufficient number of reasonable alternatives selected for detailed study. Only the preferred alternative is retained as a reasonable alternative in the DEIS for detailed study. The DEIS initially describes an evaluation of several alternatives, including the construction and operation of a gas centrifuge uranium enrichment plant at the existing Paducah Plant site. The DEIS states that construction and operation of such a plant at Paducah was considered a reasonable alternative to the proposed action. Additionally, the DEIS states that both Piketon and Paducah were suitable sites for the construction of a gas centrifuge uranium enrichment plant, when regarding environmental, socioeconomic, and regulatory factors. Under NEPA, the project proponents should have rigorously explored and objectively evaluated all reasonable alternatives. However, the project proponents eliminated the Paducah Plant site from further consideration because of construction, engineering, and plant safety concerns. The FEIS should either (1) document a detailed analysis for the Paducah site, or (2) offer a more thorough justification for why the Paducah site was not studied in detail in the DEIS.

014-17

13) The ACP DEIS states:

> "The DOE-USEC Agreement stipulates that USEC deploy the ACP at either the DOE reservation in Piketon or Paducah. Also, no other sites offered the unique combination of (1) readily accessible environmental data; (2) past history and experience in uranium enrichment; and (3) the availability of skilled labor with uranium enrichment industry experience."

Was the DOE-USEC Agreement the appropriate legal means for determining the location of the ACP in the absence of an EIS? Considering that the Piketon gaseous diffusion ceased enrichment operations in 2001, the ACP won't begin operations until 2009, and that the gas centrifuge facility proposed by Louisiana Energy Services near Eunice, New Mexico would be located at a "green field" site where there have been no prior enrichment operations, are the three reasons provided for siting the ACP at

Piketon truly valid for the purposes of an EIS?

Description of preferred alternative

014-18

14) (Page 2-34, Line 19) The ACP DEIS states that the intent of decommissioning is to return the proposed ACP site to a state that meets NRC requirements for release for unrestricted use after decontamination and decommissioning is completed. The ACP FEIS should define and discuss what NRC considers "unrestricted use" to mean. Are the NRC requirements consistent with Comprehensive Environmental Response Compensation and Liability Act (CERCLA) standards for free release of property without institutional controls? Who owns the ACP buildings? Are they owned by DOE and leased to USEC, or does USEC have ownership of buildings on the Portsmouth Reservation? If USEC or a subsequent owner goes bankrupt, would DOE then be the primary responsible party responsible for cleanup and have priority access to the cleanup funds in the ACP's surety bond (or other financial mechanisms) over other entities such as tax authorities and commercial lenders?

014-19

15) (Page 2-35, Line 1) The ACP DEIS states that the decontamination and decommissioning (D&D) activities for the proposed ACP are anticipated to occur approximately 30 years in the future, and therefore only a general description of the activities that would be conducted for the proposed ACP can be developed at this time for the DEIS. Will NRC review and approve the ACP engineering design prior to its construction? Does NRC require the concurrent development of a D&D plan while the facility is being designed? Does NRC regard issues such as cost, implementability, ease of D&D, worker safety during D&D, and waste minimization to be considerations in the design of radiological facilities such as the ACP?

Product Management

014-20

16) We are concerned about the use and/or disposal of chlorofluorocarbons (CFCs) at the Portsmouth Reservation. We understand that there was a large use of CFCs at the reservation, and that a significant amount of the Nation's CFC emissions came from the reservation. Therefore, the FEIS should describe the types and amounts of CFCs at the reservation, and it should describe the planned use and/or disposal of CFCs at the reservation. This discussion should describe how CFC management will comply with the Clean Air Act.

014-21

17) (Page 2-12, Line 48) The ACP DEIS states that uranium hexafluoride (UF_6) cylinders may be stored in any storage yard. It should be clarified whether all of the cylinders will have comparable management and security whether they are depleted uranium or enriched product. Also, will there be any long-term staging of enriched materials for subsequent blending operations? It appears that distinctions should be

made between UF6 cylinders that are tails/waste (suitable for processing and disposal), UF6 product, and UF6 materials that support production. Otherwise, mixing these UF6 materials up on any of the storage yards seems to provide an opportunity for negative impacts related to UF6 management.

014-22

18) (Page 2-19, Line 29) The ACP DEIS text and Table 2-3 provide information that approximately 8,000 cubic meters of low-level waste will be generated during refurbishment and construction activities. The ACP FEIS should discuss its waste disposition, where the low-level waste is being shipped for processing and disposal, and whether any of this low-level waste is considered "mixed waste" under the Resource Conservation and Recovery Act (RCRA).

014-23

19) (Page 2-27, Line 18) This section of the FEIS should discuss: 1) at what point the depleted uranium tails are considered a waste or a product; 2) who has the authority to make the determination that the depleted uranium tails are waste (especially considering that DOE may be the recipient of these materials); 3) at what time is the waste determination made; 4) how much tailings/waste is expected to be generated annually; 5) whether there will be sufficient capacity on-site to process the tailings/waste for use or disposal; and 6) the disposal options currently available and potentially available in the future for the off-site storage or disposal of the tailings/waste.

014-24

20) (Page 2-30, Line 45) The United States has produced depleted uranium hexafluoride (DUF6) since the early 1950s as part of the process of enriching natural uranium for both civilian and military applications. DOE's Paducah DUF6 conversion facility will process that site's estimated 450,000 metric tons of DUF6 over a 25 year processing period. DOE's Portsmouth DUF6 conversion facility will process that site's estimated 250,000 metric tons of DUF6 that is currently stored in about 16,000 cylinders on the Portsmouth Reservation, as well as process an additional 4,800 cylinders that will be transferred from the Oak Ridge ETTP facility to the Portsmouth Reservation; the overall processing period is expected to be 18 years. DOE expects the conversion of all its stored DUF6 to cost approximately $2.6 billion, excluding costs for the decontamination and decommissioning of the conversion facilities.

The ACP DEIS states that 571,000 metric tons of DUF6 will be generated during ACP operations, in 30 years generating as nearly as much DUF6 as DOE has over nearly 50 years. This is a large amount of DUF6 material that should be fully characterized in the ACP FEIS. Detailed information should be provided on DUF6 management and disposal including: how long the ACP-generated DUF6 will be stored on site prior to conversion; whether the Portsmouth DUF6 conversion facility has the capacity to process ACP-generated DUF6 in an expedient timeframe; whether there are off-site facilities that have the capacity to process ACP-generated DUF6,

cost data, financial responsibilities and liabilities; and any NRC requirements for financial assurance or surety funds that will ensure that DUF6 and other wastes generated due to ACP activities are properly managed, processed and disposed, without the cost passed on to other federal agencies and the public. Specifically, the ACP FEIS should include:

a) Detailed information on the Portsmouth DUF6 conversion facility since conversion of DUF6 is really an integral part of the overall enrichment process, with conversion of the mostly unmarketable DUF6 being necessary for the long-term stability and management of that waste stream. Does the Portsmouth DUF6 conversion facility have adequate capacity to process the DUF6 that the ACP will generate, in addition to the DUF6 already in DOE's inventory? Is there off-site DUF6 conversion capacity in case that the Portsmouth DUF6 conversion facility cannot meet demand?

b) Section 3113 of the 1996 United States Enrichment Corporation Privatization Act that states the DOE "shall accept for disposal low-level radioactive waste, including depleted uranium if it were ultimately determined to be low-level radioactive waste, generated by [...] any person licensed by the Nuclear Regulatory Commission to operate a uranium enrichment facility under Sections 53, 63, and 193 of the Atomic Energy Act of 1954 (42 U.S.C. 2073, 2093, and 2243)." If the gas centrifuge facility proposed by Louisiana Energy Services (LES) near Eunice, New Mexico is licensed by the NRC, is DOE obligated to accept its waste and DUF6? Could accepting LES wastes impact the capacity of the Portsmouth DUF6 conversion facility and the ACP's ability to deal with the DUF6 that it generates?

c) How long is the ACP-generated DUF6 expected to be stored or accumulate on the Portsmouth Reservation prior to its conversion and off-site disposal? Information should be provided on a total inventory and per cylinder basis.

d) Considering the number of DUF6 cylinders stored on the Portsmouth Reservation, and the number that will be generated by the ACP, is the Portsmouth Reservation the most suitable environment for the long-term storage of DUF6, whether prior to or after conversion?

e) What are all of the facilities available for the off-site storage and/or disposal of the post-conversion DUF6, both currently available and anticipated for licensing in the future? Will they have the capacity to accept all of the post-conversion DUF6 generated as a result of ACP and historic ACP operations? Are there any issues that could affect DOE's ability to dispose of post-conversion DUF6 off-site from the Portsmouth reservation?

f) The Portsmouth DUF6 conversion facility is stated to have an operating life of 18 years, while the ACP is expected to operate for 30 years. Where will the ACP-generated DUF6 be converted after operation of the Portsmouth DUF6 conversion facility ceases? Does DOE have an obligation to operate a conversion facility to accommodate DUF6 generated by the ACP and other enrichment facilities licensed by the NRC?

014-27

21) (Page 2-48, Line 23) The ACP DEIS states:

"The NRC staff has determined that unless USEC can demonstrate a use for uranium in the depleted tails as a potential resource, the depleted UF6 generated by the proposed ACP should be considered a waste product."

The ACP FEIS should state who has the authority to make the waste determination: NRC, DOE or USEC? The ACP FEIS should state when that determination is required to be made, or whether that determination should be made immediately upon DUF6 generation. The ACP FEIS should define "depleted uranium" in terms of its uranium-235 content for the purposes of management and waste disposition. Although depleted uranium is commonly referred to as uranium having a percentage of uranium-235 smaller than the 0.7 percent found in natural uranium, does that definition hold true for the purposes of management and waste disposition, and DOE's acceptance of depleted uranium materials generated by NRC-licensed enrichment plants?

014-26

22) (Page 3-71, Line 42) The ACP DEIS states:

"Section 3113(a) of the USEC Privatization Act (Public Law 42 104-134) requires DOE to accept low-level radioactive waste, including depleted uranium that has been determined to be low-level waste, for disposal, upon the request of, and reimbursement of costs by, the United States Enrichment Corporation. To date, this provision has not been invoked, and the form in which the depleted uranium would be transferred to DOE has not been specified."

The ACP FEIS should state who makes the low-level waste determination. Considering that during its operation the ACP is expected to generate about 571,000 metric tons of DUF6, nearly as much as DOE generated during its 50 years of enrichment operations, the ACP FEIS should clearly specify how ACP will manage DUF6 throughout the full term of the NRC license, including the form in which the depleted uranium would be transferred to DOE. The FEIS should describe an implementable and legally defensible disposition path for all of the wastes that the ACP will generate.

014-27

23) (Page 3-75, Line 5) The ACP DEIS states:

> "Classified/sensitive waste is any waste considered as such for security reasons. These materials may be classified due to configuration, composition, contamination, or contained information. Classified waste may be categorized as non-hazardous waste or as low-level radioactive depending upon its point of and method of generation."

The ACP will be a commercial facility operating on leased federal property for commercial production purposes. The ACP FEIS should state and describe: 1) who will have the authority at the ACP to make "classified/sensitive" determinations; 2) 3rd party federal reviews of the "classified/sensitive" waste determinations that are made; 3) whether any of the "classified/sensitive" wastes are exempt in any way from U.S. Environmental Protection Agency (U.S. EPA), Ohio Environmental Protection Agency, or NRC regulatory authority; 4) whether it is possible for ACP personnel to make "classified/sensitive" waste determinations; 5) whether ACP personnel will have authorities delegated to it by DOE, such as under the Atomic Energy Act; 6) whether there will be activities at the ACP that are subject to DOE oversight and exempt from NRC regulation; and 7) why a commercial facility with a civilian mission would generate "classified/sensitive" wastes requiring "classified/sensitive" determinations. Also, the ACP FEIS should state whether RCRA-regulated mixed wastes could be generated that are considered classified.

014-28

24) (Page 3-75, Line 12) The ACP DEIS states:

> "Classified waste is stored onsite prior to disposal in classified offsite disposal facilities."

The ACP FEIS should state the duration that classified waste is stored on site prior to offsite disposal and who has the regulatory authority for classified waste generated by ACP personnel or any other personnel at the USEC-leased areas.

Modeling data

014-29

25) (Page 4-11, Table 4-1) We are concerned about modeling data for air contaminants missing from the DEIS. The DEIS provides predicted concentrations for some criteria pollutants during site preparation and construction activities at the project site. The DEIS, however, omits data for ozone and lead. In order to complete the modeling data provided in the DEIS, the FEIS should include this information. The ozone forecast data should be presented as an 8-hour average, and the lead forecast data should be presented as a quarterly average, in order to compare the data to the

National Ambient Air Quality Standards for these pollutants.

014-30

26) (Page C-3) Throughout this appendix, the isotope list should include technetium and transuranic isotopes such as those listed on page 3-31 to reflect activities anticipated at the ACP.

Proposed monitoring scheme

014-31

27) (Page 2-28, Line 20) Considering the emissions from the former gaseous diffusion plant, the processing of recycled material and the processing of former Russian materials, ACP emissions should also be analyzed for transuranic radionuclides routinely.

014-32

28) (Page 2-28, Line 20) The ACP DEIS states that recycled feed may be used, and that four radionuclides will be analyzed in the ACP emissions routinely, although this paragraph discusses five radionuclides (uranium-234, uranium-235, uranium-236, uranium-238 and technetium-99). The ACP FEIS should clearly state which radionuclides will be analyzed, as well as any non-radioactive hazardous emissions.

014-33

29) (Page 6-3, Line 14) The ACP DEIS states that uranium isotopes anticipated to be released as airborne emissions would include uranium-234, uranium-235, uranium-236, and uranium-238. The ACP FEIS should also include the isotopes of americium, neptunium, plutonium, and technetium (listed on the bottom of page 3-31) that have been known emissions from the former Portsmouth Gaseous Diffusion Plant, which had uranium feed similar to what is anticipated for the ACP.

Proposed mitigation

014-34

30) (Page 4-10) We commend NRC for proposing mitigation measures during construction of the proposed project to reduce air quality impacts. According to the DEIS, the NRC staff determined that the majority of particulate emissions emitted during construction would come from construction vehicle exhaust. Therefore, in order to reduce particulate emissions from construction vehicle exhaust, NRC recommended that USEC: (1) use Tier 2 construction-related vehicles, which would reduce diesel particulate emissions by about 40%, and (2) use ultra-low sulfur diesel fuel. We urge NRC to establish these mitigation measures in the construction contracts for the proposed project, and to document these mitigation measures in the Record of Decision (ROD).

Environmental impacts

014-35

31) (Environmental Impacts Section 4.2.4.2, Facility Operation, Radiological Emissions,

Pages 4-14, 4-15) Several different isotopes are mentioned in this discussion, but emissions appear to be aggregated without a clear discussion of the relative percentages of each radionuclide's contribution to the total emissions. Disaggregating should be done in the FEIS, so that a more accurate determination of potential exposures can be made and evaluated for the resulting health consequences, if any, attributable to ACP.

014-36

32) (Executive Summary, Public and Occupational Health and Safety, Page xxvi) In the statement of standards that protect the health and safety of the public, 40 CFR 61, Subpart H, has been left out of the DEIS. That reference should be properly incorporated throughout the document. This regulation was used to determine public health protection, whereas the NRC regulations deal more with occupational levels for exposures rather than a public health exposure level.

014-37

33) (Alternatives, Section 2.4 Comparison of Predicted Environmental Impacts, Table 2-8, Page 2-60) The NESHAPs 40 CFR 61 Subpart H evaluation has not been submitted for determination of appropriateness and to demonstrate potential compliance status of this type of facility to the regulating agency as of this time. The DEIS characterized impacts as "SMALL." Until this determination is made under Subpart H, classifying impacts is premature. We encourage NRC to involve us and other appropriate Federal agencies earlier in this determination process.

014-38

34) (Affected Environment Section 3.5.3.1 Current Emissions at the DOE Reservation, Radiological Emissions, Page 3-20) The regulations for the radionuclide NESHAPs are dose standards from emissions, so the notation of the becquerel and/or curie emissions is misleading. A variety of radionuclides are potential contributors, each with different doses associated with each becquerel or curie amount. The standard is a maximum dose to the potential Maximally Exposed Individual (MEI) of 10 millirem per year in excess of background exposures. The 2004 values should be referenced, since this is an annual compliance demonstration and earlier demonstrations are not relevant to the current compliance status of the Portsmouth Reservation.

014-39

35) (Environmental Impacts Section 4.2.4.1 Site Preparation and Construction, Radiological Emissions, Page 4-11 paragraph 1) The statements here regarding 40 CFR 61, Subpart H are potentially misleading as to the potential health effects from exposures, by subtly indicating that the data and standard are not based on any measured data. This is incorrect. This should be either appropriated discussed in the FEIS, or the FEIS should state the standard's requirements or demonstration of compliance.

Cumulative impacts

014-40

36) (Page 4-16, Line 21, and Page 4-19, Line 3) We are concerned about cumulative erosion and sedimentation impacts which could be caused by construction of Cylinder Storage Yard X-745H. According to the DEIS, the cylinder storage yard would be constructed in an area characterized by steep slopes. The DEIS states, "During excavation and grading, the steep slopes would be more susceptible to soil erosion, and the streams at the bottom of the slopes may receive an increased amount of silt." Construction activities would be close to Little Beaver Creek, an impaired stream. Presently, siltation and sedimentation are two causes of the creek's impairment. Additional erosion and sedimentation from the construction of the cylinder storage yard could result in cumulative impacts to Little Beaver Creek. The DEIS does not perform a cumulative impact analysis for this case. Such an analysis should be included in the FEIS. We commend the project proponents for proposing the use of best management practices to mitigate erosion and sedimentation impacts (e.g., silt fences, straw bales, re-seeding disturbed areas, etc.). In addition, the project proponents should commit to evaluating significant characteristics for the Little Beaver Creek habitat (e.g., fish spawning periods, mussel locations), and conducting appropriate mitigation activities to preserve these characteristics. We urge NRC to establish such mitigation commitments in the construction contracts for he proposed project, and to document these mitigation measures in the Record of Decision (ROD).

014-41

37) (Page 6-9, Line 3) The ACP DEIS states that due to historical operations, The DOE reservation has multiple plumes of groundwater contamination. The ACP FEIS should also describe: 1) whether any of these plumes reside in areas leased for the ACP facilities; 2) whether the ACP facilities and areas have been certified as being free of environmental media contamination (soil, groundwater, etc.); 3) whether ACP operations are expected to contribute to groundwater contamination and to what extent; and 4) whether the ACP will have its own groundwater monitoring program independent of DOE's. The FEIS should include maps of groundwater contamination at the Portsmouth complex to aid in the description.

Applicable regulations

014-42

38) (Introduction, Section 1.5 Applicable Regulatory Requirement, Pages 1-11 through 1-33) Executive Directive and Presidential Orders that make specific requirements on all Federal Agencies that would apply or impact this project need to be included.

014-43

39) (Introduction, Table 1-3, Pages 1-20 through 1-29) Table 1-3 is incomplete. All potential applicable requirements for the construction of the ACP have not been included and need to be thoroughly re-evaluated.

014-44

40) (Alternatives, Section 2.1.4.3 Facility Operations, Air Emissions Monitoring and Treatment Systems, Page 2-28, paragraph 3) The appropriate regulations should

include 40 CFR 61, Subpart H for this facility. This facility is subject to this regulation and must meet all of the requirements of this rule before construction of this project can begin.

41) (Alternatives, Section 2.1.4.3 Facility Operations, Liquid effluent Collection and Treatment Systems, Page 2-29, paragraph 4) The appropriate regulations have not included 40 CFR 61, Subpart H for this facility. This facility is subject to this regulation and must meet all of the requirements of this rule before construction of this project can begin.

Affected environment

014-45

42) (Affected Environment Section 3.10.2 Low-Income Populations, Table 3-25, Page 3-59) There appears to be a typographical error in the Weighted Average Threshold for "One Person" in the table. This needs to be clarified for any type of comparability.

014-46

43) (Affected Environment Section 3.13.1 Background Radiological Exposure, Page 3-65 paragraph 1) The standard is a maximum dose to the potential Maximally Exposed Individual (MEI) of 10 millirem per year in excess of background exposures. The 2004 values should be referenced since this is an annual compliance demonstration and earlier demonstrations do not reflect the current compliance status of the facility. Neither of the new proposed facilities at the Portsmouth Reservation has submitted information to demonstrate their potential compliance status in an operating status to date. The estimates provided cannot be considered to be adequate until such time as they have been fully evaluated.

014-47

44) (Page 1-4, Line 23) The ACP DEIS states that the Portsmouth Gaseous Diffusion Plant is currently in "cold standby" mode (possible to restart in 18 to 24 months). The FEIS should include a schedule for when the facility will be placed into "cold iron" mode (unable to be restarted) and become ready for decontamination and demolition (D&D) work to proceed.

014-48

45) (Page 2-6, Line 1) Under DOE's RCRA Corrective Action activities, various facilities across the Portsmouth Reservation had their environmental assessment and restoration activities "deferred" until the time when the gaseous diffusion plant (GDP) D&D work is performed. The ACP FEIS should state whether any of the facilities under Table 2-1 are considered "deferred," and if so, whether RCRA corrective actions have been performed at those facilities. This table should also state which facilities will have NRC-licensed activities occurring.

014-49

46) (Page 2-7, Line 2) The ACP FEIS should list and describe the primary facilities and areas leased by DOE for the proposed ACP.

Agency Involvement

014-50

47) (Introduction, Section 1.5.5 Cooperating Agencies, Page 1-19) The DEIS states that during the scoping process, no Federal, State, or local agencies were identified as potential cooperating agencies in the preparation of the DEIS. It is not addressed that there was any contact with other regulating Agencies at any level that could have been considered cooperating Agencies. All of the current Federal, as well as State and Local regulators for this site would have been potential Cooperating Agencies in the development of this document and process.

014-51

48) (Introduction, Section 1.5.6 Consultations, Page 1-19) When the NRC was first given some regulatory authority at this site, a consultative procedure was to have been used with U.S. EPA, to assure that the site could be "certified" for their regulation. A similar process should have been used with all current regulating Agencies of this facility prior to preparation of this document.

SUMMARY OF RATING DEFINITIONS AND FOLLOW UP ACTION*

Environmental Impact of the Action

LO-Lack of Objections
The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

EC-Environmental Concerns
The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impacts. EPA would like to work with the lead agency to reduce these impacts.

EO-Environmental Objections
The EPA review has identified significant environmental impacts that must be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EU-Environmentally Unsatisfactory
The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potential unsatisfactory impacts are not corrected at the final EIS sate, this proposal will be recommended for referral to the CEQ.

Adequacy of the Impact Statement

Category 1-Adequate
The EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alterative and those of the alternatives reasonably available to the project or action. No further analysis or data collecting is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2-Insufficient Information
The draft EIS does not contain sufficient information for the EPA to fully assess the environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

Category 3-Inadequate
EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

*From EPA Manual 1640 Policy and Procedures for the Review of Federal Actions Impacting the Environment

October 21, 2005
AET 05-0075

Michael T. Lesar
Chief, Rules Review and Directives Branch
Attention: Document Control Desk
Mail Stop T6-D59
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

American Centrifuge Plant
Docket Number 70-7004
Comments on the Draft Environmental Impact Statement for the Proposed American Centrifuge Plant in Piketon, Ohio (TAC No. L32308)

Dear Mr. Lesar:

The purpose of this letter is to provide USEC Inc. (USEC) comments on the U.S. Nuclear Regulatory Commission's Draft Environmental Impact Statement for the Proposed American Centrifuge Plant in Piketon, Ohio (NUREG-1834). Enclosure 1 of this letter provides USEC's comments.

If you have any questions regarding this matter, please contact Peter J. Miner at (301) 564-3470.

Sincerely,

S. A. Toelle

Steven A. Toelle
Director, Nuclear Regulatory Affairs

cc: M. Blevins, NRC HQ
J. Davis, NRC HQ
Y. Faraz, NRC HQ
B. Smith, NRC HQ
J. Strosnider, NRC HQ

Reference:

1. NUREG-1834, Environmental Impact Statement for the Proposed American Centrifuge Plant in Piketon, Ohio, Draft Report for Comment. Published August 2005.

USEC Inc.
6903 Rockledge Drive, Bethesda, MD 20817-1818
Telephone 301-564-3200 Fax 301-564-3201 http://www.usec.com

Enclosure 1 of AET 05-0075

USEC's Comments Regarding the Draft Environmental Impact Statement

Enclosure 1 of AET 05-0075
USEC's Comments Regarding the Draft Environmental Impact Statement

	Comment Number	Page	Line	Comments
015-1	1	1-13	30	Change "municipal" to "public"
015-2	2	1-35	23 and 26	Change "United States Enrichment Corporation" to "USEC Inc."
015-3	3	2-10	13 and 23	Change "48X source cylinder" to "10-ton source cylinder."(See page 1-5 of the License Application, Revision 1).
015-4	4	2-14	47	Change "The X-7725B building…" to "The X-7725C building…" (See Environmental Report page 2-5.)
015-5	5	2-27	40-42	The Draft Environmental Impact Statement (DEIS) phrasing can be read to mean that the vent monitors have the capacity to monitor HF gas in real-time. This would not be accurate. The actual text should be clarified to state that the "gas flow monitoring instrumentation with local readouts" refers to total gas flow and accumulated radioactivity in the sample traps.
015-6	6	2-27/2-28	43-2	The description of the emission control systems on these lines is correct only for the X-3346, X-3356, and X-3366 buildings (the feed and withdrawal buildings). It explicitly cites the cold traps used to control UF_6 from process gas piping and states that the alumina traps can not be bypassed. The process buildings emission controls do not directly connect to process gas piping, do not have cold traps, and the alumina traps can be bypassed by the Evacuation Vacuum system.
015-7	7	2-29	32-36	The DEIS gives the same value for the As Low As Reasonably Achievable (ALARA) goal for liquid radioactive effluent releases as for the ALARA goal for gaseous radioactive effluent releases (0.5 mrem/year). The liquid effluent ALARA goal USEC actually proposed in the License Application is ten percent of this value (0.05 mrem/year).
015-8	8		40-43	Paragraph should state, "Satellite accumulation areas would be established throughout the proposed ACP as necessary…. Waste is then moved to the XT-847 Waste Management Staging Facility to be sampled and measured…."
015-9	9	2-30	33	Change "OAC 37455-103" to "OAC 3745-51-03"
015-10	10	2-34	33	Change "19,040" to "19,030" and change "(21,000 tons)" to "(20,980 tons)"(See Environmental Report, page 4-130, Revision 5)
015-11	11		34	Change "42,800" to "41,105" and "571,200" to "512,730" (See Environmental Report, page 4-130, Revision 5)
015-12	12		35	Change "(630,000 tons)" to "(565,200 tons)"
015-13	13		39	Change "$1,433 million" to "$1,842 million" and delete the footnote. (Revision 5 of the Decommissioning Funding Plan assumes $4.83/Kg U for disposal cost of tails.)
015-14	14	2-64	13, 16, 19, 22, and 25	Change "United States Enrichment Corporation" to "USEC Inc."
015-15	15	2-64	14, 17, and 20	Change "NRC Docket No. 70-2004" to "NRC Docket No. 70-7004"
015-16	16	2-88	27	Change to read as, "…activity would involve a filament winding process,

	Comment Number	Page	Line	Comments
				which will not…"
015-17	17	3-24	19	Technetium-99 is misspelled.
015-18	18	3-25	40	The DEIS states that Little Beaver Creek receives "treated process wastewater…ditch)." Since November 1988, the only wastewater the east drainage ditch routinely receives is stormwater runoff, non-contact cooling water (essentially tap water), condensate from air conditioners and steam lines, and treated groundwater from the U.S. Department of Energy's (DOE) X-624 facility. None of these are "process wastewater." In addition, the only treatment any of these waters (except the groundwater) receive is a settling period in the X-230J-7 East Holding Pond. The DEIS phrasing implies that decontamination solutions, or a comparable material, are being discharged to the creek.
015-19	19		40	Delete word "process"
015-20	20		49	Change "612" to "012"
015-21	21	3-27	15	Change "19 permits" to "19 permitted outfalls,"
015-22	22		16	Change "19 permits" to "19 permitted outfalls,"
015-23	23		28	Change "permits" to "permitted outfalls."
015-24	24	3-28	5	Outfall Column - Change "1" to "001"
015-25	26		7	Outfall Column - Change "2" to "002"
015-26	27		9	Outfall Column - Change "0.125" to "003"
015-27	28		11	Outfall Column - Change "4" to "004"
015-28	29		13	Outfall Column - Change "5" to "005"
015-29	30		15	Outfall Column - Change "0.375" to "009"
015-30	31		17	Outfall Column - Change "0.4167" to "010"
015-31	32		19	Outfall Column - Change "11" to "011"
015-32	33		21	Outfall Column - Change "0" to "012"
015-33	34		22	Outfall Column - Change "0.042" to "013"
015-34	35		23	Outfall Column - Change "0.125" to "015"
015-35	36	3-30	7	Delete "manganese," from the Parameters column.
015-36	37	3-30	7	Add "Cadmium," to the Parameters column.
015-37	38	3-30	9	Delete "Fluoride, manganese," from the Parameters column.
015-38	39	3-30	9	Add "Cadmium, mercury," to the Parameters column.
015-39	40	3-31	8	Change "weekly composite" to "monthly grab"
015-40	41		11	Add "are taken quarterly." to the end of the sentence.
015-41	42		15	Add "are taken quarterly." to the end of the sentence.
015-42	43	3-40	34	Change "X-611a," to "X-611A,"
015-43	44	3-40	35	Change "X-611b" to "X-611B"
015-44	45	3-41	37	Notes: Q1 and Q4 are not used in Table 3-12, delete reference.
015-45	46	3-69	24	Change "healthy work effect," to "healthy worker effect,"
015-46	47	3-74	38	Section 3.14.3.1 lists 16,190 of containers, but the number should be 16,109 to be consistent with Table 3-31.
015-47	48	3-74	13	Change "XT847" to "XT-847"
015-48	49	3-80	33, 36, and 42	Change "United States Enrichment Corporation" to "USEC Inc."
015-49	50	3-80	34	Add "NRC Docket No. 70-7003" before the date.

	Comment Number	Page	Line	Comments
015-50	51	4-14	7	Revise bulletized item as follows, "X-3356 and X-3366 Product and Tails Withdrawal Buildings;"
015-51	51		25	Add "X-3366," after "X-3356,"
015-52	52	4-21	17	Change "012" to "013"
015-53	53		18	Change "013" to "012"
015-54	54	4-23	33	Change "weekly composite" to "monthly grab"
015-55	55		37	Add "are taken quarterly." to the end of the sentence.
015-56	56	4-65	9-31	The radiation dose analyses on this page apparently used the same rural food source assumptions appropriate for the offsite locations. This pattern assumes that a fixed percentage of the receptor's food is produced at the home location. This is not a reasonable assumption for the on-site tenant organizations (ONG and OVEC). No foodstuffs are being produced on the DOE reservation and the percentages of the food sources for the on-site tenants should be adjusted to reflect this. CAP88-PC does allow this.
015-57	57	4-123	31	Add "NRC Docket No. 70-7004" before the date.
015-58	58	4-123	42	Change "USEC, Inc." to "USEC Inc."
015-59	59	4-123	46	Change "USEC, , Inc." to "USEC Inc."
015-60	60	5-4	31 and 34	Change "United States Enrichment Corporation" to "USEC Inc."
015-61	61	6-3	7	Revise bulletized item as follows, "X-3001, X-3002, X-3003, and X-3004 Process Buildings;"
015-62	62		8	Revise bulletized item as follows, "X-3356 and X-3366 Product and Tails Withdrawal Buildings;"
015-63	63	6-4	4	Revise subtitle as follows, "**X-3001, X-3002, X-3003, and X-3004 Process Buildings**"
015-64	64		6	Revise sentence to read as follows, "The X-3001, X-3002, X-3003, and X-3004 Process Buildings would…"
015-65	65		25	Revise subtitle as follows, "**X-3356 and X-3366 Product and Tails Withdrawal Buildings**"
015-66	66		26	Revise sentence to read as follows, "The X-3356 and X-3366 buildings would…"
015-67	67	6-6	6	Change "012" to "013"
015-68	68		7	Change "013" to "012"
015-69	69	6-12	34	Change "United States Enrichment Corporation" to "USEC Inc."
015-70		7-10	43 and 46	Change "United States Enrichment Corporation" to "USEC Inc."
015-71	70	8-4	13	Change "3324" to "3346"
015-72	71	8-5	3	Change "United States Enrichment Corporation" to "USEC Inc."

Official Transcript of Proceedings

NUCLEAR REGULATORY COMMISSION

ORIGINAL

Title: American Centrifuge Plant Draft EIS
Public Meeting

Docket Number: (not applicable)

Location: Piketon, Ohio

Date: Thursday, September 29, 2005

Work Order No.: NRC-627 Pages 1-101

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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

+ + + + +

PUBLIC MEETING TO DISCUSS

DRAFT ENVIRONMENTAL IMPACT STATEMENT

FOR AMERICAN CENTRIFUGE PLANT

+ + + + +

THURSDAY

SEPTEMBER 29, 2005

+ + + + +

PIKETON, OHIO

+ + + + +

The public meeting was held in the auditorium of the Verne Riffe Career and Technical Center, at 7:00 p.m., Chip Cameron, Facilitator, presiding.

PRESENT:

JIM CLIFFORD, NRC

SCOTT FLANDERS, NRC

BRIAN SMITH, NRC

YAWAR FARAZ, NRC

I-N-D-E-X

P-R-O-C-E-E-D-I-N-G-S

(6:59 p.m.)

FACILITATOR CAMERON: Good evening everyone. My name is Chip Cameron, I'm the Special Counsel for Public Liaison at the Nuclear Regulatory Commission, the NRC, and I'd like to welcome you to the NRC's public meeting tonight. The subject that we're going to discuss is the NRC's environmental review. As part of it's evaluation of a application we received from USEC to construct and operate a uranium enrichment facility known as the American Centrifuge Plant, and the NRC staff will be telling you about other parts of our evaluation as we make a decision on whether to grant this license, and I would just thank all of you for being here.

I'm going to serve as your Facilitator tonight, and generally my role will be to try to assist all of you in having a productive meeting.

I just want to cover three points on meeting process before we get into the substance of tonight's discussion and I'd like to tell you a little bit about the format for the meeting, tell you about some simple ground rules and go over the agenda and introduce our speaker for tonight.

In terms of format, it's going to be a two-part meeting. For the first part is for us to give

you information about the NRC's evaluation process, and also the findings in the draft environmental impact statement that we prepared, and then to go on to you to answer the questions that you might have about either the process or the environmental impact statement. The second part of the meeting is going to give us an opportunity to listen to you, to your comments, to your recommendations, to your concerns about the draft departmental impact statement.

I would emphasize the word "draft" to you, because it will not be finalized until we evaluate all the comments that we hear tonight, as well as written comments that we're going to be soliciting from you, and the staff will tell you more about that in a few minutes.

In terms of ground rules, when we go on to you after the NRC presentation for any questions that you might have, if you have a question, just signal me and I'll come out to you with this cordless microphone. Please introduce yourself to us and any affiliation, if that's appropriate, and ask your question and we'll try to answer it for you.

I would ask that only one person speak at a time for two reasons: one, most importantly, is so we can give her full attention to whomever has the floor at the moment and secondly, so that we can get a clean

transcript. Our stenographer tonight is Kris Kaun, over here, and that will be the public record of the meeting, and it will be available to anybody who wants to get a copy of the transcript.

I would -- during the question part of the meeting, I would ask you to just keep it to questions. There will be an opportunity for comment later. I know that often, when we're getting a question out there may be comment attached or wrapped around it. That's fine, but I would try to -- ask you to try to keep your comments to when we get to the comment part of then meeting, and try to be as brief as you can. It's hard to --- and in terms of these complex and sometimes emotional issues -- but try to be brief so that we can make sure that we give everyone an opportunity to participate tonight. In fact, when we go to the second part of the meeting and you come up to the podium to talk, I would ask you try to follow a five-minute guideline. That's not a hard and fast rule, but after about five minutes, I'm going to have to ask you to wrap up. If you have material that you'd like us to attach to the transcript, either graphics or if you have a prepared statement, we will be glad to attach that to the transcript and obviously, you can submit more detailed comments to amplify on what you say tonight during the written comment period. Usually five minutes is enough

time for people to summarize their most important points, and it accomplishes two important things: it alerts the NRC to issues that it should start looking at beginning tonight, talking to you after the meeting, perhaps, to get more information about those issues, and it also alerts those in the audience to concerns that you might have. So the public comment part of the meeting is extremely important.

In terms of our, agenda we have one speaker who is going to talk about the NRC process and then the findings in the draft environmental impact statement, and that's Mr. Matthew Blevins, who's right here. Matt is the project manager in the environmental review on this license application, and to give you little bit of his background, he's been with the NRC for approximately six years doing environmental reviews on various types of license applications, various types of projects that we get. He was a private consultant before he came to the NRC, working in low-level waste disposal and decommissioning and he is a master's degree in environmental engineering from Clemson University and a bachelor's in chemistry from West Virginia University -- or, is that the University of West Virginia? He's not sure. Well, hopefully, he knows more about chemistry then that, but Matt will talk to you -- and if you just told

your questions until he's done, it won't be that long, and then, we'll come out to you for questions and then we'll proceed with the rest of the program. We have to be out, I think -- wrap up by about 9:45 tonight so that the custodians can close the school down by 10:00 or so, but the NRC staff will be here after the meeting two talk to anybody, and you'll be getting some contact information from them. Please feel free to call them or send an e-mail if you have concern or questions and thank you all for being here. This is an important decision that the NRC has to make, and we thank you for helping us in making that decision.

Before we go to Matt and his presentation, we do have one of our senior managers here tonight, Mr. Jim Clifford, who is chief of the special projects branch at the NRC. He's been with the NRC for about 25 years and has been involved in a wide range of activities, and he's just going to give you a little bit of perspective on all this. Jim?

MR. CLIFFORD: Thank you. This is the only time that Chip will ever give up his microphone, because I -- after I give it back him, he maintains it for the rest of the night. And, Chip and I have done a number of these meetings together.

My name is Jim Clifford. You know my

title, but the responsibilities I have are for the technical review for this application and for overall project management for the successful completion of the review, whether that ends up allowing a license or deciding not to allow a license.

My counterpart for the environmental side of the activities is Scott Flanders who's sitting in the middle of the table and he has responsibility for the environmental side of the review as well.

Just to let you know who's available at the table to answer any questions that may come up and will be listening to comments as well, Brian Smith is my supervisor -- the supervisor who works for me who's responsible for all the gas centrifuge reviews including this one and then Yawar Faraz is the technical and overall project manager for our review.

So, I just wanted to end my welcome to everybody who has come out tonight and shown interest. We are here to listen to your comments and take your comments back. I will tell you, we've done similar meetings. We did one for the Louisiana Energy Services. We got over 4,400 comments by the end of the comment period, and we do go through and we do look at them, and we do address everyone of them. So make sure you speak out, we're here to listen to your comments tonight. Thank you.

FACILITATOR CAMERON: Okay, thank you very much Jim, and let's go to Matt for his presentation. This is Matt Blevins. Matt?

MR. BLEVINS: Okay, thanks Jim. Hello everyone, my name is Matt Blevins -- is this on? Can you hear me? Okay.

As Chip mentioned, we're here tonight to discuss the proposed American Centrifuge Plant and on behalf of myself and the other staff we want to welcome you to the meeting. Now just one clarification, I did graduate from West Virginia University, but I heard they changed their name, so that's the point of uncertainty.

PARTICIPANT: The microphone is not working.

MR. BLEVINS: I may need to stand closer. Is that better? I'll stand closer. Can you hear me now?

PARTICIPANT: I can hear you verbally from where you're standing but I don't know about anybody else back there.

MR. BLEVINS: Anybody in the back, can you hear the speakers, do you think?

PARTICIPANT: Yes.

FACILITATOR CAMERON: Okay, good. Thank you, sir.

MR. BLEVINS: Okay, thank you. As Chip

told you, our main goal tonight here is to listen to your comments. First, I'm going to briefly describe the NRC's license and review process, and then go into the findings, at least in a summary fashion, of the environmental review. When I've completed the short presentation, we're going to have a short question and answer session and then we're going to -- for the bulk of the time, we're going to sit here and listen to your comments.

Now, the important thing is, I want to point out that tonight is not the only time that you can submit comments, and I'll describe in more detail at the end of the presentation how you can submit other comments.

This was last-minute addition. The NRC is an independent regulatory agency. We report directly to Congress. We are not part of the Department of Energy, they are a separate agency and the report to the President. Now, the NRC has oversight responsibilities for wide variety of facilities, the most obvious of which are commercial power reactors, but we also regulate things such as medical uses, such as the radiation used to treat cancer.

The NRC's mission is to protect public health and safety as well as worker health and safety, along with the environment. The NRC does not promote nuclear projects. All nuclear projects must meet strict

safety and environmental requirements before the NRC will issue a license. Commercial nuclear facilities must have a license from the NRC before they can hold or use nuclear materials. In addition, the NRC conducts frequent and periodic inspections of our licensees. If we find out that the licensees are not following the requirements of the license, we can take enforcement action. The NRC would provide regulatory and inspection oversight for the proposed USEC facility.

Currently, we are reviewing USEC's license application to determine whether we can issue to license. There are three main portions of NRC's licensing review: We have the safety and security review, we have the environmental review, and then we have a formal hearing process.

Yawar's in charge of the safety and security review, and he's currently prepared -- he's currently preparing what is called a safety evaluation report. I'm in charge of the environmental review and the draft environmental impact statement, which we're discussing here this evening. Those two documents form part of the basis for whether or not we issue the license.

Additionally, as I mentioned there's a formal hearing process made up of a panel of Judges. They will ultimately make a recommendation to the NRC's

commissioners about whether to issue a license. Then, those NRC commissioners will then publicly vote on whether or not to issue the license, and that vote is based on all the information in those different reviews I just discussed.

Now, the next slide, I'm going to switch gears and we're going to talk just briefly about what USEC is proposing just make sure that everyone understands just we're talking about. USEC is proposing to build a uranium enrichment facility. It would be known as the American Centrifuge Plant, and in this plant, USEC intends to enrich uranium using a gas centrifuge process. Now, a gas centrifuge, shown here in the diagram, it's a machine used to enrich uranium. Basically, the machine uses high-speed rotors that's able to spin the different isotopes into different fractions. In other words the heavier uranium-238 isotopes are able to be separated from the lighter uranium-235 isotopes. The gas centrifuge process will be used to enrich natural uranium from its natural concentration of about .7 percent to somewhere between 3 and ten percent, and that's dependent on what USEC's customers need.

The proposed facility would be located within the existing Department of Energy reservation. USEC does propose to make use of some of the existing

buildings. For example, two large process buildings which are already present would be used to house the centrifuges. Other facilities would have to be built such as a tails withdrawal facility.

Now, I'm going to switch gears again and we're going to move onto the environmental review and what some of the results that were. First, I want to show you the various resource areas that we looked at in preparation of the draft EIS. We looked to see whether there would be impacts to each of these resource areas including such important concerns as public health and transportation. As you can see, it's a pretty extensive list. In terms of how we evaluated the impacts, first we looked at all phases of the project, both construction, operation, and decommissioning for each of those resource areas that we talked about on the previous slide. Now, once our experts determine what the impacts were, we went back and then we categorized those impacts as being either small, moderate, or large. And we'll -- on the very next slide, I'll define what those slides are, or what those terms are.

Now, the draft EIS also discusses mitigation measures. Mitigation measures are things that USEC can do to help decrease a potential negative environmental impact. For example, USEC has stated that

they will use dust suppression techniques for excavation under dry conditions, and this relates to an air-quality impact. All the impacts on all these resource areas are discussed in the draft environmental impact statement in chapter four, and that's the thick document that's back there on that back table if you didn't get a copy already.

Now as I just said, once the experts determine the impacts, we then categories them into small, moderate, or large. The definition of those categories are shown here. Small impacts are those that are either not detectable or they're so minor that they would neither destabilize nor noticeably alter any important attribute of a resource. Moderate impacts would be noticeable, but they wouldn't destabilize any important attribute of resource. The large impacts would clearly be noticeable, and they could eventually -- or, they could destabilize a resource. We did not find any large impacts for the proposed USEC facility.

Before we move on to the discussion of those areas that had moderate impacts, I want to briefly show you the areas that we estimated to receive small impacts. In particular, I want to focus on two areas that have received a lot of attention, starting with cultural resources. I wanted to provide a little more detail so you all know what we considered during the review.

In analyzing the impacts to cultural resources, we followed the procedures as required under the National Historic Preservation Act for consultation and more specifically, we used the criteria for determining eligibility to the National Register of Historic Places.

In this analysis we define what is called an area of potential effect. This includes the immediate area of construction, and this is what we call for the direct effects, and this could -- a direct effect could include a piece of heavy equipment uncovering a cultural resource. Now, we also extended this area of potential effects out of the DOE or the Department of Energy preservation boundary. And, this was for what we call indirect effects such as noise or visual intrusion. Now, in addition to those cultural resources which were inside the area of potential effects, we also looked to cultural resources which were immediately near the DOE reservation, and that was based on scoping comments we received when we were here last January, and based on information has been presented in the ongoing legal hearing. Based on this review, we determined that the impacts to cultural resources would be small.

I also want to briefly discuss water resources. Our analysis found that the impacts on water

supply would be small because the withdrawals would only -- are only expected to increase by 10 percent over the existing usage. Moreover, the total withdrawal is estimated to be only 31 percent of the currently permitted levels. So, in other words, the supply wells were originally designed and permitted to pump more water than is currently anticipated for the USEC proposal.

Our analysis also found that the impacts to water quality will be small. This is based on the fact that the USEC will not routinely discharge process water. To explain in a little more detail, the Centrifuges are cooled a closed loop cooling system. The important part of that is that none of the water that comes into contact with the centrifuges is discharge into the environment. That primary cooling water system gets rid of its heat to a secondary cooling water system and it does that through heat exchangers. The important part of that is that the two waters don't come in physical contact, so there's no mixing. Additionally, any leakage or spills would be collected in a separate system. If this collected water meets NRC regulations then it can be discharged to the site's sanitary sewer treatment system. If it doesn't meet the NRC regulations, it would have to be containerized and shipped offsite.

During our analysis, we found that five

resources areas may experience small to moderate impacts. They may experience moderate impacts during some portion of the facility's lifetime -- that's probably a better way to say it -- but, not necessarily for the entire facility lifetime. For example, the impacts during the construction phase might be moderate but then once they to go to the operations phase, those impacts may become small. The five areas that have moderate impacts are air-quality, socioeconomics, transportation, public and occupational health, and waste management, And I'm going to discuss each of these areas in detail in the next set of slides.

For air-quality, we analyze various pollutants. The moderate impact was found to exist for particulate matter. More technically, the particulate matter is known as PM2.5. The PM2.5, it refers to the average size of the particulate matter. In this case, it's 2.5 microns in average on the diameter. In other words, it's very small particulate matter. The level of PM2.5 would slightly exceed the existing air-quality regulations for a distance of about 3,000 feet beyond the site boundary. This is primarily related to the exhaust from the construction equipment. It should also be noted that this area of Ohio has high background of PM2.5. The numeric details can be found in the draft EIS, but a good

way to summarize it is that the proposed USEC facility would increase those levels by about 16 percent. Again, this is related just to the construction phase from about 2007 to about 2011.

Now, we also looked at emissions during the facility -- during the operation of the facility, including the emissions of hydrogen fluoride, or HF, and -- as well as emissions of uranium. The release of HF and uranium would be very small -- very -- I guess you'd say very far below the background -- I'm sorry, below the regulatory thresholds. The actual numbers, for example, the hydrogen fluoride is about .003 micrograms per cubic meter, and to put that in perspective, the regulatory threshold is 2500, so you can see that there's a large difference between those two numbers. And that's similar for the uranium numbers as well. The numeric details, again, are found in chapter four of the draft EIS.

Socioeconomics includes a wide range of areas. We analyze employment, population, housing, public services, and financing -- finances. We found that the employment impacts would be moderate because the proposed facility would either create or sustain jobs in the local area. We also found that impacts to the population increases would be small and that's primarily because of the small number of people expected to move to the area,

and I have some of the job numbers here listed on the screen.

For transportation, we looked at both materials and equipment coming to the site as well as workers commuting back and forth. Now, during both the construction in the operations phases combined, we estimated -- the estimate was less than five combined fatalities from either the shipment of the materials and equipment or from workers daily commutes, and this is just from normal routine daily traffic accidents, not including -- you know, in other words, if another vehicle were to run of the road, in other words a non-radiological accident.

Then, we looked at the radiological impacts from the transportation or the routine shipment of these radioactive materials, and when we say "routine shipment" we mean, if there weren't any accidents, and then, we also looked at what would happen if there were different accident scenarios involved with that transportation. Again combining those two estimates over the 30-year period, we expect less than one additional cancer death over that time frame. We consider the impacts of these areas to be small.

Now this analysis assumed that all the materials would be shipped by truck except for the

depleted uranium tails, which is a type of radioactive waste, which we'll talk about on the next slide. For that analysis, we assume that the depleted uranium tails would be shipped by rail. For that shipment scenario, we would expect far less than one additional cancer death over the shipping time frame. And again, we expect this to be a small impact.

Now, during construction, we expect minor congestion primarily on US Route 23. Route 32 will see increase traffic but it won't be as noticeable as on 23. Because the speed of these routes will be slightly reduced and because of the increased number of vehicles, we've concluded this would be a moderate impact.

Now, in addition to the small radiological impacts which we just talked about, it's also possible that an accident could have nonradiological impacts. For example, the formation of a hydrogen fluoride gas could be created. The exact impacts vary based on several factors, for example, whether it happens in a rural location or whether it happens in a city. It also depends on the meteorological conditions. It depends on which way the winds are blowing and whether it's a stable atmosphere. And, it also depends on what the material is, whether it's UF6, which is the uranium hexafluoride, or whether it's U-308. The results are summarized in detail in chapter --

in table 416, and there were a lot of numbers so I think you have to go look at that to get a feel for what the ranges are. Now, because of the low probability of such a severe accident occurring, we found that the nonradiological impacts from accidents would be moderate.

Now, as you know, USEC would be handling radioactive materials. So, we do a careful assessment of any possible health effects that may occur. We look at both workers at the facility as well as the public living near the facility. We found that for construction, normal operations, and decommissioning, the radiological health impacts to both workers and the public would be small. During operations, it was estimated that the nearest member of the public would receive between .2 and 1 millirem per year and this is dependant upon the location around the facility. The south and southwest direction receives its highest exposure from the airborne emission, and that relates to about the .2 millirem per year number. The direct radiation contributes the highest dose to a theoretical member of the public at the north boundary, and we say and we say theoretical because nobody currently lives there. But, that number -- that -- the highest dose in that area was about 1 millirem per year. Both of these doses are well below the NRC's regulatory requirements of 25 millirem per year.

We also looked at accidents and we found high or intermediate consequences for several accidents that were analyzed. Now, however, there are safety equipment that's at the facility that makes such as severe accident highly unlikely. Based again on the low probability that such a severe accident would occur, we determined those impacts would be moderate as well.

The last area I'm going to discuss is waste management. The facility would generate both non-radiological waste and radiological waste. The non-radiological waste could include things such as scrap metal from construction and the radiological waste could include things such as dirty rags or laundry, but most of the radioactive waste is depleted uranium tails. The uranium tails could be stored on site until their eventual conversion and disposal.

Now, we found that the impacts from the non-radiological waste and most of the radiological waste to be small. That is, there's adequate capacity at an appropriate licensed disposal facilities. The impact -- now specifically to the depleted uranium tails, the impacts from the storage of the depleted uranium tails was also estimated to be small to moderate. It was estimated to have small impacts on the nation's disposal capacity, small impacts from transportation of the depleted uranium

once it's converted into a more stable form, and small health impacts once it's eventually disposed of. The moderate impact is the necessary extension of DOE's depleted uranium conversion facility that's also going to be located on the DOE reservation.

That conversion facility, the one that's currently under construction, would have to operate for a much longer period of time than if it were just converting the existing inventory. DOE has considered this operating extension in their previous environmental reviews.

Now that concludes my technical overview of the draft EIS findings, and now, I'm going to switch gears and tell you how to submit comments.

First off, we're going to be accepting oral and written comments this evening. You may not have anything to say this evening, and that's okay, but you may hear something or something may come to you afterwards, and that's why the comment period ends October 24. It's important that you understand that we consider all the comments when we're preparing the final EIS. All those comments are going to be included in an appendix to that final EIS. Along with that -- along with your comments, there's going to be a NRC response, and that way you understand how we addressed your comments.

The important thing is when you're

something comments outside of the meeting, I want you to note the docket number on your comments. That way, it gets routed to the right people, it doesn't get lost in some of the different paper mailboxes that we have at the NRC. You can send your comments via regular post office mail or you can send them to the e-mail address listed. Also, we have some blank comment forms back here on one of the tables. Feel free to write your comments out on those blank forms as well, if you'd like, and you can provide those on your way out the door this evening.

Now in the next two slides, we're going to talk about some of the different web addresses where you can get more technical information. On the first web address, it's where you can see an electronic version of the draft environmental impact statement, and I think this is important because it has better resolution of the pictures. The second web site address takes you to the NRC's web site and it talks -- it has general information about the USEC licensing proceeding and generally has some of the more important documents. Now, this web site address may be the most important because it takes you directly to the NRC's electronic reading room, and on that web site, you can get all the publicly available documents about the USEC licensing action. Examples of documents that you can find this web site include records of phone

conversations, e-mails, meeting summaries and other public comments, and of course, all of USEC's submittals. Now, if you're having trouble finding a document in his electronic reading room, I've given you public document room, they have staff that said there and their job is to help you find it and provide you electronic copies, so just e-mail them or give them a call and they should be able to help you find something.

Now in terms of the NRC staff, if you have an overall licensing question or a safety and security review question, probably the best person to contact is Yawar, and I've given his contact information here. If you have any questions on the environmental review, you can contact myself, and we have -- again, these are on copies of the slides if you got one of those when you came in.

So that wraps up my presentation, and -- do you want me to sit down, or --FACILITATOR CAMERON: Why don't you just stay up there because I think we'll have some questions now. The NRC points of contact, can we leave that up there because I didn't see a slide.

MR. BLEVINS: It should be in the last page there on the back.

FACILITATOR CAMERON: All right.

MR. BLEVINS: Maybe you have a bad copy.

FACILITATOR CAMERON: Okay, but we'll --

MR. BLEVINS: We can --

FACILITATOR CAMERON: -- leave this up so that you can have time to look at it, and Matt, you can -- people can submit comments by e-mail, --

MR. BLEVINS: Yes.

FACILITATOR CAMERON: -- also, right?

MR. BLEVINS: Yes.

FACILITATOR CAMERON: Okay.

MR. BLEVINS: On the previous slide, there was an e-mail address.

FACILITATOR CAMERON: And, note that there is an e-mail address on their for --

MR. BLEVINS: Or, you can e-mail it to me and I'll forward it to the e-mail address.

FACILITATOR CAMERON: Okay, great. Now, are there questions? Yes, sir, please introduce yourself to us.

PMT-001-1

MR. KITE: Fred Kite from WEB News, in Athens. If, in fact, you have your EIS issued -- the final EIS issued by April 2006, when would the final, final approval of the NRC come?

MR. BLEVINS: I'm going to defer -- I think it's in early '07, but Yawar probably has the best time frame for that.

FACILITATOR CAMERON: And, it would be the final decision. It may not necessarily be an approval.

MR. BLEVINS: Right.

FACILITATOR CAMERON: But, it would be the final decision. Yawar?

MR. FARAZ: The NRC Commissioner has issued an order and in the order, they have set a goal for the entire review. It was a 30 month, review from the submittal of the application to the final decision. Based on the 30 month schedule, it's February of '07.

FACILITATOR CAMERON: Thank you very much, Yawar. And, let's go right out here. Yes?

PMT-002-1

MS. BAKER: I had two questions if you don't mind. My name is Deborah Baker. I have two questions, if that's alright. I wonder if you could compare your -- you're talking about the millirems that were the very small doses that were going to affect the locals around here. How does that compare to the doses that are estimated -- the real doses -- of people around nuclear power plants?

MR. BLEVINS: I'm going to give that to -- Scott, you want that one?

MR. FLANDERS: The doses that Matt spoke of, I believe, he said it was approximately about 1 millirem at the -- to a theoretical person at the

boundary, and around nuclear power plants, the doses vary based on the affluence, but they're typically very low, similar in nature to around nuclear power plants.

There's -- the regulatory limit for this type of facility is about 25 millirem, which represents a relatively small fraction of what the general public would receive from just day-to-day normal activities. It's about 300 millirem per year that's received to all of us just based on -- from natural sources, and there's about 60 millirem and that's assumed from activities, man-made type activities such as x-rays, flying in airplanes, et cetera, so the doses represent a very small fraction of the regulatory limit and an even smaller fraction of what a general member of the public would receive on a yearly basis.

FACILITATOR CAMERON: Okay, Deborah, your other --

MS. BAKER: Yeah, I just wanted to comment on that, that, as you know, cancer rates have gone up since nuclear testing has been going on in the atmosphere. So, the radioactivity in the air does affect cancer rates, and there is more radioactivity around nuclear plants and in fact, the cancer rates around nuclear plants -- power plants are higher than the cancer rates away from the nuclear power plants. If the rates are similar, then I

PMT-002-2

expect to see the same thing here, and of course some of the workers here have been contact -- contracting cancer. So, whatever the background rates are it sounds like that the industry is bad for people's health.

MR. FLANDERS: Well, just to add a few points, the background rates, I spoke of, the 360 millirem are not specific to exposure around a nuclear power plant. That's a general average of exposure.

PARTICIPANT: Can you speak into the mic?

MR. FLANDERS: Can you hear me? The background rates I was speaking of are general background rates, not necessarily background rates associated with nuclear power plants, or 360 millirem. That's just a general member of the public based on information collected by various radiological groups such as NCRP and international groups as well.

FACILITATOR CAMERON: And, Deborah, do you have another question?

PMT-002-3

MS. BAKER: I was wondering, who is the panel of Judges who will be making the recommendation?

MR. FLANDERS: There's a panel, there's a -- what's called an atomic safety and licensing board. It's made up of three Judges, and I'm not necessarily sure who the specific names of the Judges are, but these are what you would call -- I'm lost in my words, Chip. You

know better than I do -- Administrative Law Judges. It's made up of the three panel members. Usually one is a person with a technical background. Others are individuals with a legal background as well. So that's what makes up the panel.

FACILITATOR CAMERON: And if you need the exact names, we can get those to you off-line, Deborah.

And, Deborah made one statement and I believe that was that the radioactive emissions around nuclear power plants are higher than in areas away from cancer rates. I -- and I just would ask the NRC staff to think about whether there has been than any studies that demonstrate that or provide other information. We don't need to do it now but I just want to make sure that we get all the information on the record.

Thank you, Deborah. Thank you, Scott. Other questions? Let's go to Vina. We apologize for the feedback. Vina?

MS. COLLEY: Yes, I'd like to ask the NRC, would you be willing to sign a legal paper stating that this facility will cause no harm to the workers or the community, and if it did, who can they sue?

PMT-003-1

FACILITATOR CAMERON: And, this is Scott Flanders again.

MR. FLANDERS: The NRC has a set of

regulatory standards, which Matt spoke of briefly, that we do as a part of our safety evaluation report and those regulations are based on analysis by the NRC that we put those regulations in place, that we believe that if those regulations are satisfied, they're protective of public health and safety. So, in order for us to issue a license, we have to first ensure that the facility will be built in accordance with those regulations and then later operated in accordance with those regulations, and if they're not operated within accordance with those regulations, we would take enforcement action.

So, through that process is the NRC's way of ensuring and having reasonable assurance that they'll be protective of public health and safety. So, that's our regulatory process.

Our regulatory process does not include the signing of any specific documents, but our regulatory process includes this review and it's later reviewed by our Commission as well.

FACILITATOR CAMERON: Okay, thank you very much Scott, we didn't answer the --

MR. FLANDERS: Did I miss a --

FACILITATOR CAMERON: -- question, it's -- the way Vina phrased it is, if there's damage, who could be sued. In other words, liability for any --

MR. FLANDERS: Well, if --

FACILITATOR CAMERON: -- type of damage. I don't know if we can have the knowledge to address that right now, if you want to say anything about it in general, then --

MR. FLANDERS: I would say, generally, that if it was found that there was an accident or a violation of NRC's regulations, an enforcement action would be taken and the licensee would be held accountable for any violations of the regulations.

FACILITATOR CAMERON: And, in terms of any sorts of harm to people it would be handled in the typical way that any damage, I think, would be handled from any type of industrial facility, through a tort action in the courts. Vina, do you have a -- excuse me. Vina, do you have a follow up?

MS. COLLEY: Yeah, I'm just wondering if sovereign immunity is going to play into this liability to compensate these workers of the community, because right now, we have a compensation bill that's not working that's been in place for six years and not the first worker who had toxic chemical exposure -- if they didn't have cancer they can get paid, and they're still not even getting paid if they got cancer. So, I'm still wanting to know who is going to be liable if you guys give this company another

PMT-003-2

license to kill more people. I want to know who's going to be liable.

FACILITATOR CAMERON: If any of the NRC staff, or others, if we can try to piece together the framework of an answer that we can give to Vina after the meeting, let's try to do that. We do have some people here from our Office of General Counsel, so we'll talk to them about it. Yes, ma'am?

PMT-004-1

MS. SWAIN: Yes, this is a follow up on the comment that you made about violations -- NRC violations. I understand that USEC does have quite a few, in fact, a disgraceful record. They have, like, 16 violations of NRC regulations, and has that been taken into account? Has that been factored into this impact statement? And I have another question after that.

FACILITATOR CAMERON: Scott, or Yawar?

MR. FLANDERS: I'll start and I'll look for Yawar to see if he can answer. I assume you're speaking of violations as it relates to the operation of the gaseous diffusion facility?

MS. SWAIN: Right.

MR. FLANDERS: That -- the license for the gaseous diffusion facility is a separate activity. This is a review for a proposed license that they are proposing and we're evaluating right now the technical basis of how

they would construct and operate the facility. So we're about -- were doing a technical evaluation at this point in time. The aspect of looking at violations are done as a part of our inspection activities, which this plant will also have inspection activities.

FACILITATOR CAMERON: And, but, I don't think that in terms of whether violations are addressed in the environmental impact statement itself, as opposed to other parts of the licensing process, --

MR. FLANDERS: The operational -- the way in which they will operate the facility and the way in which we will be -- we will inspect the facility is addressed separate from the environmental impact statement.

FACILITATOR CAMERON: Okay, so you won't find any thing on that in the environmental impact statement, and as Matt and Jim Clifford talked about, there's other aspects to this review and this decision. Yawar, do you want to add anything on this? Yawar Faraz.

MR. FARAZ: As Scott mentioned, it's a certificate that we issued for the gaseous diffusion plant where the violations have occurred. We are reviewing the application for its merits -- this, for the centrifuge facility, and it would -- that's what we would base our review on, on the merits of the application. We look at

not, you know other -- if you find the application acceptable, we would conduct preoperation inspections to make sure that they construct the facility as described in the application, and then we will continue our oversight by conducting routine inspections and also unannounced inspections once they begin operations. So, that's how we would make sure that the facility is maintained -- safety is maintained.

FACILITATOR CAMERON: Okay, and if you want to -- yeah, I know you have another question. I think that for any licensee of the NRC, the enforcement record, the violations are all part of the public record and you can judge how, you know, serious you think they are and see what the fine wants. And, your --

MS. SWAIN: The second question is, has the NRC ever not licensed an applicant, other than LES, which was denied in a couple of places, but is still under application?

FACILITATOR CAMERON: And, I'll translate that into any type of facility, okay? Not just a facility like this.

MS. SWAIN: Not just a centrifuge.

FACILITATOR CAMERON: Scott?MR. FLANDERS: Throughout the NRC's regulatory history, I mean, there's been times where an application has come in and the NRC

has not approved that application. We approve the application only after it's been demonstrated that they can satisfy our regulatory requirements. So if it's demonstrated that the regulatory requirements can be satisfied after we've done our technical and environmental review, then we would issue a license, but until that point in time, so there's been cases where we did not find that the application demonstrated and satisfied all the safety requirements, and in some cases there's a need, also, to condition the license as well, which what -- is another way of adding additional requirements -- or, additional conditions to ensure that they satisfy our regulatory requirements.

FACILITATOR CAMERON: And, Scott, along those lines, there have been some cases, have there not, where we have requested that a licensed applicant do something to improve safety or to meet the regulations and they might have withdrawn their application?

All right, yes, let's go -- we'll go right here and then go to you, and please introduce yourself, sir.

MR. WEINER: Alan Wiener. I have two questions too, it's going around. One question is the nuclear fuel cycle in the back has, like, a one-way direction and there's no circle in it, and I wonder if

PMT-005-1

USEC or NRC determines the safety of the spent fuel. And the second question also -- I'll wait on the second one.

FACILITATOR CAMERON: Do you understand Allen's question in terms of what the NRC role is in regulating either the storage or disposal of spent nuclear fuel? Is that basically it?

MR. WEINER: And, the ultimate disposal.

FACILITATOR CAMERON: Ultimate disposal, okay. Scott?

MR. FLANDERS: The NRC has rules specific to the spent fuel, both storage and ultimate disposal. We have specific regulations in place that are in requirements for storage of spent nuclear fuel, as well as requirements in place that provide guidelines for ultimate disposal of spent nuclear fuel, as well.

FACILITATOR CAMERON: And, that last part, Scott, is referring to the fact that the Department of Energy has to get a license from the NRC. They have to meet all of our regulations to be able to construct and operate a repository for the disposal of waste at Yucca Mountain. Second question, Alan?

MR. WEINER: I wondered why there's an absence of any mention of higher percentages of concentration, meaning for other uses like bomb making.

PMT-005-2

MR. FLANDERS: The NRC does not regulate

the Defense uses of nuclear materials. That's separate from our responsibility.

PMT-005-2

MR. WEINER: Is that out of the question for this plant?

MR. FLANDERS: Under the NRC -- under the license that the NRC would grant, yes, the -- it would be limited in to -- as to how much they can enrich the fuel, so they -- or the material, I should say.

FACILITATOR CAMERON: Okay, does anybody from the NRC want to add anything on that last -- Yawar? Can you go up to the podium, please? Thank you.

MR. FARAZ: Just as Scott mentioned USEC would be authorized up to 10 percent for enrichment, and we have a separate plan that would require USEC to submit that plan to us. It's called the Fundamental Nuclear Material Control Plan, and that's a way to -- for USEC to demonstrate to us that they would not go above the 10 percent, and then the NRC would be -- would review that plant, obviously, and would be part of the application review and then the NRC would again, you know, conduct inspections to make sure that they are abiding by this FNMC Plan to make sure that there's no unauthorized enrichments, or any kind of divergent off of material.

In addition to the NRC, we expect the IEA, which is the international -- the UN body to -- if it

selects the American Centrifuge Plant for -- to conduct inspections for the IE to come in -- and also on its own, independently make sure that there are no unauthorized enrichments being conducted at this facility or material is not be diverted.

FACILITATOR CAMERON: Okay thank you. Let's go right here, excuse me, Dr. Manuta.

MS. PUCKSTEIN: I'm Jean Puckstein and my question is about the scoping process which some of us make contributions to. The document, as it appears as -- on the internet, the ADAMS Reading Room, did a summary of the scoping remarks, and it included after the summary remarks, pages or copies -- or some of the letters that have been sent in about the scoping process and in my computer and others I've talked with, we were not able to unscramble who those letters were from. In my experience reading other environmental impact statements and scoping reports, you usually include those letters in their entirety instead of a summary. Will that be done after this process?

PMT-006-1

MR. FLANDERS: For the scoping summary report, the NRC normally summarizes the comments, and that's so we can quickly and efficiently get the comments and the issues that out of the public so to make sure we understood what you said at the meeting. We don't --

there shouldn't have been any letters attached that scoping summary report that we issued in April, 2005.

Now for this -- for the draft EIS, when we go to finalize it, what we'll do is an add an appendix, and then, what you're talking about is everyone of the public comment letters will be in the appendix, and then we'll sort of cross-reference that the where the -- because that's a large document, we'll cross-reference that to where the NRC response will be nearby or will be cross-referenced so you can find it easily.

FACILITATOR CAMERON: If Jean wanted to see the actual letters that were submitted during scoping, those are part of the public record, and she can get to those, right?

MR. FLANDERS: Certainly. One of the things you can do is -- probably the most efficient way is if you contact the public document room at the number I listed, the 1-800 number, if you tell them what you're looking for, they're pretty efficient, and they'll be able to locate those numbers and they can tell you how to get those electronically. They're pretty small documents, the letters themselves, because they're probably one to two pages. We might have had some that were a little larger, but those would all show up on the record in a certain time frame.

FACILITATOR CAMERON: And if Jean is having trouble with this, she can contact you and see if you can give her some assistance from --

MR. FLANDERS: Yeah, I can too. The most efficient, though, is --

FACILITATOR CAMERON: Is to go --

MR. FLANDERS: -- public document. They're the professional people that do that.

FACILITATOR CAMERON: Okay. All right, did you have a follow-up?

PMT-006-1

MS. PUCKSTEIN: I wanted to ask Mr. Blevins, if I send a copy -- it's only one page of this scrambly language, would you be able to explain it to me?

MR. FLANDERS: I might. The only thing that we put on ADAMS are portable document files, PDFs. It's in an Acrobat reader file. It sounds like maybe a different file format was opened on a different program, maybe, in your computer, because I've seen some sort-of scrambled documents too. It's important just to use the right application.

MS. PUCKSTEIN: Okay.

FACILITATOR CAMERON: Well, you can give it a try.

MR. FLANDERS: Yeah, you can give it a try --

FACILITATOR CAMERON: Send it to him.

MR. FLANDERS: I'll try to find out what document it really is and then send you back the original version of that.

FACILITATOR CAMERON: All right, Dr. Manuta, you have a question?

DR. MANUTA: Well, it's actually to clarify what Mrs. Lever (phonetic spelling) just asked a few minutes ago. The gaseous diffusion process actually did at one time make what you defined as bomb-grade material, which is up to 97 percent. That process stopped in 1964 and the building was subsequently shut down in the early 1990s, around 1992. But, keep in mind that that's the gaseous diffusion plan, so that's an entirely different animal.

PMT-007-1

Now related in with the centrifuge is the fact that the licensing process here has a lot more knowledge base going into it because the NRC is involved, so there's kind of a talk the talk and walk the talk attitude -- walk the walk -- when the gaseous diffusion plant came about in the 1950s, the NRC didn't exist. Okay, very very important.

PMT-007-2

And so a lot -- and then getting back to what Vina was mentioning, I've dealt with a lot of this over the years. There are long periods of time where

people were not given all the information about the work that they were getting involved in. That era has come and gone, fortunately, and that's really critical to understand that as we move into the new era with the centrifuge, when the document is prepared with the assistance of USEC personnel to meet the criteria that NRC has and then for the judges to then pass their judgment at some point on the road, what you're going to find is that the legal mechanisms are in place so that if things happen which are unplanned and the object is that you've accounted for 99 plus percent of what the average employee is likely to encounter, there should be many fewer problems with the centrifuge than there were with the gaseous diffusion.

FACILITATOR CAMERON: Thanks, Dr. Manuta. Other questions out here? Anybody before we -- okay. Yes, ma'am?

MS. RAINEY: Carol Rainey. What happened with the centrifuge plant back in the seventies and was there environmental impact on what happened then? That's one of my questions. PMT-008-1

MR. FLANDERS: I can briefly answer. The NRC wasn't involved in that original -- what was originally called the GSEC facility, that was a DOE project. My understanding is it was run for a very brief

period of time and currently, my understanding is some of the centrifuges did have radioactive material in them, but some did not. They're currently dismantling or refurbishing some of those centrifuges from the facility.

PMT-008-1

MS. RAINEY: Why didn't it work?

MR. FLANDERS: That I don't know. Yawar, do you have -- I think it might have been more of a budget issue but I'll let Yawar --

FACILITATOR CAMERON: And after that, can we -- let's move on and if there is more information, if anybody has it -- let's provide it off-line. Yawar?

MR. FARAZ: Well, from what I understand it was a political decision. The plant was operated successfully for short period of time, but then there was this AVLIS method that was on the horizon and the decision was made that, you know, AVLIS would be pursued as opposed to a gas centrifuge.

FACILITATOR CAMERON: Okay, and if -- whatever we can provide to her on that after the meeting, I think we'd best do it.

MR. FLANDERS: Question from up here that was new.

FACILITATOR CAMERON: Okay, and let's -- we'll take this question and then let's go to all of you to hear from you with comment. Yes, ma'am?

PMT-009-1

MS. WAHLEY: Lois Wahley. I have two sort of general questions which come from the background, which is provided in the report.

First is about how much this fuel, which is going to provide -- how much will that supply -- that is to say, will it supply five power plants, 10, 100? There seems to be only this one facility for this gaseous diffusion. There must be other methods which are being used, or something.

MR. FLANDERS: There are several methods and I think I can talk more generally, and to get into very detailed, we will have to go to Yawar or Brian, but the whole fuel -- the -- think of the 100 nuclear power reactors we have, the current demand is about 11 million SWU, which is called a separate work unit. This proposed facility would initially -- the initial license application is for 3.5 million SWU, or separate work units. There's also some capacity, or SWU capacity from the Russian down blending of high enriched uranium and I'm pretty sure you can find some of that information of USEC internet web site.

And then, there's also this proposal -- well, and before we get to that, there's the Paducah gaseous diffusion plant, which -- is that about 5 million SWU right now?

MR. FARAZ: It varies.

MR. FLANDERS: Okay, so it varies, but I think that's the number, I think, we used in the draft EIS, and then there's the proposed facility in New Mexico, which its licensed application was for 3 million SWU. So you can see, total, they're getting close to the number for the 11 million SWU needed for the fuel cycle. Right now, a lot of the SWU comes from overseas and one of the purpose it needs was the -- that Congress thought we perhaps needed a more secure domestic supply of this energy, this SWU capacity.

MS. WAHLEY: So, this would be about a third. Is that --

MR. FLANDERS: Roughly, yes.

MS. WAHLEY: The other question has to do with the -- what is it, megatons to megawatts, and the use of Russian nuclear warheads as background or source material for fuel source for the gaseous diffusion, is that correct? And a, you know, how many warheads are going to use up? I certainly hope -- and is there also, what about the US warheads? I guess that this plant would not be using dismantled US warheads, is that correct?

PMT-009-2

MR. FLANDERS: The American Centrifuge Plant isn't involved in the megatons to megawatts. When I said earlier --

MS. WAHLEY: Okay.

MR. FLANDERS: -- the Russian, the high enriched uranium, you are correct, the proper term is the megatons to megawatts. That agreement, my understanding, expires in 2013. So that's one of the reasons they feel we need to bring additional capacity online, they being the Department of Energy, for the more -- to get more of the domestic sources. The -- but the Russian material of the megatons to megawatts wouldn't, or isn't involved in the American Centrifuge Plant. The American Centrifuge Plant only uses natural-feed uranium, or natural assay uranium. Does that help?

FACILITATOR CAMERON: Okay, and is there any project that is involved in the mega to mega?

MR. FLANDERS: Yawar can answer that, I think that --

FACILITATOR CAMERON: I say, it isn't involved here, but for complete information, maybe we can give you that. Yawar?

MR. FARAZ: The material that's coming from Russia is essentially what the clients, the USEC's clients are requesting, so it comes down, downblended to whatever the customer needs.

So it's not a feed to the gaseous diffusion process nor is it going to be a feed to the gas

centrifuge process. It essentially taking -- it's brought in from Russia then provided to the plants directly.

FACILITATOR CAMERON: All right, thank you very much. Thank you all. Okay, one quick question, Geoffrey, before we go to comment?

MR. SEA: Yes, Geoffrey Sea. The draft EIS says in the beginning that one of the main justifications for the facility is that it if ACP goes into operation, Paducah will be shut down. What you just said was that Paducah would be needed to stay in operation to meet the total domestic demand for enriched uranium, so which is it? If this facility is not going to result in the shut down of the Paducah plant, then everything you say in here about how the cleaner technology and more efficient technology will be acquired by shutting down Paducah is irrelevant.

PMT-010-1

MR. FLANDERS: Right, if I gave the impression that USEC or the Paducah facility would have to stay online, that's not necessarily the case, but again, that's a USEC business decision. Even if they do license this, they're not required to shut down Paducah, so it's an issue of what the demand is for the SWU and how they produce that, how to decide on the business model to produce that SWU. What they have told us as they plan on shutting it down because the centrifuge process is more

efficient. Does that --

FACILITATOR CAMERON: Okay, thanks for asking that clarification, Geoffrey, and thank you, Matt and Scott, and we're going to go to the portion of the meeting where we hear from all of you, and our first commentor is MarJean Kennedy from the Governor's regional office. MarJean?

MS. KENNEDY: Thank you. We are confident in the NRC's evaluation that potentially there could only be very minimal impact to the public and occupational safety and health, especially given USEC's history of safe operation. Since USEC has operated the gaseous diffusion plant, it has -- excuse me -- it has a proven safety record. The plant is consistently below the national average in the number of OSHA-recordable illnesses and injuries.

PMT-011-1

Just like the gaseous diffusion plant, the centrifuge's commercial plant will also be a highly regulated facility, requiring strong safety programs in order to maintain strict compliance with all state and federal regulations for the safety and health of the employees, as well as the public.

As part of its review, the draft environmental impact statement, the NRC evaluated both the direct and indirect economic impacts from the plant, and

PMT-011-2

as stated earlier by Mr. Blevins, they determined that there be small to moderate impacts. Most are positive impacts, such as jobs and tax revenues. This conclusion seems reasonable, based on our understanding of USEC's project.

Site preparation and construction is estimated to cost 1.4 billion between 2006 and 2010. USEC tells us they're going to spend approximately 1.7 billion on the plant from 2002 until its completion. That's a lot of money for the local economies here in Piketon, Chillicothe, and all of southern Ohio. It means up to 500 jobs, both direct for the reservation and indirect for contractors in the region.

In addition to the multiplier effect, that money -- of that money on the local economy, these workers will be supporting our local businesses and that's good for everyone.

The cost estimates to construct and operate the plant were based on a facility that would generate 3.5 million SWU per year, as you just heard, but the draft environmental impact statement and USEC's environmental report anticipated growing the plant's output to 7 million SWU per year and that means more machines, more jobs, and more money into your local economy. The draft EIS does not anticipate any additional

problems from increasing the plant's output to 7 million SWU.

During the site preparation, refurbishment, and construction, it is anticipated that there will be 3,362 new full-time jobs created in the local economy. There is also an anticipated increase of $2.3 million in annual state income tax revenues and an increase of $3.7 million in annual state tax receipts. During American Centrifuge operation, 1,500 jobs are anticipated to be created as a ripple effect into the community. The state will potentially benefit from $1.8 million to $2.4 million in additional annual income in sales tax receipts, respectively.

At the end of the life of the centrifuge project -- centrifuge plant, excuse me, there will then be decommissioning phase. When the plant is closed, that time frame could be much longer as the experience from the gaseous diffusion plant shows. The gaseous diffusion plant began operation in 1956 and wasn't shut down until 2001 and it still has not been decommissioned, but when it is, there will be jobs for that work as well. The NRC estimates that $435 million will be spent over six years to decommission the American Centrifuge plant.

In closing, we appreciate the fact that the NRC has been taking a very hard, but a very fair look

at this project for the State of Ohio. Thank you.

FACILITATOR CAMERON: Okay, thank you Margie, and you're going to hear a lot of -- all of you are going to hear things tonight from other people that you may not agree with, you may really disagree with, and I would just ask all of you to just extend the courtesy to one another and respect for their opinions as we go along tonight.

Second speaker, Judy Newman from Congressman Ted Strickland. Judy Newman?

MS. NEWMAN: Thank you very much. I'm very pleased to be here to represent Congressman Strickland tonight, and I have a brief statement from him.

PMT-012-1

Congressman Strickland is very enthusiastic about the deployment of advanced enrichment technology in southern Ohio. He recognizes the importance of this program to the local area and to it's economy. Ted would also like me to express his appreciation for the dedicated workforce and their commitment to protect the health and safety of their colleagues and the community surrounding this facility, and Ted strongly urges USEC to employ these his local workers and capitalize on their expertise. Thank you so much.

FACILITATOR CAMERON: Okay, thank you, Judy, and thank the Congressman, too, for those remarks.

Lorry Swain?

MS. SWAIN: I'd like to give my five minutes to anyone else.

FACILITATOR CAMERON: Well, we don't -- if you want to take the time to comment, please come up and do it, but we usually don't give five minutes to anybody else, so maybe you want to come up and just tell us what's on your mind, all right? Thank you.

MS. SWAIN: Aside from the two concerns that I raised earlier, one about USEC's safety record and their violations at the gaseous diffusion plant, I also have a concern many of us carry, and that's that we do not buy into the idea that there is any safe place on earth in which to permanently and safely store the radioactive waste that would be generated by this plant. Thank you.

PMT-004-3

FACILITATOR CAMERON: Okay, thank you Lorry, and for your questions and comments from before. Deborah, do you want to come up and talk to us? I think we heard some of your concerns before. You want to talk from there? All right. This is Deborah Baker.

MS. BAKER: One of the comments that a proponent of this plant made was that the USEC plant that is there now has had an OSHA safety record better than the national average, but I would like to point out also that there was a whistleblower there who was fired, so there

PMT-002-4

are things that are going on that aren't being talked about.

Also, I did get the draft environmental impact statement. I didn't read it all. It's very large, and there was not a lot of time to look at it for those of us don't get paid 40 hours a week to do this kind of work -- to read, so I didn't read all of that so excuse that, but there are things that concern me.

For example, centrifuge technology -- the things that concern me are not the details like how many -- whether it's one millirem or 17 millirem, you now, 5 feet away or 5 miles away, but the facts like Lorry was talking about.

PMT-002-5

One is that the Centrifuge technology as we all know is -- as you were telling me, it's easier to make weapons-grade material from the centrifuge technology than from the gaseous diffusion. I'm not promoting gaseous diffusion, I'm just saying this is dangerous -- I think this is dangerous. I mean, this is a dangerous way to go.

The United States has not been honoring the Nuclear Proliferation Treaty, it's not decommissioning its weapons. In fact, there was a question about this and that question was not answered. And, in addition, the Bush administration wants to develop more nuclear weapons,

and they also said that they would be willing to make a first nuclear strike. I think this is very disturbing and I think this has a lot to do with centrifuge technology, and I don't think it's something that we should have.

I don't think any nuclear technology is something we should use, but this particular one is very dangerous for all the peoples of the world, not just people here in Piketon. That's one of my worries about this plant.

Another is that the fiscal responsibility. Ohio, as well as this county here, have paid a lot of money for this plant to locate here. Ohio has paid, like, $100 million, an awful lot of money, for 1,500 jobs? That's not a very good return. I understand that the local county also has given a complete tax abatement, that USEC is not paying local taxes. And so, this is not something that's good for the community, and according to the tax base.

PMT-002-6

In other ways, the tax payer subsidizes the nuclear industry. For example, the Price Anderson Act, Vina was asking, what -- who do you sue? The nuclear industry is not taking fiscal responsibility for accidents that will happen. They have very limited responsibility and I think even the newer acts, newer Patriot Acts have made the responsibility even less. The taxpayers are

responsible. We are the taxpayers and I, for one, don't want to subsidize the nuclear industry. Accidents will happen, accidents have happened, and I don't think we should be paying for it.

Other concerns are having contractors and subcontractors in smaller and smaller companies responsible for this work. Who do you sue? They're going to go out of business by the time you get your cancer. Where is your health benefits going to be paid by? Who's been to be paying your health benefits? Who's going to be responsible for -- that's just going to disappear by the way this is being done, you know, I mean, do we talk to DOE, to talk to USEC, do we talk to -- I mean, it's too confusing for response -- as far as responsibility is going.

PMT-002-7

And of course, as was mentioned before, also, there is no way too store radioactive waste until the time that it's no longer a danger. There is no way. It doesn't matter how thick this book is there is no way to do that. It's not safe. Yucca Mountain has not been approved. The people in Nevada do not want that waste going there. We wouldn't want that waste going here. If we can't send it out from here, it will probably say stay here. We don't want it here, it's dangerous.

PMT-002-8

I don't think I can say more than that.

FACILITATOR CAMERON: Okay, thank you Deborah. Jean -- and, is it Puckstein? All right. Jean Puckstein.

MS. PUCKSTEIN: Yes, I'm Jean Puckstein, and I'm speaking as a member of the public today.

For the past 20-some years I have been reading and critiquing environmental impact statements for licenses that would continue to endanger the public by the spread of radioactive materials. I offer my congratulations to your staff -- I'll say something good about it -- for writing the best looking DEIS I have ever seen, also the longest, at of some 450 pages.

Mr. Blevins is already repeated some of this, but I think it's so important, I'm going to go ahead and repeat it from my written statement. Quoting from the NRC's DEIS, This proposed action is the issuance of an NRC license for USEC under the provisions of the Atomic Energy Act. This license would authorize USEC to possess and use special nuclear material, source material, and byproduct material at the proposed American Centrifuge Plant in accordance with the NRC regulations, and the scope of activities to be -- this is a continuation of the quote -- the scope of activities to be conducted under the license would include the construction, operation and decommissioning of the plant.

PMT-006-2

The glossary included at the end of your DEIS defines special nuclear material, plutonium, uranium-233, or uranium enriched in the isotopes, ores containing .05% uranium or thorium, regulated under the Atomic Energy Act. In general, this includes all materials containing radioactive isotopes concentrations greater than the natural and the byproduct trailings from the formation of this concentrated material, and byproduct materials is defined as the tailings or waste products produced by the extraction or concentration of uranium or thorium from any ore processed primarily its source material content. See also source material, which I just read.

These very broad definitions seem to include any and all radioactive materials that USEC will be authorized to possess and use if NRC grants this license. Now, we've heard some discussion about the weapons-grade materials, and the -- I think it would be helpful in your final impact statement to include a list of the nuclear material that will not be used at the site.

Okay, then, quoting again from the DEIS under the heading, Staff preliminary recommendations regarding the proposed action, After weighing the impacts of the proposed action and comparing alternatives, the NRC staff, in accordance with the law blank sets forth its

recommendations regarding the proposed action. The NRC staff recommends that unless safety issues mandate otherwise, the proposed license to be issued to USEC in this regard, the NRC staff has concluded that environmental impacts are generally small, although they could be as high as moderate in the areas of air-quality, socioeconomics, and transportation.

Small is defined in the introduction as the environmental effects are not detectable or are so minor that they would neither destabilize nor noticeably alter any important attribute of the resource. Moderate is defined as the environmental effects are sufficiently -- sufficient to noticeably alter, but not the stable ways important attribute of the resource. And, large is defined as the environmental effects are clearly noticeable and are sufficient to destabilize important attributes of the resource.

PMT-006-3

As Mr. Blevins has pointed out, that the NRC staff did not find any environmental effects that were considered large, very few, small the moderate, and almost all of their analysis and conclusions in this 450 page report would have small effects. Some of the examples of effects judged to be small, and because of our time constraint tonight, I'm only going to review one page, and that's page XXII in the summary introduction, and I'm

quoting, I'm giving three examples of how difficult it is to understand in these broad categories the real impacts when they're called small, medium, and large. Okay, the quote is, Construction of the new large cylinder storage yard, again, in addition to the other plant facilities that they license, would enable USEC to build in existing locations on the site, there's a proposed new cylinder storage yard, would result in small -- but the environmental impact statement goes on to state it would result in small impacts of flora and fauna in or around the tributaries of little Beaver Creek.

On the same page, the noise impact is rated small for a catastrophic failure of a centrifuge could cause a sudden but brief loud noise due to the high rotational speed of the centrifuge. However, the likelihood of a single centrifuge catastrophically failing is very low.

No mention is made of several centrifuges failing or the large screams of employees who are the victims of such an accident on the same page under the heading, Transportation, subheading, Small radiological impacts from routine transportation and transportation accidents, again, this is the same page. You know, I'm -- this is my last analysis, but it's to give you an idea of some of the doubletalk language used in this environmental

impact statement. The transportation of materials containing radio nuclides would result in some increased cancer risk to both the occupational workers transporting and handling the material, and two, members of the public driving along the road or living along the transportation routes, continuing the quote, the probability of a severe transportation accident that releases sufficient qualities of uranium hexafluoride that could pose health breath risks is low, but the consequences of such an accident, should it occur, are high -- I suppose that's -- yeah -- based on this analysis, the impacts associated with such an accident as part of the proposed action are considered moderate.

PMT-006-4

No mention is made of accidents with enriched, radioactive material leaving the plant to become fuel for nuclear plants and other critical safety concerns. I believe that these and many other safety issues not adequately addressed in your DEIS mandate that NRC deny issuing the license to USEC. I believe that these and -- because of the time constraints again, this evening, I will continue my remarks in writing and submit them before your October 24 deadline and I'll give you printed copy of my comments tonight.

PMT-006-5

FACILITATOR CAMERON: Okay, thank you very much, Jean, and obviously you did a careful reading of the

document. Thank you for that, too. All right, thank you, and we'll attach these to the transcript. We can do that, right, Kris?

COURT REPORTER: Yes.

FACILITATOR CAMERON: All right, thank you. Mr. Beekman? Blaine Beekman?

MR. BEEKMAN: I, too, have spent quite a time in that document, and I guess that my view differs a little bit because sometimes it does take 450 pages to tell his story if it's complete. I don't have a lot to complain about it. In fact, I thought it was pretty well-done piece at this point, but I'm still waiting to see the final document.

Last year, we brought up 8,000 letters of support, because it was important to understand that the community where this plant, if it is licensed and built, resides. It was impressive. It was certainly, I think, representative of the basic feeling of most of the residents, but that's basically all that those folks did. We didn't have 8,000 people show up for the meeting and -- but still, I think it was clear and the picture got across, both to USEC, and people who needed to see it there was a lot of support for it.

This summer, we've had something entirely different. We've had a group of things put forward that

appeared to be very difficult to understand, almost unfathomable. Now basically, most of the folks that live in this community are not nuclear scientists, we're not architects, we're not archaeologists. A lot of things we aren't, and so when people say, or you see lists of things which are absolutely -- something that we've never experienced, it was really somewhat confusing except, the strange thing that developed, because when we began to ask around in this community about certain issues we found out people had attitudes about them, then found out that those attitudes went back to experiences and facts that they had had, and when you begin to put the community together and let them speak out about what they knew about things that had happened in this community over the past 50 years, we found out that they had really a lot of information to give. It's just that no one had asked them and what it really -- and there are people in the community, I know --or, in this room tonight, I see -- looking back and see Bob Childers, I see Teddy West, I see Steve Eckhard, guys who are able to bring information into events and situations that were trying to be explained that nobody else seemed to have an explanation for.

What I really think that that shows, on top of the fact that they had stuff to give, was the amount of effort that went into it by certainly -- in one

incidence, a couple of dozen individuals who -- some still live in the community, some have moved away, but we wanted to be able to locate them and people went out of their way to give us addresses, phone numbers and whatever so that we could try to answer these questions which, when you put everyone who have information about them, they weren't really all that tough to understand, and they certainly weren't quite as exciting as the theories put forward behind them, but I think the important thing here is that these people in the community, some of whom signed the 8,000 letters last year, they were willing to put out the time and effort to try to show what some of the facts were because again, it's a different level of support in this community, and it's what we've learned to live with, with the gaseous diffusion plan for 50 years. Now, we look at a technology that by any standard that we can see, appears to be safer and whatever, but again, we brought 8,000 letters last year. This time it was a smaller number of people, but a much more intense effort, but the result of each of them is the same. It's a support for this project and an attempt to make sure that the NRC regulators who are studying it get as correct the information as possible. Thank you.

PMT-013-1

FACILITATOR CAMERON: Okay, thank you, Mr. Beekman. Then I'm assuming that some of that information,

or all of it is -- has been presented to the NRC or will be presented?

MR. BEEKMAN: Yeah.

FACILITATOR CAMERON: Okay, thank you. Next we have, I guess I would call it a collegial effort. We have four women from the same organization, which is PRESS, which they will tell us what PRESS stands for, but we're going to hear four speakers, and we're going to start with Pat Marida, and then we'll go to Kathy Arnold, then Nancy Walker, and then Vina Colley, right, Pat? And, you're going to lead off for us? Okay.

MS. MARIDA: Hi, my name is Pat Marida. I do have some -- a written copy of my statement for the NRC. I am, tonight, reading comments from a PRESS -- the Portsmouth/Piketon Residents for Environmental Safety and Security.

According to this Draft Environmental Impact Statement, the ACP would cost about $3 billion to construct with centrifuges. The Enterprise Zone program of the State of Ohio would expect about 15,000 new jobs to be created for that scale of capital investment. In other words, put an average non-nuclear industry on this site and you would get 15,000 jobs. On page 3-50 of the DEIS, we find that USEC currently employs 1,223 workers at the site. On page 4-34 of the DEIS, we learn that in the

PMT-014-1

operation phase, the ACP is expected to create 600 direct, full-time jobs. This is clarified on page 494 of USEC's ACP application, where it states that the operation of the ACP is projected to employ 600 personnel. In other words, the ACP would result in a net loss of 623 jobs. We estimate that the indirect jobs lost based on 900 indirect ACP jobs created would be about 935, for a total net loss of 1,358 jobs caused by the ACP. That's not counting the 750 jobs that would be lost at Paducah.

However, if we assume that those 6,000 -- excuse me, 600 created jobs result from the $3 billion investment, the ACP underperforms in job creation by a factor of 25 by Enterprise Zone standards. So, if $25 -- 25 times less money, less jobs for the money. Differently put, the Enterprise Zone would create the same number of new jobs for an investment of just $120 million in capitol.

In the building phase, the assessment of impacts to tax revenue is treated differently from the impacts to population characteristics. For tax impacts, the DEIS states that building will create 3,362 jobs, but for population impacts, the DEIS states that 2,998 of those jobs are on a continuum of existing jobs generated or supported by current USEC activities, thus, the DEIS tells us, 374 new jobs would be created during

construction.

To summarize the job situation, the DEIS contains enough information for us to predict that the ACP would create 374 new jobs over the short-term building period, followed by a net loss of 1,358 jobs in the operations period.

On safety, if we add up all the deaths and injuries presented in the DEIS due to routine transportation and due to transport accidents and non-occupational accidents, we get a total of six -- of just six deaths and 1,117 injuries; however, the DEIS neglects to express the injury rates in several significant categories related to routine and accidental radiological exposures in both the occupational and transport categories of both the operations stage and in the decommissioning stage.

PMT-014-2

Further, the DEIS treatment of occupational injury rates depends on statistics from the Bureau of Labor Statistics, the BLS, but overlooks an important statement in the BLS study which says some conditions, for example, long-term latent illnesses caused by exposure to carcinogens, are often difficult to regulate -- excuse me, difficult to relate to the workplace and are not adequately recognized and reported. These long-term latent illnesses are believed to be

understated in the surveys illness measures. That is end of quote from the Bureau of Labor Statistics.

On page 462, the DEIS describes that workers may be exposed to puff releases of uranium hexafluoride gas which is exactly the type of puff -- of exposure that would result in a long-term latent illness.

To be fair, the DEIS does show in table 3-29 that mortality rates in Pike County, due to renal failure, are between two and four times that of the rates in Ross County and Scioto County; however, although renal failure is associated with uranium poisoning, the DEIS suggests that this death rate may instead be associated with diabetes and hypertension. The NRC staff has made no attempt to determine whether uranium poisoning has, in fact, caused those deaths.

Blindly following USEC's analysis, the DEIS compares potential ACP occupational injury rates to those from the broad and now obsolete Standard Industrial Classification, which is called Industrial and organic chemicals, not elsewhere classified.

Not only is this inappropriate, but the ACP occupational injury rates are projected using Piketon operations in 2002 and 2003. Uranium enrichment operations at the DOE reservation in Piketon, Ohio, ceased in May, 2001. In fact, as measured by the NRC's

enforcement action notices, USEC has, by far, the worst safety record of all NRC materials licensees. Of 516 materials licensees that have been issued with NRC enforcement notices, USEC has the most, with 16, followed by Mallinckrodt Incorporated, with nine, and Westinghouse Electric, with six. Most violations have just one or two -- most violators have just one or two notices.

On security, this type of plant has a poor history. The Uranco Centrifuge Plant is responsible for allowing the Con Network access to the centrifuge technology behind the enrichment programs of Pakistan, Iran, Iraq, and Libya. So, that is how they got access. Some of USEC's violation notices have involved lax control over classified computers.

PMT-014-3

So, that's the end of my statement. I would like to point out that over on the table, I have put out some information from the Nuclear Information and Resource Services. It's called "The Myth of the Millirem," and in ten sentence -- a ten-word description of what that says, it says that the rem is not based on any standard unit that can be verified. So, thank you very much.

FACILITATOR CAMERON: You're welcome, and the table you are referring to is --

MS. MARIDA: Is -- it's right over here.

FACILITATOR CAMERON: Right over there somewhere.

MS. MARIDA: Right over -- right.

FACILITATOR CAMERON: Okay.

MS. MARIDA: The round table on my left.

FACILITATOR CAMERON: The round table, okay.

MS. MARIDA: The Myth of the Millirem, and so I think there are -- we -- our statement is long so we've got enough people to finish it.

FACILITATOR CAMERON: Okay, thank you, Pat. And, Kathy Arnold?

PARTICIPANT: (Inaudible comment from an unmarked location)

FACILITATOR CAMERON: Yeah, I think this is all one statement that we'll attach.

MS. ARNOLD: Although we have yet to complete our analysis of the 470-page Draft Environmental Impact Statement itself, we have already identified contradictions, bad advice, poor treatment of alternatives, incompetent data entry, and incompetent modeling --

PMT-015-1

FACILITATOR CAMERON: You're going to have to --

MS. ARNOLD: Come closer?

FACILITATOR CAMERON: Yeah, because I think they're -- that's --

MS. ARNOLD: Okay. Where am I? We've already identified contradictions, bad advice, poor treatment of alternatives, incompetent data entry, and incompetent modeling based on unverifiable methods. Moreover, the DEIS has overlooked some obvious problems, and it overlooks the possibility that USEC may have misled the State about the costs of the ACP, or that the ACP may be too expensive for investors to back it.

PMT-015-1

Further, DEIS contains little in the way of independent investigation and it does little to open the details of the project to public scrutiny from under two layers of secrecy: classified information and proprietary information.

In addition to this, we feel that the NRC staff has neglected it's obligations under 40 CFR 15.03 to respond, in satisfactory manner, to the scoping comments submitted by opponents of the ACP for the Draft Environmental Impact Statement. Most of these flaws seem to result from the NRC's staff repeating rather uncritically the assertions in the analysis of the USEC ACP application documents.

PMT-015-4

We should remember that the ACP application is such a highly -- such a high-qualified

PMT-015-5

application that although it models the highest possible flood using the low rate five times that of the historical flood of 1937, it finds that the highest possible flood actually reached a lower height than the 1937 flood.

The DEIS contradicts itself. For example, PMT-015-2 the annual number of feed cylinders is different on page 2-22 than it is on page 4-47. The DEIS also offers bad advice. For example, on page 2-18, it recommended that the GCEP documents from the 1980s be destroyed. This would make it more difficult to determine what contaminants have historically polluted the groundwater at the site, thereby, impeding cleanup.

The DEIS treats alternatives very poorly. PMT-015-6 For example, there is very little discussion of the potential benefits of simply cleaning the site up once and for all and using Enterprise Zone incentives to reindustrialize the site.

Another alternative for the industry would be a scheme in which laser isotope separation units were located at all the major power stations. Laser isotope separation costs less in capitol startup and electricity for operations, and is capable of processing smaller amounts of fuel. Moreover, by processing fuel at the reactor site, the risk to the public due to transportation of low-enriched uranium would be effectively eliminated.

In cost and benefit, it's a superior scheme.

The DEIS makes trivial false statements. For example, on page nine -- page 369, the DEIS states that the calendar year 2003 Bureau of Labor Statistics average incidence rate of nonfatal occupational industries -- injuries and illnesses are not currently published. In fact, they were published in December, 19 -- 2004, and reissued in June, 2005. So, this statement is false. Clearly, there is -- clearly, this error arose because the US -- because USEC application texts were cut and pasted into DEIS.

PMT-015-3

The DEIS purports to assess unknowable risk. For example, a footnote on page 4-53 states that no 2.5 ton cylinder is currently certified to ship uranium enrichment to higher than 5 weight percent of uranium-235. Yes, the DEIS goes on to assess the risks associated with the transport of 10 percent enriched uranium in a cylinder that doesn't exist.

PMT-015-7

Incidentally, the USEC has yet to explain why it requires the license of 10 percent enrichment. It's competitor in New Mexico has only asked for a five percent license and the power industry doesn't require fuel enriched above five percent.

FACILITATOR CAMERON: Oops, thank you, Kathy. And, Nancy Walker?

PMT-016-1

MS. WALKER: To continue from the PRESS, the Piketon/Portsmouth Residents for Environmental Safety and Security statement, the DEIS has incompetent data entry with another point that was raised. For example, table 4-15, estimated latent cancer fatalities from the transportation of radioactive materials for one year of operation is seriously messed up. None of the totals is the sum of it's column or row. Moreover, by comparison to table D-12 we can see that the risk to the public, whether following a cylinder on the road, living by a road where cylinders are transported, or pulling into a rest stop where a cylinder truck is, the risks have obviously been grossly understated by a factor of 10,000.

The DEIS shows incompetent modeling. For example, in tables D-12 and D-14, the trip from Piketon to Clive, Utah, indicates that the trip includes rest stops and inspection stops. The modeling is based on the WebTRAGIS system, but the WebTRAGIS manual only mentions rest stops and inspection stops in association with road transport, not the rail transport, as indicated. So, the Piketon-Clive trip is clearly modeled for road transport, yet on page D-5, it is clearly stated that this is a trip -- is a rail trip.

Furthermore, we tried to register with the ORNL WebTRAGIS system on September 23, but we have

received no reply. We suppose that the system admits only classified access and that the system is, in any case, not available for public scrutiny. The risk analysis is therefore unfavor -- unverifiable by the public.

PMT-016-2

The DEIS overlooks obvious problems. For examples, on page 4-76, the DEIS informs us that the DOE conversion utility is designated to operate until 2024 and to handle a capacity of 243,000 metric tons of depleted uranium hexafluoride, but that the ACP is designed to operate until 2040 and to generate 571,000 metric tons, thus the DOE conversion facility is designed to be decommissioned 16 years too early and to have a capacity that is less than 1/3 of the ACP waste.

PMT-016-3

The DEIS overlooks a possibility that the USC may -- that USEC may have misled the State of Ohio in order to win various incentives. For example, on page 7-1 of USEC's ACP Environmental Report, we find that on August 15, quote, 203, USEC issued requests for proposals to the Commonwealth of Kentucky and State of Ohio to cite the ACP at the respective gaseous diffusion plant. Both States were offered an opportunity to provide financial or other incentives to reduce the cost of the ACP. By all accounts, the cost of the ACP as understood by the State of Ohio was 1.5 billion; however, page 7-2 of the DEIS gives the cost of building the ACP and manufacturing

centrifuges at 2.872 billion.

The DEIS doesn't consider that the cost of the ACP is unlikely to be met by private investors. For example, in addition to the costs mentioned above, this position would cost 2.758 billion based on 571,000 metric tons of tails, 7 MSW plant, and -- at $4.83 per kilogram disposition cost, this compares with a license application's estimate of $0.72 billion for tails disposition, license application, page 10-16.

Further, decommissioning would cost $0.435 billion, according to DEIS page 7-2. Know also that USEC has estimated the decommissioning and decontamination at $0.130 billion, license application 10-14.

So, USEC appears to have uniformly underestimated costs by a factor of between three and four, so the total cost, without the withheld information about running cost, is about $6.65 billion. By comparison, when USEC went public, it raised just $1.5 billion in it's initial public offering. This was $1.0 billion short of the $2.5 billion required for it's AVLIS program. The AVLIS program was cancelled.

FACILITATOR CAMERON: Are we ready for Vina? All right, thank you very much, Nancy. This is Vina Colley.

MS. COLLEY: Hi, I'm Vina Colley. I'm

President of PRESS, Portsmouth/Piketon Residents for Environmental Safety and Security. I am co-chair of the National Nuclear Workers for Justice.

In the DEIS, presents little evidence that it contains the results of an independent investigation. For example, PRESS has released the results of analysis of radioactivity in Big Run Creek, which casts significant doubt that DOE, USEC, and other EPA data from offsite sample locations, may be flawed.

PMT-003-3

The DEIS used data from these sources, a comprehensive independent survey is warranted. PRESS has had two different independent experts who came in here. The first expert that came in, he read DOE documents. He didn't have to do any testing, he didn't have to do anything, he just read DOE documents which proved that there is offsite contamination in the creeks going to Little Beaver, Big Run, Big Beaver, into the Scioto river, into the Ohio river.

We want an independent investigation. We don't want to believe the word of USEC, DOE, or -- who was the other one, I can't -- I forgot my glasses, guys -- the USEC and the contractors of this facility, the NRC needs to do an independent investigation and I'm still not sure who is over the special nuclear material at this site. I'm still not sure who's really regulating the

PMT-003-4

trans-uranics that's going into the creeks. I don't remember seeing it in your book who's going to regulate it.

The DEIS was overlooked some obvious problems and it overlooks the possibility that USEC maybe misled the State about -- I'm sorry, everyone, I forgot my glasses and I can't hardly see this paper -- about the cost of the ACP or that the ACP may be expensive for investors to back it. Further, the DEIS contains little in the way of independent investigation and it does little to open the details of the project to the public scrutiny from under two layers of secrecy, classified information, and prosperity information.

PMT-003-5

The difficulty seems to result mainly from the NRC following the assertion and the analysis of the USEC ACP application to closely and uncritically -- I heard a few statements here tonight and I'm -- as a former worker, a whistleblower who's been blacklisted, who's lost all her benefits and everything from this facility, I sit here and I listen to you tell these people that this is a safe plant and it is going to continue to be safe. The whole time I worked here, there was 570-some violations year after year after year that never was taken care of. The centrifuge plant, when it started in '85, I remember that there was alpha daughters in the lunchroom where the

PMT-003-6

workers were at and to this day, I bet none of these workers have ever been told.

This facility produced highly enriched uranium for weapons-grade material from 1954 to 1992, which you thought was '64.

PMT-003-7

I'm still wanting to know who's going to take the liability for all these sick and dying workers that aren't being taken care of now, and now, you want to add additional stress to the community and to the workers? We are becoming a national nuclear sacrifice zone. We are going to be taking everyone's nuclear waste if you guys let this happen. If you start this it means that they'll never know what, exactly, is going on here, in Piketon, and I'm really concerned about the radium-226 that's offsite. Not only did my experts back it up but your experts that you're listening to right now, backed it up with a letter to me. So, someone's conning us in all of the analysis that they're taking at this plant.

PMT-003-8

FACILITATOR CAMERON: Okay, thank you, Vina, and thank all the participants for -- from PRESS, and if you do have a statement that we can attach to the record, we'll do that, and just one clarification is that the Draft Environmental Impact Statement is a draft, not final yet, including the conclusion, until we evaluate comments, and then there is the other part, the safety

review, in which there's been no finding yet. So, it's still in -- is a work in progress, here.

We're going to go to Mr. Geoffrey Sea, and then we're going to go to Dr. David Manuta. Geoffrey?

MR. SEA: My name is Geoffrey Sea. I'm the owner of the Barnes home, which is one of the three historic properties that the DEIS mentions but doesn't really say much about, and I'll start by saying that it's a little irritating, the way they describe the Barnes home as qualifying under criteria A and C. They don't say what -- where those criteria came from, or they don't say what they are. I find that to be a rather inscrutable and mystifying way to describe a historic property and get into a discussion of the impacts on it. So, let me tell you a little bit about the Barnes home.

PMT-010-2

Barnes home was originally built in 1804. It is generally considered to be the finest home of the 19th century in Pike County. The Barnes family was extremely influential over four generations in the politics -- political developments and general history of the county. I won't go into that, a lot of that will be made available in my written comments.

The house is on the border of the ACP site in the direction of the maximal windborne contamination from the site, which has a one-mile fence line with the

PMT-010-3

site. The DEIS could -- just dismisses and concludes, offhandedly, without any analysis, that there are not aesthetic or visual impacts on my property in particular. I can't -- I know you can't all see this, this is a picture of the ACP buildings from my fence line, okay? You're all welcome to come up and take a look at this photo afterwards. It will be made available and attached at the website at which these comments are available, so you'll all be able to see it there.

Now, no one from NRC came to my property and looked at what the view of ACP is from my property, yet they conclude that there's no visual or aesthetic impact, or that it's minimal. The new buildings that NRC wants to approve -- the staff wants to approve as being built will be between these existing buildings and this fence line here, okay?

PMT-010-4

Now, what are criteria A and C? Criteria A is architectural significance, and we've had architectural historians come and analyze my house and conclude that architecturally, it's one of the finest examples of architecture from that period in the country. Those statements will be made available to NRC. They would have been made available already, but I was not made a consulting party to the review of cultural resources, even though I, starting in December, 2004, told NRC

directly about my interests and was, in fact, admitted as an intervener -- as having standing to intervene in the issuing of a license, but they still didn't consult me as a consulting party in the historical review. That has now been corrected to very loud complaints from yours truly. But, because of that, they were -- did not have access. They didn't -- never asked to come to my property. I'd be happy to give them a tour any time they'd like. I'd like to give them a lot of information, but that has all been held up. That all needs to be corrected.

Now, there were only three properties listed as having -- as being historic properties in the DEIS. That's rather strange and mysterious. The -- I have, in documents that I've submitted, legally, to the Atomic Safety and Licensing Board that's hearing this matter, have provided NRC with detailed information about all the historic properties in the affected area, and there is no mention of many of them, and let me mention four others that receive no mention in the DEIS:

One is the Sargent home, which is just up the road from the Barnes home, and is at the main plant gate. I'm not sure -- I know the owners of that home were here earlier. I'm not sure if they're still here, but anyway, the Sargent family was the family that gave rise to the name of the town of Sargents, which is where the

plant is located. They were very closely related to the Barnes family. They intermarried. Three of the Barnes boys married three of the Sargent girls, so they effectively became one big family and the Barnes and Sargent estates, which included some 4,500 acres, originally, provided, essentially, all the land, or 90 percent of the land on which the atomic reservation is located, the AEC came and took a few thousand acres from the Sargent estate and very close to that from the Barnes estate. The actual place where the ACP buildings, where the main process buildings will be located, is on the border between the Barnes -- old Barnes and old Sargent estates.

The third -- second house is -- third house is the Rittenour home, which is down by the Scioto river, and the Rittenour family was also related to the Sargent and Barnes families, was one of the founding families of the town of Sargents.

The important thing about -- one important thing about the Rittenour home is that it -- on the Rittenour estate were numerous Indian earthworks that were written about in 1820 by a guy named Caleb Atwater. Some of the earthworks that made the Ohio earthworks famous were on that property. Now, one of those earthworks is a long, linear earthwork that was, in fact, seized by DOE in

1983 by eminent domain and is one of the places where DOE and then USEC has placed their water field from which they will draw the water to supply ACP.

And that is, in fact, the reason why NRC went into these detailed analysis and explanation of ACP's use of water resources, but they didn't tell you the reason. The reason is that there are earthworks that have now been located on the water field site, called the GSEP water field down along the Scioto river. Why is that missing from your DEIS? You had detailed information about it. On August 5, we -- I brought three cultural resource experts, one archeologist, one expert in ancient architecture, and one expert in Hopewell culture on to that site after a lot of argument and a lot of fighting, finally got access due to the good graces of the ASLB, which intervened to basically compel USEC to allow us to go on to the site, and we now have an expert statement from those three experts certifying that there is an earthwork there, right underneath the wells from which they will draw water.

And, the problem with the analysis you heard earlier is that NRC, so far, follows only the USEC model of talking only about the overall water usage of the plant in an attempt to minimize it, saying that, "well, it will only be a 10 percent increase in the water usage of

the site," but that's irrelevant. What we want to know is not what is the overall water usage, because there are many well fields and the plant draws water from many locations. What we want to know is what's the impact of water usage at the earthworks site where the earthworks are located, because that's the impact, and that's on DOE land, on Federal land, which is supposed to be protected, and the national historic preservation act mandates that studies be done when such a cultural resource is found on Federal land.

So, part of the 106 review that the DEIS completely neglects and overlooks is that you are required to mandate studies be done of what the hydrological impacts are on those cultural resources that have been identified on that federal land that, again, was seized from the Rittenour estate.

Now, the owner of the Rittenour home supplied me a letter, which I provided to NRC, which was actually addressed to NRC. There's no mention of that letter in the DEIS, in which he complains about the whole process by which DOE seized his -- the land for this water field in 1983, complains that DOE never complied with the National Historic Preservation Act when they seized the land, never made him a consulting party, and he asked to be made a consulting party now for the licensing process

PMT-010-5

of ACP. As far as I know, there's been no reply to him. There's no mention of him or his letter in the DEIS.

You sent out all these consulting letters, supposedly, to fulfill your requirements under section 106 of the act, but you never consulted the people who asked to be consulted, which included me and Charles Beagle, the owner of the Rittenour home. It's rather unbelievable.

Now, your interpretation of section 106 is rather incredible. It's basically that you consult with the State Historic Preservation office to ask them who you should consult. That's not the law, I'm sorry. The law is, and this comes from my direct discussions with the State office, is that the agency is responsible for identifying the consulting parties, meaning that if a consulting party comes to you and says, "We have concerns," you must evaluate those concerns directly because we don't always go first to the State Historic Preservation office. They don't -- that's not their role. They rely on the agency to provide them information about the project, and they know almost nothing about this project, because they've been told nothing about this project.

And, that applies, as well, to the Native American groups that you mentioned, and you'll be hearing more from them in my written comments. There will be a

lot, and you'll be getting direct comments from Native American groups as well. Don't have time to go into that tonight.

FACILITATOR CAMERON: And, Geoffrey, could you wrap up? And, I know you have some schematics of things that you want us to attach, but if you could just --

MR. SEA: Yeah, and let me just explain those, and you're all welcome to --

FACILITATOR CAMERON: Okay, thank you.

MR. SEA: -- look at them after. There is a map, which I've submitted to NRC. I'd like to see it included in the final environmental impact study. It's a map that I've created that shows all of the historic sites in relation to the ACP, to give you an idea, because you really do need a map to see what the impacts are, and what really has to be in the final impact study, there's a reference to it, but unless you see it visually, you don't really get a sense.

PMT-010-7

This is what's called the Barnes Works on the former Barnes estate. It is a major Hopewell site, one of the largest Hopewell earthwork complexes in the State of Ohio, or in existence, period. This is the drawing from Squier and Davis' 1848 Monuments of the Ancient -- Ancient Monuments of the Mississippi Valley.

It's a very impressive drawing and gives you some idea of just what we're talking about, not just mentioning that there's something called the Barnes Works or the Scioto Township Works, which these are also called.

PMT-010-6

And, I just want to mention one other thing really quickly, and that is that this community has been deceived on one particular issue, and that is the issue of the deconversion plant on site. NRC and it's DEIS has in fact gone way beyond being a regulatory body and has actually solved USEC's waste problem for it. That is, USEC didn't really say in their environmental report what they intended to do with their depleted uranium waste, and I'm sure that that prevent -- presented a real dilemma for NRC because USEC didn't solve this major problem, and so NRC stepped in, basically, and in their DEIS, says that the waste will be treated, or will probably be treated, or can be treated at the deconversion facility that's now being built on site by DOE.

Now, this is hugely problematic, because DOE, in their reports to this community at their semiannual environmental assessment meetings has said repeatedly that that plant can not be used to treat a USEC waste, there is, in fact, a legal -- both legally and technically -- legally, to use that facility would completely violate the letter and spirit of the USEC

Privatization Act. The purpose of the Privatization Act was to separate private facilities from legacy government facilities. That facility was built to treat the legacy waste that is of public responsibility and at public expense, and is not available, legally, to treat USEC's private waste. Without a new act of congress, and if you want to call for an act of congress to change that requirement of the law, you should be direct about it, but this community was deceived, and technically, that facility was -- is not capable and was not designed to treat all of the USEC waste.

FACILITATOR CAMERON: Okay, thank you --

MR. SEA: Thank you.

FACILITATOR CAMERON: -- Geoffrey, very much, and if you have those -- you don't have to give them to me now, but we'll make sure we get them on the transcript, those schematics, okay?

MR. SEA: Okay, give me a chance to show people --

FACILITATOR CAMERON: Okay, yeah. Sort it out. Dr. Manuta? Why don't you start and we'll see if we can get that --

DR. MANUTA: Hi everyone, can you hear me? I was pleasantly surprised, earlier this month, to get a surprise UPS delivery containing the EIS, and anyway, in

my background as a professional consulting chemist and engineer, I came across two technical errors that do need to be marked off in the EIS itself.

Okay, the first one is page 6-3. And again, I guess, this is the reason why you have your draft is to make sure that things like this don't go out into the final edition. On page 6-3, beginning, it's -- 6.1.1 Air Emissions Monitoring, in the second paragraph that begins on line 14, Airborne release. In line 18, you then have a shopping list of the chemicals. The chemical formula for uranyl fluoride is not right. Okay, it's listed as UF2 in the document. It should be UO2F2, okay? That needs to be taken care of because that's an error that ought to be corrected.

PMT-007-3

And then, see, on page -- on Appendix B on page 1, is there anybody here from the Chillicothe paper because this is something that I tease them about all the time. We've got a spelling mistake in the letter to Mr. Epstein. Uranium Hexafluoride, of course the U goes before the O, not the other way around, okay, and that's why I constantly catch them on that.

PMT-007-4

So, now, with the editorial stuff out of the way, I wanted to make a couple of quick hitters here so we can go home. Thank you. Because, on the nuclear fuel cycle, the only thing that this hearing really should

be about is step four, because we're, again, working with USEC's information submitted to NRC to develop an environmental impact for the gaseous centrifuge enrichment plant. Now, the NRC has regulatory authority in many of these other areas, but our concern is on number four, and I think that's important up front, now, because the way the enrichment process works, as you've heard bits and pieces, the natural feed is at a level of about .72 percent uranium-235 with the balance being 99.3, or thereabouts, percent uranium-238. So, the UF6 is really a blend of two similar compounds, and what the enrichment process is designed to do is to enrich in a cascade-type process, in other words, one machine after the next, to enrich the uranium-235 F6 to a level that the public utility can use, okay? Bottom line, that's what this is all about.

PMT-007-5

Okay, now when we make the comparison, the depleted uranium that we talk about is primarily not only the U-238 F6, it's now at a level -- not at 99.3 percent, but probably around 99.6 or 99.7 percent. In other words, a significant amount of the usable uranium for electricity generation has already been removed and so now, just to make the linkage to the conversion process, because the UF6 is not a stable compound with regard to it's chemistry. I've dealt with dropped cylinders at the plant

of UF6 where the chemical does come out. It can react with the cylinders, it can react with the moisture in the air, and so on. The important thing is, in general, when a UF6 cylinder is -- may be dropped, or where there's a crack in the cylinder, many of the compounds that are formed, with the exception of HF, are not volatile. In other words, they stay right there. So, the issue of drifting off of the reservation some distance away, HF is the only one that you have to be concerned about. The uranyl fluoride is a nonvolatile solid. It's going to drop out wherever it's formed. Notice, that's why you get a mist. And then, at some point, that does come out, literally, like snow. Okay, so we need to be clear about what the science is.

And, so, as far as I'm concerned, with the two minor issues I brought up, this is a superb document for meeting the objectives of number four, and that's really what I think we're here for tonight, because the tails, or the U238 F6, is not reactive waste. That's not the stuff that's going out, in some point in the future, to Yucca Mountain. We're talking about converting that uranium fluoride compound to a uranium oxide compound, whether it be UO2, UO3, U3O8, fundamentally, what we want to do is put it back in the ground, because that's, ultimately, where it came from. There can't be any more

environmentally responsible way of handling it than that. We talk about cradle-to-grave, make the full circle? Yucca Mountain's not part of this discussion, and we need to be very, very clear about that.

Also, a couple of quick hitters before we go, next year, in the -- when they do the census, we will hit 300 million people as a nation, so we will have added in, since 2000, probably around 18 million people, okay? The reason -- I do a lot of driving, and people talk about the price of gas. Well, the fact is, what we're dealing with tonight doesn't approach that. We're really more concerned, not with the transportation issues tonight, but with the power generation issues, because there's a difficulty associated, whether you deal with hurricanes, natural gas, whatever, I like when I come into the office in the morning and I hit the light switch, and the lights come on. And, wouldn't it be nice, based on some of the environmental issues you read all about, that when uranium is used, and again, downstream, again, in the power generation part, that you don't have any of the greenhouse issues, and by, perhaps, ramping up the amount of uranium we use for power generation, we can free up some of the carbon-bearing chemicals, the petroleum and such, for transportation, keep those costs down, and I think that's pretty important to understand.

PMT-007-6

And, I think that's probably a good point to leave it, just to kind-of fill in what I consider some of the pieces, here, about why we're here and about why it's important. So, thanks for listening.

FACILITATOR CAMERON: Okay, thank you, Dr. Manuta. Thank you. Next, we have two more speakers, Professor Andrew Feight. Professor Feight, do you want to talk to us?

DR. FEIGHT: My name is Dr. Andrew Feight, and, let's see. I moved here, to Portsmouth, back in 2001. I took a job as an Assistant Professor of History, teaching American History, at Shawnee State University, and about the time that I arrived here, I read the news that the enrichment plant was shutting down, and for many people in the community, that was bad news, the loss of jobs. But, for me, I look to the future and I was quite relieved and happy about that because I was looking forward to a nuclear-free future for southern Ohio, for Scioto County, Pike County, for where I have chosen to live and where I have chosen to put my roots down and raise a family. So, I was looking forward to a nuclear-free future for myself, for my family, and my children.

PMT-017-1

And, I'm a little disturbed by this environmental impact study, and I'm going to approach it,

really, from the perspective of a historian. I've read the parts dealing with historic and cultural resource impacts, and what I see missing here is really a consideration of an alternative future, alternative uses for the site, a vision of a nuclear-free, cleaned up, decommissioned nuclear site that really dates from the cold war, that is in our past.

And, the more I studied local history and the more I learned about the place, I've come to understand that the site of the gaseous diffusion plant, the atomic reservation, truly is a national, and even international, historic site.

PMT-017-2

Geoffrey Sea spoke of the Indian mounds located on the property, but there's also a story that Mr. Sea is pursuing that is only now being told, although I'm sure people in the community have known this for a long time, and that is that the last passenger pigeon known to exist in nature was shot and killed on this site.

The extinction of the passenger pigeon is an incredible historical tail and right here, in Pike County, at the site of the Barnes house, and on that property, is where that last bird was shot, and that makes this location quite important in the history of the environment of the United States, the history of Pike County, the history of southern Ohio, the history of Ohio,

the history, really, of our nation. A very important event did happen there.

And so, a vision of a future without a centrifuge enrichment plant would entail appreciating this site and developing this site as a historical -- a very important historical site, one where the history of the cold war, the history of the environment and the extinction of species could be meditated upon and studied. So, not only do you have Native American sites there, you have the history of the Barnes home, you have the history of the last passenger pigeon, and the backdrop and the background, which you can see from the property, the A plant, which, if it was cleaned up and decommissioned and new industries, non-nuclear industries brought in, would be a much better future for my children, for our grandchildren --

PMT-017-1

The Draft Environmental Impact Statement says -- study says that there are no large impacts, and there's certainly -- according to this report, is that there are no large impacts on historic and cultural resources. That is not true. This is a large impact, people just don't appreciate the history. People don't know the history, they don't know about this, and so they don't see it for what it is, which is a huge, large impact. It will continue to desecrate Native American

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sacred spaces. It will thwart the development of the site as a historic site for appreciation of the story and the history of the passenger pigeon, and of the environment in general, and the problem of species extinction. And, it will continue the environmental degradation of the area, and all of this runs up against this vision that I had when I first came here in 2001 of a nuclear-free future, of a southern Ohio that is cleaned up, where we put the cold war behind us, and this site can be a cold war historic site, but it cannot be that if we continue to operate and enrich uranium there, and there are sites around the United States that are becoming historic sites from the cold war, and this would be an excellent cold war site.

Two more points. One, about the centrifuge technology. This technology is the very same technology is very concerned about Iran possessing. In fact, there is very high tension between the U.S. government and Iran right now because the U.S. government is concerned that they are building a centrifuge enrichment plant. The Iranian government says they are doing this just for domestic purposes, and that may be, but there is concern, and our government has right concern for this, is that that technology can be used to make bomb-grade material, and that is why they're concerned,

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yet, should not we be concerned about this, that while the license is not for the enrichment of bomb-grade material, but the technology that they're putting in can be used for such purposes, and I don't want such a possible future for southern Ohio. I don't want something to change down the road and they change the facility to start making bomb-grade materials, because then, the environmental impact would be extremely different, and that is a possibility. It would change the whole impact of the plant if they did, ultimately, start enriching it for bomb-grade material.

So, let me just close and say, let's make sure that the nuclear industry is in our past, because I really hope for a nuclear-free future for myself and for my children. I heard that this plant could close down in 2040. In 2040, I will be 70 years, and my son will be 35, my age right now. That's a long time, that's a very long time, and I would rather us not go down that path, and I will borrow something you said, which was, let's containerize it and ship it offsite. Let's containerize this whole thing and ship it offsite so that we can get on with a nuclear-free, clean south Ohio. Thank you.

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FACILITATOR CAMERON: Thank you, Dr. Feight. And next, we have Alan Weiner. Alan?

MR. WEINER: Thank you, everyone, for

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coming and thank you, for taking our comments, but I saw one -- what I think looks like a typo, where it mentions in the -- I'm not sure where, it's near the beginning, but I'll research and write it, too, that it seems that the number of cancer deaths will probably be, according to the document, higher for routine non-accident issues, like .013 deaths per year, than accidental release, which they don't say the amount, but that seems to be .008, or half of the number of cancer deaths.

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I also am active in Cincinnati area with recreational trails and river resources. The Mill Creek is one of the greatest streams there, but we're working to make that a destination by cleaning it up and putting greenways along it, and I wonder, with this plant here, would there be very many recreational opportunities, both along the Ohio river, which, the Ohio river way is hopefully going to be a recreation destination. Hopefully, the Scioto river could be hooked up to that, so I think there's a lot of potential here, as well, all along the Ohio, and I'd hope that it could all be kept or made clean. Thanks.

FACILITATOR CAMERON: Thank you very much, Alan. I'm going ask Jim Clifford to -- we still -- we have some time for some informal discussion between NRC staff and our experts too, who are here helping us, and

all of you, I'm going to ask Jim Clifford to just close us out of the meeting.

I just would like to thank all of you for being here and for your comments, and it was obvious that a lot of people took the time to read the document, and we had a lot of relevant comments, and thank you for following the ground rules, too. And, Jim, would you like to do the honors?

MR. CLIFFORD: Thank you, Chip. Once again, I'd like to thank everyone for coming. Clearly, there were emotions that were high on both sides of the issue from what I observed here, tonight, and what I try to do is reflect on what I've seen and heard. There's been an awful lot of information provided, and we'll take a look at those comments, but as far as the atmosphere here, being as emotional as it is and can be, I greatly appreciate the amount of respect that everyone has shown to everyone who provided comments and everybody who had questions, you showed the ability to respect everyone as an individual and have their own views.

To me, I have been working for this country and defending this country for 35 years now. The beauty of this country is that we have the ability to have our own view and to express those.

The purpose of this meeting is to make

sure that everybody has the opportunity to express their views, and to me, that's the most important part of this meeting tonight, is that people felt free to express their views and we had some very strong views, and we do appreciate those. We'll take a look at every single one of those and we will be addressing those.

So, again, thank you for coming, and you will see the final Environmental Impact Statement issued in April. Is that correct? Okay.

And, we will be here for another 10 or 15 minutes for anyone who wants to chat with us. Thank you.

(Whereupon, at 9:36 p.m., the proceedings in the foregoing matter were adjourned.)

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CERTIFICATE

This is to certify that the attached proceedings before the United States Nuclear Regulatory Commission in the matter of:

Name of Proceeding: American Centrifuge Plant Draft EIS Public Meeting

Docket Number: n/a

Location: Piketon, OH

were held as herein appears, and that this is the original transcript thereof for the file of the United States Nuclear Regulatory Commission taken by me and, thereafter reduced to typewriting by me or under the direction of the court reporting company, and that the transcript is a true and accurate record of the foregoing proceedings.

Gary Baldwin
Official Reporter
Neal R. Gross & Co., Inc.