

APPENDIX F

ENVIRONMENTAL IMPACT METHODOLOGY

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This appendix summarizes the methodology used to prepare the environmental impact analyses in this Global Nuclear Energy Partnership (GNEP) Programmatic Environmental Impact Statement (PEIS). A more detailed discussion of the methodology for certain impact analyses is contained in separate appendices, specifically Intentional Destructive Acts (Appendix B), Human Health and Worker Safety (Appendix C), Facility Accident Scenarios (Appendix D), and Transportation (Appendix E). The methodology used for the Domestic Programmatic Alternatives analysis is provided in Section F.1, and that used for the International Activities analysis is provided in Section F.2.

F.1 ENVIRONMENTAL IMPACT METHODOLOGY FOR THE DOMESTIC PROGRAMMATIC ALTERNATIVES ANALYSIS

This GNEP PEIS analyzes the potential environmental impacts associated with the current United States (U.S.) commercial nuclear fuel cycle and broad implementation of alternative nuclear fuel cycles. As a result, the analysis is necessarily broad and long-term, focusing on the potential impacts that could result from implementing each of the programmatic alternatives over many decades.

As described in Chapter 2, six domestic programmatic alternatives are analyzed in this PEIS:

- No Action Alternative—Continue Existing Once-Through Uranium Fuel Cycle
- Fast Reactor Recycle Alternative
- Thermal/Fast Reactor Recycle Alternative
- Thermal Reactor Recycle Fuel Cycle Alternative
- Once-Through Fuel Cycle Alternative Using Thorium
- Once-Through Fuel Cycle Alternative Using Heavy Water Reactors (HWRs) or High Temperature Gas-cooled Reactors (HTGRs)

F.1.1 Electricity Projections, Nuclear Share of the Electricity Market, and Planning Period

This PEIS analyzes broad implementation of each programmatic alternative in terms of total nuclear generating capacity. Data from the Energy Information Administration were used to determine electricity growth projections. Each year, the Energy Information Administration publishes the *Annual Energy Outlook*, which provides projections and analysis of domestic energy consumption, supply, prices, and carbon emissions, among other factors. The most recent version of the *Annual Energy Outlook* (the 2008 Release) provides such projections through 2030 (EIA 2008a). The Energy Information Administration's estimates assume the continuation of known trends in demographics and technology improvements and also assume that no changes occur in current laws, regulations, and policies. Assumptions regarding future electricity demand and nuclear power's share of the market affect estimates of the potential quantities of spent nuclear fuel (SNF) that would be generated and require management. The amount of SNF is an

important parameter as it drives, among other factors, the amount of transportation, the potential capacity of future recycling facilities, the requirements for future geologic repository capacity, and other radioactive waste disposal capacity.

In this PEIS, the U.S. Department of Energy (DOE) assesses programmatic alternatives that would support an increase in nuclear electricity production. While DOE acknowledges that market forces (i.e., economics) would likely be the biggest factor influencing future nuclear electricity production, market forces are beyond the scope of this PEIS. This PEIS assumes that factors beyond the scope of this PEIS would not be barriers to the widespread implementation of any reasonable domestic programmatic alternatives. Further, DOE recognizes that a commitment by DOE to one or more of the programmatic alternatives could impact how the market views the economics of nuclear power.

Because of uncertainty with respect to the rate of growth in nuclear generating capacity, the GNEP PEIS considers a range of growth rates: zero growth, 0.7 percent annual growth, 1.3 percent annual growth, and 2.5 percent annual growth.¹

To allow time for broad implementation of the alternatives, the projections for nuclear-generated electricity growth were extended through approximately 2060 to 2070. Based on the growth rates set forth above, all of the PEIS alternatives were assessed at capacities of 100 gigawatts electric (GWe) (zero growth), 150 GWe (0.7 percent annual growth), 200 GWe (1.3 percent annual growth), and 400 GWe (2.5 percent annual growth). Each alternative was analyzed to determine what facilities and capacities would be necessary to achieve these generating capacities. Certain decisions could have significant environmental impacts well beyond 50 years, particularly in terms of impact on the capacity requirements for future geologic disposal. To the extent practical, this PEIS considers these impacts, typically in a qualitative manner.

F.1.2 Facilities and Capacities Needed to Meet the Demand and Data Quality

For each programmatic alternative, DOE determined the facilities, capacities, infrastructure, and other activities that would be needed to meet its assumed demand discussed in Section F.1.1. Once facilities were identified, DOE used the best available data to define the resource requirements and potential environmental impacts of construction and operation of the facilities and activities. These data were generally pre-conceptual information developed specifically for this PEIS or existing data developed for similar facilities. The quantity and quality of data concerning each alternative varies. Some facilities (such as SNF storage facilities) are operational and have actual data available; other facilities (such as a nuclear fuel recycling center that uses the UREX process to separate SNF into usable products and waste and makes transmutation fuel from the usable constituents) have never been operated on a commercial scale. Some data were obtained from sources within the United States, while other data were obtained from foreign sources, including the International Atomic Energy Agency (IAEA) and the Korean Atomic Energy Research Institute. For example, much of the information for the

¹ The 0.7 percent and 1.3 percent annual growth rates are based on Energy Information Administration estimates for nuclear generating capacity and total electricity demand as of December 2007 (EIA 2007a). As this draft PEIS was being prepared for issuance, the Energy Information Administration revised these estimates to 0.6 percent and 1.1 percent, respectively (EIA 2008a). DOE will address these, and any newer Energy Information Administration estimates, in the final PEIS, as appropriate.

DUPIC² fuel cycle was obtained from Korean and Canadian resources. In all cases, DOE used judgments of engineers and researchers to identify and utilize the best data available.

DOE used these data to estimate the amount of land required for the various potential facilities, the types and quantities of wastes that would be generated, the number of employees that would be required for construction and operation, the amount of water the facilities would use, and other resource requirements. DOE then used this information to estimate environmental impacts. The PEIS analysis focuses on the annual resource requirements for nuclear power reactors (e.g., uranium and/or thorium), the amount of waste that would be generated and need to be disposed, the amount of uranium and other actinides that could be recycled, human health and accident impacts, and the impacts of radiological materials transportation.

F.1.3 Facility Locations

For certain PEIS analyses (e.g., impacts to human health from normal operations and accidents), DOE defined the characteristics of six generic sites to assess the potential impacts associated with the facilities under the domestic programmatic alternatives. These sites provide a range of values for two parameters—offsite (50 miles [mi] [80 kilometers {km}]) population and meteorological conditions—that would directly affect the offsite impacts. Appendix D provides more details on these generic sites.

All of the GNEP programmatic alternatives, including the No Action Alternative, would produce materials (e.g., either SNF, high-level waste [HLW], or both) that would need to be isolated in a deep geologic repository as a means of final disposition. The PEIS analyzes the generic impacts of siting, constructing, and operating future geologic repository capacity and the impacts associated with transporting these materials to a geologic repository (see Section F.1.5). Some of the closed fuel cycle alternatives could also separate cesium (Cs) and strontium (Sr) wastes that would require transportation to a storage or disposal facility or be stored onsite. The PEIS assesses both of these alternative scenarios. Additionally, this PEIS assesses the impacts of storage and transportation associated with other radioactive wastes (e.g., low-level waste [LLW] and Greater-than-Class-C [GTCC] LLW). Transportation of these wastes to future disposal facilities is analyzed.

F.1.4 Resource Analyses

In general, the PEIS analyses were tailored to the decisions to be made following completion of the PEIS. Consequently, the PEIS presents the “types of impacts” that could result, while acknowledging that the specific impacts could be site dependent. For example, the PEIS indicates the amount of water that a facility might require but does not estimate what the impacts of using this much water would be, as that would be a function of the facility location. A facility that requires 1 billion gallons (3.8 million m³) of water annually might have small impacts at a site where a large volume of water is readily available. Also, actual water requirements could vary based on future design considerations (e.g., related to cooling systems).

² DUPIC = direct use of spent pressurized water reactor (PWR) fuel in CANDU.

A screen of all relevant resources was conducted to identify those potential impacts that could be meaningfully evaluated at a programmatic level. For several resource areas, DOE decided that a meaningful programmatic analysis was not possible, particularly in the absence of site-specific information. For example, impacts to cultural and paleontological resources were not analyzed at the programmatic level because impacts would be inherently site-specific and a programmatic assessment would not provide meaningful data for the decision maker. Other resource areas similarly screened from this programmatic analysis are biological resources, environmental justice, geology and soils, noise, and site infrastructure. Chapter 4 of this PEIS includes a discussion of the following resource areas:

Land Resources: Impacts to land would be site dependent. As such, impacts were assessed based on the amount of land that would be associated with implementation of each alternative.

Visual Resources: Impacts to visual resources would be site dependent. As such, impacts were assessed by determining whether any impacts, beyond the facilities themselves, would affect visual resources at relatively large distances. For example, if a facility generated a visible water vapor plume from cooling tower operations, this would be identified.

Water Resources: Impacts to water resources would be site dependent. The PEIS presents the amounts of water that could be required for facilities.

Air Resources: Impacts to nonradiological air quality would be site dependent. The PEIS provides qualitative discussions of potential impacts to nonradiological air quality. Radiological impacts associated with air emissions are discussed below under “Human Health (Normal Operations).”

Socioeconomic Impacts: Impacts to socioeconomics would be site dependent and would occur primarily in communities in the vicinity of any future facility. The PEIS provides estimates of the number of workers required for both construction and operation.

Human Health (Normal Operations): Impacts related to health and safety would be both site dependent and site independent. For example, impacts to workers at a facility would occur regardless of the location. DOE estimated the impacts to workers and presented them in terms of potential latent cancer fatalities (LCFs) from radiological exposures during normal operations. Estimates of potential impacts were based on data for existing facilities (e.g., worker exposure data from existing reactor operations) or pre-conceptual data developed for proposed facilities (e.g., for a nuclear fuel recycling center, worker exposure data were specifically developed). For differing reactor technologies, the PEIS assumed that worker doses would not be significantly different than the average doses to workers at existing light water reactors (LWRs); no data were discovered that invalidated this assumption.

With respect to potential impacts to the public, exposures would vary depending on many factors, including radiological releases from facilities, prevailing weather patterns, and the proximity of the facilities to local population centers. The availability of data to estimate impacts to the public varied among the alternatives. Based on modeling results for generic sites, the

impacts (in terms of dose and LCFs to the maximally exposed individual and the surrounding 50 mi [80 km] population) from normal operations are presented.

For some alternatives, specific radiological release data were not available. In these instances, DOE estimated public exposures based on compliance with expected licensing regulations. For example, any new commercial nuclear facility would be required to comply with the U.S. Nuclear Regulatory Commission (NRC) regulations. Title 10 *Code of Federal Regulations* (CFR) Part 20 (10 CFR Part 20) requires that each licensee conduct operations so that the total effective dose equivalent to individual members of the public from the licensed operations does not exceed 100 millirem (mrem) in a year. Furthermore, 10 CFR Part 20 requires that power reactor licensees comply with the U.S. Environmental Protection Agency's (EPA's) environmental radiation standards contained in 40 CFR Part 190 (i.e., 25 mrem to the whole body, 75 mrem to the thyroid, and 25 mrem to any other organ of any member of the public from the uranium fuel cycle).

Accidents: Accident impacts would also be dependent on many factors, including the types of accidents, radionuclides released, site characteristics, and the distribution of population in the surrounding environment. Appendix D explains the methodology that was employed to estimate the impacts for a range of accidents at six generic sites for the various facilities analyzed in the PEIS. These accident analyses are representative of the types of accident impacts that could result from these facilities. The PEIS presents a range of impacts associated with accidents (e.g., impacts from both high probability/low consequence accidents and low probability/high consequence accidents).

Intentional Destructive Acts: In addition to the accident analysis, DOE prepared an impact analysis of terrorist acts, Appendix B.

SNF and Wastes: Impacts from wastes and SNF were analyzed based on estimates of the amount of material that would be generated for each of the four analyzed growth rates during a period of approximately 50 to 60 years and of annual generation at the four analyzed nuclear generating capacities identified above. SNF and wastes would be managed in accordance with regulatory requirements. For SNF and some wastes, such as HLW, this PEIS analyzes impacts associated with the transportation of these materials to a geologic repository (see Section F.1.5).

As mentioned in Section F.1.3, Cs and Sr, if separated from LWR SNF, could be transported to a storage or disposal facility or stored at a recycling facility for extended time frames up to approximately 10 “half-lives”³ following recycle (approximately 300 years). If stored at the recycling facility, institutional controls to safeguard this material would be required during this time period. The PEIS assesses these alternative scenarios.

All of the alternatives would generate GTCC LLW, either during normal operations or during decontamination and decommissioning. The *Low Level Radioactive Waste Policy Amendments Act* of 1985 assigns the responsibility for the disposal of GTCC LLW to the Federal Government (DOE) (42 U.S.C. 2021). This legislation specified that the GTCC LLW must be disposed in a

³ Radioactive materials decay over time. “Half-life” refers to the time required for the quantity of a radioactive material to decay to half of its initial value. After approximately 10 half-lives, there would be approximately a 99.9 percent reduction (or a factor of 1,000 reduction) in the amount of the isotope present.

facility licensed by the NRC. There are no facilities currently licensed by NRC for disposal of GTCC LLW. This PEIS assesses the transportation impacts of GTCC LLW to a hypothetical disposal site using a range of distances to account for the unknown origin and destination of this material.

Resource Requirements: DOE analyzed the resources that would be needed to support the programmatic alternatives. For example, this PEIS assesses the amount of uranium and thorium (as appropriate) that each alternative would require and discusses the availability of that resource.

Sensitivity Analyses: This PEIS includes sensitivity analyses, as appropriate, for each alternative. For example, for the Fast Reactor Recycle Alternative and the Thermal/Fast Reactor Recycle Alternative, the ultimate deployment of fast reactors could be affected by the conversion ratio (CR)⁴ of fast reactors. Because the CR is essentially a measure of the efficiency by which a fast reactor consumes transuranics, it could directly affect how many fast reactors would be deployed, the percentage of transuranics that would be consumed, and how much SNF and HLW would require disposal in a geologic repository. This PEIS assesses how the impacts presented could change depending on changes in the CR. Other sensitivity analyses include a discussion of differing SNF separation technologies and the use of differing mixed-oxide reactor fuels.

F.1.5 Impacts of Transportation

A transportation analysis was prepared to determine the potential impacts associated with transporting all radiological materials (i.e., fuels and waste) associated with the domestic programmatic alternatives. The transportation analysis determined the number of radiological shipments (i.e., for both rail and truck, broken down by material to be transported) that would be required for each alternative.

The routes were analyzed using the routing computer code WebTRAGIS (Johnson and Michelhaugh 2003). The routes were calculated using current routing practices and applicable routing regulations and guidelines. Route characteristics include total shipment distance between each origin and destination and the fractions of travel in rural, suburban, and urban population density zones. Population densities were determined using data from the 2000 census.

The PEIS considered route characteristics for truck and rail transport over distances of 150, 500, 1,500, 2,100, and 3,000 mi (241, 805, 2,414, 3,380, and 4,828 km). Of the values provided above, shipments analyzed at the 2,100 mi (3,380 km) distance are used as the representative case for the domestic programmatic alternatives analyses. The population density values for all five scenarios were updated to reflect census 2000 data. Appendix E provides additional details regarding the methodology that was used to perform the transportation analysis.

⁴ As used in this PEIS, the “conversion ratio” (CR) of a fast reactor is the ratio of the amount of transuranic elements produced to the amount that is consumed in the reactor during the time the fuel is in the reactor. The CR determines the number of fast reactors required to consume transuranics separated from the LWR SNF. At a CR of 0.5, approximately 20 percent of the transuranics would be destroyed per fast reactor recycle pass. The PEIS also includes a sensitivity analysis of changing the CR.

Transportation impacts are presented in terms of radiological impacts (expressed in person-rem and converted to LCFs using a dose-to-risk conversion factor of 600 fatal cancers per 10^6 person-rem, which equates to 6×10^{-4} LCFs per person-rem [DOE 2002h]). The results of the transportation analysis are presented in two sets of tables for each alternative. The first set of tables presents the impacts associated with handling (loading and inspection). The impacts of handling are independent of the distance that the material would be transported. As such, the handling impacts would be the same whether the SNF is transported, for example, 500 mi (805 km), 2,100 mi (3,380 km), or any other distance. For this reason, these impacts were presented separately from the in-transit impacts (which are presented in the second set of tables).

Unlike handling impacts, the in-transit impacts are dependent on the distance that material would be transported. The locations of future facilities (e.g., reactors, nuclear fuel recycling centers, and a geologic repository) are unknown. The in-transit impacts for the transportation of SNF or HLW to a geologic repository are based on 2,100 mi (3,380 km) of transport. This distance was selected because it is the average distance that has been analyzed previously (in *National Environmental Policy Act* [NEPA] documents) for all SNF and HLW considered for geologic disposal. The in-transit impacts would vary based on a variety of factors, including the distance that the radiological materials would be transported, the specific routes that would be utilized, the population densities along those routes, and others. Of these factors, the transport distance is considered to be the most significant factor. This PEIS analyzes how the impacts would change as a function of distance traveled. Although the in-transit impacts are not exactly “linear” (i.e., twice the impacts for twice the distance transported), it is a close approximation. Consequently, if the radiological materials were transported 500 mi (805 km), all of the in-transit impacts could be calculated by multiplying the values in those tables by 0.24 (500/2,100). Appendix E provides additional information regarding the assumptions, methodology, and impacts for the transportation analysis for the programmatic alternatives.

F.1.6 Common Impacts

DOE identified actions and impacts that would be common to all of the domestic programmatic alternatives. Such things as uranium mining, uranium enrichment, uranium fuel fabrication, and continuation of the Advanced Fuel Cycle Initiative (AFCI) fit into this category. Although the associated impacts would be common, this does not mean impacts would be exactly the same for each alternative. For example, although each alternative would require uranium enrichment, both the quantities of uranium requiring enrichment and the percentage of enrichment could be different. Those differences, where notable, are discussed in the PEIS. DOE used the best available information to estimate these impacts, including existing NEPA documentation. For example, for uranium enrichment, DOE used a recent (2006) EIS prepared by the NRC to estimate the types of impacts that would result from uranium enrichment (NRC 2006b).

F.1.7 Cumulative Impacts

A cumulative impact analysis was prepared for the domestic programmatic alternatives. The methodology for that analysis is described in Chapter 5.

F.2 ENVIRONMENTAL IMPACT METHODOLOGY FOR THE INTERNATIONAL ACTIVITIES ANALYSIS

Impacts associated with international activities related to GNEP are discussed in Chapter 7, which includes a qualitative analysis of transportation in the United States and across the world's oceans, as well as other types of potential impacts. The methodology used for this analysis is described in Chapter 7, Section 7.2.

F.3 REFERENCES

- 10 CFR Part 20 U.S. Nuclear Regulatory Commission (NRC), “Standards for Protection Against Radiation,” *Code of Federal Regulations*, Office of the Federal Register, National Archives and Records Administration, Washington, DC, Revised January 1, 2008.
- 40 CFR Part 190 Environmental Protection Agency (EPA), “Environmental Radiation Protection Standards for Nuclear Power Operations,” *Code of Federal Regulations*, Office of the Federal Register, National Archives and Records Administration, Washington, DC, Revised July 1, 2007.
- 42 U.S.C. 2021 “Low Level Radioactive Waste Policy Act, Amended,” LLRWPA, *United States Code*, Washington, DC, January 15, 1986.
- DOE 2002h U.S. Department of Energy (DOE), “Estimating Radiation Risk from Total Effective Dose Equivalents (TEDE),” DOE/EH-412/0015/0802 Rev. 1, Office of Environmental Policy and Guidance, U.S. Department of Energy, Washington, DC, August 9, 2002.
- EIA 2007a Energy Information Administration (EIA), “AEO2008, Annual Energy Outlook 2008 (Early Release),” DOE/EIA-0383, Energy Information Administration, U.S. Department of Energy, Washington, DC, December 2007. Accessed at <http://www.eia.doe.gov/oiaf/aeo/pdf/earlyrelease.pdf> on January 22, 2008.
- EIA 2008a EIA, “Annual Energy Outlook 2008 With Projections to 2030,” DOE/EIA-0383 (2008), Energy Information Administration, U.S. Department of Energy, Washington, DC, June 2008. Accessed at [http://www.eia.doe.gov/oiaf/aeo/pdf/0383\(2008\).pdf](http://www.eia.doe.gov/oiaf/aeo/pdf/0383(2008).pdf) on July 3, 2008.
- Johnson and Michelhaugh 2003 Johnson, P.E., and R.D. Michelhaugh, “Transportation Routing Analysis Geographic Information System (TRAGIS) User’s Manual,” Report No. ORNL/NTRC-006, Revision 0, Oak Ridge National Laboratory, Oak Ridge, TN, June 2003.
- NRC 2006b NRC, “Environmental Impact Statement for the Proposed American Centrifuge Plant in Piketon, Ohio,” NUREG-1834, U.S. Nuclear Regulatory Commission, Washington, DC, 2006.

APPENDIX G

PROJECT NOTICES

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This Appendix includes the following project notices:

- Request for Expressions of Interest Global Nuclear Energy Partnership (GNEP) Technology Demonstration Program—March 17, 2006
- Advance Notice of Intent to Prepare an Environmental Impact Statement for the Global Nuclear Energy Partnership Technology Demonstration Program—March 22, 2006
- Modified Request for Expressions of Interest to Perform Site Evaluation Studies in support of the Global Nuclear Energy Partnership (GNEP) Technology Demonstration Program—May 16, 2006
- Department of Energy (DOE) Press Release “DOE Continues Path Forward on Global Nuclear Energy Partnership: Department Announces \$20 Million for GNEP Siting Studies and Seeks Further Coordination with Industry”—August 3, 2006
- Notice of Request for Expressions of Interest for \$20 million to conduct detailed siting studies for public or commercial entities to host GNEP facilities—August 3, 2006
- Notice of Request for Expressions of Interest in an Advanced Burner Reactor to Support the Global Nuclear Energy Partnership—August 7, 2006
- Notice of Request for Expressions of Interest in a Consolidated Fuel Treatment Center to Support the Global Nuclear Energy Partnership—August 7, 2006
- DOE Press Release “Department of Energy Selects Recipients of GNEP Siting Grants”—November 29, 2006
- Notice of Intent to Prepare a Programmatic Environmental Impact Statement for the Global Nuclear Energy Partnership—January 4, 2007
- DOE Press Release “Department of Energy Releases Global Nuclear Energy Partnership Strategic Plan”—January 10, 2007
- DOE Press Release “Department of Energy Awards Over \$10 Million for GNEP Siting Grants”—January 30, 2007
- Notice of Extension of Time to Submit Scoping Comments on the Programmatic Environmental Impact Statement for the Global Nuclear Energy Partnership—April 3, 2007

- Financial Assistance Opportunity for the Global Nuclear Energy Partnership Deployment Studies—May 9, 2007
- DOE Press Release “Department of Energy and Nuclear Regulatory Commission Increase Cooperation to Advance Global Nuclear Energy Partnership”—July 17, 2007
- DOE Press Release “Department of Energy to Award \$16 Million for GNEP Studies”—July 30, 2007
- DOE Press Release “Department of Energy Awards More than \$16 Million for GNEP Technology Development Plans”—October 1, 2007
- DOE Press Release “United States, France and Japan Increase Cooperation on Sodium-Cooled Fast Reactor Prototypes”—February 1, 2008
- DOE Press Release “DOE Awards \$18.3 Million to Nuclear Industry Consortia for GNEP Studies”—March 28, 2008
- DOE Press Release “DOE Seeks to Invest up to \$15 Million in Funding for Nuclear Fuel Cycle Technology Research and Development”—April 17, 2008
- DOE Press Release “U.S. Department of Energy and Tennessee Valley Authority Increase Cooperation on Nuclear Fuel Cycle Data”—April 24, 2008



R--EOI - GNEP Technology Demonstration Program

Solicitation Number: DE-RP07-06ID14760

Agency: Department of Energy

Office: Federal Locations

Location: All DOE Federal Contracting Offices

Notice Type:

Presolicitation

Posted Date:

March 17, 2006

Response Date:

March 31, 2006

Archiving Policy:

Automatic, on specified date

Archive Date:

September 30, 2006

Original Set Aside:

N/A

Set Aside:

N/A

Classification Code:

R -- Professional, administrative, and management support services

Synopsis:

Added: March 17, 2006

REQUEST FOR EXPRESSIONS OF INTEREST - GLOBAL NUCLEAR ENERGY PARTNERSHIP (GNEP) TECHNOLOGY DEMONSTRATION PROGRAM The U.S. Department of Energy (DOE), Office of Nuclear Energy, Science and Technology (NE) is seeking Expressions of Interest (EOI) from entities interested in competing, on a full and open basis, for the award of one or more contracts to perform site evaluation studies. These studies will evaluate prospective locations to host one or more demonstration projects in support of the Global Nuclear Energy Partnership (GNEP). A total of up to \$20 million may be available for the site evaluation studies, with no single award exceeding \$5 million. The anticipated period of performance for site evaluation study contracts is 90 calendar days. The GNEP Technology Demonstration Program would demonstrate certain technologies that could change the way spent nuclear fuel from commercial light-water nuclear power reactors is managed. DOE intends to demonstrate three key elements that would comprise a proliferation-resistant closed fuel cycle. These key elements are: (1) a proliferation-resistant process to separate usable elements in commercial spent nuclear fuel from its waste elements; (2) the conversion of transuranics; and (3) an advanced fuel cycle facility. The DOE GNEP web home page contains further information about the GNEP program. The home page web link is <http://www.gnep.energy.gov/>. The anticipated deliverable under each site evaluation study

contract is a site evaluation study report containing detailed information about: the proposed site location (to be chosen by the entity submitting a contract offer and to which the offeror has a legally enforceable commitment to perform the project from the site that will be evaluated in the siting study); facilities (existing or new) that will be used in the demonstration project; federal, state and local regulatory and permitting requirements; project milestones; estimated project costs, including fees associated with meeting regulatory requirements; and other factors that may affect project success, including legislative or regulatory requirements and public perception issues. The site evaluation study will be used to provide information to support the preparation of an Environmental Impact Statement (EIS) that DOE is initiating to evaluate the potential environmental impacts associated with the GNEP Technology Demonstration Program. Given the importance of these studies in supporting preparation of the EIS, the technical, regulatory and public outreach expertise of site evaluation study contractors will be of paramount importance. In addition to siting studies, successful offerors may also be tasked to provide technical evaluation and reporting services to the EIS contractor during EIS preparation, public meetings, and the preparation of responses to comments. Collaborative arrangements for submitting site evaluation study contract proposals are encouraged. These arrangements may include, to the extent permitted by law, domestic private companies, not for profit institutions, state or local governments and agencies, academic institutions, non-government organizations, trade associations, etc. The location of demonstration project facilities is not limited to DOE sites, but may include other federal and non-federal sites on a strictly voluntary basis. This EOI is intended to encourage an open exchange of ideas regarding the solicitation, award, and administration of site evaluation study contracts. Entities interested in submitting a proposal for a site evaluation study contract are requested to submit a response to this EOI that identifies the entity [organization name, type of organization (private company, not for profit institution, government contractor, etc)] and a point of contact (including an e-mail address and telephone number). Entities submitting a response to this EOI are also encouraged to provide their thoughts and suggestions through the comment form on how DOE should conduct the acquisition and award and administer the site evaluation study contracts. In particular, DOE is seeking input on:

- Contract type, content of the statement of work, and specific contract terms or conditions
- Evaluation criteria and selection considerations, including any qualification criteria
- Other considerations DOE should address during the acquisition (e.g., organizational conflict of interest issues associated with an entity supporting the DOE EIS and working on a site study contract) or after contract award

The comment submittal form is available on the GNEP Technology Demonstration Program solicitation website located at www.id.doe.gov. Written responses to this EOI must not exceed four pages and must be received by not later than 4:00 PM, Mountain Time, on March 31, 2006. Send responses by email to Ms. Janet Surrusco, Contract Specialist, United States Department of Energy, Idaho Operations Office, at surrusjk@id.doe.gov Confidential or business sensitive information contained in the submission must be identified and marked accordingly. DOE will protect this information from public disclosure to the extent permitted by law. This EOI is not a formal solicitation requesting proposals and does not represent a commitment by the Government to award a contract. The Government does not intend to formally respond to information submitted in response to this EOI. The Government is not responsible for costs incurred to submit a response to this EOI, conducting other activities associated with pre-solicitation planning, or submitting a proposal in response to a solicitation if issued.

Contracting Office Address:

850 Energy Drive (MS-1221) Idaho Falls, ID

Point of Contact(s):

Wade Hillebrant, Contracting Officer, 208-526-0547, hillebtw@id.doe.gov; Janet Surrusco, Contract Specialist, 208-526-5477, surrusjk@id.doe.gov [Janet Surrusco, Contract Specialist](#)

turtles, provide information on population dynamics to improve stock assessments, and to better understand the distribution of turtles in time and space. Turtles that are incidentally captured during resource assessment cruises would be used by the SEFSC in their assessments of distribution and abundance of turtles, as well as the cumulative impact of the relevant fishery on the stocks. The incidental capture would accrue to and be authorized by the fisheries being researched. The SEFSC would annually handle, identify, examine, measure, weigh, photograph, flipper tag, passive integrated transponder (PIT) tag, skin biopsy, and release or salvage the carcass, tissue, and parts of up to 6 green, 17 loggerhead, 8 Kemp's ridley, 6 hawksbill, 6 olive ridley, 6 unidentified hardshell, and 17 leatherback sea turtles. Research would occur in the Atlantic Ocean, Gulf of Mexico, Caribbean Sea, and their tributaries. The permit would be issued for five years.

Dated: March 16, 2006.

Stephen L. Leathery,

Chief, Permits, Conservation and Education Division, Office of Protected Resources, National Marine Fisheries Service.

[FR Doc. E6-4159 Filed 3-21-06; 8:45 am]

BILLING CODE 3510-22-S

DEPARTMENT OF DEFENSE

GENERAL SERVICES ADMINISTRATION

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

[OMB Control No. 9000-0026]

Federal Acquisition Regulation; Submission for OMB Review; Change Order Accounting

AGENCIES: Department of Defense (DOD), General Services Administration (GSA), and National Aeronautics and Space Administration (NASA).

ACTION: Notice of request for public comments regarding an extension to an existing OMB clearance (9000-0026).

SUMMARY: Under the provisions of the Paperwork Reduction Act of 1995 (44 U.S.C. Chapter 35), the Federal Acquisition Regulation (FAR) Secretariat has submitted to the Office of Management and Budget (OMB) a request to review and approve an extension of a currently approved information collection requirement concerning change order accounting. A request for public comments was published in the **Federal Register** at 71

FR 2914, January 18, 2006. No comments were received.

Public comments are particularly invited on: Whether this collection of information is necessary for the proper performance of functions of the FAR, and whether it will have practical utility; whether our estimate of the public burden of this collection of information is accurate, and based on valid assumptions and methodology; ways to enhance the quality, utility, and clarity of the information to be collected; and ways in which we can minimize the burden of the collection of information on those who are to respond, through the use of appropriate technological collection techniques or other forms of information technology.

DATES: Submit comments on or before April 21, 2006.

ADDRESSES: Submit comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to: FAR Desk Officer, OMB, Room 10102, NEOB, Washington, DC 20503, and a copy to the General Services Administration, FAR Secretariat (VIR), 1800 F Street, NW., Room 4035, Washington, DC 20405.

FOR FURTHER INFORMATION CONTACT: Jeritta Parnell, Contract Policy Division, GSA (202) 501-4082.

SUPPLEMENTARY INFORMATION:

A. Purpose

FAR clause 52.243-6, Change Order Accounting, requires that, whenever the estimated cost of a change or series of related changes exceed \$100,000, the contracting officer may require the contractor to maintain separate accounts for each change or series of related changes. The account shall record all incurred segregable, direct costs (less allocable credits) of work, both changed and unchanged, allocable to the change. These accounts are to be maintained until the parties agree to an equitable adjustment for the changes or until the matter is conclusively disposed of under the Disputes clause. This requirement is necessary in order to be able to account properly for costs associated with changes in supply and research and development contracts that are technically complex and incur numerous changes.

B. Annual Reporting Burden

Respondents: 8,750.
Responses Per Respondent: 18.
Annual Responses: 157,500.
Hours Per Response: .084.
Total Burden Hours: 13,230.

C. Annual Recordkeeping Burden

Recordkeepers: 8,750.

Hours Per Recordkeeper: 1.5.
Total Recordkeeping Burden Hours: 13,125.

Total Burden Hours: 26,355.

Obtaining Copies of Proposals: Requesters may obtain a copy of the information collection documents from the General Services Administration, FAR Secretariat (VIR), Room 4035, Washington, DC 20405, telephone (202) 501-4755. Please cite OMB Control No. 9000-0026, Change Order Accounting, in all correspondence.

Dated: March 14, 2006.

Gerald Zaffos,

Director, Contract Policy Division.

[FR Doc. 06-2751 Filed 3-21-06; 8:45 am]

BILLING CODE 6820-EP-S

DEPARTMENT OF ENERGY

Advance Notice of Intent To Prepare an Environmental Impact Statement for the Global Nuclear Energy Partnership Technology Demonstration Program

AGENCY: Department of Energy.

ACTION: Advance notice of intent.

SUMMARY: The U.S. Department of Energy (DOE) is providing this Advance Notice of Intent (ANOI) to prepare an Environmental Impact Statement (EIS) pursuant to the National Environmental Policy Act (NEPA) for the Global Nuclear Energy Partnership (GNEP) Technology Demonstration Program. The GNEP Technology Demonstration Program would demonstrate certain technologies that could change the way spent nuclear fuel from commercial light-water nuclear power reactors is managed. This EIS will inform DOE officials and the public of the potential environmental impacts associated with the proposed action, which is to demonstrate U.S. capability to safely recycle spent nuclear fuel using proliferation-resistant separation processes and the conversion of transuranics into shorter-lived radioisotopes.

The proposed action includes three key elements that would comprise a proliferation-resistant closed fuel cycle: (1) The demonstration of separation processes in which usable and waste materials that are found in spent nuclear fuel are separated; (2) the demonstration of the conversion of transuranics; and (3) the demonstration of an advanced fuel fabrication process.

The EIS will evaluate all reasonable alternative technologies and locations for the key elements of the proposed GNEP Technology Demonstration Program. New facilities and

modifications to existing facilities might be required for the Technology Demonstration Program. The EIS will address siting, construction or modification, and operation of these facilities. DOE is issuing this ANOI, pursuant to its NEPA regulations at 10 CFR 1021.311(b), to inform and request early comments from Federal agencies, state and local governments, Native American tribes, industry, other organizations, and members of the public regarding the proposed action, the reasonable alternatives, and the potential environmental impacts.

DATES: DOE invites comments on this ANOI through May 8, 2006. DOE will consider comments received after May 8, 2006 to the extent practicable. DOE intends to issue a Notice of Intent (NOI) for the EIS later this year. After the NOI is issued, DOE will conduct public scoping meetings to assist in further defining the scope of the EIS and to identify significant issues to be addressed. The dates and locations of scoping meetings will be announced in the NOI, subsequent **Federal Register** notices (as needed), and in local media.

ADDRESSES: Please direct comments, suggestions, or relevant information on the planned EIS and questions concerning the proposed action to: Timothy A. Frazier, NEPA Document Manager, Office of Nuclear Energy, Science and Technology, U.S. Department of Energy, 1000 Independence Avenue, SW., Washington, DC 20585-0119, Telephone: 866-645-7803, Fax: 866-645-7807, E-mail to: GNEPTechDemo@nuclear.energy.gov.

FOR FURTHER INFORMATION CONTACT: To request further information about the EIS or to be placed on the EIS distribution list, use any of the methods listed under **ADDRESSES** above. Supplementary information on GNEP and the proposed GNEP Technology Demonstration Program may be found at <http://www.gnep.energy.gov>.

For general information concerning the DOE NEPA process, contact: Carol Borgstrom, Director, Office of NEPA Policy and Compliance (EH-42), U.S. Department of Energy, 1000 Independence Avenue, SW., Washington, DC 20585-0119; telephone: 202-586-4600, or leave a message at 1-800-472-2756; fax: 202-586-7031; or send an e-mail to askNEPA@eh.doe.gov.

This ANOI will be available on the Internet at <http://www.eh.doe.gov/nepa> and <http://www.gnep.energy.gov>.

SUPPLEMENTARY INFORMATION:

Background

As part of President Bush's Advanced Energy Initiative, DOE has launched a new initiative, the Global Nuclear Energy Partnership (GNEP). The broad goals of GNEP are to: (1) Reduce the United States' dependence on foreign sources of fossil fuels and encourage economic growth, while meeting increasing demand for electricity without emitting air pollution and greenhouse gases; (2) recycle nuclear fuel using new proliferation-resistant technologies to recover more energy and reduce the volume of waste; (3) encourage prosperity growth and clean development around the world; and (4) utilize the latest technologies to reduce the risk of nuclear proliferation worldwide.

The proposed GNEP Technology Demonstration Program would involve the development of technologies to promote GNEP's goals. The GNEP Technology Demonstration Program would demonstrate technologies needed to implement a closed fuel cycle that enables recycling and consumption of spent nuclear fuel in a proliferation-resistant manner. While DOE has had some success at bench-scale testing of these technologies, it has not yet proven that these technologies will be feasible in demonstration-scale facilities.

The proposed GNEP Technology Demonstration Program includes three major projects that would be conducted in new or existing facilities. These projects would demonstrate: (1) Proliferation-resistant processes that would separate the usable elements in commercial spent nuclear fuel from its waste elements; (2) the conversion of transuranics into shorter-lived radioisotopes; and (3) operation of an advanced fuel fabrication facility. The GNEP Technology Demonstration Program EIS will address siting, construction or modification, and operation of these demonstration-scale facilities. (Decontamination and decommissioning of these facilities will be addressed in one or more future NEPA analyses.)

In addition, DOE anticipates preparing a separate NEPA analysis at a later date that would address the environmental impacts of potential future actions to encourage the commercial-scale adoption of these technologies for the management of spent nuclear fuel from commercial nuclear power reactors, as well as alternatives. At that time, DOE anticipates preparing a programmatic EIS that would address the potential environmental consequences of the widespread deployment of proliferation-

resistant spent nuclear fuel separation technologies, technologies that consume transuranics while extracting their energy, and fuel fabrication technologies, including those technologies that are the subject of the Technology Demonstration Program.

As discussed above, the GNEP Technology Demonstration Program includes three major projects.

1. Demonstration of an Advanced Separation Process

Under the GNEP Technology Demonstration Program, DOE would demonstrate the capability to safely recycle spent nuclear fuel from commercial light-water nuclear power reactors using proliferation-resistant separation processes. In support of this effort, DOE would conduct demonstration-scale testing of a process that would separate the usable elements in spent commercial nuclear fuel from its waste elements.

Spent nuclear fuel contains uranium, transuranics (plutonium and other long-lived radioactive material), and fission products. The fission products are waste and make up less than five percent of the used fuel. The buildup of the fission products inhibits the nuclear fission reaction, so used fuel must be removed from a nuclear power plant. In order to consume transuranics and uranium, while recovering their energy content, the transuranics and uranium would be separated from the fission products and then fabricated into new fuel.

The GNEP Technology Demonstration Program would use advanced separation processes (such as, but not necessarily limited to, Uranium Extraction Plus, or UREX+). As discussed below, the products of these advanced separation processes can be used in a facility such as a fast reactor that would consume transuranics to produce energy.

2. Demonstration of the Conversion of Transuranics

DOE would demonstrate the destruction of transuranics separated from spent nuclear fuel from commercial nuclear power plants. To destroy the transuranics, DOE would take advantage of high-energy neutrons to fission, or split apart, long-lived transuranics and transmute, or convert, them into shorter-lived radioisotopes. DOE will consider a facility such as, but not necessarily limited to, a fast reactor as a source of high-energy neutrons. As transuranics are consumed, significant energy is released and can be converted into electricity, thereby producing useful energy from material that would otherwise be waste.

3. *Demonstration of a Proliferation-Resistant Fuel Cycle and Advanced Fuel Fabrication*

DOE would demonstrate the fabrication, testing, and qualification of advanced fuel forms in a multi-hot cell, multi-purpose research, development, and demonstration laboratory that can serve fuel cycle testing needs. The facility would use modular, flexible construction technologies with the near-term objective to fabricate and qualify fuels to be used in the facility for the conversion of transuranics.

Purpose and Need for Action

The purpose of the GNEP Technology Demonstration Program is to demonstrate U.S. capability to safely recycle spent nuclear fuel using proliferation-resistant separation processes and the conversion of transuranics into shorter-lived radioisotopes. DOE needs to identify and demonstrate technologies and identify the locations where those technologies would be demonstrated.

Potential Range of Alternatives

As part of the NEPA process, DOE will consider and evaluate all reasonable alternatives, including those identified in response to the ANOI, NOI, and during the public scoping process. DOE will also evaluate a No Action alternative.

Invitation To Comment

DOE invites Federal agencies, state and local governments, Native American tribes, industry, other organizations, and members of the public to provide comments on the proposed scope, alternatives (both technology and siting), and environmental issues to be analyzed in the forthcoming EIS for the GNEP Technology Demonstration Program. DOE will consider all such comments and other relevant information in developing an NOI. Comments on this ANOI should be submitted as described under **DATES** and **ADDRESSES** above.

Potential Environmental Issues for Analysis

DOE has tentatively identified the following environmental issues for analysis in the GNEP Technology Demonstration Program EIS. The list is presented to facilitate early comment on the scope of the EIS; it is not intended to be comprehensive nor to predetermine the alternatives to be analyzed or their potential impacts.

- Potential impacts to the general population and workers from radiological and nonradiological releases.

- Potential impacts of emissions on air and water quality.
- Potential impacts on flora and fauna of a region.
- Potential transportation impacts from the shipment of radioactive materials and waste.
- Potential impacts from postulated accidents.
- Potential disproportionately high and adverse effects on low-income and minority populations (environmental justice).
- Potential Native American concerns.
- Short-term and long-term land use impacts.
- Compliance with applicable Federal and state regulations.
- Long-term health and environmental impacts.
- Long-term site suitability.

NEPA Process

DOE plans to publish the NOI for the proposed GNEP Technology Demonstration Program EIS in the **Federal Register** later this year. The NOI will identify the technologies and sites that DOE proposes to evaluate as reasonable alternatives in the EIS. Following the publication of the NOI, there will be a 60-day public scoping period. Subsequently, DOE will announce the availability of the Draft EIS in the **Federal Register** and other media outlets. Federal agencies, state and local governments, Native American tribes, industry, other organizations, and members of the public will have an opportunity to submit comments. These comments will be considered and addressed in the Final EIS. DOE will issue a Record of Decision(s) no sooner than 30 days after publication of the Environmental Protection Agency's Notice of Availability of the Final EIS. DOE might announce its decision to implement all three projects in a single Record of Decision or in separate Records of Decision.

Issued in Washington, DC, on March 16, 2006.

C. Russell H. Shearer,

Acting Assistant Secretary for Environment, Safety and Health.

[FR Doc. E6-4162 Filed 3-21-06; 8:45 am]

BILLING CODE 6450-01-P

DEPARTMENT OF ENERGY

Federal Energy Regulatory Commission

Combined Notice of Filings #1

March 15, 2006.

Take notice that the Commission received the following electric rate filings.

Docket Numbers: ER96-1551-014; ER01-615-010; EL05-2-000.

Applicants: Public Service Company of New Mexico.

Description: Public Service Co of New Mexico submits an amendment to its July 15, 2005 compliance filing and requests FERC to consider the information submitted as further evidence that PNM lacks generation market power etc.

Filed Date: March 10, 2006.

Accession Number: 20060314-0015.

Comment Date: 5 p.m. Eastern Time on Friday, March 31, 2006.

Docket Numbers: ER03-447-004.

Applicants: Black Oak Energy, LLC.

Description: Black Oak Energy LLC submits an amendment to its triennial updated market analysis filed on February 13, 2006.

Filed Date: March 9, 2006.

Accession Number: 20060310-0182.

Comment Date: 5 p.m. Eastern Time on Thursday, March 30, 2006.

Docket Numbers: ER06-464-001.

Applicants: Highlands Energy Group LLC.

Description: Highlands Energy Group LLC submits a petition for acceptance of initial rate schedule, waivers and blanket authority. Highland also amended its filing on March 10, 2006, including a revised tariff per the Commission's request.

Filed Date: March 8, 2006.

Accession Number: 20060313-0130.

Comment Date: 5 p.m. Eastern Time on Wednesday, March 29, 2006.

Docket Numbers: ER06-710-000.

Applicants: New York Independent System Operator, Inc.

Description: New York Independent System Operator, Inc submits revisions to its open access transmission tariff & market administration and control area services tariff to allow three additional forms of credit support etc.

Filed Date: March 8, 2006.

Accession Number: 20060315-0019.

Comment Date: 5 p.m. Eastern Time on Wednesday, March 29, 2006.

Docket Numbers: ER06-711-000.

Applicants: Hunlock Creek Energy Ventures.

Description: Hunlock Creek Energy Ventures submits a Notice of



R--EOI - GNEP Technology Demonstration Program

Solicitation Number: DE-RP07-06ID14760

Agency: Department of Energy

Office: Federal Locations

Location: All DOE Federal Contracting Offices

Notice Type:

Modification/Amendment

Original Posted Date:

March 17, 2006

Posted Date:

May 16, 2006

Response Date:

-

Original Response Date:

March 31, 2006

Archiving Policy:

Automatic, on specified date

Archive Date:

September 30, 2006

Original Set Aside:

N/A

Set Aside:

N/A

Classification Code:

R -- Professional, administrative, and management support services

Synopsis:

Added: March 17, 2006 Modified: May 16, 2006 [Track Changes](#)

The U.S. Department of Energy (DOE) Office of Nuclear Energy is providing additional information relating to its March 17, 2006, Request for Expressions of Interest to perform Site Evaluation Studies in support of the Global Nuclear Energy Partnership (GNEP) Technology Demonstration Program. DOE is providing clarifying information regarding the scope of the GNEP Technology Demonstration Program and notification of the revised approach for awarding funding necessary to complete the site studies. DOE will make final decisions on the siting of GNEP Technology Demonstration Program projects after completion of the Environmental Impact Statement (EIS) for the GNEP Technology Demonstration Program. (Advance Notice of Intent, 71 FR 14505, March 22, 2006). The EIS will evaluate the reasonable siting alternatives, including the location(s) of technology demonstration projects at

DOE and potentially non-DOE sites. DOE desires to have a broad range of sites be considered for the technology demonstration projects, including non-DOE sites. The eligibility for award to conduct Site Evaluation Studies will be limited to domestic non-DOE sites. The restriction to non-DOE sites applies regardless of the entity that would intend to propose to conduct a project on a DOE site. The decision to limit awards to non-DOE sites does not affect the ultimate eligibility of DOE sites for the siting of projects under GNEP Technology Demonstration Program. DOE decided to restrict eligibility to non-DOE sites because DOE sites are generally well-characterized, and additional information required to support the development of the EIS can be obtained by tasking DOE contractors directly through their existing contracts. The anticipated requirements and deliverables for the site evaluation studies remain unchanged from the Request for Expressions of Interest. It is important for entities who are interested in being considered for hosting a technology demonstration project to be aware that the technology demonstration project(s) will require the storage of nuclear materials to support the demonstration facility activities. In particular, the demonstration of a spent nuclear fuel recycling facility will require the hosting site to accept and store spent nuclear fuel as feed into the separations process.

Contracting Office Address:

850 Energy Drive (MS-1221) Idaho Falls, ID

Point of Contact(s):

Wade Hillebrant, Contracting Officer, 208-526-0547, hillebtw@id.doe.gov; Janet Surrusco, Contract Specialist, 208-526-5477, surrusjk@id.doe.gov [Janet Surrusco, Contract Specialist](#)

Opportunity History

- **Original Synopsis**
 - Presolicitation*
 - Mar 17, 2006
 - 7:00 pm
- **Changed**
 - May 16, 2006
 - 12:00 am



United States Department of Energy

Office of Public Affairs

Washington, D.C. 20585

News Media Contact(s):

Craig Stevens, (202) 586-4940

For Immediate Release

August 3, 2006

DOE Continues Path Forward on Global Nuclear Energy Partnership

Department Announces \$20 Million for GNEP Siting Studies and Seeks Further Coordination with Industry

WASHINGTON, DC – The U.S. Department of Energy (DOE) today announced \$20 million to conduct detailed siting studies for public or commercial entities interested in hosting DOE’s Global Nuclear Energy Partnership (GNEP) facilities. Entities could qualify to receive up to \$5 million per site. DOE also announced that it is seeking expressions of interest to obtain input from U.S. and international nuclear industry on the feasibility of accelerating development and deployment of advanced recycling technologies by proceeding with commercial scale demonstration facilities, specifically a Consolidated Fuel Treatment Facility and an Advanced Burner Reactor.

“The siting studies and expressions of interest enable public and commercial entities to provide useful input to the Department’s decision-making process for siting and building GNEP facilities in the U.S.,” DOE Assistant Secretary for Nuclear Energy Dennis Spurgeon said. “These are important steps forward for the GNEP initiative.”

GNEP, launched earlier this year as part of the President’s Advanced Energy Initiative, aims to expand the use of nuclear energy to address the growing demand for energy. GNEP proposes private-public-international partnerships to develop advanced technologies to recycle used nuclear fuel, reduce wastes, and avoid misuse of nuclear materials.

Based on international and private sector response to GNEP, the Energy Department believes there are advanced technologies available to recycle used nuclear fuel that may be ready for deployment in conjunction with those currently under development by DOE. In light of this information, DOE is investigating the feasibility of accelerating development and deployment of advanced recycling technologies by proceeding with commercial demonstrations of the technologies.

The Department is considering a two-track approach to demonstrate technologies under GNEP. The first track involves deployment of commercial scale facilities for which advanced technologies are available now or in the near future. The second track would focus on further research and development on transmutation fuels (containing plutonium and minor actinides) technologies.

Under the first track, DOE is currently considering two commercial scale facilities: a Consolidated Fuel Treatment Center, capable of separating used fuel into its usable and waste components; and an Advanced Burner Reactor which would convert transuranics into shorter-lived radioisotopes while producing electricity.

Under the second track, an Advanced Fuel Cycle Facility announced earlier this year to support development of technologies to separate and fabricate the transmutation fuels for the Advanced Burner Reactor would be designed and directed through DOE's national laboratories and therefore, is not part of the siting studies or the industry-requested expressions of interest.

Congress allocated \$20 million in FY 2006 to DOE for siting studies of integrated recycling facilities, with a maximum of \$5 million available per site. To be eligible for funding for siting studies, the proposed site must meet minimum criteria related to size, hydrology, electricity capacity, population density, zoning, water availability, road access, and seismic stability.

Preference for award of funds for the siting studies may be given to sites where the applicant has demonstrated community and state support for the use of the site for GNEP facilities. Preference may also be given if the proposed site has the potential for supporting both facilities.

Applications for financial assistance grants must be received by September 7, 2006. DOE anticipates announcing applications it will fund by the end of October 2006. Winning applicants will have 90 days to complete the site studies and submit required information to DOE.

Information generated from the detailed siting studies may be used in an environmental impact statement (EIS) that will evaluate the potential environmental impacts from each proposed GNEP facility. At the conclusion of the EIS, DOE will make decisions about whether to move forward with the facilities, and if so, where to locate them. Both the Consolidated Fuel Treatment Center and the Advanced Burner Reactor could be located together.

Industry-submitted expressions of interest on the recycling technologies are due to the Energy Department by September 8, 2006. The Department believes that industry's input is valuable in considering the configuration of GNEP's closed fuel cycle. Information gained from the expressions of interest will be used to create Requests for Proposals for the proposed Consolidated Fuel Treatment Facility and the Advanced Burner Reactor.

A briefing to describe DOE's baseline plan and answer expression of interest-related questions will be held August 14, 2006, from 8:00 AM - 12:00 PM in the Washington, D.C. metropolitan area. DOE requests that interested parties who wish to attend the briefing send an email to GNEP_EOI_RSVP@nuclear.energy.gov.

The Financial Assistance Funding Opportunity Announcement for the siting studies and the Expressions of Interest may be found at: <http://gnep.gov/>. The specific location for the briefing on the request for expressions of interest also will be announced on the GNEP website, <http://gnep.gov/>. The Financial Assistance Funding Opportunity Announcement is also available at <http://www.grants.gov/>. The request for expressions of interest issued today will be published in the Federal Register on August 7, 2006.

Additional information on DOE's nuclear energy programs may be found at: <http://www.nuclear.gov/>.

U.S. Department of Energy, Office of Public Affairs, Washington, D.C.



Home > Find Grant Opportunities > Search Grant Opportunities > Search Results > Synopsis

APPLICANTS

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Global Nuclear Energy Partnership (GNEP) Siting Studies



Synopsis

Full Announcement

How to Apply

The synopsis for this grant opportunity is detailed below, following this paragraph. This synopsis *has been modified* and is not considered current. Please click on the Synopsis link above to display the current synopsis.

If you would like to receive notifications of changes to the grant opportunity click send me change notification emails. The only thing you need to provide for this service is your email address. No other information is requested.

Changed sections from the previous version of the synopsis are highlighted with a light grey background.

Any inconsistency between the original printed document and the disk or electronic document shall be resolved by giving precedence to the printed document.

Document Type:	Grants Notice
Funding Opportunity Number:	DE-PS07-06ID14760
Opportunity Category:	Discretionary
Posted Date:	Aug 03, 2006
Creation Date:	Aug 03, 2006
Current Closing Date for Applications:	Sep 07, 2006
Archive Date:	Dec 03, 2006
Funding Instrument Type:	Grant
Category of Funding Activity:	Energy
Category Explanation:	
Expected Number of Awards:	
Estimated Total Program Funding:	
Award Ceiling:	\$5,000,000
Award Floor:	\$0
CFDA Number:	81.121 -- Nuclear

Cost Sharing or Matching Requirement: No

Eligible Applicants

Others (see text field entitled "Additional Information on Eligibility" for clarification)

Additional Information on Eligibility:

All types of applicants are eligible to apply, except other Federal agencies, Federally Funded Research and Development Center (FFRDC) Contractors, and nonprofit organizations described in section 501(c)(4) of the Internal Revenue Code of 1986 that engaged in lobbying activities after December 31, 1995. Other eligibility requirements are provided in Part III, Section C, of this Financial Opportunity Announcement.

Agency Name

Idaho Field Office

Description

The U.S. Department of Energy (DOE), Idaho Operations Office (DOE-ID), is seeking applications from eligible entities to perform detailed siting studies. These studies will describe prospective locations to host one or both anticipated Global Nuclear Energy Partnership (GNEP) facilities. Information obtained from these studies, along with other relevant information, will be used to support the preparation of an Environmental Impact Statement (EIS) that will evaluate reasonable siting alternatives for the anticipated GNEP facilities. Selection of an application for award does not guarantee that the site will be evaluated in detail in the EIS, only that it will be considered for further evaluation. In addition, there may be other sites considered besides those for which applications are being submitted under this announcement. In the EIS, DOE intends to evaluate certain DOE sites as potential locations for the anticipated GNEP facilities. Selection for award under this announcement in no way guarantees that a proposed site will host a GNEP facility.

Link to Full Announcement

[Click here to view the Opportunity](#)

If you have difficulty accessing the full announcement electronically, please contact:

using this
link
ips_helpdesk@e-center.doe.gov
Wade Hillebrant
hillebtw@id.doe.gov
If you have any problems linking to the funding
opportunity please contact the IIPS HelpDesk

Latest Revision

Program Authority: 20 U.S.C. 1221e-3; 20 U.S.C. 6301 *et. seq.*

Dated: August 1, 2006.

Margaret Spellings,
Secretary of Education.

[FR Doc. E6-12780 Filed 8-4-06; 8:45 am]

BILLING CODE 4000-01-P

DEPARTMENT OF EDUCATION

Safe and Drug-Free Schools and Communities Advisory Committee

AGENCY: Office of Safe and Drug-Free Schools, Department of Education.

ACTION: Notice of open meeting.

SUMMARY: This notice sets forth the schedule and proposed agenda of an upcoming open meeting of the Safe and Drug-Free Schools and Communities Advisory Committee. The notice also describes the functions of the Committee. Notice of this meeting is required by section 10(a)(2) of the Federal Advisory Committee Act and is intended to notify the public of their opportunity to attend.

DATES: Monday, August 21, 2006, and Tuesday, August 22, 2006.

Time: August 21, 2006: 8:30 a.m. to 5 p.m.; August 22, 2006: 8 a.m. to 11:30 a.m.

ADDRESSES: The Committee will meet at the U.S. Department of Education, 400 Maryland Avenue, SW., Barnard Auditorium, Washington, DC.

FOR FURTHER INFORMATION CONTACT: Catherine Davis, Executive Director, Safe and Drug Free Schools and Communities Advisory Committee, U.S. Department of Education, 400 Maryland Avenue, SW., Room 1E110, Washington, DC 20202-3510; telephone: (202) 205-4169, or e-mail at OSDFSC@ed.gov.

SUPPLEMENTARY INFORMATION: The Committee was established to provide advice to the Secretary on Federal, State and local programs designated to create safe and drug-free schools, and on issues related to crisis planning. The focus for this meeting is the Safe and Drug Free Schools and Communities State Grants Programs, a formula grant program. The agenda will include panel presentations by invited speakers offering an overview of the program and looking at opportunities to strengthen and improve it in order to ensure that schools and communities are implementing the most effective programs and interventions, and are prepared to meet current and future needs of students. Further, the Committee will address strategies for accomplishing their mission as stated in the committee charter.

Individuals who will need accommodations for a disability in order to attend the meeting (e.g., interpreting services, assistive listening devices, or materials in alternative format) should notify Catherine Davis at OSDFSC@ed.gov or 202-205-4169 no later than August 7, 2006. We will attempt to meet requests for accommodations after this date but cannot guarantee their availability. The meeting site is accessible to individuals with disabilities.

Individuals interested in attending the meeting must register in advance because limited space is available at the meeting site. Please notify Catherine Davis at OSDFSC@ed.gov or 202-205-4169 of your intention to attend the meeting.

Opportunities for public comment are available on August 22 from 8:40-9:15 a.m. on a first come, first served basis. Comments presented at the meeting must be limited to 5 minutes in length. Written comments that accompany oral remarks are optional. Five copies are recommended and should be submitted to the committee Chairman.

Request for Written Comments: We invite the public to submit written comments relevant to the focus of the Advisory Committee. We would like to receive written comments from members of the public no later than April 30, 2007.

ADDRESSES: Submit all comments to the Advisory Committee using one of the following methods: 1. Internet. We encourage the public to submit comments through the Internet to the following address: OSDFSC@ed.gov. 2. Mail. The public may also submit your comments via mail to Catherine Davis, Office of Safe and Drug Free Schools, U.S. Department of Education, 400 Maryland Avenue, SW., Room 1E110, Washington, DC 20202. Due to delays in mail delivery caused by heightened security, please allow adequate time for the mail to be received.

Records are kept of all Committee proceedings and are available for public inspection at the Office of Safe and Drug Free Schools, U.S. Department of Education, 400 Maryland Avenue, SW., Room 1E110, Washington, DC 20202, from the hours of 9 a.m. to 5 p.m. Eastern Standard Time.

Ray Simon,

Deputy Secretary.

[FR Doc. 06-6710 Filed 8-4-06; 8:45 am]

BILLING CODE 4000-01-M

DEPARTMENT OF ENERGY

Notice of Request for Expressions of Interest in an Advanced Burner Reactor To Support the Global Nuclear Energy Partnership

AGENCY: Office of Nuclear Energy, Department of Energy.

ACTION: Notice of request for expressions of interest.

SUMMARY: Based upon feedback since the President of the United States announced the Global Nuclear Energy Partnership (GNEP) in February 2006, the U.S. Department of Energy (DOE) is seeking Expressions of Interest (EOI) from domestic and international industry in building an Advanced Burner Reactor (ABR). An ABR in the United States would establish a fast reactor capability to be used to transmute fuel and consume transuranic elements within the fuel, generate electricity, and support implementation of GNEP. DOE is also seeking to define the interest of industry to build upon their proven capabilities and participate in demonstrating spent nuclear fuel (SNF) recycling technologies that meet GNEP goals. This EOI will help inform DOE's GNEP Program as to those issues that industry and potential host sites consider important to the construction of sustainable, commercial-scale SNF recycling technologies that meet GNEP objectives. The information gained from this EOI will be used to create Requests for Proposals (RFP) for the proposed ABR.

DATES: Interested parties wishing to submit an EOI should do so in writing by September 8, 2006, to ensure their input is considered. A briefing for respondents to learn about DOE's baseline plan and answer EOI-related questions will be held on August 14, 2006, 8 am-12 pm, in the Washington, DC metropolitan area. The specific meeting location will be announced on the GNEP Web site, <http://www.gnep.energy.gov>. Please indicate your interest in attending the briefing by sending an e-mail indicating your intent to attend to GNEP_EOI_RSVP@nuclear.energy.gov. It is recognized that GNEP is moving forward on an aggressive schedule that will task all of the responders' abilities to provide quality information in a short period of time. DOE believes that GNEP can help to revitalize the U.S. nuclear industry and improve its global competitive position. Early participation by industry in this effort will greatly maximize GNEP's success.

FOR FURTHER INFORMATION CONTACT: By postal mail, Mr. John F. Gross, Mail

Stop: NE-2.4/Germantown, 1000 Independence Avenue, SW., Washington DC 20585-0119; by phone on 301-903-3918; by e-mail at GNEP_EOI_RSVP@nuclear.energy.gov.

ADDRESSES: Please send all hardcopy Expressions of Interest to Mr. John F. Gross, Mail Stop: NE-2.4/Germantown, U.S. Department of Energy, 1000 Independence Avenue, SW., Washington, DC 20585-0119. Electronic versions of the Expressions of Interest may be submitted in pdf (portable document format) format by e-mail to GNEP_EOI_RSVP@nuclear.energy.gov.

SUPPLEMENTARY INFORMATION:

Background

As part of President Bush's Advanced Energy Initiative, DOE has launched the Global Nuclear Energy Partnership (GNEP). The broad goals of GNEP are described in the Report to Congress—Spent Nuclear Fuel Recycling Program Plan issued May 2006, <http://www.gnep.energy.gov/pdfs/snfRecyclingProgramPanMay2006.pdf>.

A major element of GNEP is the development and deployment of advanced nuclear fuel recycling technologies. In general, advanced recycling technologies focus on three operations:

(1) Separate commercial LWR SNF into its usable and waste components.

Spent nuclear fuel contains uranium, transuranics (plutonium and other long-lived radioactive elements), and fission products. The fission products are waste and make up less than five percent of the used fuel. Buildup of fission products within the fuel inhibits nuclear fission reactions so the spent fuel must be replaced with fresh fuel for continued operation of a nuclear reactor. The transuranics and uranium in SNF would be separated from the fission products and then fabricated into new fuel for a fast reactor to consume the transuranics and uranium while simultaneously recovering their energy content. The SNF recycling program would use advanced separation processes (e.g., Uranium Extraction Plus or other comparable processes).

(2) Fabricate and recycle fast reactor fuel containing transuranic elements.

Fabricating, testing, and qualifying fast reactor fuel containing transuranic and actinide elements (i.e., transmutation fuel), obtained from recycled spent fast reactor fuel, is required to provide fresh fuel for the reactor. After the qualification of transmutation fuel, the GNEP facilities would demonstrate recycle of fast reactor transmutation fuel and eventually could include the

construction of a separate transmutation fuel separations and fabrication facility.

(3) Convert transuranics into shorter-lived radioisotopes while producing electricity.

Fast reactors produce high-energy neutrons that can fission long-lived transuranics, thus converting the transuranics into shorter-lived radioisotopes. As the transuranics are consumed, significant energy is released that can be used to produce electricity from material that would otherwise be considered waste and potentially require disposal in a geologic repository.

The Department initially announced an approach that would demonstrate technologies from the laboratory at engineering scale, prior to a second phase of commercialization. This approach is described in the Report to Congress—Spent Nuclear Fuel Recycling Program Plan issued May 2006, <http://www.gnep.energy.gov/pdfs/snfRecyclingProgramPanMay2006.pdf>.

Following the announcement of the GNEP Program by the President, a number of foreign governments and private companies expressed interest in cooperating in the near-term with the Department in the development and deployment of advanced recycling technologies. Some of these entities indicated they are pursuing similar technologies and, in some cases, these technologies may be ready for deployment prior to those currently under development by the Department. In light of this information, DOE seeks to determine the feasibility of accelerating the development and deployment of advanced recycling technologies that would enable commercial scale demonstrations that meet GNEP objectives. These demonstrations would utilize industry expertise to build the well-understood stages of advanced technology for the separation of LWR SNF, and the construction and operation of a fast reactor, while designing in the modules for incorporating group separation of actinides, transmutation fuel production, burning, and recycling operations.

This approach would involve two simultaneous tracks: (1) Deployment of commercial scale facilities for which advanced technologies are available now or in the near future and (2) further research and development on transmutation fuels technologies. This two-track approach could result in two commercial scale facilities, one of which is the subject of this EOI. These facilities are:

- Consolidated Fuel Treatment Center (CFTC)—a facility to separate the usable uranium and transuranics from spent

light-water reactor fuel for use in fabricating fast reactor fuel. During the second track the CFTC would be augmented or a separate transmutation fuel separations and fabrication facility would be constructed to separate and fabricate fast reactor transmutation fuel.

- Advanced Burner Reactor (ABR; subject of this EOI)—fast reactor to use transmutation fuel and consume transuranic elements within the fuel and generate electricity. The ABR is expected to be qualified with conventional fast reactor fuel. Subsequently, the ABR would be used to demonstrate the feasibility of recycling fast reactor transmutation fuel.

A third facility, the Advanced Fuel Cycle Facility (AFCF), will be designed and directed through DOE's national laboratories and will support development of the technologies required to separate and fabricate fast reactor transmutation fuel. The AFCF is not currently a subject of a Request for Expressions of Interest.

ABR Characteristics

DOE prefers to constrain as little as possible this EOI on the fuel cycle pathway to meet GNEP goals. Industry's input is valuable in considering the ultimate technical and pragmatic configuration of GNEP's closed fuel cycle. Some rough parameters for considering the ultimate characteristics of an ABR for the GNEP Technology Demonstration Program are set out below. They simply illustrate the type of information DOE is requesting in this EOI and respondents should not interpret the following information as a final decision from DOE on the ABR's characteristics or the overall demonstration program. The responses to this EOI may significantly influence subsequent RFPs.

Desired ABR General Characteristics

The ABR is essential to perform key functions in support of GNEP technology development objectives, including:

- Providing a fast neutron reactor necessary to consume the transuranic and actinide elements contained in transmutation fuel, i.e., fuel that is fabricated from uranium, plutonium, and other transuranics found in light water reactor (LWR) spent fuel.

- Generating and providing electricity to a power grid and contribute to commercial sustainability. Thus, the ABR would consume transuranic elements in fuel made possible by other key elements of the technology program: separation of LWR and fast reactor SNF into their usable components and the

fabrication of transmutation fuel from those components.

- Consuming transuranic elements separated from LWR SNF. See the Consolidated Fuel Treatment Center (CFTC) EOI for a discussion of that element.
- Ensuring that facility designs meet U.S. standards for safeguards and security.

Developing this complete system to support GNEP remains the central objective, drawing upon the expertise and capabilities of industry and international partners to achieve it. Further,

The ABR shall safely and reliably perform its power generation and transmutation functions. The ABR shall be capable of being licensed by the U.S. Nuclear Regulatory Commission (NRC) and operated in accordance with NRC regulations. The ABR shall incorporate design features and technologies to promote reliable system performance during normal operations and in response to postulated accident scenarios.

- The ABR shall be designed such that the future cost of electrical power generation using ABRs can be shown to be economical, with a goal of being competitive with Advanced Light Water Reactors, reasonably accounting for any externalities.

- ABRs shall be capable of generating power through the net destruction of transuranic material.

- The strategy for potential development of ABRs shall be made to be as affordable as possible without introducing undue risk into the development effort so as to place in serious jeopardy the potential to successfully achieve the ABR mission.

- To support timely implementation supportive of GNEP goals, the ABR system shall be capable of commercial deployment as early as possible.

Example Technical Characteristics of the ABR

- *Reactor neutron energy spectrum:* Fast.

- *Reactor technology:* Pool-type sodium cooled.

- *Power conversion technology:* Steam-Rankine or Super-critical CO₂ Brayton Cycle.

- *Reactor fuel type:* Oxide or metal based.

- *Reactor unit thermal power:* 500 MWt–2000 MWt.

- *Electrical power from reactor unit:* 200 MWe–800 MWe, generated electricity can be provided to a commercial power grid.

- For modular approach, technology for reactor unit should be scalable to

higher power levels up to at least 1 GWe.

- The ABR would have the capability of being started on conventional fast reactor driver fuel, transitioned to full core operation on transmutation fuel, and provide a capability for transmuted minor actinide targets prior to this transition.

- *Process storage capacity:* Sufficient process storage capacity should be included to support full-scale plant operations, including storage of spent fuel prior to recycling.

Geographic

- The reactor may be collocated with the SNF processing and fuel fabrication operations. This is not a requirement but rather a possibility.

Regulatory

- Must comply with all environmental protection laws and regulations.

- Must be capable of being licensed under NRC regulations applicable to demonstration operations on privately owned land regardless of where the demonstration is sited.

Content of EOI

The following items identify the information that DOE is requesting in this EOI. All respondents are encouraged to provide information beyond that requested if it is believed to be beneficial to their responses.

1. Level of Interest and Proposed Scope of Interest

Please describe how you believe DOE could accelerate successful demonstration of SNF integrated recycling technologies to advance the goals of GNEP. Describe the approach that you believe should be taken to accomplish this goal, including its benefits and risks, and describe your level of interest or potential participation. Also, provide a description of what you believe your approach does to advance the broad goals of GNEP (as described, for example, in the Background section). In particular, for the ABR, DOE is interested in:

a. What reactor unit size (MWt) would be proposed by industry to achieve the ABR mission, and what reactor size would be proposed for the demonstration program (e.g., sub-scale, full-size module)?

b. What set of reactor system technologies (e.g., basic type of fuel, reactor and power conversion technologies) is proposed to achieve the ABR mission?

c. What would the general fuel qualification approach and schedule be for initial driver fuel and transmutation fuel? Identify the basic in-reactor tests and facilities that would be used to support fuel qualification.

d. In addition to advanced reactor systems, what research and development (R&D) on near-term water-cooled reactor approaches could be pursued to support transmutation of transuranics consistent with the goals of GNEP?

2. Proposed Roles of Parties Involved

Please identify who you believe the parties to such a venture should include and the role of each party. Parties could include U.S. Government and foreign government agencies, state and local government agencies, nongovernmental organizations, domestic and foreign commercial firms (e.g., Architect & Engineering (A&E) firms, component manufacturers, electric utility companies, etc.) or any other entity you may identify that fits into your proposed solution. Your statement should clearly identify the role each party would play in ensuring the success of your proposition, whether direct or indirect. Examples of roles include, but are not limited to, providing financing, guaranteeing financing, A&E services, construction, facility operations, program or project management, regulatory compliance support, and hardware vendor. Provide an assessment of the benefit to the U.S. Government and GNEP of your proposed parties and their roles. Also, provide a description of the benefits that would accrue to each of the parties in this venture. Benefits could include, but are not limited to, financial gain, intellectual property, market position, facilities, education, and advancing policy goals.

3. Resources

For each entity you have identified in Item 2 above, provide specifics describing the resources each party could provide to ensure the program's success. These resources may include, but are not limited to, financial, existing or new facilities, personnel (include a description of the type of personnel, e.g., technical, management, regulatory, financial, etc.), intellectual property, and leased equipment.

4. Proposed Contractual Vehicle

Please provide a description of the contractual vehicle(s) you feel should be employed in furtherance of your approach. Examples may include, but are not limited to, contracts, financial assistance, Cooperative Research and

Development Agreements, loan guarantees, other transactional arrangements. Please limit your suggestions to those contractual authorities already granted to DOE or other government agencies you identify.

5. Areas of Technology Development Required for Potential Commercialization

Please identify what technical areas associated with your approach would benefit from additional research, development or demonstration (RD&D) activities, how and to what extent this RD&D would mitigate technical or technology risk, estimated timeframes to accomplish this RD&D, parties performing the activities, and other technical issues that need to be addressed.

6. Government Furnished Data/Technology/Equipment

Describe what, if any, government furnished data, technology, or equipment you would require to accomplish your defined approach. State whether you have any existing rights or license for the use of the data or technology, and if not, how you would pursue acquiring such rights.

Confidentiality

Confidential or business sensitive information contained in the submission must be identified and marked accordingly. DOE will protect this information from public disclosure to the extent permitted by law.

This EOI is not a formal solicitation requesting proposals and does not represent a commitment by the Government to award a contract. The Government does not intend to formally respond to information submitted in response to this EOI. The Government is not responsible for costs incurred to submit a response to this EOI, conducting other activities associated with pre-solicitation planning, or submitting a proposal in response to a solicitation, if issued.

Issued in Washington, DC, on July 31, 2006.

Dennis R. Spurgeon,

Assistant Secretary for Nuclear Energy, Office of Nuclear Energy.

[FR Doc. E6-12747 Filed 8-4-06; 8:45 am]

BILLING CODE 6450-01-P

DEPARTMENT OF ENERGY

Notice of Request for Expressions of Interest in a Consolidated Fuel Treatment Center To Support the Global Nuclear Energy Partnership

AGENCY: Office of Nuclear Energy, Department of Energy.

ACTION: Notice of request for expressions of interest.

SUMMARY: Based upon feedback since the President of the United States announced the Global Nuclear Energy Partnership (GNEP) in February 2006, the U.S. Department of Energy (DOE) is seeking Expressions of Interest (EOI) from domestic and international industry in building spent nuclear fuel recycling and transmutation fuel fabrication capabilities. DOE contemplates locating these capabilities together in a Consolidated Fuel Treatment Center (CFTC) and seeks expressions of interest from potential domestic host sites. DOE is also seeking to define the interest of industry to build upon their proven capabilities and participate in demonstrating spent nuclear fuel (SNF) recycling technologies that meet GNEP goals. This EOI will help inform DOE's GNEP Program as to those issues that industry and potential host sites consider important to the ultimate construction of sustainable, commercial-scale SNF recycling technologies that meet GNEP objectives. The information gained from this EOI will be used to create Requests for Proposals (RFP) for the proposed CFTC.

DATES: Interested parties wishing to submit an EOI should do so in writing by September 8, 2006, to ensure their input is considered. A briefing for respondents to learn about DOE's baseline plan and answer EOI-related questions will be held on August 14, 2006, 8 a.m.–12 p.m., in the Washington, DC metropolitan area. The specific meeting location will be announced on the GNEP Web site, <http://www.gnep.energy.gov>. Please indicate your interest in attending the briefing by sending an e-mail indicating your intent to attend to GNEP_EOI_RSVP@nuclear.energy.gov. It is recognized that GNEP is moving forward on an aggressive schedule that will task all of the responders' abilities to provide quality information in a short period of time. DOE believes that GNEP can help to revitalize the U.S. nuclear industry and improve its global competitive position. Early participation by industry in this effort will greatly maximize GNEP's success.

FOR FURTHER INFORMATION CONTACT: By postal mail, Mr. John F. Gross, Mail Stop: NE-2.4/Germantown, 1000 Independence Avenue, SW., Washington, DC 20585-0119; by phone on 301-903-3918; by e-mail at GNEP_EOI_RSVP@nuclear.energy.gov.

ADDRESSES: Please send all hardcopy Expressions of Interest to Mr. John F. Gross, Mail Stop: NE-2.4/Germantown, U.S. Department of Energy, 1000 Independence Avenue, SW., Washington, DC 20585-0119. Electronic versions of the Expressions of Interest may be submitted in pdf (portable document format) format by e-mail to GNEP_EOI_RSVP@nuclear.energy.gov.

SUPPLEMENTARY INFORMATION:

Background

As part of President Bush's Advanced Energy Initiative, DOE has launched the Global Nuclear Energy Partnership (GNEP). The broad goals of GNEP are described in the Report to Congress—Spent Nuclear Fuel Recycling Program Plan issued May 2006, <http://www.gnep.energy.gov/pdfs/snfRecyclingProgramPanMay2006.pdf>.

A major element of GNEP is the development and deployment of advanced nuclear fuel recycling technologies. In general, advanced recycling technologies focus on three operations:

(1) Separate commercial LWR SNF into its usable and waste components.

Spent nuclear fuel contains uranium, transuranics (plutonium and other long-lived radioactive elements), and fission products. The fission products are waste and make up less than five percent of the used fuel. Buildup of fission products within the fuel inhibits nuclear fission reactions so the spent fuel must be replaced with fresh fuel for continued operation of a nuclear reactor. The transuranics and uranium in SNF would be separated from the fission products and then fabricated into new fuel for a fast reactor to consume the transuranics and uranium while simultaneously recovering their energy content. The SNF recycling program would use advanced separation processes (e.g., Uranium Extraction Plus or other comparable processes).

(2) Fabricate and recycle fast reactor fuel containing transuranic elements.

Fabricating, testing, and qualifying fast reactor fuel containing transuranic and actinide elements (i.e., transmutation fuel), obtained from recycled spent fast reactor fuel, is required to provide fresh fuel for the reactor. After the qualification of transmutation fuel, the GNEP facilities would demonstrate recycle of fast

reactor transmutation fuel and eventually could include the construction of a separate transmutation fuel separations and fabrication facility.

(3) Convert transuranics into shorter-lived radioisotopes while producing electricity.

Fast reactors produce high-energy neutrons that can fission long-lived transuranics, thus converting the transuranics into shorter-lived radioisotopes. As the transuranics are consumed, significant energy is released that can be used to produce electricity from material that would otherwise be considered waste and potentially require disposal in a geologic repository.

The Department initially announced an approach that would demonstrate technologies from the laboratory at engineering scale, prior to a second phase of commercialization. This initial approach is described in the Report to Congress—Spent Nuclear Fuel Recycling Program Plan issued May 2006, <http://www.gnep.energy.gov/pdfs/snfRecyclingProgramPlanMay2006.pdf>.

Following the announcement of the GNEP Program by the President, a number of foreign governments and private companies expressed interest in cooperating in the near-term with the Department in the development and deployment of advanced recycling technologies. Some of these entities indicated they are pursuing similar technologies and, in some cases, these technologies may be ready for deployment prior to those currently under development by the Department. In light of this information, DOE seeks to determine the feasibility of accelerating the development and deployment of advanced recycling technologies that would enable commercial scale demonstrations that meet GNEP objectives. These demonstrations would utilize industry expertise to build the well-understood stages of advanced technology for the separation of LWR SNF, and the construction and operation of a fast reactor, while designing in the modules for incorporating group separation of actinides, transmutation fuel production, burning, and recycling operations.

This approach would involve two simultaneous tracks: (1) Deployment of commercial scale facilities for which advanced technologies are available now or in the near future and (2) further research and development on transmutation fuels technologies. This two-track approach could result in two commercial scale facilities, one of which is the subject of this EOI. These facilities are:

- Consolidated Fuel Treatment Center (CFTC; subject of this EOI)—a facility to separate the usable uranium and transuranics from spent light-water reactor fuel for use in fabricating fast reactor fuel. During the second track the CFTC would be augmented or a separate transmutation fuel separations and fabrication facility would be constructed to separate and fabricate fast reactor transmutation fuel.

- Advanced Burner Reactor (ABR)—fast reactor to use transmutation fuel and consume transuranic elements within the fuel and generate electricity. The ABR is expected to be qualified with conventional fast reactor fuel. Subsequently, the ABR would be used to demonstrate the feasibility of recycling fast reactor transmutation fuel.

A third facility, the Advanced Fuel Cycle Facility (AFCF), will be designed and directed through DOE's national laboratories and will support development of the technologies required to separate and fabricate fast reactor transmutation fuel. The AFCF is not currently a subject of a Request for Expressions of Interest.

CFTC Characteristics

DOE prefers to constrain as little as possible this EOI on the fuel cycle pathway to meet GNEP goals. Industry's input is valuable in considering the ultimate technical and pragmatic configuration of GNEP's closed fuel cycle. Some rough parameters for considering the ultimate characteristics of a CFTC facility for the GNEP Technology Demonstration Program are set out below. They simply illustrate the type of information DOE is requesting in this EOI and respondents should not interpret the following information as a final decision from DOE on the CFTC's characteristics or the overall demonstration program. The responses to this EOI may significantly influence subsequent RFPs.

Desired CFTC General Characteristics

The complete CFTC would be designed to perform several key functions in support of GNEP technology development objectives, including:

- Separating reusable uranium and transuranics from spent light water reactor (LWR) fuel for use in fabricating fast reactor driver fuel. (An additional facility designed and directed through a DOE national laboratory will support development of the technologies required to separate and fabricate fast reactor transmutation fuel, i.e., fuel that is fabricated from uranium, plutonium, and other transuranics found in LWR spent fuel.)

- Demonstrating the separation of LWR and fast reactor SNF into their usable components and the fabrication of transmutation fuel from those components.

- Consuming transuranic elements in a fast reactor. See the Advanced Burner Reactor (ABR) EOI for a discussion of that element.

- Ensuring that facility designs meet U.S. standards for safeguards and security.

Developing this complete system to support GNEP remains the central objective, drawing upon the expertise and capabilities of industry and international partners to achieve it. Further,

- The CFTC shall safely and reliably perform its LWR spent fuel process storage and separations functions as well as providing safe and reliable ABR driver fuel fabrication capabilities. The CFTC shall be capable of being licensed by the U.S. Nuclear Regulatory Commission (NRC) and operated in accordance with NRC regulations. The CFTC shall incorporate design features and technologies to promote reliable system performance during normal operations and in response to postulated accident scenarios.

- The CFTC shall demonstrate improved spent fuel separations technologies. This shall be accomplished in a process whose end products are not pure plutonium or other weapons-grade fissile material. The spent fuel separations technology will be further enhanced by advanced safeguards and security monitoring technology.

- The CFTC will produce, through spent fuel separations, high-purity uranium for reuse as reactor fuel or disposal as low-level waste, transuranic fuel feed material for transmutation in a fast reactor, and fission products with reduced heat generation and radiotoxicity for long-term geologic disposal.

- The CFTC shall be designed such that the future cost of spent fuel receipt, separations process, product management, and fuel fabrication capabilities can be shown as an efficient component of an economical fuel cycle. It is desirable that the material remain throughout in as low a category as possible for attractiveness for use in a nuclear weapon and for safeguarding purposes.

- The CFTC shall fabricate the driver fuel (i.e., fuel for the initial startup core and subsequent refueling of the core in advance of the availability of transmutation fuel) for the ABR to initially generate power.

- CFTC technologies shall be capable of commercial deployment.

Example of Technical Characteristics of the CFTC

- Process storage capacity: Sufficient storage capacity should be included to support full-scale plant operation, including storage of spent fuel prior to separations as well as storage of the resulting separated material.

- Spent fuel separations throughput: Able to be increased to approximately 2,000 to 3,000 metric tons per year to support commercial operation.

- Separations technology: UREX+1a where major products include high-purity uranium, cesium and strontium, transuranics, spent fuel cladding hulls, and fission products. Alternative separation technologies with different product streams (e.g., different actinide separation efficiencies or distributions) may be proposed.

- Waste disposition strategies: Waste minimization is a priority and should focus on reducing radiotoxicity, half-life, heat generation, and minimize criticality concerns.

- Fast reactor driver fuel type: Oxide or metal based (depends on fuel type selected in related GNEP ABR EOI).

Geographic

- The SNF processing and fuel fabrication operations may be collocated with ABR.

- Existing DOE or commercial facilities or new facilities may be addressed in the response.

Regulatory

- Must comply with all environmental protection laws and regulations.
- Must be capable of being licensed under NRC regulations applicable to demonstration operations on privately owned land regardless of where the demonstration is sited.

Content of EOI

The following items identify the information that DOE is requesting in this EOI. All respondents are encouraged to provide information beyond that requested if it is believed to be beneficial to their responses.

1. Level of Interest and Proposed Scope of Interest

Please describe how you believe DOE could accelerate successful demonstration of SNF integrated recycling technologies to advance the goals of GNEP. Describe the approach that you believe should be taken to accomplish this goal, including its benefits and risks, and describe your

level of interest or potential participation. Also, provide a description of what you believe your approach does to advance the broad goals of GNEP (as described, for example, in the Background section). In particular, for the CFTC, DOE is interested in:

a. What LWR spent fuel process storage capabilities, separations technology and throughput (initial and final), and fast sodium reactor driver fuel fabrication system characteristics would be proposed to achieve the CFTC mission?

b. What set of separations process technologies are sufficiently mature to implement immediately and what proposed technologies or components require additional developmental work (e.g., advanced centrifugal contactors, advanced monitoring instrumentation) to achieve the CFTC mission?

c. What are the key elements of the proposal's product and waste management strategies? Are there near-term strategies using existing technology as well as long-term strategies for improved waste minimization and product form as well as storage and disposition technologies envisioned? If so, specify the key elements of future improvements, their relative costs and their benefits.

d. In addition to advanced separation processes, what technology development could be pursued to support spent fuel recycling consistent with the goals of GNEP?

2. Proposed Roles of Parties Involved

Please identify who you believe the parties to such a venture should include and the role of each party. Parties could include U.S. Government and foreign government agencies, state and local government agencies, nongovernmental organizations, domestic and foreign commercial firms (e.g., Architect & Engineering (A&E) firms, component manufacturers, electric utility companies, etc.) or any other entity you may identify that fits into your proposed solution. Your statement should clearly identify the role each party would play in ensuring the success of your proposition, whether direct or indirect. Examples of roles include, but are not limited to, providing financing, guaranteeing financing, A&E services, construction, facility operations, program or project management, regulatory compliance support, and hardware vendor. Provide an assessment of the benefit to the U.S. Government and GNEP of your proposed parties and their roles. Also, provide a description of the benefits that would accrue to each of the parties in

this venture. Benefits could include, but are not limited to, financial gain, intellectual property, market position, facilities, education, and advancing policy goals.

3. Resources

For each entity you have identified in Item 2 above, provide specifics describing the resources each party could provide to ensure the program's success. These resources may include, but are not limited to, financial, existing or new facilities, personnel (include a description of the type of personnel, e.g., technical, management, regulatory, financial, etc.), intellectual property, and leased equipment.

4. Proposed Contractual Vehicle

Please provide a description of the contractual vehicle(s) you feel should be employed in furtherance of your approach. Examples may include, but are not limited to, contracts, financial assistance, Cooperative Research and Development Agreements, loan guarantees, other transactional arrangements. Please limit your suggestions to those contractual authorities already granted to DOE or other government agencies you identify.

5. Areas of Technology Development Required for Potential Commercialization

Please identify what technical areas associated with your approach would benefit from additional research, development or demonstration activities, how and to what extent this research and development (R&D) would mitigate technical or technology risk, estimated timeframes to accomplish this R&D, parties performing the activities, and other technical issues that need to be addressed.

6. Government Furnished Data/Technology/Equipment

Describe what, if any, government furnished data, technology, or equipment you would require to accomplish your defined approach. State whether you have any existing rights or license for the use of the data or technology, and if not, how you would pursue acquiring such rights.

Confidentiality

Confidential or business sensitive information contained in the submission must be identified and marked accordingly. DOE will protect this information from public disclosure to the extent permitted by law.

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Government to award a contract. The Government does not intend to formally respond to information submitted in response to this EOI. The Government is not responsible for costs incurred to submit a response to this EOI, conducting other activities associated with pre-solicitation planning, or submitting a proposal in response to a solicitation, if issued.

Issued in Washington, DC, on July 31, 2006.

Dennis R. Spurgeon,

Assistant Secretary for Nuclear Energy, Office of Nuclear Energy.

[FR Doc. E6-12646 Filed 8-4-06; 8:45 am]

BILLING CODE 6450-01-P

DEPARTMENT OF ENERGY

Biological and Environmental Research (BER); Federal Interagency Steering Committee on Multimedia Environmental Modeling

AGENCY: Office of Science; Biological and Environmental Research (BER), Department of Energy, (DOE).

ACTION: Notice of open meeting.

SUMMARY: The annual public meeting of the Federal Interagency Steering Committee on Multimedia Environmental Modeling (ISCMEM) will convene to discuss new operational initiatives for FY 2007 as a result of the revised Memorandum of Understanding (MOU) among the participating agencies.

DATES: August 24, 2006. Time: 9:30 a.m. to 5 p.m.

ADDRESSES: The American Geophysical Union (AGU) headquarters building, 2000 Florida Avenue, NW., Washington, DC 20009.

FOR FURTHER INFORMATION CONTACT:

Inquiries and notice of intent to attend the meeting may be faxed or E-mailed to: Dr. Robert T. Anderson, ISCMEM Chair, Office of Biological and Environmental Research SC-23.4 / Germantown Building, U.S. Department of Energy, 1000 Independence Avenue, SW., Washington, DC 20585-1290. Tel: 301-903-5549. Fax: 301-903-4154. Todd.Anderson@science.doe.gov.

SUPPLEMENTARY INFORMATION:

Background: Nine Federal agencies have been cooperating under a MOU on the research and development of multimedia environmental models for the last 5 years. The MOU establishes a framework for facilitating cooperation and coordination among the following agencies (the specific research organization within the agency is in parenthesis): U.S. Army Corps of

Engineers (Engineer Research and Development Center); U.S. Department of Agriculture (Agricultural Research Service); U.S. Department of Agriculture (Natural Resources Conservation Service); U.S. Department of Energy (Office of Biological and Environmental Research); U.S. Environmental Protection Agency; U.S. Geological Survey; U.S. National Oceanographic and Atmosphere Administration; and U.S. Nuclear Regulatory Commission (Office of Nuclear Regulatory Research); U.S. Bureau of Reclamation. These agencies are cooperating and coordinating in the research and development (R&D) of multimedia environmental models, software and related databases, including development, enhancements, applications and assessments of site specific, generic, and process-oriented multimedia environmental models as they pertain to human and environmental health risk assessment. Multimedia model development and simulation supports interagency interests in risk assessment, uncertainty analyses, water supply issues and contaminant transport. This MOU was just renewed by member agencies ensuring another 5 years of continuing collaboration and cooperation among the participating agencies in these areas.

Purpose of the Public Meeting: The annual public meeting provides an opportunity for the scientific community, other Federal and State agencies, and the public to be briefed on ISCMEM activities and their initiatives for the upcoming year, and to discuss technological advancements in multimedia environmental modeling.

Proposed Agenda: The ISCMEM Chair will open the meeting with a brief overview of the goals of the MOU, the activities of ISCMEM and changes in organizational operations as a result of the revised and renewed ISCMEM MOU. This introduction will be followed by series of invited presentations throughout the morning session focusing on topics of mutual interest to ISCMEM participants. The afternoon session will be largely devoted to discussing future goals and projects that will set the stage for collaborative interactions among ISCMEM participating agencies for the next 5 years. A detailed agenda with presentation titles and speakers will be posted on the MOU public Web site: <http://www.ISCMEM.org>.

Meeting Access: The headquarters of the American Geophysical Union (AGU) is located at 2000 Florida Avenue, NW., Washington, DC 20009. The most convenient transportation to the meeting venue is via Metro. Please take

Metro to the Dupont Circle Metro stop on the Red Line. Take the "Q" Street exit of the Dupont Circle station. Upon exiting the Metro station proceed North on Connecticut Avenue for about 3 blocks. Turn right onto Florida Avenue for about one-half block. AGU building is on the right. Please inform the security personnel upon entering the building that you are attending the public meeting on multimedia environmental modeling. The meeting room is on the ground floor to your left as you enter the building.

Robert T. Anderson,

Chair, Federal Interagency Steering Committee on Multimedia Environmental Modeling.

[FR Doc. E6-12748 Filed 8-4-06; 8:45 am]

BILLING CODE 6450-01-P

DEPARTMENT OF ENERGY

Energy Information Administration

Continuation of Forms EIA-182, "Domestic Crude Oil First Purchase Report," and EIA-856, "Monthly Foreign Crude Oil Acquisition Report"

AGENCY: Energy Information Administration, Department of Energy.

ACTION: Notice of Continuation of Forms EIA-182, "Domestic Crude Oil First Purchase Report," and EIA-856, "Monthly Foreign Crude Oil Acquisition Report."

SUMMARY: The Energy Information Administration (EIA) will continue the monthly collection of data on the Forms EIA-182, "Domestic Crude Oil First Purchase Report," and EIA-856, "Monthly Foreign Crude Oil Acquisition Report," through the reporting of October 2006 data that is due to EIA by November 30, 2006.

DATES: Data collection on Forms EIA-182 and EIA-856 will continue through November 30, 2006.

ADDRESSES: Inquiries about the continuation of Forms EIA-182 and EIA-856 should be directed to Susan Harris at the Energy Information Administration, EI-42, Forrestal Building, Mail Stop: 2E-050, U.S. Department of Energy, Washington, DC 20585, telephone: (202) 586-8384, E-mail address: susan.harris@eia.doe.gov or fax number: (202) 586-1076.

FOR FURTHER INFORMATION CONTACT: Requests for additional information should be directed to Susan Harris at the address listed above.

SUPPLEMENTARY INFORMATION:
I. Background

II. Current Actions



United States Department of Energy

Office of Public Affairs

Washington, D.C. 20585

News Media Contact(s):
Craig Stevens, (202) 586-4940

For Immediate Release
November 29, 2006

Department of Energy Selects Recipients of GNEP Siting Grants

Eleven sites to be analyzed for potential nuclear recycling facilities

WASHINGTON, DC – The U.S. Department of Energy (DOE) today announced that 11 commercial and public consortia have been selected to receive up to \$16 million in grants, subject to negotiation, to conduct detailed siting studies for integrated spent fuel recycling facilities under the Global Nuclear Energy Partnership (GNEP) initiative. DOE will award the grants early next year after negotiations are completed with prospective awardees.

“As our economy grows so will the need for reliable, emissions-free energy generation. Nuclear energy can help meet that need and GNEP can do it in a way that maximizes the benefit of nuclear fuel while minimizing the risk of nuclear proliferation,” DOE Assistant Secretary for Nuclear Energy Dennis Spurgeon said. “That is why we are pleased that so many communities across the country are interested in hosting the initial facilities necessary to support this exciting project. These selections are an important initial step in proceeding to evaluate and select locations to host GNEP facilities.”

Of the 11 sites located throughout the country, six are currently owned and operated by DOE. The study sites and sponsors are:

- | | |
|--------------------------------------|---|
| 1. Atomic City, ID | EnergySolutions, LLC |
| 2. Barnwell, SC | EnergySolutions, LLC |
| 3. Hanford Site, WA | Tri-City Industrial Development Council/Columbia Basin Consulting Group |
| 4. Hobbs, NM | Eddy Lea Energy Alliance |
| 5. Idaho National Laboratory, ID | Regional Development Alliance, Inc. |
| 6. Morris, IL | General Electric Company |
| 7. Oak Ridge National Laboratory, TN | Community Reuse Organization of East Tennessee |

- | | |
|--|--|
| 8. Paducah Gaseous Diffusion Plant, KY | Paducah Uranium Plant Asset Utilization, Inc. |
| 9. Portsmouth Gaseous Diffusion Plant, OH | Piketon Initiative for Nuclear Independence, LLC |
| 10. Roswell, NM | EnergySolutions, LLC |
| 11. Savannah River National Laboratory, SC | Economic Development Partnership of Aiken and Edgefield Counties |

The grantees will perform detailed siting studies related to hosting one or both of the Consolidated Fuel Treatment Center and the Advanced Burner Reactor. The subsequent awards will be for a 90-day period of performance to complete a detailed site characterization study of each sponsored site. Congress provided up to \$20 million in FY 2006 for integrated spent fuel recycling facilities siting studies. The remaining funds will be held in reserve to potentially fund supplemental activities if required.

Information generated from the detailed siting studies of non-DOE sites is expected to address a variety of site-related matters, including site and nearby land uses; demographics; aquatic and riparian ecological communities; terrestrial plant and animal habitat; threatened or endangered species; historical, archaeological and cultural resources; geology and seismology; weather and climate; and regulatory and permitting requirements. Information requirements for the DOE sites are more limited due to the availability of previous studies.

The information may also be used in the environmental impact statement (EIS) that will evaluate the potential environmental impacts from each proposed GNEP facility. At the conclusion of the EIS, DOE will make decisions about whether to move forward with the facilities, and if so, where to locate them.

Fourteen applications were originally submitted, and twelve were selected to receive a comprehensive merit review under the criteria listed in the Financial Assistance Funding Opportunity Announcement (FOA) issued in August 2006. Two of the twelve recently decided to collaborate and team, as they proposed the same site for study.

An advanced nuclear fuel recycling center contains facilities where usable uranium and transuranics are separated from spent light water reactor fuel for use in producing new fuel that can be reused in a power reactor. An advanced recycling reactor is a fast reactor that would demonstrate the ability to reuse and consume materials recovered from spent nuclear fuel, including long-lived elements that would otherwise have to be disposed of in a geologic repository. Both facilities could be located at the same site.

The development and deployment of advanced nuclear fuel recycling facilities is a major element of GNEP, part of President Bush's Advanced Energy Initiative. In general, these technologies focus on separating commercial light water reactor Spent Nuclear Fuel (SNF) into its usable and waste components, fabricating and recycling fast reactor fuel containing transuranic elements from the usable components of SNF, and converting

those transuranics into shorter-lived radioisotopes while producing electricity in an advanced recycling reactor.

For more information on GNEP, visit: <http://www.gnep.gov/>. Additional information on DOE's nuclear energy program may be found on <http://www.nuclear.energy.gov/>.

U.S. Department of Energy, Office of Public Affairs, Washington, D.C.

Bde, 25th ID(L) to an SBCT and home station it in Hawaii.

The 2nd Bde, 25th ID(L) began its transformation to the 5th SBCT shortly after completion of the 2004 FEIS and ROD. As of November 2006, the Brigade has completed about 60% of the training required to achieve combat efficiency and has received about 70% of its equipment. The Brigade is scheduled to complete its training and equipment fielding in late 2007. The Brigade must be available for deployment to meet joint force and on-going operational requirements in November of 2007.

The National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. & et seq.) and the Army NEPA procedures, Environmental Analysis of Army Action (32 CFR Part 651) require the Army to consider the environmental impacts of their actions and alternatives, and to solicit the views of the public, so they can make an informed final decision regarding how to proceed. In particular, the Court concluded the Army had a duty under the National Environmental Policy Act (NEPA) to consider locations other than Hawaii for the 5th SBCT.

The proposed action would result in the permanent home stationing of the 5th SBCT. Evaluations will include strategic military and National defense and security considerations. Evaluations will include strategy military and National defense and security consideration, to include which locations, if selected, are capable of supporting the National Security Strategy (2006), the Quadrennial Defense Review (QDR, 2006), National Military Strategy, and the Army Campaign Plan (ACP). These strategic guidance documents have been incorporated into the Army's decision making process. All of these individual components will be considered in the 5th SBCT stationing SEIS to ensure a range of reasonable alternatives are carried forward which support the National Security Strategy (2006). Based on public scoping and factors discussed above, the Army will refine its range of reasonable alternatives to the extent possible to accommodate both mission requirements and Soldier and family quality of life. In reaching this decision the Army will assess and consider public concerns. Analysis will focus on the Purpose of and Need for the Proposed Action. The analysis will evaluate each installation's capability to support the stationing and training of the 5th SBCT in conjunction with meeting the requirements set forth in the National Security Strategy (2006) and its supporting Army initiatives and plans.

The SEIS will assess, consider, and compare the direct, indirect, and cumulative environmental effects from the permanent stationing of the 5th SBCT in Hawaii and reasonable alternate locations. These locations could include permanent stationing of the 5th SBCT in Hawaii, at Fort Richardson and Donnelly Training Area in Alaska, Fort Lewis and Yakima Training Center in Washington, Fort Carson and Piñon Canyon Maneuver site in Colorado, or Fort Knox in Kentucky. The no action alternative is to return the 2–25th BDE(L) to its original structure as it existed prior to its transformation. Under established Army Force Structure the no-action alternative is not feasible, as the ACP directed that all Brigades be transformed to expeditionary modular standardized configurations. Only three types of expeditionary modular BCTs exist; Heavy, Infantry and Stryker.

The primary environmental issues to be analyzed will include those identified as the result of the scoping process and installation-specific considerations. These issues may include impacts to soil, water and air quality, airspace conflicts, natural and cultural resources, land use compatibility, noise, socio-economics, environmental justice, energy use, human health and safety considerations, and infrastructure and range/training requirements.

Scoping and Public Comment: All interested members of the public, including native communities and Federally Recognized Indian Tribes (to include Alaska Native Tribes), Native Hawaiian groups, and Federal, State, and local agencies are invited to participate in the scoping process for the preparation of this SEIS. Written comments identifying environmental issues, concerns and opportunities to be analyzed in the SEIS will be accepted following publication of the Notice of Intent in the **Federal Register**. There will be a 45-day public comment period following publication of the Notice of Intent in the **Federal Register**. Scoping meetings will be held at the installations identified as potentially reasonable alternative home stationing sites. Notification of the times and locations for the scoping meetings will be published in local newspapers. The scoping process will help identify environmental issues, concerns and opportunities to be analyzed in the SEIS.

Dated: December 28, 2006.

Addison D. Davis, IV,

Deputy Assistant Secretary of the Army, (Environment, Safety, and Occupational Health).

[FR Doc. 06–9966 Filed 1–3–07; 8:45 am]

BILLING CODE 3710–08–M

DEPARTMENT OF ENERGY

Notice of Intent To Prepare a Programmatic Environmental Impact Statement for the Global Nuclear Energy Partnership

AGENCY: Department of Energy.

ACTION: Notice of Intent.

SUMMARY: The Department of Energy (DOE) intends to prepare a Programmatic Environmental Impact Statement for the Global Nuclear Energy Partnership initiative (GNEP PEIS) pursuant to the National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S.C. 4321 *et seq.*), and the Council on Environmental Quality's (CEQ's) and DOE's regulations implementing NEPA (40 CFR Parts 1500–1508 and 10 CFR Part 1021, respectively). GNEP would encourage expansion of domestic and international nuclear energy production while reducing nuclear proliferation risks, and reduce the volume, thermal output, and radiotoxicity of spent nuclear fuel (spent fuel or SNF) before disposal in a geologic repository.

Domestically, GNEP involves a programmatic proposal as well as project-specific proposals. The programmatic proposal is to begin to recycle spent fuel and destroy the long-lived radioactive components of that spent fuel. Toward this end, GNEP includes project-specific proposals to construct and operate three facilities. The proposed nuclear fuel recycling center would separate the SNF into its reusable components and waste components and manufacture new nuclear fuel using reusable components that still have the potential for use in nuclear power generation. The proposed advanced recycling reactor would destroy long-lived radioactive elements in the fuel while generating electricity. The advanced fuel cycle research facility would perform research into SNF recycling processes and other aspects of advanced nuclear fuel cycles. The GNEP PEIS will consider 13 sites as possible locations for one or more of these facilities, as well as alternative technologies to be used in these facilities. Internationally, GNEP involves two programmatic initiatives. First, the United States would cooperate with countries that have advanced

nuclear programs to supply nuclear fuel services to countries that refrain from pursuing enrichment or recycling facilities to make their own nuclear fuel. Such countries would have no need to develop the technology and infrastructure to enrich uranium or separate plutonium, both of which have application in the production of nuclear weapons. Second, the United States would promote proliferation-resistant nuclear power reactors suitable for use in developing economies.

The GNEP PEIS will analyze the potential environmental impacts of these programmatic and project-specific proposals, as well as reasonable alternatives. The GNEP PEIS also will evaluate at a programmatic level the potential environmental impacts associated with the international aspects of GNEP, including alternatives. The **SUPPLEMENTARY INFORMATION** section of this Notice of Intent (NOI) describes the alternatives that DOE proposes to evaluate in the GNEP PEIS. This NOI also identifies dates, times, and locations for public scoping meetings on the GNEP PEIS.

DATES: DOE invites Federal, state, and local governments, Native American Tribes, industry, other organizations, and members of the public to provide comments on the proposed scope, alternatives, and environmental issues to be analyzed in the GNEP PEIS. The public scoping period starts with the publication of this NOI in the **Federal Register** and will continue through April 4, 2007. All comments received during the public scoping period will be considered in preparing the GNEP PEIS. Late comments will be considered to the extent practicable. Public scoping meetings are discussed below in the **SUPPLEMENTARY INFORMATION** section. Federal or state agencies, local governments, or Native American Tribes that want to be considered as a cooperating agency in preparation of this PEIS should contact Mr. Timothy A. Frazier at the address listed below.

ADDRESSES: Please direct comments, suggestions, or relevant information on the GNEP PEIS to: Mr. Timothy A. Frazier, GNEP PEIS Document Manager, Office of Nuclear Energy, U.S. Department of Energy, 1000 Independence Avenue, SW., Washington, DC 20585-0119, Telephone: 866-645-7803, Fax: 866-645-7807, e-mail to: GNEP-PEIS@nuclear.energy.gov. Please mark envelopes, faxes, and e-mail: "GNEP PEIS Comments." Additional information on GNEP may be found at <http://www.gnep.energy.gov>.

For general information on the DOE NEPA process, please contact: Ms. Carol M. Borgstrom, Director, Office of NEPA Policy and Compliance, GC-20, U.S. Department of Energy, 1000 Independence Avenue, SW., Washington, DC 20585-0103, 202-586-4600, or by leaving a message at 1-800-472-2756. Additional information regarding DOE's NEPA activities is available on the DOE NEPA Web site at <http://www.eh.doe.gov/nepa>. This NOI is available at <http://www.eh.doe.gov/nepa> and <http://www.gnep.energy.gov>.

SUPPLEMENTARY INFORMATION:

I. Terminology

To aid in understanding the information that follows, a brief explanation of key terms and the three proposed facilities that support GNEP is provided below:

- **Advanced Fuel Cycle Initiative—**The Advanced Fuel Cycle Initiative (AFCI) is an ongoing DOE initiative to develop proliferation-resistant spent nuclear fuel treatment and transmutation technologies to enable a transition from the current once-through nuclear fuel cycle to a future sustainable, closed nuclear fuel cycle where valuable material is separated from spent fuel and recycled, thereby extracting energy and reducing waste.

- **Enriched uranium—**Uranium in which the proportion of uranium-235 to uranium-238 has been increased above the naturally occurring 0.7 percent uranium-235. Reactor-grade uranium is uranium that has been enriched to about three to five percent uranium-235 for use in reactors to produce electricity. The same process can be used to further enrich uranium for weapons use.

- **Fission—**The splitting of an atom into at least two other atoms and the release of a relatively large amount of energy. Two or three neutrons are usually released during the transformation. Fission is the scientific principle by which nuclear power reactors work.

- **Fission product—**The atoms (fission fragments) formed by the fission of heavy elements such as uranium. Fission products build up in nuclear fuel as a normal part of reactor operations.

- **Light-water reactor—**A nuclear power reactor that uses water to cool the reactor and to moderate (slow down) neutrons. It belongs to the class of nuclear power plants called "thermal reactors." Most nuclear power reactors in the world are light-water reactors.

- **Recycling—**The separation of used nuclear fuel into: Uranium; waste (fission products and fuel element structural materials); and transuranics.

Uranium and transuranics would be incorporated into new fuel to be consumed in reactors to generate electricity.

- **Spent nuclear fuel (used nuclear fuel)—**The fuel that has been used in a nuclear reactor. As a typical nuclear reactor operates, the fission process creates energy to generate electricity. During this process, the uranium is being "used" and fission products accumulate and interfere with efficiency until the fuel can no longer effectively produce energy. At this point, the used fuel is said to be "spent" and is replaced.

- **Transmutation—**The conversion of one element to another by changing its atomic structure. There are two primary transmutation processes: Fission, which splits atoms, releasing energy; and neutron capture, which adds one neutron to an atom. Transmutation can be used to destroy radioactive elements with very long half-lives, such as transuranic elements, by converting them to stable elements or elements with shorter half-lives, while producing energy.

- **Transuranics (transuranic elements)—**Elements with atomic numbers greater than uranium (atomic number 92), including neptunium (93), plutonium (94), americium (95), and curium (96). Transuranic elements are created in nuclear power reactors when uranium absorbs or captures neutrons.

- **Uranium enrichment—**The physical process of increasing the proportion (or ratio) of uranium-235 to uranium-238 to make the uranium more usable as nuclear fuel.

The three proposed GNEP facilities that DOE will evaluate in the GNEP PEIS are:

- **A nuclear fuel recycling center—**A nuclear fuel recycling center would support two of the three key components of an SNF recycling program: (1) It would separate light-water reactor SNF and fast reactor SNF into their reusable and non-reusable constituents, and (2) after completion of transmutation fuel development at the advanced fuel cycle research facility, it would fabricate such fuel for use in the destruction of transuranic elements in a fast reactor (the advanced recycling reactor). A nuclear fuel recycling center could be privately owned and operated, potentially with government-supplied incentives or other involvement yet to be determined.

- **An advanced recycling reactor—**A fast neutron spectrum reactor that would be capable of converting long-lived radioactive elements (e.g., plutonium and other transuranics) into shorter-lived radioactive elements while

producing electricity. The advanced recycling reactor could be privately owned and operated, potentially with government-supplied incentives or other involvement yet to be determined.

- An advanced fuel cycle research facility—A research facility that DOE would design, build, and operate at a DOE site. Among other activities, the advanced fuel cycle research facility would support research and development (R&D) relating to separation and fabrication of fast reactor transmutation fuel to enable the destruction of transuranic elements separated from SNF.

II. Background

The United States faces significant energy challenges including increasing energy supplies in ways that protect and improve the environment. Meeting each of these challenges is critical to expanding the United States economy and protecting energy and national security.

The President's Advanced Energy Initiative has identified three ways to meet the challenge of generating more electricity: Clean coal technology, advanced emission-free nuclear power, and renewable resources such as solar and wind. The GNEP PEIS will evaluate the potential environmental impacts of alternative ways to recycle spent nuclear fuel using technologies that increase its usefulness while reducing the threat of proliferation.

Nuclear power provides approximately one-fifth of the electricity that the United States uses to power factories, office buildings, homes, and schools. Over 100 operating nuclear power plants, located at 65 sites in 31 states, constitute the second-largest source of electricity generation in the United States. The plants are, on average, approximately 25 years old and are licensed to operate for 40 years with an option to renew for an additional 20 years. Nuclear reactors do not emit the air pollutants and greenhouse gases that result from coal-fired, oil-fired, and natural gas-fired generation. Nuclear power contributes to United States energy security.

Historically, the United States has used a "once through" or "open" fuel cycle in which nuclear fuel is used a single time by a nuclear power reactor, and then the spent fuel is stored at that plant pending disposal. The Federal government has responsibility for the disposal of SNF, and plans to dispose of it in the geologic repository located at Yucca Mountain, Nevada.

GNEP would establish a "closed" fuel cycle by recycling spent nuclear fuel rather than disposing of it after one use.

Recycling spent fuel rather than disposing of it potentially would extend the stock of nuclear fuel available to meet growing electricity demand and reduce waste from the generation of nuclear power. DOE has been researching and developing recycling technologies in its laboratories for many years and has identified processes that would be needed for GNEP to accomplish its objectives. However, additional R&D is necessary to implement the proposed GNEP recycling associated with the transmutation fuel.

GNEP also offers the potential for more efficient nuclear waste disposal. Technological advancements through GNEP could reduce the volume, thermal output, and radiotoxicity of waste requiring permanent disposal at the Yucca Mountain geologic repository. It is important to emphasize, however, that GNEP does not diminish in any way the need for, or the urgency of, the nuclear waste disposal program at Yucca Mountain. Yucca Mountain is still required under any fuel cycle scenario.

The Energy Information Administration projects that the world's electricity consumption will double from 2003 to 2030. GNEP as envisioned would promote the expanded use of carbon-free nuclear energy to meet growing electricity demand throughout the world, while reducing nuclear proliferation risks. GNEP would achieve this goal by having nations with secure, advanced nuclear capabilities provide fuel services—fresh fuel and recovery of used fuel—to other nations that refrain from pursuing uranium enrichment or recycling activities. The closed fuel cycle model envisioned by this partnership requires development and deployment of technologies that enable recycling and reduction of long-lived radioactive waste.

As these technologies are developed, the United States would work with partners to provide developing countries with reactors that would be secure, cost-effective, and able to meet their energy needs, as well as related nuclear services that would ensure that they have a reliable fuel supply. In exchange, these countries would agree to use nuclear power only for electricity and refrain from pursuing uranium enrichment and reprocessing activities that can be used to develop nuclear weapons. By working with other nations under the GNEP, the United States could provide safe and reliable energy that growing economies need, while reducing the risk of nuclear proliferation.

The commercial marketplace will ultimately determine how to meet future increased demand for electricity. By recycling SNF, GNEP is designed to provide an alternative to the once-through fuel cycle. DOE is not proposing in this PEIS that DOE would construct and operate any facilities for the primary purpose of generating electricity. The proposed advanced recycling reactor would demonstrate the feasibility of consuming transuranics in transmutation fuel in a reactor, while also generating electricity.

III. The Purpose and Need for Agency Action

DOE's underlying purpose and need in proposing this action is to encourage expansion of domestic and international nuclear energy production while reducing the risks associated with nuclear proliferation, and to reduce the volume, thermal output, and radiotoxicity of SNF before disposal in a geologic repository. To meet its non-proliferation goals with regard to SNF recycling, DOE will only assess as reasonable alternatives those technologies that do not separate pure plutonium.

IV. Advance Notice of Intent; Funding Opportunity Announcement; Requests for Expressions of Interest

On March 22, 2006, DOE published in the **Federal Register** (71 FR 14505) an Advance NOI (ANOI) related to the then-proposed GNEP Technology Demonstration Program EIS. That ANOI explained the goals of GNEP as it was then conceived and identified the three major project-specific elements (the demonstration of advanced separations processes, conversion of transuranics, and advanced fuel fabrication) of a GNEP Technology Demonstration Program, which was intended to demonstrate closed fuel cycle technologies at an engineering scale. The ANOI also invited comments on the proposed scope, alternatives, and environmental issues to be analyzed in that EIS. DOE received over 800 comment documents, more than 750 of which contained similar substantive comments.

DOE considered all comments received. One of the main comments received was that DOE should do a programmatic NEPA review instead of limiting its review to the three facilities. Comments received on the ANOI also included the following:

- The proposed technologies are not sufficiently advanced to proceed with engineering-scale demonstrations;
- DOE should pursue and analyze alternatives to nuclear power in a PEIS;

• DOE is proceeding with Federal action related to GNEP before conducting the required NEPA analysis.

These issues will be addressed in the GNEP PEIS.

In addition, a number of foreign governments and private companies have expressed interest in cooperating with DOE to develop and deploy advanced nuclear fuel recycling technologies. Some of these entities indicated they are pursuing technologies that may be ready for deployment faster, and at a larger, commercial scale, than those currently under development by DOE.

In response to the comments and the interest expressed, DOE has made two fundamental changes to its GNEP NEPA strategy: (1) DOE will prepare a PEIS to assess the programmatic elements of GNEP, as well as the three proposed projects; and (2) DOE is now proposing to analyze engineering-scale and commercial-scale demonstrations of GNEP technologies at two of the three proposed facilities, rather than only at the smaller engineering scale.

Since publication of the ANOI, DOE has taken several steps to determine the level of interest in GNEP and obtain useful information. First, DOE has sought input regarding potential hosting sites in the United States for a nuclear fuel recycling center and an advanced recycling reactor. On August 3, 2006, DOE issued a Financial Assistance Funding Opportunity Announcement (FOA) for public or commercial entities interested in hosting GNEP facilities to conduct detailed siting studies. These siting studies will be used by DOE to help evaluate potential locations for a nuclear fuel recycling center and an advanced recycling reactor. Applications for these financial assistance grants were due to DOE by September 7, 2006. On November 29, 2006, DOE announced that 11 commercial and public consortia had been selected to receive grants under this FOA. The study sites and sponsors are:

Atomic City, Idaho—EnergySolutions, LLC,
Barnwell, South Carolina—
EnergySolutions, LLC,
Hanford Site, Washington—Tri-City
Industrial Development Council/
Columbia Basin Consulting Group,
Hobbs, New Mexico—Eddy Lea
Energy Alliance,
Idaho National Laboratory, Idaho—
Regional Development Alliance, Inc.,
Morris, Illinois—General Electric
Company,
Oak Ridge National Laboratory,
Tennessee—Community Reuse
Organization of East Tennessee,

Paducah Gaseous Diffusion Plant,
Kentucky—Paducah Uranium Plant
Asset Utilization, Inc.,

Portsmouth Gaseous Diffusion Plant,
Ohio—Piketon Initiative for Nuclear
Independence, LLC,

Roswell, New Mexico—
EnergySolutions, LLC,

Savannah River National Laboratory,
South Carolina—Economic
Development,

Partnership of Aiken and Edgefield
Counties.

Second, on August 7, 2006, DOE issued two requests for Expressions of Interest (EOIs) related to GNEP (see 44 FR 44673 and 44 FR 44676). The purpose of the EOIs was to obtain information from the domestic and international nuclear industry on the potential development of a commercial-scale nuclear fuel recycling center and an advanced recycling reactor using advanced technologies available now or in the near future. DOE is using the industry responses to the EOIs to help identify available technologies, alternative facility sizes, potential financial arrangements, and other factors related to the development of a nuclear fuel recycling center and an advanced recycling reactor. This information will contribute to the development of reasonable alternatives for evaluation in the GNEP PEIS.

DOE also would pursue an R&D program using an advanced fuel cycle research facility to develop additional technologies (not yet available) to separate and fabricate transmutation fuel for a fast reactor. DOE did not include an advanced fuel cycle research facility in the FOA or EOI processes because an advanced fuel cycle research facility is intended to be an R&D facility on a DOE site. Like a nuclear fuel recycling center and an advanced recycling reactor, an advanced fuel cycle research facility will be evaluated in the GNEP PEIS.

V. Description of GNEP Recycling

In general terms, GNEP recycling would work as follows. Spent fuel would be received from commercial nuclear reactors and would be processed in a nuclear fuel recycling center to separate the potentially reusable constituents (uranium and transuranic elements) from the non-reusable constituents (e.g., fuel element structural materials and fission products). The reusable constituents would be used to make transmutation fuel for an advanced recycling reactor and, possibly, other reactor fuels (e.g., uranium could be re-enriched and made into light-water reactor fuel). The transmutation fuel would be consumed

in an advanced recycling reactor, and the advanced recycling reactor would also produce electricity during these operations. The spent transmutation fuel would then be separated and the remaining transuranics used to make new transmutation fuel to be further destroyed in the advanced recycling reactor while producing electricity. Non-reusable constituents would be converted to waste forms for eventual disposal in a geologic repository or for other long-term storage or disposal, as appropriate. This fuel cycle has the potential to reduce the volume, thermal output, and radiotoxicity of waste that would need to be placed in a geologic repository, thereby increasing the geologic repository's effective capacity and lessening the need for additional repository capacity.

VI. Current Research and Development Activities

DOE has been conducting R&D related to the nuclear fuel cycle and nuclear reactor programs for many decades. Current R&D efforts are focused on exploring new, innovative concepts for advanced nuclear energy technologies that can address the key issues facing the long-term viability and expansion of nuclear power, including: The need to reduce and deal satisfactorily with nuclear wastes; improving economic performance; further advancing the safety of nuclear power generation; and addressing issues associated with the proliferation of fissile materials and sensitive nuclear technologies. GNEP would build upon these activities. While these activities share a common purpose with GNEP, they are outside the scope of the GNEP PEIS.

VII. Proposed Alternatives

The GNEP PEIS will analyze the potential environmental impacts of programmatic and project-specific proposals, as well as reasonable alternatives.

A. International Programmatic Alternatives

The GNEP PEIS will evaluate the potential environmental impacts of two proposed international initiatives and, for each, a No Action Alternative. The No Action Alternative would reflect the continuation of the status quo.

The two initiatives are the reliable fuel services program and the reactor program. Under the reliable fuel services program, the United States would work with partner nations to provide assurances of fuel availability for operators of nuclear power reactors in nations that refrain from pursuing uranium enrichment and reprocessing

programs. DOE is not proposing any specific action with regard to the reliable fuel services program, and the GNEP PEIS will include only a general, qualitative analysis of the potential impacts on the United States or the global commons that might be involved with such activities.

Under the reactor program, the United States would explore promoting proliferation-resistant reactors designed to meet the needs of developing economies. Because the designs for these reactors are not yet determined and DOE is not proposing any specific action to make the reactors available, the GNEP PEIS will include only a general, qualitative analysis of the potential impacts on the United States or the global commons that might be involved with such activities.

B. Domestic Programmatic Alternatives

The domestic programmatic alternatives currently envisioned are:

Programmatic Alternative 1, No Action Alternative: Continue the status quo by relying upon a “once through” or “open” fuel cycle in which commercial reactors generate and store SNF until DOE can dispose of it in a geologic repository, while continuing the ongoing nuclear fuel cycle R&D activities, including those activities associated with DOE’s Advanced Fuel Cycle Initiative (AFCI).

Programmatic Alternative 2, Proposed Action: Pursue the GNEP closed fuel cycle and recycle SNF in a system that includes one or more nuclear fuel recycling centers and one or more advanced recycling reactors to process SNF generated after their deployment. The PEIS analysis would be based upon alternative assumptions regarding the amount of SNF processed and the corresponding potential cumulative impacts of reasonably foreseeable actions as a result of this alternative.

The closed fuel cycle programmatic alternative will include an analysis of the potential environmental impacts associated with broad implementation of a closed fuel cycle. In addition, DOE is now proposing to site, construct, and operate a single set of closed fuel cycle facilities.

C. Domestic Project-Specific Alternatives

The project-specific alternatives are:

Project Alternative 1, No Action Alternative: Continue relying upon a “once through” or “open” fuel cycle in which commercial reactors generate and store SNF until DOE can dispose of it in a geologic repository, while continuing the ongoing nuclear fuel cycle R&D activities, including those activities

associated with DOE’s AFCI. A nuclear fuel recycling center, an advanced recycling reactor, and an advanced fuel cycle research facility would not be built.

Project Alternative 2, Proposed Action: Select site(s) and construct and operate the following GNEP facilities: (1) A nuclear fuel recycling center, (2) an advanced recycling reactor, and (3) an advanced fuel cycle research facility. The GNEP PEIS will assess alternative technologies and implementation approaches (e.g., engineering or commercial facility scale) that are deemed reasonable, based in part on the EOIs discussed in the **BACKGROUND** section above. With respect to a nuclear fuel recycling center, DOE plans to evaluate alternative separations technologies for SNF from commercial light-water reactors and the advanced recycling reactor. For each technology, DOE would evaluate potential waste streams and alternative waste forms (e.g., borosilicate glass, ceramic).

For a nuclear fuel recycling center, DOE will analyze several alternative SNF throughputs from approximately 100 metric tons of heavy metal (MTHM) annually, up to 3,000 MTHM annually. At the low range of throughputs, the analyses would correspond to engineering-scale capacities consistent with the ANOI. At the high range of throughput, the Department expects that a nuclear fuel recycling center would have the capacity to recycle up to 2,000–3,000 MTHM annually, which would enable a nuclear fuel recycling center to recycle commercial SNF inventories at approximately the same rate that such inventories are now generated. DOE also will assess appropriate storage alternatives for the recycling facilities. DOE will evaluate storage of spent fuel prior to recycling, as well as storage of waste generated from recycling, at a level related to the projected throughput for a nuclear fuel recycling center.

For an advanced recycling reactor, the baseline technology that will be assessed is a sodium-cooled fast reactor. DOE plans to evaluate alternative fuel types (e.g., oxide, metal) and power ratings (250–2,000 MW_{thermal}) for an advanced recycling reactor. DOE also will assess appropriate storage alternatives for spent fuel generated by an advanced recycling reactor prior to recycling, at a level related to the projected size of an advanced recycling reactor.

DOE envisions that a nuclear fuel recycling center and an advanced recycling reactor could begin operation before DOE has fully completed its research and development of the

transmutation fuel recycling at an advanced fuel cycle research facility. During this interim period, DOE may use a nuclear fuel recycling center to separate light-water reactor SNF and support the fabrication of fast reactor driver fuel which would be consumed in the advanced recycling reactor. This fuel could be made of uranium and plutonium, but would likely not contain other transuranics. Once DOE completes the R&D required to fabricate fuel containing other transuranic elements, it would use a nuclear fuel recycling center to fabricate fast reactor fuels containing other transuranics, and demonstrate the consumption of transuranic elements in an advanced recycling reactor. DOE would then separate the resulting spent transmutation fuel and fabricate new transmutation fuel in a nuclear fuel recycling center.

At this time, the following DOE sites are under consideration for the location of a nuclear fuel recycling center and/or an advanced recycling reactor: Idaho National Laboratory (Idaho Falls, Idaho); Paducah Gaseous Diffusion Plant (Paducah, Kentucky); Portsmouth Gaseous Diffusion Plant (Piketon, Ohio); Savannah River Site (Aiken, South Carolina); Oak Ridge National Laboratory (Oak Ridge, Tennessee); and Hanford Site (Richland, Washington). In addition, non-DOE sites in the following locations also are under consideration for the location of a nuclear fuel recycling center and/or an advanced recycling reactor: Atomic City, Idaho; Morris, Illinois; Hobbs, New Mexico; Roswell, New Mexico; and Barnwell, South Carolina.

DOE is proposing that the advanced fuel cycle research facility be located at a DOE site. The DOE sites under consideration include: Idaho National Laboratory (Idaho Falls, Idaho); Argonne National Laboratory (DuPage County, Illinois); Los Alamos National Laboratory (Los Alamos, New Mexico); Savannah River Site (Aiken, South Carolina); Oak Ridge National Laboratory (Oak Ridge, Tennessee); and Hanford Site (Richland, Washington).

To determine reasonable site alternatives for an advanced fuel cycle research facility, DOE is conducting a site screening process that is considering criteria specific to an advanced fuel cycle research facility. Similarly, for a nuclear fuel recycling center and an advanced recycling reactor, DOE will use the information received through the FOA process, as well as other information, to develop the reasonable site alternatives. As a result of these site screening processes, some sites may be eliminated from

consideration as reasonable site alternatives. DOE will document the results of the site screening processes in the GNEP PEIS *Site Alternative Screening Report*.

DOE intends that the alternatives and analyses in the GNEP PEIS will provide the maximum amount of flexibility in making decisions related to GNEP. In any event, however, in order for a site to be selected as the preferred site for a facility, DOE will require adequate assurances that there are no legal impediments to the siting and operation of that facility in that State.

The GNEP PEIS analysis will address the potential environmental impacts of proceeding with a nuclear fuel recycling center, an advanced recycling reactor, and an advanced fuel cycle facility, either individually or in any combination. In addition, the PEIS will analyze the environmental impacts of not developing transmutation fuel in a timely manner.

VIII. Potential Environmental Issues for Analysis

DOE has identified the following potential environmental issues for analysis in the GNEP PEIS. The list is presented to facilitate comment on the scope of the PEIS; it is not intended to be comprehensive or to predetermine the alternatives to be analyzed or their potential impacts. Additional issues may be identified as a result of the public scoping process. The current list includes the following issues:

- Potential impacts to the general population and workers from radiological and nonradiological releases
- Potential impacts of emissions on air and water quality
- Potential impacts on flora and fauna of a region
- Potential impacts from transportation—in the United States and across the global commons
- Potential impacts from treatment, storage, and disposal of radioactive materials and waste
- Potential impacts from postulated accidents, as well as potential impacts from acts of terrorism or sabotage
- Potential disproportionately high and adverse effects on low-income and minority populations (environmental justice)
- Potential Native American concerns (cultural and archaeological)
- Short-term and long-term land use impacts
- Compliance with applicable Federal and state regulations
- Long-term health and environmental impacts
- Long-term site suitability

- Consumption of natural resources and energy
- Socioeconomic impacts to potentially affected communities
- Potential impacts to cultural resources
- Cumulative impacts
- Pollution prevention and waste management practices
- Potential impacts from decontamination and decommissioning (D&D) of facilities

IX. Public Scoping Meetings

Public scoping meetings will be held to provide the public with an opportunity to present comments, ask questions, and discuss the scope of the GNEP PEIS with DOE officials. DOE selected the following scoping meeting locations based on the responses received to the Financial Assistance Funding Opportunity Announcement and a preliminary identification of DOE sites that could support the proposed DOE-directed R&D facility.

As discussed in this NOI, inclusion on the list below does not necessarily mean that a particular location will be considered as a reasonable site alternative for any GNEP facilities.

Oak Ridge, Tennessee: DoubleTree Hotel (Salons A and B) 215 South Illinois Avenue Oak Ridge, Tennessee 37830 Tuesday, February 13, 2007, 6 p.m.–9:30 p.m.

North Augusta, South Carolina: North Augusta Community Center 495 Brookside Avenue North Augusta, South Carolina 29841 Thursday, February 15, 2007, 6 p.m.–9:30 p.m.

Joliet, Illinois: Barber & Oberwortmann Horticultural Center 227 North Gougar Road Joliet, Illinois 60435 Thursday, February 22, 2007, 6 p.m.–9:30 p.m.

Hobbs, New Mexico: Lea County Event Center 5101 N Lovington-Hobbs Hwy Hobbs, New Mexico 88240 Monday, February 26, 2007, 6 p.m.–9:30 p.m.

Roswell, New Mexico: Best Western Sally Port Inn & Suites (Ballroom) 2000 N Main Street Roswell, New Mexico 88201–6450 Tuesday, February 27, 2007, 6 p.m.–9:30 p.m.

Los Alamos, New Mexico: Hilltop House Best Western (La Vista Room) 400 Trinity Drive (at Central) Los Alamos, New Mexico 87544 Thursday, March 1, 2007, 6 p.m.–9:30 p.m.

Paducah, Kentucky: Executive Inn Riverfront (Meeting Room International D) One Executive Blvd. Paducah, Kentucky 42001 Tuesday, March 6, 2007, 6 p.m.–9:30 p.m.

Piketon, Ohio: Ohio State University Endeavor Center, Room 160 1862 Shyville Road Piketon, Ohio 45661

Thursday, March 8, 2007, 6 p.m.–9:30 p.m.

Pasco, Washington: Red Lion Hotel (Gold Room) 2525 N. 20th Avenue Pasco, Washington 99301 Tuesday, March 13, 2007, 6 p.m.–9:30 p.m.

Idaho Falls, Idaho: Red Lion Hotel on the Falls (Yellowstone/Teton Rooms) 475 River Parkway Idaho Falls, Idaho 83402 Thursday, March 15, 2007, 6 p.m.–9:30 p.m.

Washington, DC: Hotel Washington (Washington Room) 15th and Pennsylvania Ave, NW Washington, DC 20004 Monday, March 19, 2007, 1 p.m.–5 p.m.

DOE also will publish notices in local media in advance of the scheduled public scoping meetings with the dates, times, and locations.

X. NEPA Process

DOE plans to publish the GNEP Draft PEIS in 2007 and the GNEP Final PEIS in 2008. Following the 90-day public scoping period that commences with publication of this NOI, DOE will prepare the GNEP Draft PEIS. Once approved, DOE will announce the availability of the GNEP Draft PEIS in the **Federal Register** and hold public hearings to solicit comments on the GNEP Draft PEIS from Federal, state, and local governments, Native American Tribes, industry, other organizations, and members of the public. These comments will be considered and addressed in the GNEP Final PEIS. DOE will issue one or more Records of Decision no sooner than 30 days after publication of the Environmental Protection Agency's Notice of Availability of the GNEP Final PEIS.

Issued in Washington, DC, on December 27, 2006.

David R. Hill,

General Counsel.

[FR Doc. E6–22548 Filed 1–3–07; 8:45 am]

BILLING CODE 6450–01–P

DEPARTMENT OF ENERGY

Privacy Act of 1974; Notice to Amend an Existing System of Records

AGENCY: U.S. Department of Energy.

ACTION: Notice.

SUMMARY: As required by the Privacy Act of 1974, 5 U.S.C. 552a, and the Office of Management and Budget (OMB) Circular A–130, the Department of Energy (DOE) is publishing a notice of a proposed amendment to an existing system of records. DOE proposes to amend and change the name of DOE–21 “Emergency Defense Mobilization



United States Department of Energy

Office of Public Affairs

Washington, D.C. 20585

News Media Contact(s):

Craig Stevens, (202) 586-4940

For Immediate Release

January 10, 2007

Department of Energy Releases Global Nuclear Energy Partnership Strategic Plan

WASHINGTON, DC – The U.S. Department of Energy (DOE) Assistant Secretary for Nuclear Energy Dennis Spurgeon today released the Global Nuclear Energy Partnership (GNEP) Strategic Plan, which details the Initiative’s purpose, principles and implementation strategy. The Plan outlines a path forward to enable worldwide increase in the use of safe, emissions-free nuclear energy without contributing to the spread of nuclear weapons capabilities in a manner that responsibly addresses the waste produced.

“For the United States, GNEP is good policy; for industry, it could be very good business,” Assistant Secretary Spurgeon said. “Releasing GNEP’s Strategic Plan demonstrates the seriousness DOE places on this Initiative as well as the seriousness of our nation’s need to incorporate safe, emissions-free nuclear power into our nation’s energy mix. While DOE labs and research facilities host some of the best scientists, the GNEP Strategic Plan gives researchers, experts and industry the opportunity to examine and understand our vision.”

The Strategic Plan is a guiding document, one that can be modified if the U.S. Government, our international partners and industry deem it appropriate. It lays out DOE’s plan to prepare for construction and operation of a nuclear fuel recycling center and an advanced recycling reactor, and for continuing an aggressive research and development program focused on advanced fuel cycle technology. The Plan also specifies criteria necessary to consider in order to safely and successfully implement the goals of GNEP.

The Strategic Plan provides a framework for the U.S. to:

1. Expand nuclear power to meet growing energy demand;
2. Develop, demonstrate, and deploy advanced technologies for recycling spent nuclear fuel without separating plutonium;
3. Develop, demonstrate, and deploy advanced reactors that consume transuranics;
4. Establish reliable fuel services worldwide;
5. Develop, demonstrate, and deploy proliferation resistant reactors appropriate to power grids and;
6. Develop enhanced safeguards to ensure nuclear energy systems are used for peaceful purposes.

This Plan identifies the technology, economic and environmental information necessary to present a convincing case to the Secretary of Energy for his decision on a path forward regarding the design and construction of recycling facilities in support of GNEP.

GNEP is a part of President Bush's Advanced Energy Initiative, which seeks to reduce our reliance in imported oil by changing the way we power our cars, homes and business. For more information on GNEP, visit: <http://www.gnep.gov/>.

GNEP Strategic Plan Jan 2007

U.S. Department of Energy, Office of Public Affairs, Washington, D.C.



United States Department of Energy

Office of Public Affairs

Washington, D.C. 20585

News Media Contact(s):
Craig Stevens, (202) 586-4940

For Immediate Release
January 30, 2007

Department of Energy Awards Over \$10 Million for GNEP Siting Grants

WASHINGTON, DC – The U.S. Department of Energy (DOE) today announced that over \$10 million will be used for 11 commercial and public consortia selected to conduct detailed siting studies for integrated spent fuel recycling facilities under President Bush’s Global Nuclear Energy Partnership (GNEP).

“These facilities will enable us to effectively recycle spent nuclear fuel in a safe and proliferation-resistant manner. They will set the technological standard and allow us to influence energy policy abroad while increasing energy security here at home,” DOE Assistant Secretary for Nuclear Energy Dennis Spurgeon said. “With the negotiations complete, we are ready to proceed from an initial phase to one where actual studies can explore sites for GNEP-related facilities.”

Award recipients, announced in November 2006, will carry out siting studies to determine the possibility of hosting an advanced nuclear fuel recycling center and/or an advanced recycling reactor. Beginning today, recipients will conduct detailed site characterization studies of the sites which were proposed in their Funding Opportunity Announcement (FOA) responses. Recipients will have 90-days to complete these studies and submit a Site Characterization Report to DOE on May 1, 2007.

Of the 11 sites, six are currently owned and operated by DOE. Sites, lead award recipients, and award amounts are as follows:

Proposed Site Location	Teaming Consortia	Award Amounts
1. Atomic City, ID	EnergySolutions, LLC	\$915,448
2. Barnwell, SC	EnergySolutions, LLC	\$936,151
3. Hanford Site, WA	Tri-City Industrial Development Council/Columbia Basin Consulting Group	\$1,027,715

4. Hobbs, NM	Eddy Lea Energy Alliance	\$1,590,016
5. Idaho National Laboratory, ID	Regional Development Alliance, Inc	\$648,745
6. Morris, IL	General Electric Company	\$1,484,875
7. Oak Ridge National Laboratory, TN	Community Reuse Organization of East Tennessee	\$894,704
8. Paducah Gaseous Diffusion Plant, KY	Paducah Uranium Plant Asset Utilization, Inc.	\$664,600
9. Portsmouth Gaseous Diffusion Plant, OH	Piketon Initiative for Nuclear Independence, LLC	\$673,761
10. Roswell, NM	EnergySolutions, LLC	\$1,134,522
11. Savannah River National Laboratory, SC	Economic Development Partnership of Aiken and Edgefield Counties	\$468,420
	TOTAL:	\$10,458,242

Information generated from the detailed siting studies of non-DOE sites is expected to address a variety of site-related matters, including site and nearby land uses; demographics; ecological and habitat assessment; threatened or endangered species; historical, archaeological and cultural resources; geology and seismology; weather and climate; and regulatory and permitting requirements. Information requirements for the DOE sites are more limited due to the availability of previous studies.

Such information may also be used in preparing the draft programmatic environmental impact statement (PEIS) – a process that began in early January (<http://www.energy.gov/news/4560.htm>) – which will evaluate the potential environmental impacts from each proposed GNEP facility.

An advanced nuclear fuel recycling center contains facilities where usable uranium and transuranics are separated from spent light water reactor fuel then produced into new fuel (or “transmutation fuel”) which then could be reused in an advanced recycling reactor. This advanced recycling reactor is a fast reactor that would demonstrate the ability to reuse and consume materials recovered from spent nuclear fuel, including long-lived elements that would otherwise be disposed of in a geologic repository.

GNEP is a part of President Bush's Advanced Energy Initiative, which seeks to reduce our reliance in imported oil by changing the way we power our cars, homes and business. For more information on GNEP, visit: <http://www.gnep.gov/>. Additional information on the DOE's nuclear energy program may be found on <http://www.nuclear.energy.gov/>.

U.S. Department of Energy, Office of Public Affairs, Washington, D.C.

support document for the PEIS investigated the feasibility of depleted uranium disposal at six low-level waste disposal facilities based on waste acceptance criteria, available capacity, and disposal cost (*Depleted Uranium Storage and Disposal Trade Study: Summary Report*, ORNL/TM-2000/10). This document and subsequent follow-up studies have verified that the only currently operating dry-environment, low-level waste disposal facilities that are feasible for disposal of the depleted uranium oxide conversion product are the NTS and EnergySolutions facilities.

Like the PEIS, site-specific EISs for each conversion facility assumed that depleted uranium oxide would be classified as low-level waste. This assumption is consistent with a recent ruling by the U.S. Nuclear Regulatory Commission (NRC) in the licensing proceeding for a commercial uranium enrichment facility (NRC 2005a,b,c,d and 2006a,b). The site-specific EISs stated that the disposal facility (or facilities) would be (1) selected in a manner consistent with DOE policies and orders, and (2) authorized or licensed to receive the conversion products by DOE (in conformance with DOE orders), the NRC (in conformance with NRC regulations), or an NRC agreement state agency (in conformance with state laws and regulations determined to be equivalent to NRC regulations).

DOE is now proposing to amend the site-specific RODs to decide that the depleted uranium oxide conversion product may be disposed of at either the NTS or the EnergySolutions low-level waste disposal facilities. Accordingly, DOE has prepared the draft SA that is the subject of this Notice. All other aspects of the depleted DUF₆ conversion program remain as previously described in the site-specific EISs and RODs.

The draft SA identifies no significant new circumstances or information relevant to environmental concerns that bear on DOE's decisions on disposal locations or the impacts of those decisions. Since issuance of the two site-specific DUF₆ conversion facility final EISs, the following circumstances have changed. In May 2006, a contract was signed with Solvay Fluorides, a commercial vendor, for purchase of the HF co-product. On June 2, 2006, the NRC issued an order that determined that the Envirocare (now EnergySolutions) site near Clive, Utah, appears to be suitable for near-term disposal of depleted uranium. The transportation campaign has been slightly modified to include more cylinders per railcar with fewer shipments per year. Impacts from the

modified campaign for both operations and accident scenarios are projected to be about the same as those presented in the site-specific EISs.

DOE believes, based on the analysis in the draft SA, that disposal at either NTS or EnergySolutions low-level waste disposal facilities are reasonable alternatives. Regarding the alternative of disposal at the EnergySolutions facility, DOE believes that adequate NEPA documentation exists to support disposal of any unused depleted uranium oxide conversion product as well as for emptied DUF₆ cylinders that would be used for disposal containers and the small quantity of CaF₂ that would be generated during the conversion process. With respect to NTS low-level waste facility, the draft SA analyses show that there is adequate NEPA coverage for all actions leading up to delivery at the NTS and that site-specific NEPA coverage at the NTS is adequate for disposal of up to 60,000 m³ of unused depleted uranium oxide conversion product. Furthermore, upcoming reviews of the NTS site-wide EIS will evaluate disposal of additional uranium oxide conversion product volumes at NTS. Accordingly, DOE believes that a supplemental EIS (or an environmental assessment) is not needed to support amending the site-specific RODs to address disposal of the depleted uranium oxide conversion product.

DOE plans to issue amended RODs under the conversion facility EISs no sooner than 30 days after issuance of the final SA. DOE will consider all public comments on the draft SA submitted by May 18, 2007.

Issued in Washington, DC, March 27, 2007.

Mark W. Frei,

Deputy Assistant Secretary for Program Planning and Budget.

[FR Doc. E7-6039 Filed 4-2-07; 8:45 am]

BILLING CODE 6450-01-P

DEPARTMENT OF ENERGY

Notice of Extension of Time to Submit Scoping Comments on the Programmatic Environmental Impact Statement for the Global Nuclear Energy Partnership

AGENCY: Office of Nuclear Energy, U.S. Department of Energy.

ACTION: Notice of extension of time to submit scoping comments.

SUMMARY: In response to public requests, the Department of Energy (DOE) announces an extension of time to submit comments on the proposed scope, alternatives, and environmental

issues to be analyzed in the Programmatic Environmental Impact Statement for the Global Nuclear Energy Partnership (GNEP PEIS). This date has been extended to June 4, 2007, thereby giving an additional 61 days to provide comments.

ADDRESSES: Please direct comments, suggestions, or relevant information on the GNEP PEIS to: Mr. Timothy A. Frazier, GNEP PEIS Document Manager, Office of Nuclear Energy, U.S. Department of Energy, 1000 Independence Avenue, SW., Washington, DC 20585-0119; Telephone: 866-645-7803, Fax: 866-645-7807, e-mail to: GNEP-PEIS@nuclear.energy.gov. Please mark envelopes, faxes, and e-mails: "GNEP PEIS Comments." Additional information on GNEP may be found at <http://www.gnep.energy.gov>.

FOR FURTHER INFORMATION CONTACT: For general information on DOE's National Environmental Policy Act (NEPA) process, please contact: Ms. Carol M. Borgstrom, Director, Office of NEPA Policy and Compliance, GC-20, U.S. Department of Energy, 1000 Independence Avenue, SW., Washington, DC 20585-0103, 202-586-4600, or by leaving a message at 1-800-472-2756. Additional information regarding DOE's NEPA activities is available on the DOE NEPA Web site at <http://www.eh.doe.gov/nepa>. This notice is available at <http://www.eh.doe.gov/nepa> and <http://www.gnep.energy.gov>.

SUPPLEMENTARY INFORMATION: On January 4, 2007, DOE published a Notice of Intent (NOI) (72 FR 331) to prepare the GNEP PEIS pursuant to the National Environmental Policy Act of 1969, as amended, 42 U.S.C. 4321 *et seq.*, and the Council on Environmental Quality's (CEQ's) and DOE's regulations implementing NEPA, 40 CFR parts 1500-1508 and 10 CFR part 1021, respectively. With the publication of the NOI, DOE began the PEIS scoping period and invited Federal, state, and local governments, Native American Tribes, industry, other organizations, and the public to provide comments on the proposed scope, alternatives, and environmental issues to be analyzed in the GNEP PEIS. In response to public requests, DOE is now extending the time for submittal of scoping comments an additional 61 days from April 4, 2007, to June 4, 2007. DOE will consider all comments received during the scoping period in preparing the GNEP PEIS. Late comments will be considered to the extent practicable.

Issued in Washington, DC, on March 29, 2007.

Dennis R. Spurgeon,

Assistant Secretary for Nuclear Energy.

[FR Doc. E7-6175 Filed 4-2-07; 8:45 am]

BILLING CODE 6450-01-P

DEPARTMENT OF ENERGY

Energy Information Administration

Agency Information Collection

Activities: Proposed Collection; Comment Request

AGENCY: Energy Information Administration (EIA), Department of Energy (DOE).

ACTION: Agency Information Collection Activities: Proposed Collection; Comment Request.

SUMMARY: The EIA is soliciting comments on the proposed revision and three-year extension to the following EIA Forms:

- EIA-63A, "Annual Solar Thermal Collector Manufacturers Survey."
- EIA-63B, "Annual Photovoltaic Module/Cell Manufacturers Survey."
- EIA-902, "Annual Geothermal Heat Pump Manufacturers Survey."

DATES: Comments must be filed by June 4, 2007. If you anticipate difficulty in submitting comments within that period, contact the person listed below as soon as possible.

ADDRESS: Send comments to Fred Mayes. To ensure receipt of the comments by the due date, submission by FAX (202-287-1964) or e-mail fred.mayes@eia.doe.gov is recommended. The mailing address is Energy Information Administration, EI-52, Forrestal Building, U.S. Department of Energy, Washington, DC 20585. Alternatively, Fred Mayes may be contacted by telephone at 202-287-1750.

FOR FURTHER INFORMATION CONTACT: Requests for additional information or copies of any forms and instructions should be directed to Fred Mayes at the address listed above.

SUPPLEMENTARY INFORMATION:

- I. Background
- II. Current Actions
- III. Request for Comments

I. Background

The Federal Energy Administration Act of 1974 (Pub. L. 93-275, 15 U.S.C. 761 *et seq.*) and the DOE Organization Act (Pub. L. 95-91, 42 U.S.C. 7101 *et seq.*) require the EIA to carry out a centralized, comprehensive, and unified energy information program. This program collects, evaluates, assembles,

analyzes, and disseminates information on energy resource reserves, production, demand, technology, and related economic and statistical information. This information is used to assess the adequacy of energy resources to meet near and longer term domestic demands.

The EIA, as part of its effort to comply with the Paperwork Reduction Act of 1995 (Pub. L. 104-13, 44 U.S.C. 3501, *et seq.*), provides the general public and other Federal agencies with opportunities to comment on collections of energy information conducted by or in conjunction with the EIA. Any comments received help the EIA to prepare data requests that maximize the utility of the information collected, and to assess the impact of collection requirements on the public. Also, the EIA will later seek approval by the Office of Management and Budget (OMB) under Section 3507(a) of the Paperwork Reduction Act of 1995.

Form EIA-63A, "Annual Solar Thermal Collector Manufacturers Survey," collects information on the distribution of solar thermal panels by manufacturers; Form EIA-63B, "Annual Photovoltaic Module/Cell Manufacturers Survey," collects information on the distribution by manufacturers of photovoltaic (PV) cells/modules; and Form EIA-902, "Annual Geothermal Heat Pump Manufacturers Survey," collects information on distribution of geothermal heat pumps by manufacturers. Specifically, all forms collect information on manufacturing, imports, exports, and shipments. The EIA has been collecting the above information annually and proposes to continue the surveys. The data collected will be disseminated in electronic products and electronic data files for use by government and private sector analysts. For details on EIA's renewables information program, please visit the renewable and alternative fuels page of EIA's Web site at <http://www.eia.doe.gov/fuelrenewable.html>.

II. Current Actions

EIA proposes to collect information on Forms EIA-63A, EIA-63B, and EIA-902 using EIA's Internet Data Collection (IDC) system as the primary mode for reporting information. Survey respondents must provide an e-mail address to EIA to receive instructions on the procedures for submitting information electronically. The IDC system utilizes secure socket layer software to encrypt and protect the information transmitted between a respondent and EIA. All software that is necessary to report electronically is

provided by EIA at no cost to the respondents. Respondents need to register one time with EIA and receive a mailing identification and code prior to reporting electronically.

The EIA has completed an extensive review and update of the renewable survey collection instruments. The objective of the review is to provide a standardized survey instrument and unified data collection approach for all three renewable forms. All three forms collect information from manufacturers of renewable energy equipment. The proposed forms revision is the result of efforts, which includes input from the renewable energy industry, other industry users of the data, government agencies, consumer groups, and private sector analysts. EIA will be requesting approval for its revisions and a three-year extension for its renewable surveys with the following proposed survey changes.

Form EIA-63A, "Annual Solar Thermal Collector Manufacturers Survey."

The EIA proposes the following revisions, additions, and deletions to harmonize the data requested across the three surveys.

(1) *Addition:* Item 3.1 (a) Collector Manufacturing.

(2) *Addition:* Item 4.3 Average Thermal Performance Rating of Collector.

(3) *Revision:* Item 4.3 Market Sector becomes Item 4.4 Domestic Shipments by Sector.

- Collect domestic shipments by sector instead of total shipments by sector.
- Change the sector headings from Residential, Commercial, Industrial, Utility, and Other to Residential, Commercial, Industrial, Electric Power, and Transportation.

(4) *Revision/Deletion:* Item 4.4 End Use becomes Item 4.5 Domestic Shipments by End Use.

- Collect only domestic shipments by end use instead of domestic and foreign shipments by end use as the total number of shipments.
- Delete "other" end use type category under Item 4.4.8 Other (describe).

(5) *Revision/Deletion:* Item 4.9 becomes Item 4.10. Delete the seller type category Item 4.9 (f) Other (describe).

Form EIA-63B, "Annual Photovoltaic Modules/Cells Manufacturers Survey."

The EIA proposes the following revisions, additions, and deletions to harmonize the data requested across the three surveys.

(1) *Addition:* Item 3.4 What percentage of your company's total sales

Sensitive Information

This web site (not necessarily this web page or every document on this site) may contain information that is procurement sensitive and may be privileged or confidential and is therefore exempt from disclosure under applicable law. **Pages containing Sensitive Information will be clearly identified.** Access to Sensitive Information on this web site is limited to individuals and/or entities authorized by a formal registration process. Authorized individuals must log in and be authenticated to access this sensitive information. If you have inadvertently gained access to Sensitive Information without having been authenticated, you are hereby notified that any downloading, printing, copying, dissemination, or distribution of this information is strictly prohibited. If you have received access inappropriately, you should disregard the contents of that Sensitive Information and immediately notify the IIPS Help Desk by e-mail at mailto:%20IIPS_HelpDesk@e-center.doe.gov. Thank you.

Agency Information

Agency Name: U.S. Department of Energy

Requiring Activity: NE - Office of Nuclear Energy, Science and Technology (NE)

Opportunity Information

Funding Opportunity Title: Global Nuclear Energy Partnership Deployment Studies

Attach XML files from Grants.gov? Yes

Funding Opportunity Number: DE-PS01-07NE24448

CFDA Code: 81.121

CFDA Title: Nuclear Energy Research Initiative

Time Zone for Due Date Times: Eastern Time

Application Due Date: 06/21/2007

Application Due Time: 11:59 PM

Application Due Date Explanation: Application Due Date is June 21, 2007

Grant Officer Name: Lynnette Desorcie

Grant Officer Phone: 202-287-1435

Grant Officer E-mail: Lynnette.Desorcie@hq.doe.gov

Grant Specialist Name: Jacqueline Kniskern

Grant Specialist Phone: 202-287-1476

Grant Specialist E-mail: Jacqueline.Kniskern@hq.doe.gov

Instrument Type: Grant, Other

Solicitation Description:

The U.S. Department of Energy (DOE) is seeking applications from industry on endeavors to explore the technical and business parameters that would support the Global Nuclear Energy Partnership (GNEP) program. Information is being sought in the areas of business planning, technology development roadmaps, conceptual design studies for GNEP facilities, and a communications plan for disseminating scientific, technical and practical information relating to closing the fuel cycle. The conceptual design studies for GNEP facilities will focus on providing scope, cost and schedule information for the initial nuclear fuel recycling center and advanced recycling reactor, with capabilities of: 1) separating light water reactor spent nuclear fuel into its reusable components and waste components, 2) reducing the volume, heat load and radio-toxicity of waste requiring geologic repository disposal, and 3) generating electricity with an advanced reactor that consumes transuranic elements as part of its fuel. The business plan, technology development roadmap and communications plan will address approaches to achieve the overall long-term GNEP goals and will be used to inform the public and key stakeholders regarding proposed options for successful GNEP implementation. Applicants with expertise to design, build, and operate GNEP facilities are encouraged to respond to this Funding Opportunity Announcement and share their recommendations for GNEP deployment.

Category of Funding Activity: EN - Energy

Explanation of "Other" Category of Funding Activity:

Eligible Applicants: 99 - Unrestricted (i.e. open to any type of entity below) - subject to any clarification in the text field "Additional Information on Eligibility"

Additional Information on Eligibility:

All types of entities are eligible to apply, except other Federal agencies, Federally Funded Research and Development Center (FFRDC) Contractors, and nonprofit organizations described in section 501(c)(4) of the Internal Revenue Code of 1986 that engaged in lobbying activities after December 31, 1995.

As a result of its unique status in the commercial energy market, for the purposes of this funding opportunity, the restriction on funding a Federal Agency is waived with respect to TVA only.

Cost Sharing or Matching Requirement: No

Type of Action: Competitive

Estimated Total Funding Available: \$15,000,000

Expected Number of Awards: 3

Anticipated Award Size: \$5 - \$10 million

Award Ceiling: None

Award Floor: None

Period of Performance: 6 months

Anticipated Start Date: 09/26/2007

Additional Information

Status: 1. Announcement Issued

Date Posted: 05/09/2007

Archive Date: 09/09/2007

URL Links

Full Announcement & Other Files

Appendix_B.doc	29 KB
AppendixC.pdf	2057 KB
Appendix_D.ppt	144 KB
GNEP_REPORTING_CHECKLIST.doc	98 KB
GNEP_Solicitation.pdf	2265 KB
Appendix_A.doc	61 KB
GNEPAmendment.pdf	119 KB
ATTC8QKP.pdf	119 KB
GNEPAmendment2.pdf	98 KB
GNEPAmendment3.pdf	101 KB
Total:	5.1 MB

Supporting Documents/Amendments for this Financial Assistance Opportunity

[Messages: Questions and Answers: 05/17/2007](#)

[Document: Questions and Answers Number 2; 05/22/2007](#)

[Document: Questions and Answers: 05/24/2007](#)



United States Department of Energy

Office of Public Affairs

Washington, D.C. 20585

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For Immediate Release
July 17, 2007

Department of Energy and Nuclear Regulatory Commission Increase Cooperation to Advance Global Nuclear Energy Partnership

WASHINGTON, DC – The U.S. Department of Energy (DOE) and Nuclear Regulatory Commission (NRC) expanded cooperation for President Bush’s Global Nuclear Energy Partnership (GNEP) through a Memorandum of Understanding (MOU) that was signed on Friday by DOE’s GNEP Deputy Program Manager Paul Lisowski and NRC Executive Director for Operations Luis Reyes. The MOU establishes the foundation for increased cooperation between DOE and NRC on technological research and engineering studies and marks another important milestone towards closing the nuclear fuel cycle in the United States.

“This MOU represents a significant step in the development of nuclear fuel recycling technologies as envisioned by President Bush’s Global Nuclear Energy Partnership,” DOE’s Assistant Secretary for Nuclear Energy Dennis Spurgeon said. “Working with the NRC, DOE is expanding federal involvement in preparation for advanced nuclear power technologies that will increase our nation’s energy security.”

Through this cooperation memorialized in the MOU, DOE will share the latest information on advanced recycling technologies with the NRC, enabling them to develop license criteria for GNEP facilities. The NRC will also participate in and observe DOE tests, simulations, and demonstrations. NRC will review and provide feedback to DOE on GNEP reports and engineering studies, review literature and take facility tours, and provide annual reports to DOE on work performed under this MOU. DOE and NRC officials agreed to continue to regularly meet and exchange the latest GNEP information.

As part of President Bush’s Advanced Energy Initiative, GNEP seeks to expand the use of clean, affordable nuclear energy to meet the growing worldwide demand for energy in ways that manage nuclear waste safely, advance non-proliferation objectives, and improve the environment. This MOU builds on over two years of the Department’s nuclear fuel cycle research, environmental studies, GNEP facility planning, and international discussion and cooperation. DOE has also engaged international partners through bilateral nuclear agreements to advance research in proliferation-resistant technologies. And in May, the United States hosted a GNEP Ministerial in Washington, DC, where leaders from China, France, Japan, Russia and the United States agreed to work together to bring the benefits of nuclear energy to the world safely and securely. The United Kingdom and the International Atomic Energy Agency also participated as observers in this Ministerial.

Read this MOU and find additional information on [GNEP](#).

U.S. Department of Energy, Office of Public Affairs, Washington, D.C.



United States Department of Energy
Office of Public Affairs
Washington, D.C. 20585

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For Immediate Release
July 30, 2007

Department of Energy to Award \$16 Million for GNEP Studies

Teams to Provide Analysis on Technology Development

WASHINGTON, DC – The U.S. Department of Energy (DOE) today announced that four consortia have been selected to receive up to \$16 million for technical and supporting studies to support President Bush’s Global Nuclear Energy Partnership (GNEP). AREVA Federal Services, LLC; EnergySolutions, LLC; GE-Hitachi Nuclear Americas, LLC; and General Atomics will each lead teams in developing the cost, scope and schedule for conceptual design studies for an initial fuel recycling center and advanced recycling reactor for GNEP. DOE will negotiate the final terms, under cooperative agreements, with the selected applicants and awards are expected to be finalized by the end of September 2007.

“These studies will contribute to the analysis and inform the research that DOE is conducting to further President Bush’s Global Nuclear Energy Partnership”, Assistant Secretary of Nuclear Energy Dennis R. Spurgeon said. “GNEP seeks to increase the use of safe and clean nuclear energy worldwide in ways that reduces both the proliferation risks as well as nuclear waste.”

DOE will use the information and recommendations provided by the teams, as well as other data and analyses, to evaluate the development and deployment of GNEP activities and to inform decision making on the path forward for GNEP. Today’s announcement is part of \$60 million in funding opportunities announced by Deputy Secretary of Energy Clay Sell in May to engage industry experts in conceptual design of proposed GNEP facilities. The \$60 million in funding opportunities will be made available through September 2009, subject to Congressional appropriations.

The FOA sought applications from commercial entities interested in providing technology development roadmaps, business plans, and a communications strategy supporting the GNEP conceptual design studies for the nuclear fuel recycling center and advanced recycling reactor. The technology development roadmaps will describe the state of the current technology, perform a technology “gap” analysis, and define the methods and plans to acquire technology needed to achieve the GNEP goals. The business plans will address how the market may facilitate DOE plans to develop and commercialize the advanced fuel cycle technologies and facilities. The communications plans will focus on the dissemination of scientific, technical, and practical information relating to nuclear energy and closing the nuclear fuel cycle.

GNEP is part of President Bush's Advanced Energy Initiative and seeks to enable the expanded use of economical, carbon-free nuclear energy worldwide to meet growing electricity demand. GNEP seeks to close the nuclear fuel cycle in ways that reduce proliferation risks, reduce waste and further increase global energy security.

Read more information on [GNEP](#) or view the FOA at [Grants.gov](#).

U.S. Department of Energy, Office of Public Affairs, Washington, D.C.



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For Immediate Release
October 1, 2007

Department of Energy Awards More Than \$16 Million for GNEP Technology Development Plans

Areva, EnergySolutions, GE-Hitachi Nuclear Americas, and General Atomics to Develop Conceptual Design

WASHINGTON, DC – The U.S. Department of Energy (DOE) completed cooperative agreements on Friday with four industry consortia to receive \$16.3 million for technical and conceptual design studies to further the Global Nuclear Energy Partnership (GNEP). Today’s announcement follows the selections for negotiation of terms under a Funding Opportunity Announcement in July to AREVA; Energy Solutions; GE-Hitachi Nuclear Americas, LLC; and General Atomics to develop studies for a GNEP nuclear fuel recycling center and advanced recycling reactor. Funding under the cooperative agreements awarded last week is as follows: \$5.6 million to AREVA; \$4.3 million to EnergySolutions, LLC; \$4.8 million to GE-Hitachi Nuclear Americas, LLC; and \$1.6 million to General Atomics. DOE will evaluate the information and recommendations provided by the teams, as well as other data and analyses, to explore the technical and business parameters that could support the development and deployment of GNEP technology.

“These studies will contribute to the analysis and inform the research that DOE is conducting to further the Global Nuclear Energy Partnership,” Assistant Secretary of Nuclear Energy Dennis R. Spurgeon said. “These awards enable DOE to benefit from the vast technological and business experience of the private sector as we move towards the goal of closing the nuclear fuel cycle.”

In July, DOE announced that four consortia led by AREVA and Mitsubishi Heavy Industries, Ltd.; EnergySolutions, LLC; GE-Hitachi Nuclear Americas, LLC; and General Atomics were selected to receive up to \$16 million. DOE has since negotiated the final terms of the cooperative agreements with the selected applicants and awards have been made for the consortia to provide conceptual design studies, technology development roadmaps, business plans, and a communications strategy in 2008 supporting decisions regarding the GNEP proposal for a nuclear fuel recycling center and advanced recycling reactor.

The following outlines the funding negotiated for each applicant.

AREVA AND MITSUBISHI HEAVY INDUSTRIES, LTD. (\$5.6 MILLION)

Principal Team Members: Japan Nuclear Fuel Limited; Battelle Memorial Institute; BWX Technologies, Inc.; and Washington Group International

ENERGY SOLUTIONS, LLC (ENERGY SOLUTIONS) (\$4.3 Million)

Principal Team Members: The Shaw Group and Westinghouse Electric Company.
Additional members: Atomic Energy of Canada Limited (AECL); Booz Allen Hamilton; Nexia Solutions; Nuclear Fuel Services; and Toshiba.

GE-HITACHI NUCLEAR AMERICAS, LLC (GE-HITACHI) (\$4.8 Million)

Team Members: Burns and Roe; Ernst & Young; Fluor Corporation; International Business Machines (IBM); and Lockheed Martin.

GENERAL ATOMICS (GENERAL ATOMICS) (\$1.6 Million)

Team Members: CH2M Hill; United Technologies Corporation - Hamilton Sundstrand Rocketdyne Division (UTC); a Russian consortium led by OKB Mechanical Engineering (OKBM); Potomac Communications Group; LISTO; and KAERI.

Today's announcement is part of \$60 million in funding opportunities announced by the Deputy Secretary of Energy Clay Sell in May to engage industry experts in the conceptual designs for proposed GNEP facilities. The \$60 million in funding opportunities includes the current funding announced today of \$16.3 million and planned future funding of \$44 million that is expected to be made available through September 2009, subject to congressional appropriations and other considerations.

GNEP is part of President Bush's Advanced Energy Initiative and seeks to enable the expanded use of nuclear energy worldwide to meet growing electricity demand. GNEP seeks to close the nuclear fuel cycle in ways that reduce proliferation risks, reduce waste and increase global energy security.

Read more information on the [Global Nuclear Energy Partnership \(GNEP\)](#).

U.S. Department of Energy, Office of Public Affairs, Washington, D.C.



United States Department of Energy

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Washington, D.C. 20585

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For Immediate Release
February 1, 2008

United States, France and Japan Increase Cooperation on Sodium-Cooled Fast Reactor Prototypes

WASHINGTON, DC –The U.S Department of Energy (DOE), the French Atomic Energy Commission (CEA) and Japan Atomic Energy Agency (JAEA) today expanded cooperation to coordinate Sodium-Cooled Fast Reactor Prototype development through a Memorandum of Understanding (MOU) signed by DOE Assistant Secretary for Nuclear Energy Dennis R. Spurgeon, CEA Chairman Alain Bugat and JAEA President Toshio Okazaki. The MOU establishes a collaborative framework with the ultimate goal of deploying sodium-cooled fast reactor prototypes. A sodium-cooled fast reactor uses liquid sodium to transfer heat, burning the plutonium and other transuranic elements in the process producing clean, safe nuclear power, less waste and increasing non-proliferation goals.

The U.S., France and Japan currently cooperate within the framework of the Global Nuclear Energy Partnership (GNEP) which seeks to expand the use of clean and affordable nuclear energy, as well as in the Generation IV International Forum (GIF) which furthers the research and development of future nuclear energy systems. The sodium-cooled fast reactor technology is one of the most advanced nuclear technologies being researched to date and could potentially be used as an advanced recycling reactor, one of the key components of GNEP. A prototype reactor is the first step to demonstrate the feasibility of the sodium-cooled fast reactor technology to accomplish GNEP objectives and to test advanced technologies that would allow these reactors to be built and operated by private industry on a large scale.

“This MOU supports the nuclear expansion and non-proliferation goals of the Global Nuclear Energy Partnership by expanding the signatory parties’ cooperation on a technology that has shown great promise for the next generation of nuclear reactors”, said Assistant Secretary Dennis Spurgeon. “This agreement highlights the continued cooperation between the United States, France and Japan in expanding civilian nuclear energy in a safe, secure and environmentally sustainable manner.”

The three countries will work together to establish design goals and high-level requirements for sodium-cooled fast reactor prototypes; identify common safety principles and key technical innovations to reduce capital, operating and maintenance costs. This cooperation will enable important discussion on power levels, reactor types, fuel types and an appropriate timetable for the potential deployment of prototype facilities.

In addition, the participants plan to pursue joint infrastructure development activities to leverage existing, refurbished and new facilities to support development of the prototype reactors. This could include facilities used for component or safety testing, fuel development, or irradiation and evaluation of materials. There also exists the potential for additional countries to participate in this cooperation.

In signing the MOU, each of the parties affirms its intent to develop advanced fast reactor prototypes according to its respective national program's objectives, and recognizes that each country's individual development of sodium-cooled fast reactor technology should not be duplicative. This cooperation will utilize the technical expertise and resources required to deploy sodium-cooled fast reactor prototypes.

DOE has engaged with several international partners through bilateral agreements to advance research in proliferation-resistant technologies. In September 2007 China, France, Japan, Russia and the United States hosted the second GNEP Ministerial in Vienna, Austria where 35 countries and three intergovernmental organizations attended the meeting and 16 nations signed the Statement of Principles to become GNEP partner countries. Since the ministerial, Italy, Canada and the Republic of Korea, have become official partners by signing the GNEP Statement of Principles, which serves as the framework for the Partnership.

As part of President Bush's Advanced Energy Initiative, GNEP seeks to expand the use of clean, affordable nuclear energy to meet the growing worldwide demand for energy in ways that manage nuclear waste safely, advance non-proliferation objectives, and improve the environment. Gen IV explores advances in nuclear energy system design and has engaged governments, industry, and the research community worldwide to broaden the opportunities for the use of nuclear energy.

For more information on DOE's international nuclear cooperation and to read the MOU, visit the [Office of Nuclear Energy](#).

U.S. Department of Energy, Office of Public Affairs, Washington, D.C.



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For Immediate Release
Friday, March 28, 2008

DOE Awards \$18.3 Million to Nuclear Industry Consortia for GNEP Studies

Today's announcement follows DOE's award of \$16 million last September

WASHINGTON, DC – The U.S. Department of Energy (DOE) this week awarded \$18.3 million to four industry teams to further develop plans for an initial nuclear fuel recycling center and advanced recycling reactor as part of the Global Nuclear Energy Partnership (GNEP). Today's awards include \$5.9 million to EnergySolutions; \$5.7 million to the International Nuclear Recycling Alliance, led by AREVA and Mitsubishi Heavy Industries; \$5.5 million to General Electric-Hitachi; and \$1.3 million to General Atomics. These firms will further develop detailed studies that build on conceptual design studies, technology development roadmaps, business plans submitted earlier this year by these four industry consortia.

“The expertise that these industry teams bring to the table provides an important perspective as DOE evaluates technology options and business approaches to close the nuclear fuel cycle,” Assistant Secretary for Nuclear Energy Dennis R. Spurgeon said. “This industry analysis and technical planning will inform GNEP decision making and support international cooperation as nations seek to safely expand the benefits of clean, reliable, and affordable nuclear power worldwide.”

DOE will use the information and recommendations provided by these studies, as well as other information and analyses, to determine the cost, feasibility and technical aspects of proposed GNEP activities. In January 2008, the four consortia presented their analysis to DOE, which helped determine where additional studies were needed and provided the basis for today's awards. DOE may make another round of awards for additional GNEP studies later this year.

GNEP is part of President Bush's Advanced Energy Initiative and seeks to enable the expanded use of economical, carbon-free nuclear energy worldwide to meet growing electricity demand. GNEP seeks to close the nuclear fuel cycle in ways that reduce proliferation risks, reduce waste and further increase global energy security. For further information on DOE's GNEP and other nuclear energy programs, visit: www.ne.doe.gov.

U.S. Department of Energy, Office of Public Affairs, Washington, D.C.



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For Immediate Release
April 17, 2008

DOE Seeks to Invest up to \$15 Million in Funding for Nuclear Fuel Cycle Technology Research and Development

WASHINGTON, DC – The U.S. Department of Energy (DOE) today issued a Funding Opportunity Announcement (FOA) inviting universities, national laboratories, and industry to compete for up to \$15 million to advance nuclear technologies closing the nuclear fuel cycle. These projects will provide necessary data and analyses to further U.S. nuclear fuel cycle technology development, as part of the Department's Advanced Fuel Cycle Initiative (AFCI), the domestic technology R&D component of the Global Nuclear Energy Partnership (GNEP). Studies resulting from this FOA will include computing and simulation of spent fuel technology, advanced fuel systems analyses and properties of future waste forms. This announcement builds on over \$328 million that DOE has provided to universities, national labs and industry since GNEP was announced in February 2006.

"To ensure that we have enough energy to meet growing demands, DOE is partnering with experts across the board to develop the necessary technology to advance the current state of nuclear energy and close the nuclear fuel cycle," said Assistant Secretary for Nuclear Energy Dennis Spurgeon. "Harnessing the power of technology will bring about the solutions to decrease the quantity and radiotoxicity of spent fuel, reduce the proliferation risk and lower greenhouse gas emissions while enhancing our nation's energy security."

In the FOA issued today, DOE is seeking applicants from industry, universities and national laboratories to conduct R&D in the following areas: Used Fuel Separations Technology, Advanced Nuclear Fuel Development, Fast Burner Reactors and Advanced Transmutation Systems, Advanced Fuel Cycle Systems Analysis, Advanced Computing and Simulation, Safeguards and Advanced Waste Forms. Responses are due by May 8, 2008.

As part of President Bush's Advanced Energy Initiative, GNEP aims to accelerate development and deployment of advanced fuel cycle technologies to encourage clean energy development worldwide, responsibly manage nuclear waste, and reduce the risk of nuclear proliferation. In March 2008, DOE announced the next stage of awards to four industry consortia, AREVA Federal Services, LLC; EnergySolutions, LLC; GE-Hitachi Nuclear Americas, LLC; and General Atomics, which included \$18 million for additional studies on GNEP conceptual design, technology development roadmaps, and business plans. Over the past two years, DOE has also awarded universities approximately \$39 million for research grants and fellowships, to upgrade laboratories and reactor facilities and purchase state-of-the-art equipment for researching advanced nuclear fuel cycle technology. DOE's national labs received approximately \$182 million to advance domestic nuclear technology development through AFCI.

View the full contents of the Funding Opportunity Announcement on [Grants.gov](#) under number: DE-PS07-08ID14906.

Learn more about GNEP and DOE's other nuclear energy programs at the [Office of Nuclear Energy](#).

U.S. Department of Energy, Office of Public Affairs, Washington, D.C.



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For Immediate Release
April 24, 2008

U.S. Department of Energy and Tennessee Valley Authority Increase Cooperation on Nuclear Fuel Cycle Data

WASHINGTON, DC – The U.S. Department of Energy (DOE) and the Tennessee Valley Authority (TVA) this week agreed to collaborate on developing and exchanging information on advanced fuel cycle technologies through a Memorandum of Understanding (MOU) signed by DOE Assistant Secretary for Nuclear Energy Dennis Spurgeon and TVA Chief Operating Officer William McCollum. This joint effort furthers DOE’s ongoing nuclear research and development activities and along with other analyses and studies from nuclear industry, universities and DOE’s national laboratories will help to determine the best path forward for the Global Nuclear Energy Partnership (GNEP).

“We look forward to gaining valuable knowledge and experience in working with TVA to advance the goals of GNEP and expand clean, safe nuclear power,” Dennis Spurgeon, DOE’s Assistant Secretary for Nuclear Energy said. “The information provided and utility perspective offered from this partnership will be vital in departmental decisions on GNEP and closing the nuclear fuel cycle in the United States.”

This MOU establishes the overall framework for the exchange of information and conduct of activities between the two organizations. Future work associated with this MOU, which would be detailed in an Interagency Agreement to be developed subsequent to the MOU, would be focused on providing supporting data and information to help inform DOE on advanced fuel cycle technology development concepts and include conceptual plans, utility perspectives, suitable business models and additional research and development needed for the advancement of nuclear technology.

“TVA is in a unique position to look for ways to improve how used nuclear fuel could be managed,” said TVA Chief Operating Officer William McCollum. “We look forward to working with DOE to determine the best path forward.”

TVA currently operates six nuclear reactors as part of its power system, which serves approximately 8.8 million consumers in seven southeastern states. TVA recently restarted a nuclear unit at its Browns Ferry plant, has submitted a Combined License application to the Nuclear Regulatory Commission for two advanced reactor design nuclear units at its Bellefonte site and has resumed efforts to complete a second nuclear unit at its Watts Bar plant. TVA is the nation’s largest public power provider and is completely self-financing. TVA also manages the Tennessee River and its tributaries to provide multiple benefits, including flood damage reduction, navigation, water quality and recreation.

GNEP was announced by President Bush in February 2006 and includes key nuclear research and technology development programs as well as international policy collaboration. Currently, 21 partner

nations have joined the effort to globally expand nuclear power and help meet growing energy demand in a safe and secure manner, while at the same time reducing the risk of nuclear proliferation and responsibly managing spent nuclear fuel.

For more information on this MOU, GNEP and other nuclear energy programs visit the [Office of Nuclear Energy](#).

U.S. Department of Energy, Office of Public Affairs, Washington, D.C.

APPENDIX H

SUMMARY OF SCOPING COMMENTS

APPENDIX H

SUMMARY OF SCOPING COMMENTS

This appendix summarizes major scoping comments received by the U.S. Department of Energy (DOE) in response to an Advance Notice of Intent (ANOI) (71 FR 14505; March 22, 2006) and the Notice of Intent (NOI) to prepare this Global Nuclear Energy Partnership (GNEP) Programmatic Environmental Impact Statement (PEIS) (72 FR 331; January 4, 2007), as well as DOE's response to those comments. This appendix also describes the scoping process. A copy of the ANOI and the NOI are contained in Appendix G, Project Notices.

H.1 ADVANCE NOTICE OF INTENT SCOPING SUMMARY

The ANOI for the GNEP Technology Demonstration Program Environmental Impact Statement (EIS) explained the goals of the GNEP Program, described three major elements of the as-then-proposed GNEP Technology Demonstration Program, stated the purpose and need for agency action, and included a list of potential environmental issues for analysis. The ANOI also invited comments through May 8, 2006, on the proposed scope, alternatives, and environmental issues to be analyzed in the GNEP Technology Demonstration Program EIS.

As explained in the ANOI, the purpose of the GNEP Technology Demonstration Program was to demonstrate certain technologies that could change the way spent nuclear fuel (SNF) from commercial light water nuclear power reactors is managed. The GNEP Technology Demonstration Program EIS was intended to inform DOE officials and the public of the potential environmental impacts associated with the proposed action and the reasonable alternatives. The proposed action was to demonstrate, at an engineering scale, the United States capability to safely recycle SNF using proliferation-resistant separation processes and to convert transuranics into shorter-lived radioisotopes. The as-then-proposed action included projects for three key elements that would comprise a proliferation-resistant closed fuel cycle: 1) the demonstration of separation processes in which usable and waste materials that are found in SNF are separated; 2) the demonstration of the conversion of transuranics into shorter-lived isotopes; and 3) the demonstration of an advanced fuel fabrication process.

In response to the ANOI, DOE received more than 800 comment documents. More than 750 of these were part of a campaign letter (i.e., multiple submissions of the same comment document). DOE considered the comments received on the ANOI in developing the GNEP PEIS NOI and in preparing this Draft GNEP PEIS.

H.1.1 Advance Notice of Intent Major Scoping Comments

All comments received in response to the ANOI are included in the draft *Advance Notice of Intent (ANOI) Scoping Summary Report* (Tetra Tech 2006), which is part of the record of this review. The following paragraphs summarize major comments received on the ANOI and include DOE's responses:

- 1) DOE should prepare a PEIS for the entire GNEP Program proposal, not just the GNEP Technology Demonstration Program. Commentors stated that DOE should withdraw the ANOI for the GNEP Technology Demonstration Program.

DOE response: *DOE agrees and has decided to prepare a PEIS that assesses programmatic alternatives associated with the GNEP Program. There was no need to withdraw the ANOI to implement this change in scope and National Environmental Policy Act (NEPA) strategy.*

- 2) DOE should pursue alternatives to nuclear power and GNEP. Commentors stated that renewable energy technologies—such as wind, solar, advanced hydroelectric, and some types of biomass and geothermal energy—are cleaner and safer technologies and can completely meet U.S. energy needs over the coming decades.

DOE response: *The Purpose and Need for agency action is focused on activities related to the nuclear fuel cycle. Other DOE programs address alternative electricity generation technologies.*

- 3) The proposed technologies are not sufficiently advanced to proceed with engineering-scale demonstrations. Commentors stated that the technologies involved in the GNEP Technology Demonstration Program have not reached a level of maturity to perform a realistic or sensible analysis.

DOE response: *DOE believes that it has sufficient information to analyze the programmatic alternatives. DOE's Advanced Fuel Cycle Initiative (AFCI) and other related DOE programs were established to develop the technologies needed to: reduce the environmental consequences associated with SNF management, reduce proliferation risk from the use of nuclear power, and extend uranium resources. The initiative relies on utilization of existing facilities, located mostly within United States national laboratories. See Chapter 2 and Appendix A, Section A.9 for a discussion of the major tasks and facilities associated with the AFCI. A description of additional research and development needs for the programmatic alternatives is included in Chapter 4, Section 4.8.1 of this PEIS.*

- 4) DOE is proceeding with federal actions related to GNEP before conducting the required NEPA analyses. Commentors stated that DOE has taken specific steps that demonstrate a clear commitment to an expenditure of resources on the GNEP Program before any programmatic analysis has been undertaken. Commentors cited the initiation of pre-conceptual design activities for then-proposed engineering-scale demonstrations.

DOE response: *Expending resources prior to preparing NEPA documentation is not prohibited by any law or regulation. Such actions are allowable prior to a record of decision so long as the action would not "have an adverse environmental impact" or "limit the choice of reasonable alternatives" (see 40 CFR 1506.1). In addition, DOE Order 413.3A, Program and Project Management for the Acquisition of Capital Assets, requires that NEPA compliance be completed prior to the beginning of final design. A*

prime example of the allowable expenditure of resources prior to a record of decision involves the development of information to support the NEPA review. Some of these comments addressed the use of specific facilities such as the F-Canyon facility at SRS. There is no longer a project-specific proposal being considered for any GNEP alternative.

After considering these comments, DOE modified its NEPA compliance strategy for the GNEP Program. Most significantly, DOE decided to prepare an EIS that assesses programmatic elements of the GNEP Program now rather than after demonstration activities occur.

H.2 NOTICE OF INTENT SCOPING SUMMARY

On January 4, 2007, DOE published the NOI for the GNEP PEIS in the *Federal Register* (72 FR 331). The public scoping comment period initially was scheduled to end on April 4, 2007; however, in response to public requests, the public scoping comment period was extended until June 4, 2007 (72 FR 15871). DOE invited the public to submit comments during the scoping period by postal mail, electronic mail, fax, and through written and oral comments submitted at the public scoping meetings.

DOE held 13 public scoping meetings around the country between February 13 and March 26, 2007. The NOI listed 11 meetings; in response to public requests, 2 additional meetings were added: Carlsbad, NM, and Hood River, OR. The meeting dates and locations are illustrated on Figure H.2-1.

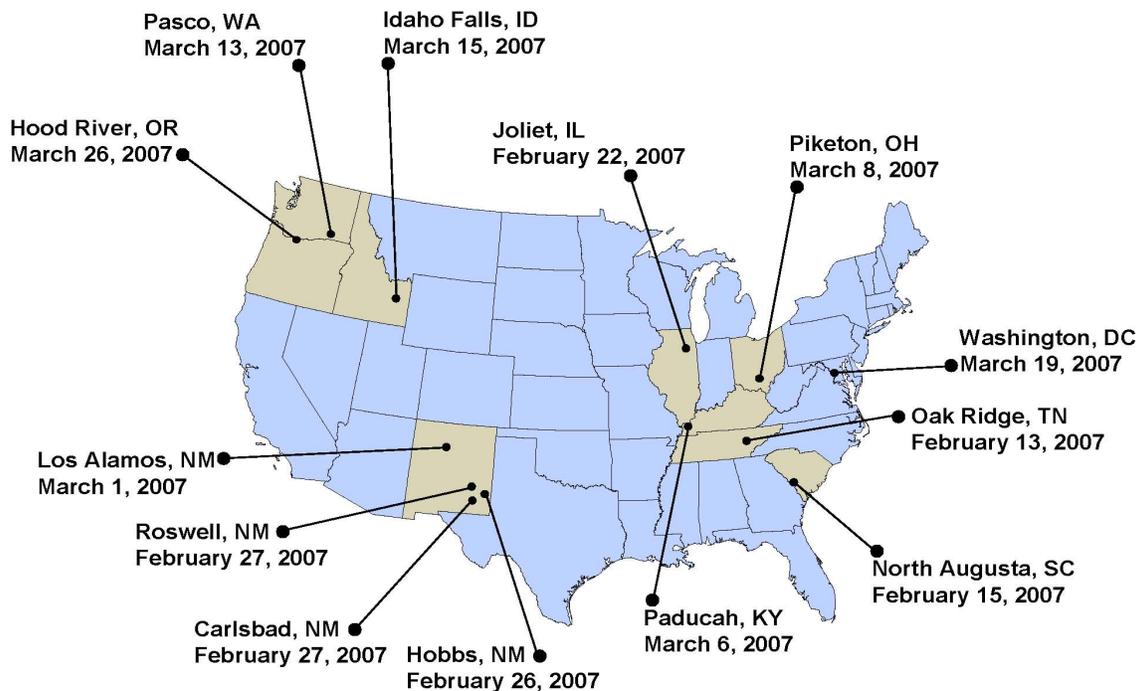


FIGURE H.2-1—Location of Global Nuclear Energy Partnership Programmatic Environmental Impact Statement Scoping Meetings

DOE received more than 14,000 scoping comment documents from members of the public, interested groups, and Federal, state, tribal, and local officials. These include comments received at the 13 public scoping meetings. Transcripts of these scoping meetings are available for public review at <http://www.gnep.energy.gov/PEIS/gnepPEISmeetingTranscripts.html>. Approximately 12,400 of the documents were part of 28 letter, postcard or e-mail campaigns (i.e., multiple people sending the same comment document). Additionally, 12 petitions were received with a total of approximately 7,500 signatures; each petition is recorded as 1 comment document. DOE has given each comment document a unique document number, and electronically scanned, reviewed, and analyzed the comments. Each comment was assigned to an appropriate issue category (see Table H.2-1). Similar comments were grouped and summarized.

TABLE H.2-1—Scoping Comment Categories

Issue Category
Policy
Programmatic Purpose and Need
Cost and Schedule
Proposed Action—Domestic
– Advanced Fuel Cycle Facility
– Nuclear Fuel Recycling Facility
– Advanced Recycling Reactor
Proposed Action—International Initiatives
No Action Alternative
Other Alternatives
Funding Opportunity Announcement (FOA)/Site Study Grants
Impacts
– Land Use
– Visual Resources
– Site Infrastructure
– Air Quality and Noise
– Water Resources
– Geology and Soils
– Biological Resources
– Cultural and Paleontological Resources
– Socioeconomics
– Environmental Justice
– Public and Worker Health and Safety
– Transportation
– Waste Management
– Intentional Destructive Acts (e.g., sabotage or terrorism)
Regulatory Compliance
Outside of the Scope of the PEIS
Support the GNEP Program
Opposed to the GNEP Program

H.2.1 Major Scoping Comments

DOE has considered all scoping comments in preparing the GNEP Draft PEIS. Major issues identified during scoping are summarized below, along with information about where the comments are addressed in the Draft PEIS. In addition, Chapter 2, Section 2.8 of the Draft PEIS

addresses several alternatives that were proposed during the scoping period but that DOE determined do not require detailed analysis.

- 1) Commentors stated that the Purpose and Need was excessively narrow and limited reasonable alternatives to only DOE's proposal to reprocess SNF. Commentors added that combining the programmatic analysis with project-specific proposed actions prejudiced the PEIS and presumed a certain programmatic outcome. Commentors identified a broad range of possible alternatives for evaluation in the PEIS. These included different reactor and fuel types (e.g., reactor technologies, coolants [gas, sodium], mixed-oxide [MOX] recycle in thermal reactors, and thorium fuel).

DOE response: DOE has modified its statement of Purpose and Need to clarify that DOE did not intend to unduly limit the range of reasonable alternatives. DOE reviewed the scoping comments and other available information carefully and, as a result, added both closed and open fuel cycle technologies to the range of reasonable programmatic alternatives. Chapter 1 of the PEIS provides a discussion of the Purpose and Need. Chapter 2 provides a description of the additional programmatic alternatives that have been added for consideration. The alternatives now considered in the GNEP PEIS are No Action Alternative—Continue Existing Once-Through Fuel Cycle, Fast Reactor Recycle Alternative, Thermal/Fast Reactor Recycle Alternative, Thermal Reactor Recycle Alternative, Once-Through Fuel Cycle Alternative using Thorium, and Once-Through Fuel Cycle using the Heavy Water Reactor/High Temperature Gas-Cooled Reactor. Some of these alternatives include sub-options that involve different technology combinations.

- 2) Commentors recommended a demonstration program to ensure both that the fuel recycling technology is feasible and that it will not cause more waste than current technologies. Commentors stated that the PEIS should assess timing issues such as building fast reactors before a reprocessing plant and, conversely, assess impacts of reprocessing without fast reactors.

DOE response: The GNEP PEIS identifies the major research and development needs associated with each programmatic alternative (Chapter 4, Section 4.8.1) and discusses how these needs could affect implementation of the technologies analyzed and associated environmental impacts (Chapter 4, Section 4.8.2). Any specific research and development needs would be the subject of future proposals by DOE or other entities. This section (Chapter 4, Section 4.8.2) also provides qualitative information on the constraints which may impact actual transition timing.

- 3) Commentors stated that the PEIS should analyze a wide range of potential environmental impacts associated with each alternative, and they provided specific comments regarding public and worker health and safety, accidents and intentional destructive acts, transportation, land use, cultural impacts, waste management issues, water quality/water availability issues, air quality, socioeconomics, environmental justice, and other potential impacts. For example, commentors requested that DOE estimate the quantity of SNF that would be reprocessed from existing reactors, forecast a range of new reactors in the

decades ahead, and estimate the quantity and radiological characteristics of any waste that would go to a geologic repository. In regard to using reprocessing to separate usable materials from waste in SNF, commentors stated that storing the hottest fission products, strontium and cesium, would involve about the same amount of storage capacity as storing the SNF in the first place. Additionally, there would be the problem of dealing with the rest of the waste and process residues. Commentors asked how reprocessing wastes would be classified (as high-level waste [HLW], transuranic waste, or low-level waste); what form, composition, and quantity of wastes would result from nuclear fuel reprocessing, operation of fast reactors, and operation of the proposed Advanced Fuel Cycle Facility (AFCF); and how and where wastes would be stored, treated, and disposed.

DOE response: *The GNEP PEIS discusses each of these types of impacts based on the best available information. For example, the PEIS discusses alternatives for disposition of separated cesium and strontium; under one disposition alternative, storage would be needed for about 300 years to allow for radioactive decay, compared to thousands of years required for SNF. The potential environmental impacts of programmatic alternatives are discussed in Chapters 4 and 5. For the programmatic alternatives, the PEIS acknowledges that additional information would become available as future proposals are considered and designs advance. Types, forms, and quantities of waste would vary with technology and other implementation decisions yet to be made. Information on these and other topics would be considered in more detail in future NEPA analyses. Because the GNEP PEIS only addresses programmatic alternatives, the AFCF is no longer being considered in the PEIS.*

- 4) Commentors stated that the PEIS should assess nonproliferation issues. Commentors stated that GNEP involves a major departure from U.S. policy on SNF and may affect agreements and treaties with other nations. Commentors asserted that reprocessing increases nuclear weapons proliferation threats. Commentors suggested that DOE assess a nuclear fuel leasing and SNF take-back program with the current open fuel cycle.

DOE response: *Separate from the GNEP PEIS, the National Nuclear Security Administration (NNSA), a semiautonomous agency within DOE, is preparing a Nonproliferation Impact Assessment (NPIA) that will analyze the nonproliferation aspects of the programmatic alternatives evaluated in this GNEP PEIS. The NPIA will assess the programmatic alternatives and technologies against major U.S. nonproliferation policy objectives. The NPIA will also identify the nonproliferation issues associated with potential future technology choices under each of these programmatic alternatives. The assessment framework is based on a qualitative evaluation of U.S. Government policy factors and on internationally accepted Proliferation Resistance and Physical Protection methodology (GIF 2006). NNSA intends to make a draft of the NPIA publicly available in 2008. The final NPIA will be publicly available prior to the Record of Decision for the GNEP PEIS and will be considered by DOE in its decisions regarding the GNEP Program.*

- 5) Commentors would like all technology information to be presented and include a history and evaluation of past performance of reactors and reprocessing facilities. Commentors stated that the reprocessing of irradiated fuel has not solved the nuclear waste problem in any country and actually exacerbates it by creating numerous additional waste streams that must be managed.

DOE response: *Chapter 2 and Appendix A include a discussion of reactor technologies being considered in the PEIS, and Chapter 1 includes a history of reprocessing. Waste streams associated with programmatic alternatives are discussed in Chapter 4.*

- 6) Commentors stated that the PEIS should propose and assess specific international aspects of the GNEP Program and include reasonably foreseeable scales of global action. Commentors stated that the Draft PEIS should also disclose how much SNF from abroad would be imported for reprocessing under GNEP.

DOE response: *Chapter 7 of the PEIS describes the international implications of the domestic programmatic alternatives, as well as the types of environmental impacts that could occur from international activities. The information in that chapter provides an overview of the types of actions and impacts that could occur if international activities are pursued. At this time, DOE has no specific proposal involving receipt of SNF from abroad.*

- 7) Commentors stated that GNEP is fundamentally inconsistent with DOE's objective of disposing of SNF deep underground where it would be as inaccessible as possible. If DOE is permitted to go forward with the Yucca Mountain project, much of the nation's SNF and HLW effectively would be made unavailable for reprocessing and reuse well before GNEP facilities could begin operations.

DOE response: *As explained in Chapter 4, Section 4.1.5, a geologic repository would be needed under any programmatic alternative. Each fuel cycle technology generates some quantity of SNF and/or HLW, although the forms and quantities differ among alternatives. DOE assumes that the particular SNF and HLW currently proposed for disposal at Yucca Mountain would still be disposed of there regardless of any decision made subsequent to completion of the GNEP PEIS. The PEIS assumes that any reprocessing, for example, would only involve SNF generated in the future.*

H.3 REFERENCES

- 40 CFR 1506.1 Council on Environmental Quality (CEQ), “Limitations on Actions During NEPA Process,” *Code of Federal Regulations*, Office of the Federal Register, National Archives and Records Administration, Washington, DC, Revised July 1, 2007.
- 71 FR 14505 U.S. Department of Energy (DOE), “Advance Notice of Intent (ANOI) to Prepare an Environmental Impact Statement for the Global Nuclear Energy Partnership Technology Demonstration Program,” Office of the Federal Register, National Archives and Records Administration, Washington, DC, March 22, 2006.
- 72 FR 331 DOE, “Notice of Intent To Prepare an Environmental Impact Statement for the Global Nuclear Energy Partnership,” Office of the Federal Register, National Archives and Records Administration, Washington, DC, January 4, 2007.
- 72 FR 15871 DOE, “Notice of Extension of Time to Submit Scoping Comments on the Programmatic Environmental Impact Statement for the Global Nuclear Energy Partnership,” Office of the Federal Register, National Archives and Records Administration, Washington, DC, April 3, 2007.
- DOE O 413.3A DOE Order 413.3A, “Program and Project Management for the Acquisition of Capital Assets,” U.S. Department of Energy, Washington, DC, July 28, 2006.
- GIF 2006 Generation IV International Forum (GIF), “Evaluation Methodology for Proliferation Resistance and Physical Protection of Generation IV Nuclear Energy Systems,” Revision 5, The Proliferation Resistance and Physical Protection Evaluation Methodology Expert Group Of the Generation IV International Forum, November 30, 2006.
- Tetra Tech 2006 Tetra Tech, Inc., “Scoping Summary Report for the Global Nuclear Energy Partnership Technology Demonstration Program Environmental Impact Statement Advance Notice of Intent,” Tetra Tech, 2006.

APPENDIX I

NEPA DISCLOSURE STATEMENT FOR PREPARATION OF THE *GLOBAL NUCLEAR ENERGY PARTNERSHIP PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT*

**NEPA DISCLOSURE STATEMENT FOR PREPARATION OF THE GLOBAL
NUCLEAR ENERGY PARTNERSHIP PROGRAMMATIC ENVIRONMENTAL IMPACT
STATEMENT**

CEQ Regulations at 40 CFR 1506.5(c), which have been adopted by the DOE (10 CFR 1021), require contractors who will prepare an EIS to execute a disclosure specifying that they have no financial or other interest in the outcome of the project. The term "financial interest or other interest in the outcome of the project" for purposes of this disclosure is defined in the March 23, 1981 guidance "Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations," 46 FR 8026-18038 at Question 17a and b.

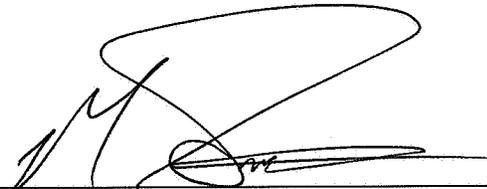
"Financial or other interest in the outcome of the project" includes "any financial benefit such as a promise of future construction or design work in the project, as well as indirect benefits the contractor is aware of (e.g., if the project would aid proposals sponsored by the firm's other clients)." 46 FR 18026-18038 at 18031.

In accordance with these requirements, the offeror and any proposed subcontractors hereby certify as follows: (check either (a) or (b) to assure consideration of your proposal).

- (a) X Offeror and any proposed subcontractor have no financial or other interest in the outcome of the project.
- (b) Offeror and any proposed subcontractor have the following financial or other interest in the outcome of the project and hereby agree to divest themselves of such interest prior to award of this contract.

Financial or Other Interests

- 1.
- 2.
- 3.



Certified by
Signature

Mark E. Smith, Vice President

Printed Name and Title

Tetra Tech, Inc.

Company

September 20, 2006

Date

**NEPA DISCLOSURE STATEMENT FOR PREPARATION OF THE GLOBAL
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Financial or Other Interests

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- 2.
- 3.



Certified by
Signature

G. E. PETTY Senior Vice President
Printed Name and Title

Epsilon Systems Solutions, Inc.
Company

7/23/07
Date

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Financial or Other Interests

- 1.
- 2.
- 3.

Certified by
Kenneth D. Bulmahn

Signature

Kenneth D. Bulmahn, Sole Proprietor

Printed Name and Title

Company

Oct. 02, 2007

Date

APPENDIX J

FUNDING OPPORTUNITY ANNOUNCEMENT SITE SUMMARIES

APPENDIX J FUNDING OPPORTUNITY ANNOUNCEMENT SITE SUMMARIES

J.1 INTRODUCTION

Following the comment period on the Advance Notice of Intent (ANOI) (71 FR 14505), the U.S. Department of Energy (DOE) sought additional input from industry, both international and domestic, and potential hosting sites to obtain more information from which to determine the feasibility of the Global Nuclear Energy Partnership (GNEP) Program. On August 3, 2006, DOE announced a Funding Opportunity Announcement (FOA) of \$20 million available for public or commercial entities to conduct detailed siting studies of potential sites for GNEP facilities (DOE 2006n). Applications for these financial assistance grants were received by DOE by September 7, 2006. DOE reviewed these applications and on January 30, 2007, issued financial assistance grants to 11 public and commercial entities to conduct detailed siting studies for hosting a nuclear fuel recycling center and/or an advanced recycling reactor (DOE 2007a). The consortia locations are: Atomic City (ID), Barnwell (SC), Morris (IL), Hanford (WA), Idaho National Laboratory (ID), Hobbs (NM), Oak Ridge Reservation (TN), Paducah (KY), Portsmouth (OH), Roswell (NM), and Savannah River Site (SC). Recipients completed these siting studies and submitted Site Characterization Reports (SCR 2007 a,b,c,d,e,f,g,h,i) to DOE by May 1, 2007 (DOE 2007b). The results of these site studies were reviewed by DOE and are included in the administrative record for this programmatic environmental impact statement (PEIS) to respond to public comment requesting information on the FOA responses. A summary of the information from those site studies is included here.

During public scoping, several additional sites were suggested by the public as suitable for locating a nuclear fuel recycling center and/or an advanced recycling reactor. No determination has been made regarding the sites suggested through the FOA and public scoping processes as potential locations for a nuclear fuel recycling center and/or an advanced recycling reactor. Because site selection will not be completed at this time, no sites have been eliminated from consideration for these two facilities.

J.2 ATOMIC CITY SITE

This section presents a summary of the affected environment for Atomic City Site. The information was summarized from the Site Characterization Report prepared by the Funding Opportunity Announcement (FOA) grant recipient (SCR 2007a).

J.2.1 Land Use

The Atomic City Site covers approximately 3,310 acres (1,340 ha) and is located in the arid, high desert rangeland of east-central Idaho in Bingham County. The entire Atomic City Site is currently zoned A-Agricultural, but could potentially be rezoned for heavy manufacturing according to the Bingham County Planning and Zoning Board. The Atomic City Site is bounded by undeveloped ranch land to the east, west, north and south, some of which is Bureau of Land Management (BLM) land. The U.S. Department of Energy (DOE)-managed Idaho National Laboratory (INL) is located north of the Atomic City Site.

J.2.2 Visual Resources

Currently there are no existing structures or facilities within the boundaries of the Atomic City Site. INL borders the site to north. Volcanic buttes near the northern boundary of the site can be seen from most locations on the site. The area surrounding the site consists of open desert land predominantly covered by big sagebrush and grasslands. Pasture and farmland border much of the site.

J.2.3 Site Infrastructure

Currently, there are no structures or facilities within the Atomic City Site and therefore no existing infrastructure within site boundaries.

U.S. Highway 26 is the closest highway and joins U.S. 20 seven miles (mi) (11.3 kilometers [km]) northwest from the Atomic City exit. The Union Pacific Railroad provides rail service near the site and crosses the southern boundary of the site.

J.2.4 Air Quality and Noise

The climate at the Atomic City Site and the surrounding region is characterized as that of a steppe (a vast semiarid grass-covered plain). The average annual precipitation is 8.7 in (22.1 cm), and prevailing winds are generally southwest or northeast. The average annual temperature at the Atomic City Site is about 42°F (20°C), and average monthly temperatures range from around negative 16°F (-8°C) in January to 68°F (20°C) in July. The annual average wind speed is 7.5 mph (12.1 km/hr).

Ambient air pollutant concentrations in the Atomic City Site region are monitored by DOE, the Idaho DEQ, and the National Park Service. None of the ambient air pollutant concentrations measured by the monitors cited in this section exceeded the state or national standards.

There are no current or existing facilities at the Atomic City Site to contribute to nonradiological or radiological pollutant emissions. There are no existing facilities or activities at the Atomic City Site, which result in elevated noise levels.

J.2.5 Water Resources

The nearest water course to the Atomic City Site is the Big Lost River. The Atomic City Site is located 9.5 mi (15.3 km) from the Big Lost River as it flows east of Arco and onto the INL. The USGS gaging station located near Arco has registered no flow in 12 of the past 22 years. The Atomic City Site is not connected to the Big Lost River by any developed drainage system. Based on this information, the Big Lost River would not be a reliable source of water for the Atomic City Site.

No drainage system connects the site to the Snake River, located 25 mi (40 km) to the southeast. A source of water supply for the Atomic City Site from the Snake River would require construction of a pipeline at least 25 mi (40 km) in length.

Existing contamination at the Atomic City Site, if present, would have no potential to impact the current quality of surface water in the area. The Atomic City Site is above the flood plain, with no water bodies within the 6 mi (10 km) radius.

Water is available from wells in the Snake River Plain Aquifer beneath the site. This aquifer has been designated a Sole Source Aquifer by EPA. Water storage in the aquifer is estimated at some 2 billion acre ft (2 trillion m³), and irrigation wells can yield 7,000 gal/min (26,498 L/min). The aquifer is composed of numerous relatively thin basalt flows with interbedded sediments extending to depths in excess of 3,500 ft (1,067 m) below land surface.

The two most likely sources of potential groundwater contamination at the Atomic City Site are agricultural contamination and groundwater contamination associated with facilities at the INL. No industrial facilities, fuel filling stations, or other commercial enterprises that are common sources of groundwater contamination exist within 5 mi (8 km) upgradient of the Atomic City Site.

As part of a 1984 settlement of a dispute between Idaho Power Company and the State of Idaho over Idaho Power Company's water rights for hydroelectric power, the entire Snake River Basin, which includes the Snake River and its tributaries, is undergoing water rights adjudication for both ground and surface water. The adjudication commenced in 1987 and is ongoing. The water right allows a diversion rate of 1.89 cubic feet per second (cfs) or volume of 483 acre ft/yr (595,775 m³/yr). This is the only water right that has been identified for the Atomic City Site. There are no known future rights, including Native American tribal rights that would be claimed or would impact the existing water right for the property.

J.2.6 Geology and Soils

The Atomic City Site occupies a relatively flat area on the northwestern edge of the Eastern Snake River Plain, part of the Eastern Snake River Plain Physiographic Province. The area

consists of a broad plain that has been built up from the eruptions of multiple flows of basaltic lava over the past 4 million years.

The upper 0.6 to 1.2 mi (1.0 to 1.9 km) of the crust beneath INL is composed of a sequence of Quaternary age (recent to 2 million years old) basalt lava flows and poorly consolidated sedimentary interbeds collectively called the Snake River Group. The lava flows at the surface range from 2,100 to 2 million years old. The sediments are composed of fine-grained silts that were deposited by wind; silts, sands, and gravels deposited by streams; and clays, silts, and sands deposited in lakes such as Mud Lake and its much larger ice-age predecessor, Lake Terretton. The accumulation of these materials in the Eastern Snake River Plain has resulted in the observed sequence of interlayered basalt lava flows and sedimentary interbeds (DOE 2005a).

The Arco Segment of the Lost River Fault is thought to terminate about 4.3 mi (6.9 km) from the Atomic City Site boundary. The Howe Segment of the Lemhi Fault terminates near the northwest boundary of INL (DOE 2005a). Both segments are considered capable or potentially active. A capable fault is one that has had movement at or near the ground surface at least once within the past 35,000 years, or recurrent movement within the past 500,000 years (10 CFR Part 100).

Based on the maximum considered earthquake ground motions, Atomic City is located in a broadly defined region of low and moderate to high seismicity. Ground motions in these regions are controlled by earthquake sources that are not well defined, with estimated maximum earthquake magnitudes having relatively long return periods.

Basaltic volcanic activity occurred from about 2,100 to 4 million years ago in the Atomic City Site area. Although no eruptions have occurred on the Eastern Snake River Plain during recorded history, lava flows of the Hell's Half Acre lava field erupted near the northern Atomic City boundary as recently as 5,400 years ago. The most recent eruptions within the area occurred about 2,100 years ago, 19 mi (31 km) southwest of the site at the Craters of the Moon Wilderness Area. The estimated recurrence interval for volcanism associated with the five identified volcanic zones ranges from 16,000 to 100,000 years (DOE 2005a).

J.2.7 Biological Resources

The project area occurs on nearly level flats or benchlands to rolling or broken foothills between outcrops of lava or as lava flows that are highly fractured and have vegetation growing where soil material has accumulated. Small lava outcrops may be scattered throughout the area and range from nearly level to about 30 percent slopes.

There are no riparian, wetlands, or aquatic habitats present within or directly adjacent to the Atomic City Site. Therefore, species associated with these habitat types are not anticipated to be found within the project area. None of the species identified for this area are critical to the structure and function of the ecosystem or provide a broader ecological perspective of the area primarily due to the small amount of native vegetation that remains on the site.

No aquatic, riparian, wetland areas or source water bodies capable of supporting fish or shellfish communities are present within the boundaries of the Atomic City Site, due to the dry climate and lack of perennial surface water.

The following are the special concern species:

- Sage grouse. The sagebrush habitat on the project area is limited to the southwest corner and the northern and western edges. Sage grouse were seen during the field survey, but the sagebrush is very fragmented and limited.
- Ferruginous hawk, Prairie falcon, and Townsend's big-eared bat. These species may use the area for foraging, but nesting and roosting habitat is not available on site. Ferruginous hawks were seen during the field survey hunting in the vicinity of the Atomic City Site.

J.2.8 Cultural and Paleontological Resources

A branch of the Oregon Trail, Goodale's Cutoff, is located within the current Atomic City Site. The route diverts from the main trail at Fort Hall and continues west past Big Southern Butte to Camas Prairie where it reconnects with the main Oregon Trail at Ditto Creek. The first Oregon-bound emigrants followed Goodale's Cutoff in 1852. The INL is located within the aboriginal territory of the Shoshone and Bannock people.

J.2.9 Socioeconomics

According to the U.S. Census Bureau, an estimated 26 people lived in Atomic City in 2005, and 27 are estimated to reside in the town in 2007 (SCR 2007a).

This area is sparsely populated and primarily relies on agriculture, food processing, and services to support its economy. The population density within a 50 mi (80 km) radius of the Atomic City Site is approximately 30 persons per square mile, with a population density of less than one person per square mile within 20 mi (32 km) of the Atomic City Site. The most populated areas are along the Interstate 15 corridor (SCR 2007a).

The county's growth rate is primarily the result of natural change, or the net change in population as the result of births and deaths in the region. Between 2000 and 2005, Bingham County population grew by 4.8 percent (2,004 persons) due to natural change, compared to a growth rate of 10.4 percent for the State of Idaho as a whole (SCR 2007a).

J.2.10 Environmental Justice

U.S. Census Bureau data were analyzed on the block group level to identify minority and low-income communities within the 50 mi (80 km) region of influence. In 2000, there were a total of 192 census block groups fully or partially within 50 miles of the Atomic City site. Block groups with a population of minority or low income residents that are 10 percent or more above the state average are considered minority or low income communities (SCR 2007a). In 2000, the average minority population in Idaho was 12 percent; therefore, block groups with a minority population of 22 percent or greater were considered minority areas. A total of 25 block groups within the 50-mile radius of the site are classified as minority communities based on 2000 census data.

Approximately 40,322 (or almost 19 percent) of residents within the 50 mi (80 km) radius classified themselves as belonging to a minority group or being one or more other race in the 2000 Census (SCR 2007a). The low-income population in Idaho based on the 2000 census was 11.8 percent; therefore, block groups with a low-income population of 21.8 percent or greater were considered low-income areas. The 2000 Census identified 28 low-income block groups within the 50 mi (80 km) radius (SCR 2007a).

J.2.11 Public and Worker Health and Safety

There are currently no existing facilities or structures on the Atomic City Site to contribute radiological or hazardous chemical contaminants to the environment. However, because the Atomic City Site is contiguous with the INL, major sources and levels of background radiation exposure to individuals in the vicinity of Atomic City would be similar to INL. These doses fall within the radiological limits given in DOE Order 5400.5, *Radiation Protection of the Public and the Environment*, and are much lower than those from background radiation (DOE O 5400.5).

Health impacts to the public may occur during normal operations at Atomic City via inhalation of air containing hazardous chemicals released to the atmosphere by operations in the area, predominantly from INL. Risks to public health from ingestion of contaminated drinking water or direct exposure are also potential pathways.

J.2.12 Transportation

Two interstate highways serve the Atomic City regional area. Interstate 15 is a north-south route that connects several cities along the Snake River. Interstate 86 intersects Interstate 15 south of the Atomic City Site and provides a primary linkage from Interstate 15 to points west. U.S. Highways 20 and 26 are the main access routes to the southern portion of the site. Rail transportation to the Atomic City Site is provided by the Union Pacific Railroad line at the southwest corner of the property. Since there are no existing facilities, a transportation network within the site would need to be developed.

J.2.13 Waste Management

INL is one potential provider of waste management services for the Atomic City Site. INL is located to the north of the Atomic City Site and generates various waste streams during ongoing activities including routine operations and cleanup action, and stores wastes generated by past activities. INL manages the following types of waste: high-level, low-level radioactive, mixed low-level radioactive, transuranic, hazardous, sanitary solid, wastewater, and sanitary sewage. The waste is managed using appropriate treatment, storage, and disposal technologies, and in compliance with all applicable Federal and state statutes and DOE orders.

EPA placed INL on the National Priorities List on December 21, 1989. In accordance with *Comprehensive Environmental Response, Compensation, and Liability Act* (CERCLA), DOE entered into a consent order with EPA and the state of Idaho to coordinate cleanup activities at INL under one comprehensive strategy (42 U.S.C 9610). This agreement integrates DOE's

CERCLA response obligations with *Resource Conservation and Recovery Act* (RCRA) corrective action obligations (40 CFR Parts 239-299).

There are currently no existing facilities or structures on the Atomic City Site; therefore, no waste is produced and no waste management services are provided.

J.3 BARNWELL SITE

This section presents a summary of the affected environment for the Barnwell Site. The information was summarized from the Site Characterization Report prepared by the Funding Opportunity Announcement (FOA) grant recipient (SCR 2007b).

J.3.1 Land Use

The Barnwell Site is located within Barnwell County, in the southwestern portion of South Carolina, close to the state border with Georgia. The proposed Barnwell Site is 970 acres (393 ha) of land within a 1,631 acre (660 ha) industrial park consisting of developed and undeveloped land.

The Barnwell Site is situated between two industrial parks and is partially located on one of these industrial parks, the South Carolina Advanced Technology Park (ATP). This site is located to the east of the Par Pond of the United States (U.S.) Department of Energy (DOE) Savannah River Site (SRS).

J.3.2 Visual Resources

The terrain surrounding the Barnwell Site is gently rolling, sloping upwards towards the northwest. There is a forest buffer along the north, west, and south of the site providing limited views from these directions. Par Pond located approximately 2 mi (3.2 km) to the west of the site, further obscures views of the Barnwell Site and its facilities.

J.3.3 Site Infrastructure

The Barnwell Site is surrounded by a system of well established transportation infrastructure. Major highways service the main entrance to ATP with several roads providing access to the proposed site.

Rail transportation is provided to the ATP by CSX Corporation.

South Carolina Electric and Gas (SCE&G) provides electrical and gas service to the ATP with an electrical substation located approximately 6 mi (10 km) from the ATP in the City of Barnwell.

SCE&G operates a 6 to 9 in (15 to 24 cm) natural gas pipeline at 45 psi of pressure along SC Highway 64.

J.3.4 Air Quality and Noise

The climate in the area is temperate. The proximity of the Appalachian Mountain chain to the northwest, and the Atlantic Ocean to the southeast, both provide a moderating influence on the climate. The site has a long-term annual average precipitation of 48.96 in (124.36 cm). Thunderstorms, tornadoes, and hurricanes provide occasional severe weather to South Carolina. The only hurricane-force winds measured at the SRS, bordering the Barnwell Site, were

associated with Hurricane Gracie on September 29, 1959, when wind speeds of 75 mi/hr (120 km/hr) were measured.

The area in vicinity of Barnwell is considered within attainment. The Barnwell Site does not have any significant sources of regulated air pollutants, although the SRS site does. The SRS significant sources of regulated air pollutants include coal-fired boilers for steam production, diesel generators, chemical storage tanks, the Defense Waste Processing Facility (DWPF), groundwater air strippers, and various other process facilities.

The U.S. Environmental Protection Agency (EPA) annual effective dose equivalent limit of 10 millirem per year (mrem/yr) to members of the public for the atmospheric pathway is incorporated in DOE Order 5400.5, *Radiation Protection of the Public and the Environment* (DOE O 5400.5). Process area stacks that release, or have the potential to release, radioactive materials are monitored continuously by applicable online monitoring and/or sampling systems. Tritium in elemental and oxide forms accounted for more than 99 percent of the total radioactivity released to the atmosphere from SRS operations. During 2005, about 40,800 curies (Ci) of tritium were released from SRS, compared to about 61,300 Ci in 2004. Most of the SRS radiological facilities release small quantities of radionuclides at concentrations below the DOE limits derived concentration guides (DCGs). The offsite dose from all atmospheric releases remained well below the DOE and EPA annual atmospheric pathway dose standard of 10 mrem.

Major noise sources at the Barnwell Site are primarily located in developed or active areas and include various industrial facilities, equipment, machines, and vehicles operating at the nearby industrial park or at the SRS. Most industrial facilities at SRS are at a sufficient distance from the Barnwell Site boundary that noise levels at the boundary from these sources would not be distinguishable from ambient background noise levels. Traffic from the Barnwell Site (SRS operations) is the primary contributor to noise levels emanating from the Barnwell Site.

J.3.5 Water Resources

The Barnwell Site is located almost entirely within the Lower Three Runs Creek watershed, with surface drainage primarily southward to Lower Three Runs Creek. The Site has very low relief, with drainage from the northwestern portion going directly to Par Pond. Some drainage from the extreme northeast corner of the Barnwell Site may flow eastward to a tributary of the Salkehatchie River. Surface waters on the Site include several minor natural and manmade drainage swales and one named pond, Beacon Pond. Highland Pond is another named feature on the Site near Beacon Pond and is associated with an isolated wetland complex. Due to its having received water from R-Reactor incidents, Par Pond's sediments are contaminated by the radionuclides cesium-137 (the largest component of the radioisotope inventory), cobalt-60, plutonium-238, and plutonium-239.

Floodplains within the 6 mi (9.7 km) radius of the Barnwell Site are primarily associated with Par Pond and Lower Three Runs Creek, located west of the Barnwell Site within SRS property. The Barnwell Site is not located within a floodplain.

Abundant groundwater resources exist at the Barnwell Site in over 1,000 ft (304.8 m) of four distinct aquifers. The confined aquifers are capable of sustained yields of over 2,000 gal/min (757.08 L/min) to production wells and provide more than adequate capacity for the end use of the nuclear fuel recycling center and the advanced recycling reactor. Water withdrawals in the Barnwell area are significantly below the capacity of the extensive aquifer system that underlies the area.

J.3.6 Geology and Soils

In general, the geology of the Barnwell Site and immediate vicinity is comprised of Coastal Plain clastics, clays, calcareous sediments, and conglomerates, that are approximately 1200 ft (400 m) thick beneath the ATP and overlie Paleozoic igneous and metamorphic rocks of the Appalachian orogen and Triassic sediments of the Dunbarton basin. The Site area is also characterized by geomorphic features known as Carolina Bays; shallow elliptical depressions with associated sand rims found on the surface of the coastal plain sediments. Within the SRS area the carbonate rich Tinker/Santee/Utley facies contain zones that offer lower resistance to drilling or Cone Penetration Tests (CPTs). These zones, depending on location, occur between approximately 100 to 180 ft (30 to 55 m) below ground surface.

Earthquakes located within 25 mi (40 km) of the Barnwell Site include approximately 24 from 1897 to 2002 with only 3 above MAG 3.0. Results of seismic studies show a peak horizontal ground acceleration of 0.28g (at 100 Hz) and peak spectral acceleration of about 0.8g (at 10 Hz). Faulting is present within the region of the Site. In addition, available literature, both deterministic and probabilistic studies, indicate that none of the faults in the vicinity of the Site are “capable” as defined by 10 CFR Part 100, or have been active within the past 35,000 years.

J.3.7 Biological Resources

The 970 acre (393 ha) Barnwell Site is dominated by five of the eight habitat types known to occur in the coastal plain ecoregion with the most prominent ones being pine woodlands and upland forest. The Barnwell Site also contains grassland and early successional habitats, stream bottomland (bottomland hardwood), ponds and depressions, and developed land. These habitats cover approximately 840 acres (340 ha) (87 percent) of the Barnwell Site. The U.S. Fish and Wildlife Service (USFWS) confirmed that there are no federally designated or proposed critical habitats, as defined in 50 CFR 17.95 (fish and wildlife) and 50 CFR 17.96 (plants) (50 CFR Part 17), in Barnwell County.

The Barnwell Site contains approximately 15 wetland areas, including Beacon Pond and Highland Pond. The United States Army Corps of Engineers (USACE) determined previously that the one bottomland hardwood wetland, which drains to Lower Three Runs Creek, is jurisdictional pursuant to the *Clean Water Act* (33 U.S.C. 1251 et seq.). The other wetlands on the Barnwell Site are isolated and not regulated by the USACE.

The American alligator is the only federally- or state-listed Threatened and Endangered (T & E) species known to occur at the Barnwell Site. A field reconnaissance conducted at the Barnwell Site in February 2007 confirmed that the Barnwell Site does not contain suitable habitat, other

than occasional foraging or stopover habitat, for any federally- or state-listed T & E species other than the American Alligator, the Smooth Coneflower, and Harperella.

J.3.8 Cultural and Paleontological Resources

Previous investigations assessed the potential of the Barnwell Site to contain cultural resources and intensively surveyed approximately 300 acres (121 ha) for cultural resources. Four archaeological sites were identified within the Barnwell Site, of which none have been determined eligible for the National Register of Historic Places (NRHP). No aboveground historic sites have been identified within or near the Barnwell Site. There are no known historic properties within or near the Barnwell Site that may be affected by any future development or use.

J.3.9 Socioeconomics

The Barnwell Site is located in Barnwell County, in the southwestern portion of South Carolina. The area within a 5 mi (8 km) radius of the proposed Barnwell Site is a rural, agrarian setting. Within the 5 mi (8 km) radius, 100 percent of the population of 1,827 persons is classified as rural. This area had a year 2000 population density of 7.9 persons per square mile. The largest city in the county is Barnwell with a population of 23,478 persons.

Barnwell County's chronic high unemployment is linked to the decline in manufacturing, lack of growth in service jobs, low educational attainment of county residents, and lack of employment opportunities. Agriculture is a significant, but declining presence in the community. The average farm is 230 acres (93 ha) and generates about \$19,102 in products. In excess of 92 percent of the farms are operated by a family or individuals. Irrigated croplands, vegetables and orchards, the products most likely to need seasonal help in harvesting, account for about 1,200 acres (485.6 ha) under cultivation.

J.3.10 Environmental Justice

The last U.S. census reported that the Barnwell County per capita income was \$15,870. Approximately 20.9 percent of the Barnwell County's residents, 18.2 percent of families, were determined to be living in poverty. Approximately 27 percent of families with children were living in poverty. The per capita income in South Carolina was \$18,795 in 2000 and 14.1 percent of South Carolina residents were living in poverty. In 2004, approximately 3,238 households out of a total of 9,021 in Barnwell County were receiving food stamps.

One-hundred-ninety-four block groups have a significant Black or African American minority population and 207 block groups have significant aggregate minority percentages. One census block group within the 50 mi (80 km) radius has a significant Hispanic ethnicity population.

Based on the "more than 20 percent" or the "exceeded 50 percent" criteria, no American Indian or Alaskan Native, Asian, Native Hawaiian or Other Pacific Islander, Some other race, or Multi-racial minority block groups exist in the geographic area

J.3.11 Public and Worker Health and Safety

An individual's radiation exposure in the vicinity of the Barnwell Site amounts to approximately 357 mrem, and is comprised of natural background radiation from cosmic, terrestrial, and internal body sources; radiation from medical diagnostic and therapeutic practices; weapons test fallout; consumer and industrial products, and nuclear facilities. Annual background radiation doses to individuals are expected to remain constant over time. Releases of radionuclides to the environment from SRS operations provide another source of radiation exposure to individuals in the vicinity of the Barnwell Site. These doses fall well below the 100 mrem/yr (10 mrem from air) radiological limits given in DOE Order 5400.5, *Radiation Protection of the Public and the Environment*, and are much lower than those from background radiation (DOE Order 5400.5), (WSRC 2005). The average radiation dose recorded for workers at SRS in 2005 is 51 mrem (WSRC 2005).

The South Carolina Department of Health and Environmental Control (SCDHEC) regulate both radioactive and non-radioactive criteria and toxic air pollutant emissions from the Barnwell Site sources. Major non-radiological emissions of concern from stacks at SRS facilities include sulfur dioxide, carbon monoxide, oxides of nitrogen, PM₁₀, volatile organic compounds (VOCs), and toxic air pollutants. All SRS permitted sources were found to be in compliance with their respective permit conditions and limits.

J.3.12 Transportation

The Barnwell Site is surrounded by a system of interstate highways, U.S. highways, state highways, and railroads. I-20 serves the northern region, providing the primary east-west corridor. I-520 provides a loop around Augusta, Georgia. Truck shipments to (or from) the Barnwell Site in the west normally enter the region from the west on I-20. In Augusta, Georgia, the trucks typically take I-520 to the Georgia/South Carolina border where U.S. 278 takes them into Barnwell. From the south, Barnwell is accessed by way of U.S. Route 301. From the north, Barnwell is accessed by way of either U.S. Route 301 or U.S. Route 321. From the east, Barnwell is accessed by way of U.S. Route 78.

The Barnwell Site does not have direct rail access. The closest line passes 30 mi (48 km) to the south through the town of Allendale and 15 mi (24 km) to the east going through the town of Denmark.

J.3.13 Waste Management

The Barnwell Site has existing waste storage facilities, previously existing waste facilities that have been dismantled, and land area that is available for development of additional waste storage capacity. For dry fuel storage, a large, concrete paved area is located within the fuel storage building. The currently developed area could provide storage for an estimated 5,000 metric ton unit (MTU) dry fuel. The AGNS facility had established infrastructure for liquid waste. The facility had three 500,000 gal (1,892,700 L) double-walled stainless steel tanks for storage of high level waste. The final component is storage appropriate for low-level waste. Low-level

waste storage requirements for operating nuclear facilities is typically in the range of several thousand cubic feet per year and the Barnwell Site has ample space for construction of a facility of this size.

J.4 MORRIS SITE

This section presents a summary of the affected environment for the Morris Site, which is owned by General Electric. The information was summarized from the Site Characterization Report prepared by the Funding Opportunity Announcement (FOA) grant recipient (SCR 2007c).

J.4.1 Land Use

The Morris Site encompasses 889 acres (360 ha) of land located in northeast Illinois, approximately 50 mi (80 km) southwest of Chicago, in Goose Lake Township, Grundy County. The Dresden Power Station is adjacent to the Morris Site.

The Morris operations are comprised of facilities to support the storage of spent nuclear fuel. The site uses approximately 15 acres (6 ha) of the 889 acres (360 ha) proposed by Morris. Historically, much of the area surrounding the Morris Site was mined for coal, clay, and building stone. The area surrounding the Morris Site is crossed by three major rivers: the Des Plaines, Kankakee, and Illinois Rivers. The site is located 1 mi (2 km) to the southwest of the convergence of these three rivers. Immediately to the northeast of the Morris Site is the Dresden Power Station. This station has been in operation since the 1970s, and has a peak generating capacity of 1,824 megawatts. To the northwest is the Reichhold Chemical Facility, which is a polyester resin manufacturing facility.

J.4.2 Visual Resources

The area surrounding the site is generally flat with sparse vegetation and tree cover. The Illinois River is to the north and north-west. The Des Plaines River, to the north-east, and the Kankakee River, to the east merge to form the Illinois River to the north and north-west of the site. The Morris facility and the Dresden Power Plant are highly visible from the site.

J.4.3 Site Infrastructure

The Morris Site has ready access to electrical power from the adjoining Dresden Power Station. The Morris Site is currently supplied with water from a ground water production well. There is no discharge of wastewater from the site, and sanitary sewage is treated in two onsite lagoons. Extensive rail lines exist throughout the area, with the closest spur approximately one mile to the west of the site.

J.4.4 Air Quality and Noise

Illinois is located in the Midwestern United States and experiences a wide range of weather patterns in both temperature and precipitation. In general, summers in northern Illinois are hot and humid and winters are cold and snowy. Southeasterly and easterly winds from the Atlantic Ocean and Gulf of Mexico usually bring mild and wet weather. Winds from the northwest and north out of Canada are usually cooler and drier. Winds in northern Illinois blow predominantly out of the northwest during the colder months followed by south wind directions during the

warmer months. The annual average windspeed for Moline, Illinois is 8 mi/hr (13 km/hr) and for the same period and location, the maximum recorded peak wind gust was 81 mi/hr (130 km/hr).

The Great Lakes affect local climates by enhancing precipitation, particularly with the formation of lake-effect snows. The Morris Site has averaged 28 to 32 in (71 to 81 cm) from 1971 through 2000. The average rainfall in the vicinity of the Morris Site from 1971 through 2000 (most recent comprehensive data set available) was 33 to 34 in/yr (84 to 86 cm/yr). Annual high and low temperatures are on average 60°F (15.6°C) and 39°F (3.9°C). Seasonal variations in temperature at the Morris Site are typical for a location in the Midwest.

High velocity wind speeds in the vicinity of the Morris Site can result from either straight-line winds or tornadoes. Grundy County has had an annual average of three days per year with wind speeds at or above 45 mi/hr (72 km/hr). Winds at this speed or above can result in some degree of damage. The recorded annual maximum for Grundy County is 20 days with windspeed above 45 mi/hr (72 km/hr). From 1950 to 2006, there were ten tornadoes in Grundy County. The closest tornado to the Morris Site was an F2 magnitude tornado 8.3 mi (13.4 km) to the southwest on April 19, 1973. Tropical storms affecting Illinois weather are rare. Over the past 20 years, the only storm of tropical origin that affected the weather near the Morris Site was Hurricane Gilbert in 1998.

The Morris Site is located in the Metropolitan Chicago Interstate Air Quality Control Region (AQCR). The AQCR is currently an attainment area for all criteria pollutants except ozone, and in some areas for PM₁₀ as well.

J.4.5 Water Resources

The proposed site is located on the east bank of the Kankakee River, just on the confluence of the Kankakee River and the Des Plains River. Local hydrology is dominated by the flat topography of the proposed site which is amenable to development of wetlands, ponds and small intermittent streams. These waterbodies can be found on the southern and northwestern portions of the proposed site.

Much of the Kankakee River and the Illinois River are classified as impaired waters and included on the Illinois 303(d) list. The Illinois River is impaired for human fish consumption due to mercury and polychlorinated biphenyls (PCBs) contamination. The Kankakee River near the proposed site is impaired for fish consumption due to mercury contamination, and for primary contact recreation due to fecal coliform contamination. These impairments are not anticipated to inhibit use of either waterway as a source of water for the proposed facilities. The right to withdraw surface water for the proposed GNEP facility would be within the confines of environmental regulations which limit total water removal to no more than 5 percent of the annual mean flow (e.g., 40 CFR Part 125 Subpart I) and IEPA/IDNR water withdrawal reduction requirements near 7Q10 flow conditions. The water that could be withdrawn from the Kankakee River is 145 million gallons per day (mgd) and 320 mgd from the Illinois River under normal flow conditions.

The elevation for the proposed site is about 0.29 ft (0.09 m) less than msl elevation levels presented in U.S. Geological Survey (USGS) topographic maps. The eastern edge of the Morris Site is between 509.5 ft and 510.0 ft (155.3 m and 155.4 m) National Geodetic Vertical Datum (NGVD 29). The 500-year flood is between 511.5 ft and 512.0 ft (155.9 m and 156.1 m) NGVD. Therefore, the eastern edge of the proposed site borders the 100- and 500-year flood zones, but the northern portion of the proposed site is approximately 10 to 22 ft (3 to 7 m) above the 100-year floodplain and 8.5 to 20.5 ft (2.6 to 6.3 m) above the 500-year floodplain.

The areal extent of aquifers and confining units vary in northeastern Illinois because of glacial erosion, depositional extent, and the presence of certain geologic structures (i.e., regional inactive faults). Overall, groundwater from the aquifers in the upper Illinois River basin is generally suitable for most uses. Although not considered a health issue, total dissolved solids (TDS), and chlorides can be high and cause difficulties with water distribution systems. In addition, naturally occurring constituents, such as arsenic, barium, and isotopes of radium, have been problematic enough to cause groundwater users (e.g., both domestic and community well systems) to abandon their wells in favor of surface water supplies. The available groundwater resources in northeastern Illinois are adequate to supply the needs of the region in the near future. With planning and careful management, large volumes of water could be safely withdrawn from the deep bedrock aquifer system. Illinois groundwater quantity use law is based principally on the doctrine of reasonable use. The Illinois General Assembly passed the *Water Use Act* in 1983, abolishing the English common law of absolute ownership (previously allowing capture of all groundwater beneath a parcel, regardless of the impact on neighboring wells). Currently, there are no groundwater use restrictions or mandatory reporting of water withdrawals in Illinois. Different types of groundwater users have been identified within 6 mi (10 km) of the proposed site. These groundwater users may withdraw groundwater from wells in the sand and gravel aquifers, the shallow bedrock aquifer, the deep bedrock aquifer system, or potentially in a few cases, the Mt. Simon aquifer.

J.4.6 Geology and Soils

The Morris Site is located in Grundy County, in northeastern Illinois at the western end of the Kankakee Plain subprovince of the Till Plains Section of the Central Lowland Physiographic Province. Based on an age of faulting of more than 280 million years, a prior analysis concluded that the “faulting is not capable” (as defined by the USNRC in 10 CFR Part 100), meaning that no movement on the fault has taken place at or near the ground surface at least once within the past 35,000 years, or movement of a recurring nature has occurred within the past 500,000 years. The Morris Site is located adjacent to the Dresden Power Station, which underwent thorough seismic evaluations as part of its licensing process to operate as a nuclear generating station, and was found to be suitable by the Atomic Energy Commission when the Construction Permit for Dresden Unit I was issued.

The Morris Site is overlaid by approximately 1 to 2 ft (0.3 to 0.6 m) of an undulating, erosional, bedrock surface soil. This soil generally consists of about 3 to 8 in (8 to 20 cm) of dark brown to black clayey silt topsoil with some occasional inclusions of extremely weathered limestone, sandstone, and glacial erratics. The Channahon Series is the soil series that is the most

prevalent (>35 percent) on the Morris Site. This series consists of shallow, well-drained, moderately permeable soils that formed in loamy material over dolomitic limestone terraces.

J.4.7 Biological Resources

The animals observed within the 889 acre (360 ha) parcel during the winter field observations included: whitetail deer, gray squirrel, deer mouse, meadow vole, red-tailed hawk, rough-legged hawk, Swainson's hawk, northern harrier, American kestrel, rock dove, mourning dove, northern flicker, American goldfinch, song sparrow, house sparrow, tree sparrow, and dark-eyed junco.

There are some areas with wetland vegetation and soil located to the south and, to a lesser extent, west of the Morris Site. There is a small (0.6 acre [0.24 ha]) bluejoint and river bulrush dominated wetland area to the west of the Morris Site. There are apparent wetlands just to the south of the existing Morris Site that are primarily common reed and common cattail areas associated with a low swale.

J.4.8 Cultural and Paleontological Resources

No archaeological surveys were identified that have been conducted within the Morris Site. Additionally, no documentation of previously recorded archaeological sites within the site was identified. Upon evaluation of the historic maps, atlases, and plat maps, a number of potentially sensitive areas were identified within the Morris property. The most extensive of these areas is located in the southeastern corner of the site.

J.4.9 Socioeconomics

The population density near the site is 91.48 people per square mile within the first 5 mi (8 km) radius from the site. The population density slowly increases, reaching a cumulative 485.49 people per square mile at the 35 mi (56 km) radius. The population density then climbs quickly as the radii include portions of Cook County and Chicago. Between the 35 mi (56 km) radius and the 50 mi (80 km) radius, the cumulative population density increases to 842.78 people per square mile, even though the counties to the south and west of the site have relatively low population levels. The region's labor force was approximately 4.2 million in 2000. In 2000, 6.5 percent of this labor force (273,000) was unemployed. That year, the majority of the labor force (2.6 million) resided in Cook County.

J.4.10 Environmental Justice

Minority in this analysis is defined as any ethnic group other than white, non-Hispanic. Overall, more than 30 percent of the region's residents are members of minority groups. Minority residents are of special concern because their behaviors may cause higher exposures to environmental contaminants; they may do more subsistence fishing, for example, and thus be more affected by water pollution. Of the populations in the region for which the U.S. Census was able to determine the poverty status, more than 11 percent has income below the poverty line. Poverty status is determined for an individual, household, or family by comparing their reported income to officially determined income thresholds. Residents of the region who are both a

minority and have incomes below the poverty line are of particular concern from an environmental justice perspective.

J.4.11 Public and Worker Health and Safety

There are small radiological air emissions associated with the storage of spent nuclear fuel. To assure compliance with regulatory standards, effluent air is continuously sampled for particulates. Samples are analyzed weekly for gross beta activity. With respect to surrounding population doses, the Dresden Power Plant is a more predominant source of radiological emissions than Morris. The review revealed that the doses to maximally exposed individuals (MEIs) in the vicinity of Dresden Site were a small fraction of the Environmental Protection Agency (EPA) limits. The impact to the environment from radioactive releases from Dresden Units 2 and 3 is small. For comparison, the average American living in the United States is typically exposed to 360 millirem (mrem) annually from natural and other sources of radiation.

J.4.12 Transportation

Grundy and Will Counties are crossed by I-55, I-57, I-80, and I-355, a network of interstates connecting them to the Chicago area. The Kankakee River and the Des Plains River come together near the Grundy-Will County line to form the Illinois River, providing a connection for barge traffic to the Chicago area and down the Mississippi River through a system of canals and locks. A total of nine airports or heliports were identified within 10 mi (16 km) of the Morris Site. Only two, the Morris Municipal Airport and the Joliet Regional Airport, are public airports. There are extensive rail lines in the area, and the Morris Site has a spur that connects it to the nearest rail line, which is located approximately 1 mile to the west.

J.4.13 Waste Management

Currently the Morris Site is classified as a conditionally exempt small quantity generator (CESQG) of hazardous waste. CESQG facilities are those that generate less than 220 lbs (100 kg) of hazardous waste per month. Solid wastes generated by the Morris Site include spent resin filter materials that are disposed of as radioactive waste and sanitary wastes that are disposed of as solid, non-hazardous wastes.

J.5 HANFORD SITE

This section presents a summary of the affected environments for the Hanford Site (Hanford).

J.5.1 Land Use

Hanford, established in 1943 as one of the three original Manhattan Project sites, is located on approximately 375,000 acres (148,000 hectares [ha]) in Washington State, just north of Richland. It extends over parts of Adams, Benton, Grant, and Franklin counties (DOE 2006b).

Hanford is owned and used primarily by the U.S. Department of Energy (DOE), but portions of it are owned, leased, or administered by other Government agencies. Only about 6 percent of the land area has been disturbed and is actively used, leaving mostly vacant land with widely scattered facilities. On June 9, 2000, the President issued a proclamation that established the 195,000 acre (78,900 ha) Hanford Reach National Monument (65 FR 37253). Industrially and agriculturally developed land lies to the southwest (all zoned industrial by the City of Richland). The Columbia River is located due east. There is also a barge-docking facility, located to the southeast that is used for transferring reactor components and other materials destined for the Hanford Site. A haul road connecting the barge facility to Stevens Drive traverses the buffer area from southeast to northwest. The Washington State University (WSU)-Tri-Cities branch campus, Hanford High School, and Richland residential area are located to the south-southeast (DOE 2000g).

J.5.2 Visual Resources

The topography of land in the vicinity of Hanford ranges from generally flat to gently rolling. Rattlesnake Mountain, rising to 3,480 feet (ft) (1,061 meters [m]) above mean sea level, forms the southwestern boundary of the site. Gable Mountain and Gable Butte are the highest land forms within the site, rising approximately 200 ft (61 m) and 590 ft (180 m), respectively. The Columbia River flows through the northern part of the site and, turning south, forms part of the eastern site boundary. Typical of the regional shrub-steppe desert, the site is dominated by widely spaced, low-brush grasslands (DOE 2000g, DOE 2007h).

Hanford is characterized by mostly undeveloped land, with widely spaced clusters of industrial buildings along the southern and western banks of the Columbia River and at several interior locations. The adjacent visual landscape consists primarily of rural rangeland and farms. Viewpoints affected by DOE facilities are primarily associated with the public access roadways. The Energy Northwest (formerly known as the Washington Public Power Supply System) nuclear reactor and DOE facilities are brightly lit at night and are highly visible from many areas. The tallest structures within the 300 area vicinity are the water towers, with a height of 130 ft (40 m) and the meteorological tower with a height of 200 ft (61 m) in height. The 300 Area is visible from Route 4. The Fuels and Materials Examination Facility, the tallest building in the 400 Area, is 100 ft (30 m) tall and can be seen from State Route 240 (DOE 2000g).

J.5.3 Site Infrastructure

The DOE road network at the Hanford Site includes about 122 lane miles (mi) (196 kilometers [km]) of primary roads and 377 lane mi (607 km) of secondary roads that provide access to the various work centers (DOE 2007h).

The Hanford Site rail system now includes about 110 mi (177 km) of active track and an estimated 275 mi (443 km) of inactive track (DOE 1999a).

Electricity for the Hanford Site is purchased from Bonneville Power Administration (BPA), a federal power agency within the DOE, which provided 90 percent of the electricity consumed on the Hanford Site in 2005 (Slocum 2006).

The coal-fired steam plants at the Hanford Site are no longer in operation. Building heat is now provided by natural gas and fuel oil (Slocum 2006).

Propane and gasoline fuels are also used to support site operations. Fuels used onsite are delivered by truck. The Columbia River is the principal source of water for the Hanford Site. Based on current demand for water and water treatment, the systems now in place have plenty of excess capacity to accommodate additional water and treatment needs (Slocum 2006).

J.5.4 Air Quality and Noise

The Environmental Protection Agency (EPA) has issued regulations (40 CFR Part 50) setting National Ambient Air Quality Standards (NAAQS). Individual states have the primary responsibility for assuring that air quality within the state meets the NAAQS through state implementation plans (SIP) that are approved by EPA. Areas that meet ambient air quality standards are said to be in attainment. Areas that do not meet one or more ambient air quality standards are designated as nonattainment areas.

None of the areas within Hanford and its surrounding counties are designated as nonattainment areas with respect to NAAQS for criteria air pollutants (40 CFR Part 81). The primary sources of air pollutants at Hanford include emissions from power generation and chemical processing (DOE 2000g). Other sources include vehicles, construction, environmental remediation, and waste management activities (DOE 2000j). Hanford sources are limited and background concentrations of criteria pollutants are well below ambient standards. Carbon monoxide, sulfur dioxide, and nitrogen dioxide have been monitored periodically in communities and commercial areas southeast of Hanford (DOE 2006b).

Small quantities of tritium (i.e., hydrogen-3), strontium-90, iodine-129, cesium-137, plutonium-238, plutonium-239/240, plutonium-241, americium-241, and several other longer lived isotopes are released to the environment through state and federally permitted emission points. Distinguishing Hanford-produced radionuclides in the environment is extremely challenging because concentrations in emissions from the Hanford Site stacks are comparable to background concentrations of radionuclides that originated from historical atmospheric nuclear weapons testing (DOE 2000g).

Studies of the propagation of noise at Hanford have been concerned primarily with occupational noise at work sites. Environmental noise levels have not been extensively evaluated because of the remoteness of most Hanford activities and isolation from receptors that are covered by federal or state statutes. Most industrial facilities on the Hanford Site are located far enough away from the Site boundary that noise levels at the boundary are not measurable or are barely distinguishable from background noise levels.

J.5.5 Water Resources

Major surface water features at and surrounding the Hanford Site include the Columbia River, Columbia riverbank seepage, springs, and ponds. In addition, the Yakima River flows along a short section of the southern boundary of the site. The Columbia River is the second largest river in the contiguous United States in terms of total flow and is the dominant surface water feature on the site. Several communities use the Columbia River as their source of drinking water, and various facilities at the Hanford Site use water from the Columbia River (DOE 2006b).

About one-third of the Hanford Site drains into the Yakima River. Water is expected to flow from the Yakima River into the aquifer underlying the Hanford Site rather than from the aquifer into the river, due to the higher elevation of the river surface compared to the elevation of the adjacent water table (DOE 2006b). Groundwater contaminants from the Hanford Site do not reach the Yakima River (DOE 2006b).

No floodplains are found in the 400 Areas. Flooding on the Hanford Site has occurred along the Columbia River, but chances of recurrence have been greatly reduced by the construction of dams to regulate river flow. Major floods are typically due to the melting of the winter snowpacks combined with above normal precipitation (DOE 2006b). Discharges from the Hanford Site enter the Columbia River along the Hanford Reach, which is routinely monitored and regulated for radioactive and chemical pollutants in accordance with the *Clean Water Act* (CWA) (33 U.S.C. 1251 et seq.). According to the general water use and water quality criteria established by Washington State for the Columbia River, the stretch of the River from Grand Coulee Dam to the Washington-Oregon border, which includes the Hanford Reach is classified as Class A, Excellent (WAC 2006) Class A waters are suitable for essentially all uses, including raw drinking water, recreation, and wildlife habitat (DOE 2006b).

Groundwater under Hanford occurs in confined and unconfined aquifer systems. The unconfined aquifer system lies within the glacioalluvial sands and gravels of the Hanford Formation and, to a greater degree, the fluvial and lacustrine sediments of the Ringold Formation. Groundwater generally flows eastward across the site from recharge areas in the higher elevations on the western site boundary, with discharge primarily to the Columbia River (DOE 1999a, DOE 2000g).

The area of contaminant plumes on the Hanford Site with concentrations exceeding drinking water standards was estimated to be 80.3 mi² (207.9 km²) in fiscal year 2001. This estimate is 1 percent smaller than that for fiscal year 2000. The decrease is primarily due to shrinkage of the

known tritium plume, which was caused primarily by radioactive decay (DOE 2004i). By 2006 the total combined plume area is 71.8 mi² (185.9 km²) (Poston et al. 2007).

The groundwater usage in the Pasco Basin can be characterized by a large proportion (50 percent) of domestic use followed by agricultural uses (24 percent) and industrial (3 percent) (DOE 1999a). Most of Hanford Site's water supply is withdrawn from the Columbia River and it is distributed to the 100-B, 100-D, 200, and 300 Areas at Energy Northwest (DOE 1999a). The 400 Area and other low-use facilities at remote locations use groundwater from wells located at those locations. The 700 and 1100 Areas are supplied with water by the City of Richland (DOE 1999a).

J.5.6 Geology and Soils

The Hanford Site is located within the Pasco Basin, a topographic, structural depression in the southwest corner of the Columbia Basin physiographic subprovince. This subprovince is characterized by generally low-relief hills with deeply carved river drainage. Relief in the Pasco Basin area ranges from 390 ft (120 m) above mean sea level at the Columbia River level, to 750 ft (230 m) above mean sea level (DOE 2004i).

The stratigraphy of the Hanford Site consists of Miocene-age and younger rocks. Older Cenozoic sedimentary and volcanoclastic rocks underlying the Miocene rocks are not exposed at the surface. Over 100 basalt flows of the Columbia River Basalt Group, with a total thickness exceeding 10,000 ft (3000 m), lie beneath the Hanford Site. Interbedded between many of these basalt flows are sedimentary rocks of the Ellensburg Formation, a series of sand, gravel, or silt layers that were deposited by the ancestral Columbia River system. The sedimentary deposits of the Ringold Formation, Hanford Formation, and surficial deposits overlie the Columbia River Basalt Group and are up to 750 ft (230 m) thick. The 400 Area stratigraphy consists of sand-dominated sediments of the Hanford Formation which attain a thickness of about 164 ft (50 m) beneath the site (DOE 2004i).

The Hanford Site lies in an area of relatively low seismic activity. The nearest capable fault to the 400 Area (Central Gable Mountain fault) is 12 mi (19.3 km) away. The most recent Hanford Site-specific hazard analysis (DOE 2004i) estimated that 0.10 g (1 g is the acceleration of gravity) horizontal acceleration would be experienced on average every 500 years (yr) (or with a 10 percent chance every 50 yr). This study also estimated that 0.2 g would be experienced on average every 2,500 years (or with a 2 percent chance in 50 yr) (DOE 2004i).

Several major volcanoes are located in the Cascade Range west of the Hanford Site. The nearest volcano, Mount Adams, is about 102 mi (165 km) from the Hanford Site. The most active volcano, Mount St. Helens, is located approximately 136 mi (220 km) west-southwest of the Hanford Site (DOE 2004i).

No economically viable mineral resources exist at the Hanford Site. Fifteen different soil types have been identified on the Hanford Site, varying from sand to silty and sandy loam (DOE 2004i). The predominant soil type in the 400 Area is the Quincy (Rupert) sand, and the soils and surface sediments are not subject to liquefaction or other instabilities.

J.5.7 Biological Resources

Plants at the Hanford Site are adapted to low annual precipitation, low water-holding capacity of the rooting substrate (sand), dry summers, and cold winters. Range fires that burn through the area during dry summers have reduced species that are less resistant to fire (for example, big sagebrush) and have allowed more opportunistic and fire-resistant species a chance to become established. Perennial shrubs and bunchgrasses generally dominate native plant communities on the site. However, Euro-American settlement and development have resulted in the proliferation of non-native species. Of the 727 plant species recorded on the Hanford Site, approximately 25 percent of the species are considered non-native (DOE 2007h) (DOE 2006b). The Nature Conservancy of Washington also conducted rare plant surveys. The Conservancy found 112 populations/occurrences of 28 rare plant taxa on the Hanford Site. When combined with observations preceding the 1994–1999 inventories, a total of 127 populations of 30 rare plant taxa have been documented on the Hanford Site (DOE 2004i).

The shrub and grassland habitat of the Hanford Site supports many groups of terrestrial wildlife. Species include large game animals like Rocky Mountain elk and mule deer; predators such as coyote, bobcat, and badger; and herbivores like deer mice, harvest mice, ground squirrels, voles, and blacktailed jackrabbits. The most abundant mammal on the Hanford Site is the Great Basin pocket mouse (DOE 2006b).

Shrubland and grassland provide nesting and foraging habitat for many passerine bird species. Surveys conducted during 1993 (DOE 2007h) reported the occurrence of western meadowlarks and horned larks more frequently in shrubland habitats than in other habitats on the site. Long-billed curlews and vesper sparrows were also noted as commonly occurring species in shrubland habitat. Common upland game bird species that occur in shrub and grassland habitat include chukar partridge, California quail, and Chinese ring-necked pheasant. Among the raptor species that use shrubland and grassland habitats are American kestrel, red-tailed hawk, Swainson's hawk, and ferruginous hawks. Northern harriers, sharp-shinned hawks, rough-legged hawks, and golden eagles also occur in these habitats but are not sighted as frequently. Many species of insects occur throughout all habitats on the Hanford Site. Butterflies, grasshoppers, and darkling beetles are among the most conspicuous of the approximately 1,500 species of insects that have been identified from specimens collected on the Hanford Site (DOE 2007h). The high diversity of insect species on the Hanford Site is believed to reflect the size, complexity, and quality of the shrub-steppe habitat (DOE 2006b).

Two types of natural aquatic habitats are found on the Hanford Site: the Columbia River that flows along the northern and eastern edges of the site, and the small spring-streams and seeps located mainly on Arid Lands Ecology reserve (ALE) in the Rattlesnake Hills (DOE 2004i).

The Columbia River is the dominant aquatic ecosystem on the Hanford Site and supports a large and diverse community of plankton, benthic invertebrates, fish, and other communities. Steelhead and salmon are regulated as evolutionary significant units (ESUs) by the National Marine Fisheries Service based on their historic geographic spawning areas. The Upper Columbia River steelhead ESU is listed as threatened (USFWS 2007b). Conditions in the Hanford Reach promote spawning success for salmonids, sturgeon and bass. Three species of

fish (bull trout, spring-run Chinook and steelhead) that are currently found on the federal list of threatened and endangered species are found at the Hanford Site.

Washington State considers shrub-steppe habitat as a priority habitat because of its relative scarcity in the state and because of its requirement as nesting/breeding habitat by several state and federal species of concern.

Primary wetland areas at Hanford are found in the riparian zone along the Columbia River. The extent of this zone varies, but includes large stands of willows, grasses, and other plants. There are no natural wetlands in the 400 Area, although a small cooling and wastewater pond does contain some wetland vegetation.

J.5.8 Cultural and Paleontological Resources

Twenty-four percent of the Hanford Site has been surveyed for archaeological resources (DOE 2005f). Archaeological surveys have focused on islands and a 1,312 ft (400 m) corridor on each side of the Columbia River. Approximately 1,447 cultural resource sites and isolated finds have been documented, and 127 of these have been evaluated for eligibility to the National Registry of Historic Places (NRHP). Documentation and evaluation have occurred on 531 buildings and structures at the Hanford Site.

Prehistoric resources at the Hanford Site include pithouse villages, open campsites, graves, spirit quest sites, hunting camps, game drive complexes, quarries, and temporary camps (DOE 2000g). Approximately 720 archaeological sites and isolated finds associated with the pre-contact period have been recorded on the Hanford Site; of these, 80 contain historic components as well (DOE 2005f). Forty-nine prehistoric archaeological sites have been listed on the NRHP, with 3 listed individually and 46 contained within 6 listed archaeological districts. Five prehistoric archaeological sites have been determined eligible for individual listing on the NRHP. Most of the 400 Area has been so disturbed by construction activities, that an archaeological survey in 1978 found that only 30 acres (12 ha) were undisturbed. Survey of the undisturbed acreage identified no archaeological resources. No archaeological sites are known to be located within 0.6 miles (1 km) of the 400 Area (DOE 2005f).

Historic resources at the Hanford Site that pre-date the Hanford era include homesteads, ranches, trash scatters, gold mines, roads, and townsites. More recent historic resources include reactors and materials processing facilities that played important roles in the Manhattan Project and Cold War era (DOE 2000g). The 400 Area does contain six Cold War-era buildings/structures that have been determined eligible for the NRHP as contributing properties within this historic district (DOE 2005f).

Native American tribes who retain secular and religious ties to the Hanford Site region include the Yakama, Cayuse, Nez Perce, Wanapum, Chamnapum, Palus, Walla Walla, and Umatilla Peoples. These groups have knowledge of the traditional and historical ceremonies and lifeways of their cultures, and resources that are found on the Hanford Site are used by tribal members for ceremonies and other traditional uses.

Remains from the Pliocene and Pleistocene Ages have been identified at the Hanford Site. The Upper Ringold Formation dates to the Late Pliocene Age and contains fish, reptile, amphibian, and mammal fossil remains. Late Pleistocene Touchet beds have yielded mammoth bones. These beds are composed of fluvial sediments deposited along ridge slopes that surround the Hanford Site. No paleontological resources have been discovered in the 400 Area at Hanford.

J.5.9 Socioeconomics

Socioeconomic characteristics addressed at Hanford include employment, income, population, housing, and community services. These characteristics are analyzed for a two-county ROI consisting of Benton and Franklin Counties in Washington.

The state and local government, professional and technical services, retail trade, and administrative and waste services sectors employ the greatest number of workers in the ROI (BEA 2006a, TtNUS 2006a). The state and local government sector provides 12.4 percent of all employment, while the professional and technical services sector provides 11.1 percent, the retail trade sector provides 11.1 percent, and the administrative and waste services sector provides 9.2 percent of the jobs in the ROI. Another important sector of employment is healthcare and social assistance (8.7 percent) (BEA 2006a, TtNUS 2006e).

The labor force in the ROI increased 43.8 percent from 1990 to 2005 (BLS 2005b, TtNUS 2006a). In comparison, for the same period, the state-wide labor force in Washington increased 29.8 percent. Between 1990 and 2005, the ROI population grew from 150,033 to 220,961, an increase of 47.3 percent (USCB 1990, USCB 2007c, and TtNUS 2006e). This was a higher rate of growth than for the state of Washington, which grew at a rate of 29.2 percent, during the same time period.

J.5.10 Environmental Justice

Census data from the year 2000 was used to determine minority and low-income characteristics by block group within 50 mi (80 km) of the Hanford Site. Eleven census block groups (3 percent) have a significant American Indian or Alaskan Native minority population, 94 census block groups (26 percent) have significant “some other race” populations, 87 census block groups (24 percent) have significant aggregate minority percentages, and 147 census block groups (41 percent) have significant Hispanic Ethnicity populations (TtNUS 2006e).

Thirty-seven census block groups within the 50 mi (80 km) radius have a significant percentage of low-income households (TtNUS 2006e).

J.5.11 Public and Worker Health and Safety

An individual’s radiation exposure in the vicinity of the Hanford Site amounts to approximately 365 millirem (mrem), and is comprised of natural background radiation from cosmic, terrestrial, and internal body sources; radiation from medical diagnostic and therapeutic practices; weapons test fallout; consumer and industrial products, and nuclear facilities.

Releases of radionuclides to the environment from Hanford operations provide another source of radiation exposure to individuals in the vicinity of Hanford. Types and quantities of radionuclides released from Hanford operations in 2005 are listed in *Hanford Site Environmental Report for Calendar Year 2005* (DOE 2006b). The potential sources of radionuclide contamination included gaseous emissions from stacks and ventilation exhausts, liquid effluent from operating wastewater treatment facilities, contaminated groundwater seeping into the Columbia River, and fugitive emissions from contaminated soil areas and facilities. The doses from these emissions and effluents fall within the radiological limits given in DOE Order 5400.5, *Radiation Protection of the Public and the Environment*, and are much lower than those from background radiation (DOE Order 5400.5), (DOE 2006b).

Hanford worker doses have typically been well below DOE worker exposure limits. DOE set administrative exposure guidelines at a fraction of the exposure limits to help enforce doses that are as low as reasonably achievable (ALARA). Every year DOE evaluates the Hanford Sites' ALARA administrative control levels and adjusts them as needed.

Liquid effluent and airborne emissions that may contain hazardous constituents are continually monitored at the Hanford Site (DOE 2006b).

J.5.12 Transportation

Vehicle access to Hanford is provided by State Routes 240, 243, and 24. State Route 240 connects to the Richland bypass highway, which interconnects with I-182. State Route 243 exits the site's northwestern boundary and serves as a primary link between the site and I-90. State Routes 24 and 240 are both two-lane roads that traverse the Hanford Site. These roads are maintained by Washington State (DOE 1999a). State Route 24 enters the site from the west and continues eastward across the northernmost portion of the site and intersects State Route 26 about 10 mi (16 km) east of the site boundary. State Route 240 is a north-south highway that skirts the western edge of the Site.

A DOE-maintained road network within the Hanford Site, mostly paved and two lanes wide provides access to the various work centers. There is presently no rail service at Hanford, except for a spur to Energy Northwest.

The ports of Benton, Kennewick, and Pasco use the commercial waterways of the Snake and Columbia Rivers to provide access to the deep-water ports of Portland, Oregon and Vancouver, Washington. The Port of Benton provides a barge slip where shipments arriving at Hanford may be off-loaded (DOE 2000g).

J.5.13 Waste Management

Currently, Hanford's mission is focused on cleanup of wastes associated with past nuclear research, development, and weapons production activities, and decommissioning and demolition projects. The following waste types are managed at Hanford: high-level, transuranic, mixed transuranic, low-level, mixed low-level and hazardous waste. In addition to these radioactive and hazardous wastes, Hanford generates and manages sanitary solid waste, uncontaminated

demolition debris, and sanitary sewage. A major focus of DOE's environmental management mission at Hanford is cleanup and management of the site's legacy waste from more than 45 years of nuclear materials production. However, beginning in 1999, non-dangerous waste has been disposed of at an offsite landfill. In addition to newly generated waste, significant quantities of legacy waste remain from years of nuclear material production and waste management activities. Most legacy waste from past operations at the Hanford Site resides in *Resource Conservation and Recovery Act* (RCRA) compliant waste sites or is stored in places awaiting cleanup and ultimate safe storage or disposal (40 CFR Parts 239-299), (DOE 2004i).

J.6 IDAHO NATIONAL LABORATORY

The Idaho National Laboratory (INL) is located on approximately 570,000 acres (230,671 ha) in southeastern Idaho, and is 45 miles (mi) (72 kilometers [km]) west of Idaho Falls, 38 mi (61 km) northwest of Blackfoot, and 22 mi (35 km) east of Arco. It is primarily located within Butte County, but portions of the site are also in Bingham, Jefferson, Bonneville, and Clark Counties. The site is roughly equidistant from Salt Lake City, Utah, and Boise, Idaho (INL 2006).

This section presents a summary of the affected environments for the Idaho National Laboratory site.

J.6.1 Land Use

The Federal Government, the state of Idaho, and various private parties own lands immediately surrounding INL. Regional land uses include grazing, wildlife management, mineral and energy production, recreation, and crop production. Two national natural landmarks border INL: Big Southern Butte (1.5 mi [2.4 km] south) and Hell's Half Acre (1.6 mi [2.6 km] southeast). Land is also used for recreation and environmental research associated with the designation of INL as a National Environmental Research Park. Much of INL is open space that has not been designated for specific use. Because INL is remote from most developed areas, its lands and adjacent areas are not likely to experience residential and commercial development, and no new development is planned near the site. Recreational and agricultural uses, however, are expected to increase in the surrounding area in response to greater demand for recreational areas and the conversion of rangeland to cropland (DOE 2005b).

J.6.2 Visual Resources

The Bitterroot, Lemhi, and Lost River Mountain ranges border INL on the north and west. Volcanic buttes near the southern boundary of INL can be seen from most locations on the site. INL generally consists of open desert land predominantly covered by big sagebrush and grasslands. Pasture and farmland border much of the site. INL facilities have the appearance of low-density commercial/industrial complexes clustered and widely dispersed throughout the site. Structure heights generally range from 10 to 100 feet (ft) (3 to 30 meters [m]); a few stacks and towers reach 250 ft (76 m). Although many INL facilities are visible from highways, most are more than 0.5 mi (0.8 km) from public roads. The operational areas are well defined at night by security lights (DOE 2005b).

J.6.3 Site Infrastructure

The road network at INL provides for onsite ground transportation. There are about 90 mi (145 km) of paved public roads at the INL site. In addition, there are 87 mi (140 km) of non-public paved roads and 100 mi (161 km) of unpaved non-public roads at the INL site (INL 2006).

The Union Pacific Railroad's Blackfoot-to-Arco Branch crosses the southern portion of INL and provides rail service to the site. There are 30 mi (48 km) of railroad track at INL (DOE 2005b).

DOE presently contracts with the Idaho Power Company and Rocky Mountain Power and Light to supply electric power to INL. The contract allows for power demand of up to 45,000 kilowatts (45 megawatts [MW]) (DOE 2005b).

Fuel consumed at INL includes natural gas, fuel oil (heating fuel), diesel fuel, gasoline, and propane. All fuels are transported to the site for use and storage (INL 2006).

The Snake River Plain Aquifer is the source of all water used at INL. The water is provided by a system of about 30 wells, together with pumps and storage tanks (DOE 2005b).

J.6.4 Air Quality and Noise

The climate at INL and the surrounding region is characterized as that of a steppe (a vast semiarid grass-covered plain). The average annual precipitation is 8.7 in (221.0 mm), and prevailing winds are generally southwest or northeast. The average annual temperature at INL is about 42°F (6°C) and average monthly temperatures range from a minimum of around 16°F (-9°C) in January to a maximum of 68°F (20°C) in July. The annual average wind speed is 7.5 mi/hr (12.1 km/hr) (DOE 2005b).

None of the ambient air pollutant concentrations measured by the monitors exceeded the state or national standards (DOE 2005b).

The primary source of air pollutants at INL are from combustion of fuel oil for heating. Other emission sources include combustion of waste materials, industrial processes, stationary diesel engines, vehicle engines, and fugitive dust from waste burial and construction activities (IDEQ 2004a).

Radiological air pollutants are routinely monitored at locations within, around, and at longer distances from INL. In 2005, an estimated 6,614 curies of radioactivity were released to the atmosphere from all INL sources (DOE 2005b). The impacts to human health from radiological releases are summarized in Section J.6.11.

Noise emission sources within INL include various industrial facilities, equipment, and machines (e.g., coolant systems, transformers, engines, pumps, boilers, steam vents, pager systems, construction equipment and materials-handlers, and vehicles). Most INL industrial facilities are far enough from the site boundary that noise levels from these sources are not measurable or are barely distinguishable from background levels at the boundary (DOE 2005b).

J.6.5 Water Resources

INL is in the Mud Lake-Lost River Basin (also known as the Pioneer Basin). This closed drainage basin includes three main streams, the Big and Little Lost Rivers and Birch Creek. These three streams are essentially intermittent and drain the mountain areas to the north and west of INL, although most flow is diverted for irrigation in the summer months before it reaches the site boundaries. Flow that reaches INL infiltrates into the ground surface along the length of the streambeds in the spreading areas at the southern end of INL and, if the streamflow is

sufficient in the ponding areas (playas or sinks), in the northern portion of INL. During dry years, there is little or no surface water flow on the INL site.

The Snake River Plain Aquifer, which lies below INL, extends from near the western boundary of Yellowstone National Park in eastern Idaho to the Idaho-Oregon border where the Snake River enters Hells Canyon. The Snake River Plain Aquifer is the most widely used source of water for drinking and agriculture in southern Idaho (Roback et al. 2001). This aquifer has been designated a Sole Source Aquifer by Environmental Protection Agency (EPA). Water storage in the aquifer is estimated at some 2 billion acre ft (2.47×10^{12} m³), and irrigation wells can yield 7,000 gal/min (26,498 L/min) (DOE 2002e). The aquifer is composed of numerous relatively thin basalt flows with interbedded sediments extending to depths in excess of 3,500 ft (1,067 m) below land surface (DOE 2005b).

The U.S. Geological Survey has estimated that the thickness of the active portion of the Snake River Plain Aquifer at INL ranges between 250 to 820 ft (76 to 250 m). Depth to the water table ranges from about 200 ft (61 m) below land surface in the northern part of the site to more than 900 ft (274 m) in the southern part (Ackerman et al. 2006). Depth to water at the proposed site is 475 ft (145 m) (DOE 1989a).

Average groundwater consumption during 2004 was 1.6 billion gal/yr (6.1 billion L/yr). This amount of water represents less than 1 percent of the groundwater that flows underneath INL (ATSDR 2004). Since 1950, DOE has held a Federal Reserved Water Right for the INL site that permits a pumping capacity of approximately 80 ft³/sec. Total groundwater withdrawal at INL historically averages between 15 and 20 percent of that permitted amount (DOE 2002e).

J.6.6 Geology and Soils

INL occupies a relatively flat area on the northwestern edge of the Eastern Snake River Plain, part of the Eastern Snake River Plain Physiographic Province. The area consists of a broad plain that has been built up from the eruptions of multiple flows of basaltic lava over the past 4 million years. The proposed site is fairly level to gently sloping, with some areas of moderate slope due to basalt rock outcroppings. Elevations on the proposed site range from 4,900 to 5,000 ft (1,493 to 1524 m). Generally, the terrain slopes toward the Big Lost River.

The upper 0.6 to 1.2 mi (1.0 to 1.9 km) of the crust beneath INL is composed of a sequence of Quaternary age (recent to 2 million years old) basalt lava flows and poorly consolidated sedimentary interbeds collectively called the Snake River Group. The lava flows at the surface range from 2,100 to 2 million years old. The sediments are composed of fine-grained silts that were deposited by wind; silts, sands, and gravels deposited by streams; and clays, silts, and sands deposited in lakes such as Mud Lake and its much larger ice-age predecessor, Lake Terreton. The accumulation of these materials in the Eastern Snake River Plain has resulted in the observed sequence of interlayered basalt lava flows and sedimentary interbeds (DOE 2005b).

The Arco Segment of the Lost River Fault is thought to terminate about 4.3 mi (6.9 km) from the INL boundary, and approximately 22 mi (35 km) west of the proposed site. The Howe Segment of the Lemhi Fault terminates near the northwest boundary of INL, and approximately 17 mi (27 km) northwest of the proposed site (DOE 2005b). Both segments are considered capable or

potentially active. A capable fault is one that has had movement at or near the ground surface at least once within the past 35,000 years, or recurrent movement within the past 500,000 years (10 CFR Part 100).

Based on the maximum considered earthquake ground motions, INL is located in a broadly defined region of low and moderate to high seismicity. Ground motions in these regions are controlled by earthquake sources that are not well defined, with estimated maximum earthquake magnitudes having relatively long return periods.

Basaltic volcanic activity occurred from about 2,100 to 4 million years ago in the INL site area. Although no eruptions have occurred on the Eastern Snake River Plain during recorded history, lava flows of the Hell's Half Acre lava field erupted near the southern INL boundary as recently as 5,400 years ago. The most recent eruptions within the area occurred about 2,100 years ago, 19 mi (31 km) southwest of the site at the Craters of the Moon Wilderness Area. The estimated recurrence interval for volcanism associated with the five identified volcanic zones ranges from 16,000 to 100,000 years (DOE 2005b).

Within INL, mineral resources include sand, gravel, pumice, silt, clay, and aggregate (e.g., sand, gravel, and crushed stone). These resources are extracted at several quarries or pits at INL and used for road construction and maintenance, new facility construction and maintenance, waste burial activities, and ornamental landscaping. The geologic history of the Eastern Snake River Plain makes the potential for petroleum production at INL very low. The potential for geothermal energy exists at INL and in parts of the Eastern Snake River Plain; however, a study conducted in 1979 identified no economic geothermal resources (DOE 2005b).

Four basic soilscapes exist at INL: river-transported sediments deposited on alluvial plains, fine-grained sediments deposited into lake or playa basins, colluvial sediments originating from bordering mountains, and wind-blown sediments over lava flows. The surface soils at the proposed site are shallow with numerous basalt outcrops. Malm sandy loam, Matheson sandy loam, bondfarm sandy loam, Matheson loamy sand, and Malm loamy sand comprise most of the soils at the proposed site. Basalt bedrock was typically encountered at depths ranging from 1.5 to 4 ft (0.5 to 1 m) (DOE 2005b).

J.6.7 Biological Resources

INL lies in a cool desert ecosystem dominated by shrub-steppe communities. Most land within the site is relatively undisturbed and provides important habitat for species native to the region. Facilities and operating areas occupy 2 percent of INL; approximately 60 percent of the area around the periphery of the site is grazed by sheep and cattle. Although sagebrush communities occupy about 80 percent of INL, a total of 20 plant communities have been identified. These communities may be grouped into six basic types: juniper woodland, grassland, shrub-steppe (which consists of sagebrush-steppe and salt desert shrubs), lava, bareground-disturbed, and wetland vegetation (DOE 2005b). Similar to most of INL, vegetation at the proposed site is dominated by big sagebrush vegetation associations (DOE 1989a).

The interspersed low sagebrush (*Artemisia arbuscula*) and big sagebrush (*Artemisia tridentata*) communities in the northern portion of INL and juniper communities in the northwestern and southeastern portions of the site are considered sensitive habitats.

Large wildfires in 1994, 1995, 1996, 1999, 2000, and 2007 played an important role in the ecology of INL. The most recent fires burned about 36,000 acres (14,568 ha) in the summer and early fall of 2000 (DOE 2005b). Of particular concern is the loss of sagebrush. This plant is slow to regenerate since it must grow from seed, whereas many other plant species regenerate from underground root systems. The slow recovery of sagebrush is likely to have a detrimental impact on greater sage grouse (DOE 2005b).

INL supports numerous animal species, including two amphibian, 11 reptile, 225 bird, and 44 mammal species. Common animals on the site include short-horned lizards (*Phrynosoma douglassi*), gopher snakes (*Pituophis melanoleucus*), sage sparrows (*Amphispiza belli*), Townsend's ground squirrels (*Spermophilus townsendii*), and black-tailed jackrabbits (*Lepus californicus*). Important game animals include the greater sage grouse, mule deer (*Odocoileus hemionus*), elk (*Cervus elaphus*), and pronghorn (DOE 2005b).

Aquatic habitat on INL is limited to the Big Lost River, Little Lost River, Birch Creek, and a number of liquid waste disposal ponds. All three streams are intermittent and drain into four sinks in the north-central part of the site. Six species of fish have been observed within water bodies located onsite. Species observed in the Big Lost River include brook trout (*Salvelinus fontinalis*), rainbow trout (*Salmo gairdneri*), mountain whitefish (*Prosopium williamsoni*), speckled dace (*Rhinichthys osculus*), shorthead sculpin (*Cottus confusus*), and kokanee salmon (*Oncorhynchus nerka*) (DOE 2005b).

Twenty Federal- and state-listed threatened, endangered, and other special status species occur, or possibly occur on INL. Federally-listed plants and animals include 2 threatened, one candidate, and ten species of concern. No critical habitat for threatened or endangered species, as defined in the *Endangered Species Act*, exists on INL.

National Wetland Inventory maps prepared by the U.S. Fish and Wildlife Service (USFWS) have been completed for most of INL. These maps indicate that the primary wetland areas are associated with the Big Lost River, the Big Lost River spreading areas, and the Big Lost River sinks, although smaller (less than about 1 acre) isolated wetlands also occur intermittently. Wetlands associated with the Big Lost River are classified as riverine/intermittent, indicating a defined stream channel with flowing water during only part of the year (DOE 2006r).

J.6.8 Cultural and Paleontological Resources

Archaeological investigations conducted in southeastern Idaho have provided evidence of human use of the Eastern Snake River Plain for at least 15,000 years (INL 2006). Prehistoric resources identified at INL are generally reflective of Native American hunting and gathering activities. At least 688 prehistoric sites and 753 prehistoric isolates have been located, and known resources are concentrated along the Big Lost River and Birch Creek, atop buttes, and within craters and caves (DOE 2005a). Resources include residential bases, campsites, caves, hunting blinds, rock

alignments, and limited activity locales such as lithic and ceramic scatters, isolated hearths, and concentrations of fire-cracked rock. Most known sites at INL have not been formally evaluated for nomination to the National Register of Historic Places (NRHP), but are considered to be potentially eligible. Given the rather high density of prehistoric sites at INL, additional sites are likely to be identified as more surveys are conducted (DOE 2005a).

Historic resources found at INL are representative of European-American activities, including fur trapping and trading, immigration, transportation, mining, agriculture, and homesteading, as well as more recent military and scientific/engineering research and development activities (DOE 2005b).

The INL is located within the aboriginal territory of the Shoshone and Bannock peoples. These two groups of nomadic hunters and gatherers used the region at the time of European-American contact for harvesting plant and animal resources and collecting obsidian from Big Southern Butte and Howe Point (DOE 2005a), among other uses. Because the INL site is considered part of the Shoshone-Bannock Tribes' ancestral homeland, it contains many localities that are important for traditional, cultural, educational, and religious reasons (DOE 2005b).

Surveys for paleontological remains outside of and within INL boundaries have identified several fossils that suggest the region contains abundant and varied paleontological resources, including vertebrate and invertebrate animals, plants, and pollen. No paleontological localities have been identified within the proposed project area. The north and northwest margins of the proposed project area level out across the Big Lost River floodplain, where Pleistocene vertebrate fossils have been discovered near the surface and in deeply buried sand and gravel deposits. The potential for encountering surface or buried paleontological remains in the project area is characterized as low to moderate (DOE 2005b).

J.6.9 Socioeconomics

Approximately 8,000 people work at the INL Site. The state and local government, retail trade, and healthcare and social assistance sectors employed the greatest number of workers in the region of influence (ROI) during 2004 (BEA 2006a, TtNUS 2006a). The labor force in the ROI increased 27.2 percent from 1990 to 2005 (BLS 2005b, TtNUS 2006a). In comparison, for the same period, the state-wide labor force in Idaho increased 49.5 percent. Between 1990 and 2005, the ROI population grew from 192,359 to 235,330, an increase of 22.3 percent (USCB 1990, USCB 2007a, TtNUS 2006a). This was a slower rate of growth than for the state of Idaho, which grew at a rate of 42 percent during the same time period.

J.6.10 Environmental Justice

Census data for Idaho characterizes 0.4 percent of the population as Black or African American; 1.4 percent American Indian or Alaskan Native; 0.9 percent Asian; 0.1 percent Native Hawaiian or other Pacific Islander; 4.2 percent some other race; 2.0 percent multi-racial (two or more races); 9.0 percent aggregate of minority races; and 7.9 percent Hispanic ethnicity (USCB 2007a).

Based on the “more than 20 percent” or the “exceeded 50 percent” criteria, no Black or African American, Native Hawaiian or Other Pacific Islander, Asian, or Multi-racial minority block groups exist in the geographic area (TtNUS 2006a). Five American Indian or Alaskan Native block groups, three Some Other Race, six Aggregate, and five Hispanic block groups are found within the 50 mi (80 km) radius. Also within this area, two block groups have a significant percentage of low-income households (TtNUS 2006a).

J.6.11 Public and Worker Health and Safety

Releases of radionuclides to the environment from INL operations provide a source of radiation exposure to individuals in the vicinity of INL. These doses fall within the radiological limits given in DOE Order 5400.5 (DOE O 5400.5), *Radiation Protection of the Public and the Environment*, and are much lower than those of background radiation.

INL workers receive the same dose as the general public from background radiation, but they also receive an additional dose from working in facilities with nuclear materials. These doses fall within the radiological regulatory limits of 10 CFR Part 835.

The background chemical environment important to human health consists of the atmosphere, which may contain hazardous chemicals that can be inhaled; drinking water, which may contain hazardous chemicals that can be ingested; and other environmental media with which people may come in contact (e.g., soil through direct contact or via the food pathway). Adverse health impacts to the public are minimized through administrative and design controls to decrease hazardous chemical releases to the environment and to achieve compliance with permit requirements. The effectiveness of these controls is verified through the use of monitoring information and inspection of mitigation measures. Health impacts to the public may occur during normal operations at INL via inhalation of air containing hazardous chemicals released to the atmosphere by INL operations. Risks to public health from ingestion of contaminated drinking water or direct exposure are also potential pathways. Workers are protected from hazards specific to the workplace through appropriate training, protective equipment, monitoring, and management controls. INL workers are also protected by adherence to Occupational Safety and Health Administration and EPA occupational standards that limit atmospheric and drinking water concentrations of potentially hazardous chemicals.

J.6.12 Transportation

Two interstate highways serve the INL regional area. Interstate 15, a north-south route that connects several cities along the Snake River, is approximately 25 mi (40 km) east of INL. Interstate 86 intersects Interstate 15 approximately 40 mi (64 km) south of INL and provides a primary linkage from Interstate 15 to points west. U.S. Highways 20 and 26 are the main access routes to the southern portion of INL and the Materials and Fuels Complex. Idaho State Routes 22, 28, and 33 all pass through the northern portion of INL, with State Routes 22 and 33 providing access to the northern INL facilities.

The Union Pacific Railroad’s Blackfoot-to-Arco Branch crosses the southern portion of INL and provides rail service to the site. There are 30 mi (48 km) of railroad track at INL (DOE 2002e).

J.6.13 Waste Management

INL generates various waste streams during ongoing activities including routine operations and cleanup action, and stores wastes generated by past activities. INL manages the following types of waste: high-level, low-level radioactive, mixed low-level radioactive, transuranic, hazardous, sanitary solid, wastewater, and sanitary sewage. The waste is managed using appropriate treatment, storage, and disposal technologies, and in compliance with all applicable Federal and State statutes and DOE Orders (DOE 2005a).

EPA placed INL on the National Priorities List on December 21, 1989. In accordance with the *Comprehensive Environmental Response, Compensation, and Liability Act* (CERCLA), DOE entered into a consent order with EPA and the state of Idaho to coordinate cleanup activities at INL under the 1995 Settlement Agreement (42 U.S.C. 9610).

Under the 1995 Settlement Agreement, the state of Idaho, U.S. Navy, and DOE reached agreement settling a lawsuit filed by the state to prevent shipment of spent nuclear fuel to the INL for storage. This agreement integrates DOE's CERCLA response obligations with *Resource Conservation and Recovery Act* (RCRA) corrective action obligations (40 CFR Parts 239-299). Clean up activities at INL are under the oversight of EPA Region 10 and the Idaho Department of Environmental Quality.

J.7 LEA COUNTY SITE

This section presents a summary of the affected environment for the Lea County site. The information was summarized from the Site Characterization Report prepared by the Funding Opportunity Announcement (FOA) grant recipient (SCR 2007d).

J.7.1 Land Use

The site is located in southeastern New Mexico in Lea County, 32 miles (mi) (51 kilometers [km]) east of Carlsbad, New Mexico, and 34 mi (55 km) west of Hobbs, New Mexico. The site is comprised of 1,040 acres (421 hectares [ha]) of patented land spread across three section of land running west to east. The area surrounding the site is Bureau of Land Management (BLM) land and two small parcels of state land. The surface estate is privately owned, and the subsurface minerals are owned by the state of New Mexico. The nearest residents to the site are located at the Salt Lake Ranch, 1.5 mi (2.4 km) north of the site. There are several existing right-of-ways (ROW) in the site. These existing ROW include pipelines, roads, well pads, power lines, telephone lines, and a communications tower.

Intrepid Mining, LLC owns both mines located within 6 mi (10 km) of the site. Mineral extraction in the area consists of underground potash mining and oil/gas extraction. Both industries support major facilities on the surface, although mining surface facilities are confined to a fairly small area. The Intrepid North mine, located to the west, is no longer actively mining potash underground. However, the surface facilities are still being used in the manufacture of potash products. The Intrepid East facility is still mining its underground potash ore.

J.7.2 Visual Resources

The following are situated at the site

- A communications tower in the southwest corner of the site;
- A producing gas and distillate well with associated tank battery is located near the communications tower;
- A small water drinker (livestock) is located along the aqueduct in the northern half of the property;
- Oil recovery facility (abandoned) that still has tanks and associated hardware left in place in the northeast corner; and
- An oil recovery facility with tanks and associated hardware still in place in the far southeast corner.

J.7.3 Site Infrastructure

Oil and gas extraction provides most of the activity in the vicinity. Roads are built and maintained to provide access to the various wells. Pipelines are installed to move the product efficiently from one area to the next. Where pipelines are not used, access for heavy trucks to haul the oil and produce water is required. Compressor stations are needed to pump the product through the pipelines. Electric power is required at the individual well pads to provide the

electricity necessary to operate the pumps, compressors, and other equipment as needed. There are two major facilities related to oil/gas activity in the area. The Zia Gas Plant is located northwest of the site, while Controlled Recovery Incorporated is southwest of the site.

J.7.4 Air Quality and Noise

The climate at the site and the surrounding region is characterized as that of semi arid region with generally mild temperatures, low precipitation and humidity, and a high evaporation rate. The average precipitation in Hobbs is 18.5 inches (in) (47.0 centimeters [cm]) annually. The average temperature is 62.2°F (16.7°C). The annual mean wind speed was 11.0 miles per hour (mi/hr) (17.6 kilometers per hour [km/hr]) and the prevailing wind direction was wind from 180 degrees with respect to True North.

One exceedance of the national ambient air quality standards (NAAQS) maximum 24-hour limit was reported in Hobbs, New Mexico, for particulate matter in 2003 due to a natural event—a dust storm. Corrective actions were taken by the state of New Mexico. According to NAAQS, one exceedance of this limit is allowed per year. Based on U.S. Environmental Protection Agency (EPA) information (EPA 2007a), the entire region within 50 mi (80 km) of the site is in an attainment area for all of the criteria pollutants.

There are no existing facilities at the Lea County site resulting in increased noise levels.

J.7.5 Water Resources

There are no potable surface water resources within the vicinity of the site. Surface drainage at the site is contained within two local playa lakes that have no external drainage. The only major natural lakes or ponds within 6 mi (10 km) of the site include Laguna Gatuna, Laguna Tonto, Laguna Plata, and Laguna Toston which are ephemeral playas. Surface runoff from the site flows into Laguna Gatuna to the east and Laguna Plata to the northwest (SCR 2007d). The site lies within the Pecos River Basin, which has a maximum basin width of 130 mi (209 km), and a drainage area of 44,535 square miles (mi²) (71,672 square kilometers [km²]). The Pecos River generally flows year-round. Seventy-five percent of the total annual precipitation and 60 percent of the annual flow result from intense local thunderstorms between April and September. Water quality in the Pecos River basin is affected by mineral dissolution from natural sources and from irrigation return flows. The site is not located in any 100 year or 500 year floodplain.

The site is located in the Lea County Underground Water Basin (UWB). Evapo-transpiration at the site is five times the precipitation rate, indicating that there is little infiltration of precipitation into the subsurface. Groundwater encountered on the east side of the site is brackish, exceeding 10,000 parts per million in total dissolved solids which is the New Mexico regulatory threshold (NM Water Quality Control Commission Regulations, 20.6.2.3101A) for protected water. Regional data indicates that groundwater is on the order of 300 to 400 feet (ft) (91 to 122 meters [m]) deep (WQCC 2002).

Potable water for the area is generally obtained from potash company pipelines that convey water to area potash refineries from the Ogallala High Plains aquifer on the caprock area of

eastern Lea County. Much of the shallow groundwater near the site has been directly or indirectly influenced by brine discharges from potash refining or oil and gas production. The High Plains Aquifer in the Ogallala Formation contains 3.270 billion acre-feet (4.03 trillion m³) of water and underlies 174,050 mi² (450,787 km²) in parts of eight states. The volume of recoverable water in the New Mexico portion of the aquifer is on the order of 50 million acre feet (61.67 billion m³). It is estimated that the Lea County portion of the High Plains Aquifer contains 14,000,000 acre feet of recoverable water.

The City of Carlsbad owns and operates Double Eagle Water System, located near Maljamar in northwestern Lea County. The Double Eagle Water System is supplied by groundwater pumped from 11 wells completed in the Ogallala Formation. The first 16 mi (26 km) segment of the pipeline carrying water from these wells to the Waste Isolation Pilot Plant (WIPP) facility has a 24 in (61 cm) diameter and runs to Highway 62/180.

The Double Eagle Water Resource System is 3 mi (5 km) west of the site. The City of Carlsbad has indicated that the Double Eagle water line near the site is capable of delivering 6,000 gallons per minute (22,712 liters per minute). This equates to over 8,000,000 gallons of water per day (30,283,290 liters per day). The City of Carlsbad is in the process of modeling the Double Eagle system to determine what upgrades are needed for future users.

J.7.6 Geology and Soils

The entire site is underlain by Triassic bedrock consisting of shale, siltstone, and minor, fine-grained, poorly sorted sandstone. Most of the proposed operational area is relatively flat and the shale bedrock is covered by a laterally extensive veneer of 25 ft (8 m) of Quaternary sediment deposits consisting of well sorted eolian sand and sandy-gravelly materials near the bedrock interface.

The site is located in the northern portion of the Delaware Basin, a northerly-trending, southward plunging asymmetrical trough with structural relief of greater than 20,000 ft (6,096 m) on top of the Precambrian. The Basin was formed by early Pennsylvanian time, followed by major structural adjustment from Late Pennsylvanian to Early Permian time. Regional eastward tilting of the Basin occurred much later in the Cenozoic era.

Tectonic activity in the Basin is characterized by slow uplift relative to surrounding areas which has resulted in erosion and dissolution of rocks in the Basin. Faulting has not occurred in the northern Delaware Basin in the area of the site. The regional geology suggests that there have been no recent, dramatic changes in geologic processes and rates in the vicinity of the site.

The USGS shows that the Guadalupe fault is located 80 mi (129 km) west of the site. Little is known about this fault except that it is a normal fault, 3.6 mi (5.8 km) in length, and has a slip rate of less than 0.01 in/yr. The Guadalupe fault forms a scarp on unconsolidated Quaternary deposits at the western base of the Guadalupe Mountains in the Basin and Range physiographic province.

J.7.7 Biological Resources

The site does not support any vegetation of significance. The site is located primarily (roughly 98 percent) in an environment of Simona-Tonuca soils and includes varying combinations of sand, fine sands, loam, and gravel. The soil type affects the depth to which roots can grow and thus, the vegetative species in the area. The vegetation community for the site is Desert Grassland which contains both prairie grasses and shrubs and provides food and cover for specific types of wildlife.

There are three species considered “Species of Concern” within the habitat near the site. These include the Lesser Prairie Chicken (*Tympanuchus pallidicinctus*), the Sand Dune Lizard (*Sceloporus aerinicolus*), and Gypsum wild-buckwheat (*Eriogonum gypsophilum*). These species have not been located within the site and regulatory reviews and field inspections do not support the belief that they are present within the site.

There are no wetlands or unique habitats for threatened or endangered plant or animal species on the site.

J.7.8 Cultural and Paleontological Resources

Only three archaeological sites (LA 22116, 89675, and 89676) have been recorded within or immediately adjacent to the site. LA 22116, a non-structural site measuring 7.4 acres (2.9 ha) was identified in 1979 by New Mexico State University (NMSU). It contains fire-cracked rock and lithic debitage (the waste from tool manufacture), but is of unknown cultural and temporal affiliation. LA 89675 is a 7.4 acre (2.9 ha) non-structural Mogollon site dated at A.D. 750-1175. LA 89676 is of unknown cultural and temporal affiliation, measures 7.4 acres (2.9 ha), and contains fire-cracked rock and lithic debitage. These sites were identified in 1992.

The 6 mi (10 km) zone around the site contains 211 previously recorded archaeological sites.

J.7.9 Socioeconomics

Statistics for population, housing, and local transportation are presented for the region of influence, a three-county area in New Mexico, consisting of Chaves, Eddy and Lea Counties. The number of people that are covered within the 50 mi (80 km) radius indicates that approximately 20,000 people reside within 30 mi (48 km) of the site. Extending the radius another three miles captures an additional 30,000 people. More than 100,000 people reside just over 40 mi (64 km) from the site. The areas within the 30 mi (48 km) radius of the project are sparsely populated. The cities and urban areas in the study area are more than 30 mi (48 km) away. Altogether, approximately 115,000 people reside in the study area.

From 1990 to 2000, the study area population increased by almost four percent or approximately 4,200 people. The assumption is that the compound annual average growth rate experienced during the period July 1, 2001 to July 1, 2005 continues into the future. For the very near future the population projections should be useful. However, projections need to be updated every 3 to

5 years, especially for places like southeastern New Mexico that are undergoing rapid economic and demographic change.

J.7.10 Environmental Justice

The preliminary conclusion is that although there are census tracts within the 50 mi (80 km) radius that have minority percentages exceeding 64 percent, they are confined to the urban areas which are at least 30 mi (48 km) from the site.

From 1990 to 2000, the Hispanic population in the study area increased by 26 percent. In comparison, the overall study area population increased by only four percent. The younger age groups are represented by minority and Hispanic individuals while the older age groups are primarily Anglos or White Not Hispanic. The minority population comprised approximately 60 percent of the population who were younger than 10 years old and greater than 50 percent among the 10-19 years old.

J.7.11 Public and Worker Health and Safety

There are currently no existing facilities or structures on the site to contribute radiological or hazardous chemical contaminants to the environment. The closest facilities with the potential to contribute radiological or hazardous chemical contaminants are the Waste Isolation Pilot Plant (WIPP) and the National Enrichment Facility (NEF). The WIPP is located approximately 37 mi (60 km) southwest of the proposed GNEP sites, while the NEF is approximately 40 mi (64 km) southeast.

J.7.12 Transportation

The nearest transportation route to the site is U.S. Highway 62/180 (0.5 mi to the south [0.8 km]), which is the major route between Carlsbad and Hobbs, New Mexico. The nearest Interstate Highway is Interstate 20, 95 mi (153 km) to the southeast in Odessa, Texas.

Two railroads service the area. One railroad company operates to the west of the site and the other to the east. Southwestern Railroad operates the Burlington Northern-Santa Fe (BNSF) Carlsbad Subdivision (Carlsbad to Clovis, New Mexico, plus industrial spurs serving potash mines east of Carlsbad and east of Loving, New Mexico) under a lease agreement.

J.7.13 Waste Management

There are currently no existing facilities or structures on the Lea County site; therefore, no waste is produced and no waste management services provided.

J.8 OAK RIDGE RESERVATION

This section presents a summary of the affected environments for the Oak Ridge Reservation (ORR) and Oak Ridge National Laboratory (ORNL).

J.8.1 Land Use

ORR was established in 1943 as one of the three original Manhattan Project sites. It is located on 33,718 acres (13,645 hectares [ha]) in Oak Ridge, Tennessee, and includes ORNL, the Y-12 National Security Complex (Y-12), and the East Tennessee Technology Park (ETTP).

Land use at the ORR site includes industrial, mixed industrial, institutional/research, institutional/environmental laboratory, Black Oak Ridge Conservation Easement, and mixed research/future initiatives. Land within the mixed research/future initiative category includes land that is used or available for use in field research and land reserved for future U.S. Department of Energy (DOE) initiatives. Most mixed research and future initiatives areas are forested. Undeveloped forested lands on ORR are managed for multiple uses. Although soils that would be identified as prime farmland occur on the site, that designation is waived because they are within the city of Oak Ridge (DOE 2000g). Only a small fraction of ORR has been disturbed by Federal activities, including the construction and operation of facilities, roadways, or other structures (DOE 2005b).

The largest mixed use is biological and ecological research in the Oak Ridge National Environmental Research Park (ORNERP), which is on 20,000 acres (8,094 ha). The National Environmental Research Park, established in 1980, is used by the Nation's scientific community as an outdoor laboratory for environmental science research on the impact of human activities on the eastern deciduous forest ecosystem (DOE 2000g, DOE 2005b).

ORNL is primarily located within Bethel Valley between Haw and Chestnut Ridges, and covers 4,250 acres (1,720 ha) of land. The site is classified as an industrial area that encompasses a number of facilities dedicated to energy research. Lands bordering ORNL and ORR are predominantly rural and are used primarily for residences, small farms, forest land, and pasture land. The city of Oak Ridge, Tennessee, has a typical urban mix of residential, public, commercial, and industrial land uses. It also includes almost all of ORR (DOE 2000g, DOE 2005b).

The landscape at ORR is characterized by a series of ridges and valleys that trend in a northeast-to-southwest direction. The vegetation is dominated by deciduous forest mixed with some coniferous forest.

J.8.2 Visual Resources

The surrounding area consists mainly of rural land. Sensitive viewpoints affected by DOE facilities are primarily associated with Interstate 40, State Highways 58, 62, and 95, and Bethel Valley and Bear Creek Roads. The Clinch River/Melton Hill Lake, and the bluffs on the opposite side of the Clinch River also have views of ORR, but views of most of the existing DOE

facilities are blocked by terrain and/or vegetation. Although only a small portion of State Highway 62 crosses ORR, it is a major route for traffic to and from Knoxville and other communities. The hilly terrain, heavy vegetation, and generally hazy atmospheric conditions limit views (DOE 2005b).

While a large part of ORNL is visible from Bethel Valley Road, it is not visible to persons in offsite locations because of the presence of the Haw and Chestnut Ridges.

J.8.3 Site Infrastructure

ORNL contains 217 mi (349 km) of improved roadways, including 37 mi (59.5 km) of paved roads. Two main branches provide rail service to the ORR (DOE 2005b).

Electrical power is supplied to ORNL and ORR by the Tennessee Valley Authority. Two transmission lines supply ORNL and vicinity. Total electrical energy availability to ORR from the Tennessee Valley Authority grid is 13,880,000 megawatt-hours per year. Total electrical energy consumption across ORR is about 726,000 megawatt-hours annually (DOE 2005b).

The Duke Energy Company supplies natural gas to ORNL. This company owns, operates, and maintains the main line and the three pressure-reduction stations that comprise the supply system to ORR. The system is designed with more capacity than is now demanded. However, contractual agreements do limit the amount of gas ORNL can demand (DOE 2005b).

Water for ORNL is taken from the Clinch River south of the eastern end of the Y-12 National Security Complex and pumped to the water treatment plant located on the ridge northeast of the Y-12 Plant. The treatment plant is owned and operated by the City of Oak Ridge and can supply water at a potential rate of 24 million gallons (gal)/day (991.8 million liters ([L]/day) to two storage reservoirs with a combined capacity of 7 million gal (26.5 million L). Water from the two reservoirs is distributed to the Y-12 Plant, ORNL, and the City of Oak Ridge (ORNL 2002).

J.8.4 Air Quality and Noise

ORNL is located entirely within Anderson County. The Environmental Protection Agency (EPA) has designated Anderson County as a basic non-attainment area for the 8-hour ozone standard, as part of the larger Knoxville basic 8-hour ozone non-attainment area that encompasses several counties, and for PM_{2.5}. For all other criteria pollutants for which EPA has made attainment designations, existing air quality in the greater Knoxville and Oak Ridge areas is in attainment with the National Ambient Air Quality Standards (NAAQS) (DOE 2006e).

Average radionuclide concentrations measured for the ORNL network were less than 1 percent of the applicable derived concentration guides (DCGs) in all cases (DOE 2006e).

ORNL holds a Title V permit that covers ten emission sources and a separate Title V permit for Environmental Management (EM) activities. No permit limits were exceeded in 2005. Cumulative actual criteria pollutant emissions from ORNL in 2004 were roughly one-thirtieth of the actual emissions from the Y-12 site. Current ORNL emissions would therefore have only a minor affect on regional criteria pollutant concentrations (DOE 2006e).

Radioactive airborne discharges at ORNL consist primarily of ventilation air from radioactively contaminated areas, vents from tanks and processes, and ventilation for hot cell operations and reactor facilities. These airborne emissions are treated and then filtered with high-efficiency particulate air filters or charcoal filters before discharge (DOE 2006e).

Radiological airborne emissions from ORNL include solid particulates, absorbable gases (e.g., iodine), tritium, and nonadsorbable gases (e.g., noble gases). The major radiological emission point sources for ORNL include five stacks located in Bethel and Melton Valleys (DOE 2006e).

Noise emission sources within ORNL include various industrial facilities, equipment, and machines (e.g., coolant systems, transformers, engines, pumps, boilers, steam vents, pager systems, construction equipment and materials-handlers, and vehicles). Most ORNL industrial facilities are far enough from the residential or commercial areas that noise levels from these sources are not measurable or are barely distinguishable from background levels. The most significant noise to nearby off-site receptors is due to traffic noise along State Highway 95 generated by personal vehicles and trucks that travel to and from ORNL (DOE 2005b).

Existing ORNL-related noises of public significance result from the transportation of people and materials to and from the site and in-town facilities primarily via private vehicles and trucks. A site-specific survey has not been conducted, but ambient noise levels in a rural environment such as the ORNL site boundary are typically in the 35-45 dB range (DOE 2005b).

J.8.5 Water Resources

The major surface water feature in the immediate vicinity of ORNL is the Clinch River, which borders ORR to the south and west. There are four major subdrainage basins on ORR that flow into the Clinch River and are affected by site operations: Poplar Creek, East Fork Poplar Creek, Bear Creek, and White Oak Creek.

The Clinch River and connected waterways supply raw water for ORNL. The ORR water supply system, which includes the city of Oak Ridge treatment facility (formerly the DOE treatment facility) and the East Tennessee Technology Park (ETTP) treatment facility, has a capacity of 24 to 32.1 million gal/day (90.8 to 121.5 million L/day) (DOE 2000g).

The Tennessee Valley Authority has conducted flood studies along the Clinch River, Bear Creek, and East Fork Poplar Creek, and has also performed probable maximum flood studies along the Clinch River. Based on the studies, most of ORNL is above the probable maximum flood elevation along the Clinch River (DOE 2000g).

The Clinch River is the only surface water body near ORNL classified for domestic water supply. In addition, the Clinch River and a short segment of Poplar Creek from its confluence with the Clinch River are also classified for industrial water supply use.

White Oak Creek and Melton Branch are the only streams not classified for irrigation. East Fork Poplar Creek is posted by the state of Tennessee with warnings against fishing and contact recreation (DOE 2000g). Wastewater treatment facilities are located throughout ORR, including

six treatment facilities at Y-12 that discharge to East Fork Poplar Creek, and three treatment facilities at ORNL that discharge into White Oak Creek Basin.

These discharge points are included in existing National Pollutant Discharge Elimination System (NPDES) permits (DOE 2000b, Hughes et al. 2004). At ORNL, water samples are collected and analyzed from 18 locations around the reservation to assess the impact of past and current DOE operations on the quality of local surface water. Sampling locations include streams, both upstream and downstream of ORNL waste sources, and public water intakes.

Two broad hydrologic units have been identified on the ORR: 1) the Knox Aquifer, which includes the Maynardville Limestone and is highly permeable, and 2) the ORR Aquitards, which consist of the less permeable Rome Formation, Conasauga Group, excluding the Maynardville Limestone, and the Chickamauga Group. Active groundwater flow can occur at substantial depths in the Knox Aquifer (300 to 400 feet (ft) [91.4 to 121.9 meters {m}] deep). The Knox Aquifer is the primary source of groundwater to many streams (base flow), and most large springs on ORR receive discharge from the Knox Aquifer. Because of the abundance of surface water and its proximity to the points of use, very little groundwater is used at ORNL. Industrial and drinking water supplies are primarily taken from surface water sources. However, single-family wells are common in adjacent rural areas not served by the public water supply system (DOE 2000g).

Groundwater monitoring at ORNL consists of two components: the DOE Environmental Management and Enrichment Facilities (EMEF) groundwater monitoring program and the DOE Office of Science (OS) groundwater monitoring surveillance program (DOE 2006e). In the current ORNL program, groundwater quality wells are sampled on an annual basis (Hughes et al. 2004).

J.8.6 Geology and Soils

ORNL is in the southwestern portion of the Valley and Ridge physiographic province in east-central Tennessee. The topography consists of alternating valleys and ridges that have a southwest-northeast trend, with most facilities occupying the valleys. The topography reflects the underlying geology, which consists of a sequence of sedimentary rocks deformed by a series of major southeast-dipping thrust faults. The ridges are underlain by relatively erosion-resistant rocks, while weaker rock strata underlie the valleys (DOE 2005b).

Bedrock in the ORNL vicinity is of Early Cambrian (about 570 million years ago) to Ordovician Age (505 to 540 million years ago). The bedrock units encompass a wide variety of lithologies ranging from pure limestone to dolostone to fine sandstone. The total thickness of the stratigraphic section is about 1.6 miles (mi) (2.6 kilometers [km]). Four primary geologic units occur in the area. These include (from oldest to youngest) the Rome Formation, Conasauga Group, Knox Group, and Chickamauga Group (DOE 2005b).

There is no evidence of active capable faults in the Valley and Ridge physiographic province or within the rocks comprising the Appalachian Basin structural feature where ORNL is located. A capable fault is one that has had movement at or near the ground surface at least once within the

past 35,000 years, or recurrent movement within the past 500,000 years (10 CFR Part 100). The nearest capable faults are approximately 298 mi (479.6 km) northwest in the New Madrid (Reelfoot Rift) Fault Zone. Historical earthquakes occurring in the Valley and Ridge are not attributable to fault structures in underlying sedimentary rocks, but rather occur at depth in basement rock (DOE 2005b). Numerous studies have been conducted as part of establishing the design-basis earthquake for evaluating and designing new ORR facilities. For this purpose, an earthquake producing an effective peak-ground acceleration of 0.15g has been established and calculated to have an annual probability of occurrence of about 1 in 1,000. For comparison, an earthquake with a peak acceleration of 0.32g has an annual probability of occurrence of 1 in 5,000 (DOE 2005b).

There is no volcanic hazard at ORNL. The area has not experienced volcanic activity within the last 230 million years (DOE 2005b).

Soils of ORNL are highly disturbed and would be classified as Urban Land. Urban Land includes areas where more than 80 percent of the surface is covered with industrial plants, paved parking lots, and other impervious surfaces (DOE 2005b). While there are soils that would be classified as prime farmland on ORR, that designation is waived within the ORR site boundary (DOE 2005b).

The ORNL main site is underlain primarily by calcareous siltstones and silty-to-clean limestone of the Chickamauga Group. No mineral resources have been identified at the site.

J.8.7 Biological Resources

Plant communities at ORNL are characteristic of the intermountain regions of central and southern Appalachia; only a small fraction of ORR has been disturbed by Federal activities. A portion of land was set aside for the Black Oak Ridge Conservation Easement, which is managed by the State of Tennessee.

The vegetation of ORR has been categorized into seven plant communities. Although outbreaks of southern pine beetles (*Dendroctonus frontalis*) killed over 1,100 acres (445 ha) of pine forests in 1994 and 1999 to 2000, pine and pine-hardwood forest is the most extensive plant community on the site. Another abundant community is the oak-hickory forest, which is commonly found on ridges. Northern hardwood forest and hemlock-white pine-hardwood forest are the least common forest community types on the site. Over 1,100 vascular plants species are found on ORR (DOE 2005b, ORNL 2002). ORNL in Melton Valley contains a variety of ecosystems that range from those that are greatly disturbed to some that are relatively undisturbed. Where the valley has been heavily disturbed, the current vegetation cover is primarily grass and weeds. Vegetation of the rest of the valley is typical of forests found throughout ORR. Relatively undisturbed second-growth forests of mixed oak-hickory occur on the ridges and dry slopes, while pine and pine-hardwood on the lower slopes and valleys are typical of abandoned, eroded farmland (DOE 1996a).

According to the ORNERP animal species found on the ORR include 64 amphibians and reptiles, 205 birds, and 34 mammals (USFWS 2007b). Fauna of Melton Valley are typical of

ORR and include the rat snake (*Elaphe obsoleta*), black racer (*Coluber constrictor*), red-eyed vireo (*Vireo olivaceus*), scarlet tanager (*Piranga olivacea*), red-tailed hawk, red-shouldered hawk (*Buteo lineatus*), yellow-billed cuckoo (*Coccyzus americanus*), coyote, deer mouse, eastern gray squirrel (*Sciurus carolinensis*), southern flying squirrel (*Glaucomys volans*), and whitetail deer (DOE 2005b).

Aquatic habitat on or adjacent to ORNL and ORR ranges from small, free-flowing streams in undisturbed watersheds to larger streams with altered flow patterns due to dam construction. These aquatic habitats include tailwaters, impoundments, reservoir embayments, and large and small perennial streams. Aquatic areas in ORR also include seasonal and intermittent streams and old farm ponds (DOE 2005b). The minnow family has the largest number of species and is numerically dominant in most streams. Fish species representative of the Clinch River in the vicinity of ORR are shad, herring, common carp (*Cyprinus carpio*), catfish, bluegill (*Lepomis macrochirus*), crappie (*Pomoxis* spp.), and freshwater drum (*Aplodinouts grunniens*). The most important fish species taken commercially in the ORR area are common carp and catfish. Commercial fishing is permitted on the Clinch River downstream from Melton Hill Dam.

Thirty Federal- and state-listed threatened, endangered, and other special status species have been recently identified on the ORR (ORNERP). Among these are 26 birds, two mammals, one fish, and one amphibian and reptile. The spotfin chub (*Cyprinella monnacha*), both a Federal and state threatened species, has been sighted and collected in the city of Oak Ridge and is potentially present on the ORR (USFWS 2007b). Approximately 580 acres (235 ha) of wetlands occur on ORR, ranging in size from several square yards to about 25 acres (10 ha) (ORNL 2002). There are six wetlands at ORNL in the vicinity of the Radiochemical Engineering Development Center and the High Flux Isotope Reactor, including one small unclassified wetland; however, none are within the developed area.

J.8.8 Cultural and Paleontological Resources

At least ten major archaeological reconnaissance surveys have been conducted on the ORR. In 1993, an archaeological field review of the ORNL installation was conducted. In 1994, an intensive architectural and historic survey was conducted for the ORNL complex.

The project area has been assessed as having very low archaeological potential due to moderate to steep terrain, and drainages with low banks and wide floodplains. No historic archaeological resources are located within the ORNL complex, and the likelihood for intact historic archaeological resources is extremely low (Thomason and Associates 2004).

The majority of the geological units with surface exposures at ORR contain paleontological materials consisting primarily of invertebrate remains (DOE 2005b). These types of remains are relatively widespread and common, and as such, have relatively low research potential. Paleontological resources at ORNL would not be expected to differ from those found elsewhere on ORR.

J.8.9 Socioeconomics

Socioeconomic characteristics addressed at ORNL include employment, income, population, housing, and community services. These characteristics are analyzed for a four-county region of influence (ROI) consisting of Anderson, Knox, Loudon, and Roane Counties in Tennessee, in which 87.7 percent of all ORNL employees reside.

In 2003, ORNL employed 12,856 persons. The retail trade, state and local government, manufacturing, and healthcare and social assistance, sectors employ the greatest number of workers in the ROI (BEA 2006a and TtNUS 2006c). The retail trade sector provides more than 12 percent of all employment in the ROI, while the state and local government, healthcare and social assistance, and manufacturing sectors provide 11.5, 9.9, and 8.9 percent, respectively. Other important sectors of employment include professional and technical services (7.9 percent), accommodation and food services (7.6 percent), and administrative and waste services (7.1 percent) (BEA 2006a).

The labor force in the ROI increased 21.3 percent from 1990 to 2005 (BLS 2005b, TtNUS 2006c). In comparison, for the same period, the state-wide labor force in Tennessee increased 21.2 percent. Total employment in the ROI increased at a similar rate to the labor force, at 21.9 percent. The unemployment rate in the ROI decreased from 4.9 percent in 1990 to 4.4 percent in 2005. In comparison, the state-wide unemployment rate increased in Tennessee from 5.5 percent in 1990 to 5.6 percent in 2005 (BLS 2005b, TtNUS 2006c).

In 2004, per capita income in the ROI ranged from a high of \$32,040 in Knox County to a low of \$26,051 in Roane County (BEA 2006b). In 2004, per capita income in the ROI was \$30,838, compared to the Tennessee per capita income of \$29,844 (TtNUS 2006c). Per capita income increased in the ROI by 70.8 percent between 1990 and 2004, compared to a state-wide increase of 78.8 percent in Tennessee (BEA 2006b, TtNUS 2006c).

Between 1990 and 2005, the ROI population grew from 482,481 to 573,678, an increase of 18.9 percent (USCB 1990, USCB 2007f, TtNUS 2006c). This was a slower rate of growth than for Tennessee, which grew at a rate of 22.3 percent, during the same time period.

J.8.10 Environmental Justice

Census data from the year 2000 was used to determine minority and low-income characteristics by block group within 50 mi (80 km) of ORNL. Twenty-nine block groups have a significant Black or African American minority population, one census block group has a significant Asian population, and 29 block groups have significant aggregate minority percentages (TtNUS 2006c).

Based on the “more than 20 percent” or the “exceeded 50 percent” criteria, no American Indian or Alaskan Native, Native Hawaiian or Other Pacific Islander, some other race, multi-racial, or Hispanic ethnicity minority block groups exist in the geographic area (TtNUS 2006c).

Fifty-six census block groups within the 50 mi (80 km) radius have a significant percentage of low-income households (TtNUS 2006c).

J.8.11 Public and Worker Health and Safety

An individual's radiation exposure in the vicinity of ORNL amounts to approximately 390 mrem, and is comprised of natural background radiation from cosmic, terrestrial, and internal body sources; radiation from medical diagnostic and therapeutic practices; weapons test fallout; consumer and industrial products; and nuclear facilities. Annual background radiation doses to individuals are expected to remain constant over time. The total dose to the population, in terms of person-rem, changes as the population size changes. Background radiation doses are unrelated to ORNL operations (DOE 2000g).

Releases of radionuclides to the environment from ORNL operations provide another source of radiation exposure to individuals in the vicinity of ORNL. ORNL worker doses have typically been well below DOE worker exposure limits (ORNL 2004a).

The average radiation dose recorded for workers at ORNL with a measurable dose in 2005 was 71 mrem (DOE 2005b). ORNL workers receive the same dose as the general public from background radiation, but they also may receive an additional dose from working in facilities with nuclear materials. These doses fall within the radiological regulatory limits of 10 CFR Part 835. The number of projected latent cancer fatalities (LCFs) among ORR workers from normal operations in 2003 is 0.02. For the population living within 50 mi (80 km) of ORNL 0.002 excess fatal cancers are projected from normal ORNL operations.

J.8.12 Transportation

Vehicles access to ORNL is via three State Routes: State Route 95 forms an interchange with Interstate 40 and enters the reservation from the south approximately 1 mi (2 km) to the west of ORNL's main complex; State Route 58 enters ORR from the west and passes just south of the East Tennessee Technology Park; and State Route 62 provides access from the east.

The Norfolk Southern main line from Blair provides easy access to the East Tennessee Technology Park. No tracks run to the ORNL (DOE 2005b). ORNL is bordered by the Clinch River on the south, but no barge facility has been developed.

J.8.13 Waste Management

ORNL generates waste from its ongoing operations and from cleanup and decommissioning and demolition projects. ORNL has 344 sites that are contaminated to the extent that they require monitoring and remediation and the waste quantities from these activities are expected to increase (ORNL 2002). The following types of waste are generated from operations: transuranic (TRU); low-level radioactive; mixed low-level radioactive; hazardous; and nonhazardous including sanitary solid waste, industrial waste and construction debris, sanitary sewage, and process wastewater. In addition, TRU waste mixed with *Resource Conservation and Recovery Act* (RCRA) hazardous waste, and waste mixed with PCBs which are regulated under the *Toxic*

Substances Control Act (TSCA), are generated by cleanup and decommissioning and demolition activities (40 CFR Parts 239-299), (15 U.S.C. 2601 et seq.).

Waste management responsibilities at ORNL are shared between the generator (i.e., ORNL) and the waste management contractor. The generator is responsible for collecting, characterizing, and certifying the waste prior to receipt by the waste management contractor. The waste management contractor is then responsible for storage, transport, treatment, and disposal operations (ORNL 2002).

J.9 PADUCAH SITE

This section presents a summary of the affected environments for the Paducah Site. The information was summarized from the Site Characterization Report prepared by the Funding Opportunity Announcement (FOA) grant recipient (SCR 2007e).

J.9.1 Land Use

The Paducah Site covers an estimated 3,556 acres (1,439 hectares [ha]) currently held by U.S. Department of Energy (DOE) in rural McCracken County of western Kentucky. The city of Paducah is located approximately 10 miles (mi) (16 [km]) east of the site, and the Ohio River runs 3.6 mi (5.8 km) north of the Paducah Site.

The Paducah Gaseous Diffusion Plant occupies a 750 acre (303.5 ha) complex within the Paducah Site. The Paducah Site is heavily developed and includes approximately 115 buildings with a combined floor space of an estimated 8.2 million square feet (ft²) (0.76 million square meters [m²]). In 1994, the Paducah Site was placed on the Environmental Protection Agency (EPA) National Priorities List (NPL), a list of hazardous waste sites across the nation that the EPA has designated as high priority for site remediation. The NPL designation was assigned primarily because of groundwater contamination with trichloroethylene (TCE) and Technetium-99 (Tc-99), which were first detected in 1988. As a site on the NPL, the Paducah Site would undergo remediation efforts that met the requirements set forth by *Comprehensive Environmental Response, Compensation, and Liability Act* (CERCLA) (42 U.S.C. 9610). The City of Paducah is the largest urban area in the six counties surrounding the Paducah Site. The six-county area in which the site is located is primarily rural, with industrial uses accounting for less than 5 percent of the land use.

J.9.2 Visual Resources

The Paducah Site is characterized by a flat, rural landscape. Over 90 percent of the land surrounding the site is either undeveloped or serves as agricultural lands. The Ohio River flows 3.6 mi (5.8 km) north of the site. SR 358 (Ogden Landing Road) provides public access through the northern section of the Paducah Site.

J.9.3 Site Infrastructure

The Paducah Site has the infrastructure to function as a standalone operation, with the exception of imported electrical power and telecommunications. The site is served by two interstate highways, several U.S. and state highways, several rail lines, barge service, and a regional airport (DOE 2004d). There are 9 mi (14 km) of railroad and 19 mi (31 km) of road on site.

Eighteen 161 kilovolt (kV) transmission lines deliver power to the site from three separate providers (Tennessee Valley Authority, Electric Energy, Inc., and Kentucky Utilities). Peak electrical demand is about 2,000 megawatts (MW) with a site capacity of 3,040 MW.

The Paducah Site has waste management systems in place for treatment and disposal of hazardous, non-hazardous, and radioactive waste. The Paducah Site steam plant burns coal to generate steam used primarily to heat non-production facilities. Annual coal consumption is nearly 33,100 tons (30,000 metric tons [MT]). All water (potable, process, fire) used by the site is obtained from the Ohio River through an intake at the steam plant near the Shawnee Power Plant north of the site.

J.9.4 Air Quality and Noise

The Paducah Site is located in the humid continental zone, characterized by warm summers and moderately cold winters. Tornadoes are rare in the area surrounding the Paducah Site.

The Paducah Site is located in the Paducah-Cairo Interstate Air Quality Control Region (AQCR), which covers the westernmost parts of Kentucky. McCracken County currently is designated as being in attainment for all criteria pollutants (40 CFR 81.318). Major air pollution sources around the Paducah Site in Kentucky include United States Enrichment Corporation (USEC) and the Tennessee Valley Authority's (TVA) coal-fired Shawnee Power Plant, about 3 mi (5 km) northeast of the Paducah Site. Potential radionuclide sources from the Paducah Site in 2000 were the Drum Mountain Removal Project, Northwest Plume Groundwater System, and fugitive emission sources. Ambient air monitoring stations in and around the site mainly collect data on radionuclides released from the site. Monitoring results showed that all airborne radionuclide concentrations in the surrounding area were at or below background levels.

The noise-producing activities within the Paducah Site are associated with processing and construction activities and local traffic, similar to those at any other industrial site. During site operations, noise levels near the cooling towers are relatively high, but most noise sources are enclosed in the buildings. Another noise source is associated with rail traffic in and out of the Paducah Site. In particular, train whistle noise, at a typical noise level of 95 to 115 dB (A), is high at public grade crossings. Currently, rail traffic noise is not a factor in the local noise environment because of infrequent traffic (one train per week).

J.9.5 Water Resources

The Paducah Site existing water supply plant obtains water from the Ohio River through an intake near the TVA Shawnee Fossil Plant. The Paducah Site water supply plant's capacity is about 30 million gallons per day (gal/day) (113.6 million liters per day [L/day]), which is approximately double the current requirement for the Paducah Site. The State of Kentucky has created a permitting system to allocate groundwater resources. Any person, business, industry, city, county, water district or other political subdivision desiring to withdraw, divert, or transfer public water must register with the Cabinet and submit an application for a permit if not exempted by the law. The regional gravel aquifer and sections of the McNairy Flow System are contaminated with volatile organic compounds (VOCs) and radiological components. Plumes emanating from the Paducah Site are located to the southwest, northwest, and northeast and generally flow north toward the Ohio River. Big Bayou Creek and its main tributary receive discharges of treated process water and sanitary wastewater through KPDES-permitted outfalls.

Flooding is associated with the Ohio River, Big Bayou Creek, and Little Bayou Creek. The majority of overland flooding is associated with the Ohio River floodplain.

Floodplains outside the DOE property have been mapped by the Federal Emergency Management Agency but no floodplain determination has been made within the DOE property. The minimum elevation of the proposed site is approximately 380 feet (ft) (116 meters [m]), which is above both the 100-year floodplain level (333 ft [101 m] elevation) and the historical high water level (1937 flood level of 342 ft [104 m]) for the Ohio River.

J.9.6 Geology and Soils

The topography of the Paducah Site is relatively flat. The Paducah Site is located near the northern end of the Mississippian Embayment, which is characterized by unconsolidated Cretaceous, Tertiary, and Quaternary sediments that dip gently to the south and overlie indurated Paleozoic limestone and shale bedrock. Several zones of faulting occur in the vicinity of the site. These zones include the New Madrid, St. Genevieve, Rough Creek, Cottage Grove, Wabash Valley, and Shawneetown fault zones. In addition, there is a northeast-trending rift zone. The area near the site has been the location of some of the largest earthquakes that have occurred in North America. The largest recorded earthquakes that occurred in the vicinity of the site happened between 1811 and 1812. Four of the earthquakes had Modified Mercalli intensities (MMI) that ranged from IX to XI. The largest earthquakes that have occurred since then were on January 4, 1843, and October 31, 1895, with body wave magnitude estimates of 6.0 and 6.2, respectively. In addition to these events, seven events of magnitude greater than 5.0 have occurred in the area. Since 1895, more than 4,000 earthquakes have been located in the zone. For the Paducah Site, the evaluation basis earthquake (EBE) was designated by DOE to have a return period of 250 years. A detailed analysis indicated that the peak ground motion for the EBE was 0.15 times the acceleration of gravity. An earthquake of this size would have an equal probability of occurring any time during a 250-year period, which approximately correlates to an MMI of VII.

J.9.7 Biological Resources

The DOE property between the Paducah Site and the surrounding West Kentucky Wildlife Management Area consists primarily of open, frequently mowed grassy areas. The DOE property also includes several small upland areas of mature forest, old-field, and transitional habitats. The habitats at the Paducah Site support a relatively high diversity of wildlife species.

Common species of the surrounding West Kentucky Wildlife Management Area and undeveloped areas of the Paducah Site outside the Paducah Site fence line include white-tailed deer, red fox, raccoon, opossum, coyote, turkey, and bobwhite quail. Ground-nesting species include the white-footed mouse, bobwhite, and eastern box turtle. Bayou Creek, upstream of the Paducah Site, supports aquatic fauna indicative of oxygen-rich, clean water, including 14 fish species. Aquatic species just downstream of the Paducah Site discharge points include 11 fish species.

Although no occurrence of federally listed plant or animal species on the Paducah Site itself have been documented, the Indiana Bat (Federal- and state-listed as endangered) has been found near the confluence of Bayou Creek and the Ohio River 3 mi (5 km) north of the Paducah Site.

Although no wetlands are identified on the Paducah Site by the National Wetlands Inventory, approximately 5 acres (2 ha) of jurisdictional wetlands have been identified in drainage ditches scattered throughout the Paducah Site. Several wetland areas occur on the Paducah Site and total approximately 7.2 acres (2.9 ha). The open area in the northern portion of this location is crossed by several drainage ditches and swales that contain wetlands. The northernmost of these drainages conveys storm water from the cylinder storage yard to KPDES Outfall 017, located west of the Paducah Site entrance road.

J.9.8 Cultural and Paleontological Resources

In 1994, the United States Department of the Army (USDOA) completed a cultural resources survey (CRS) of 1,653 acres (669 ha) surrounding the Paducah Site. Besides presenting the results of the 1994 survey, it also included data from a survey conducted in 1932 by the University of Kentucky. In 2004, forty-one sample survey units were examined. Three of the 41 survey units were located within the proposed site. No pre-historic or historic sites were discovered within those three aforementioned survey units. No determinations of eligibility for listing in the National Register of Historic Places (NRHP) were made at that time.

J.9.9 Socioeconomics

Socioeconomic data for the Paducah Site focus on a region of influence (ROI) surrounding the site consisting of six counties: Ballard, Carlisle, Graves, Marshall, and McCracken Counties in Kentucky, and Massac County in Illinois. More than 92 percent of Paducah workers currently reside in these counties.

The population of the ROI in 2000 was 161,465 people and 65,514 people (41 percent of the ROI total) resided in McCracken County, with 26,307 of them residing in the City of Paducah.

In 2000, total employment in the ROI was 67,866. The economy of the ROI is dominated by the trade and service industries, with employment in these activities currently contributing 60 percent of all employment in the ROI.

In the ROI, total personal income grew at an annual rate of 2.1 percent over the period 1990 through 2000.

J.9.10 Environmental Justice

Based on data from the 2000 census, of the 173 census tracts within 50 mi of the proposed site, 42 had minority populations in excess of state percent minority (SCR 2007e). As recommended by the Council on Environmental Quality (CEQ) guidelines, the environmental justice analysis identifies low-income populations as those falling below the statistical poverty level identified annually by the U.S. Bureau of the Census in its Series P-60 documents on income and poverty. Based on data from 2000, of the 173 census tracts within 50 mi (80 km) of the then-proposed

conversion facility at Paducah, 109 had low-income populations in excess of state-specific thresholds—a total of 118,029 low-income persons in all. In McCracken County in 1999, 15.1 percent of the individuals for whom poverty status was known were low-income (SCR 2007e, DOE 2004d).

J.9.11 Public and Worker Health and Safety

Operations at the Paducah Site result in radiation exposure of both on-site workers and off-site members of the general public. Exposures of onsite workers generally are associated with the handling of radioactive materials used in the on-site facilities and with the inhalation of radionuclides released from processes conducted on site. Offsite members of the public are exposed to radionuclides discharged from onsite facilities with airborne and/or waterborne emissions and, in some cases, to radiation emanated from radioactive materials handled in the on-site facilities. The total radiation dose to a maximally exposed individual (MEI) of the general public is estimated to be 1.9 mrem/year (yr), which is much lower than the maximum radiation dose limit set for the general public of 100 mrem/yr.

Permissible exposure limits (PELs) for uranium compounds and hydrogen fluoride in the workplace (29 CFR Part 1910) are as follows: 0.05 mg/m³ for soluble uranium compounds, 0.25 mg/m³ for insoluble uranium compounds, and 2.5 mg/m³ for HF. Paducah worker exposures are kept below these limits.

J.9.12 Transportation

The Paducah Site is located in an area with an established highway network. The area is served by an interstate highway, several U.S. and state highways, and local roads and freeways. The Site is surrounded by the West Kentucky Wildlife Management Area, which in turn is bordered on the west by Route 1132 and on the west by State Highway 996. These two roadways do not access the Site. Two roads provide access to Paducah Site. Along the northern border is the east-west rural major collector State Highway 358. Along the southern border lies State Highway 725; this interchanges with an access road, Route 1154. Route 1154 is a freeway connecting the Site with US Highway 60, which is approximately 3 mi (4.8 km) to the south.

The onsite network of roadways is approximately 19 mi (30.6 km) in distance. State Highway 358 links the Site with the greater area through an interchange with Interstate 24 to the east between the Site and the City of Paducah, which lies approximately 10 mi (16 km) to the east. US Highway 60 travels east-west linking the City of Paducah with Missouri to the west and Louisville to the east. US Highway 60 also has an interchange with Interstate 24. The US Highway in the area that traverses north-south is US Highway 45. It travels from the Tennessee border to the south through Paducah and into Illinois.

DOE owns an onsite railway system, a spur from the Paducah and Louisville rail line. The Paducah and Louisville rail lines also serve the Paducah-McCracken Riverport for transferring shipments to and from Ohio River barges. The onsite system is composed of approximately 9 mi (14 km) of track. Rail traffic is approximately one train per week. The Paducah Site can be served by barge transportation via the Ohio River.

J.9.13 Waste Management

The Paducah Site generates wastewater, solid low level waste (LLW), solid and liquid mixed low level waste (MLLW), nonradioactive hazardous waste, and nonradioactive nonhazardous solid waste. Wastes generated from site operations and environmental restoration is managed by DOE. DOE also manages the disposal of waste generated from ongoing management of the DOE-generated DUF₆ cylinders currently in storage. Wastewater at the Paducah Site consists of nonradioactive sanitary and process-related wastewater streams, cooling water blowdown, and radioactive process-related liquid effluents. Wastewater is processed at on-site treatment facilities and is discharged to Bayou Creek or Little Bayou Creek through eight permitted outfalls. The total capacity of the site wastewater control facilities is approximately 1.75 million gal/day (6.6 million L/day). Solid waste—including sanitary refuse, cafeteria waste, industrial waste, and construction and demolition waste—is collected and disposed of at the on-site landfill, which consists of three cells. The landfill is permitted for 1 million cubic yards (yd³) (764,600 cubic meters [m³]) per Permit KY073-00045.

The site has a permit that authorizes it to treat and store hazardous waste in 10 treatment units, 16 tanks, and 4 container storage areas at the site. Several additional 90-day storage areas for temporary storage of hazardous waste are located on the site. LLW generated at the Paducah Site is stored on site pending shipment to a commercial facility in Tennessee for volume reduction.

J.10 PORTSMOUTH SITE

This section presents a summary of the affected environments for the Portsmouth Site (Portsmouth). The information was summarized from the Site Characterization Report prepared by the Funding Opportunity Announcement (FOA) grant recipient (SCR 2007f).

J.10.1 Land Use

The Portsmouth Site is located on the U.S. Department of Energy (DOE) Reservation in Piketon, Ohio. It covers an estimated 3,714 acres (1,500 hectares [ha]) located in Pike County, approximately 22 miles (mi) (35 kilometers [km]) north of the Kentucky/Ohio state line and 3 mi (5 km) southeast of the town of Piketon in south-central Ohio. The Portsmouth Gaseous Diffusion Plant (PGDP) was previously operated by DOE and then by the United States Enrichment Corporation (USEC). Uranium enrichment operations were discontinued in May 2001, and the plant has been placed in cold standby, a non-operational condition in which the plant retains the ability to resume operations within 18 to 24 months. Currently, NRC has given USEC a license to locate the American Centrifuge Program at the Portsmouth Site. The facility will be located on approximately 200 acres (81 ha) of the southwest quadrant of the controlled access area.

Of the 3,714 acre (1,500 ha) Portsmouth Site, 800 acres (320 ha) comprise the fenced core area which contains the former uranium enrichment operation facilities. The 2,914 acres (1,180 ha) outside the core area include restricted buffers, waste management areas, plant management and administrative facilities, gaseous diffusion plant support facilities, and vacant land. The site is heavily developed and includes approximately 150 buildings, trailers, and sheds.

J.10.2 Visual Resources

The Portsmouth Site is characterized by a primarily flat, rural landscape. Over 90 percent of the land surrounding the site is either undeveloped or serves as grazing or agricultural lands. SR 23 runs parallel to the western border of the Portsmouth Site less than 1 mi (2 km) away. It provides limited public views to the site due to the forested portions of the surrounding site area, which partially obscure the view of the facilities at the Portsmouth Site.

J.10.3 Site Infrastructure

The PGDP was constructed in the mid-1950s. The Portsmouth Site has an on-site steam plant, water treatment plant, wastewater treatment plant, and storm water management system. The DOE Reservation is the largest industrial user of water in the vicinity and obtains its water supply from an on-site X-611 Water Treatment Facility that draws water from three well fields located along the Scioto River. The maximum potential production associated with the well fields is 13 million gallons per day (gal/day) (49 million liters per day [L/day]). The current production is approximately 5 million gal/day (19 million L/day).

The Portsmouth Site is supplied electricity by the Ohio Valley Electric Corporation. Sewage treatment at the site is provided by the X-6619 Sewage Treatment Facility. The system is

activated sludge using plug flow processes, aerobic digestion, secondary clarification, and granular-media filtration for effluent polishing. Post-chlorination is used to produce a bacteriologically safe effluent, and the final product is dechlorinated with sulfur dioxide before discharge to the Scioto River at National Pollutant Discharge Elimination System (NPDES) Permit Outfall 003. The X-6619 Sewage Treatment Plant has a design capacity of 700,000 gal/day (2,649,780 L/day) and currently has 400,000 gal/day (1,514,160 L/day) excess capacities available. The proposed site has a developed and functioning storm water system consisting of open ditch and some very limited storm drains adjacent to the existing buildings that discharge to open ditches.

J.10.4 Air Quality and Noise

The Portsmouth Site is located in the humid continental climatic zone and has weather conditions that vary greatly throughout the year. Tornadoes are rare in the area surrounding the Portsmouth Site, and those that do occur are less destructive in this region than those occurring in other parts of the Midwest. For the period from 1950 through 1995, 656 tornadoes were reported in Ohio, with an average of 14 tornadoes per year. For the same period, 3 tornadoes were reported in Pike County, but most of those were relatively weak, at most, F2 of the Fujita tornado scale.

The Portsmouth Site is located in the Wilmington-Chillicothe-Logan Intrastate Air Quality Control Region (AQCR), which covers the south-central part of Ohio. Currently, Pike County is designated as being in attainment for all criteria pollutants. Ambient concentration data for criteria pollutants around the site are not available. On the basis of 2003 monitoring data, the highest concentration levels for SO₂, NO₂, CO, PM₁₀, and Pb representative of the region near the Portsmouth Site are less than 44 percent of their respective National Ambient Air Quality Standards (NAAQS). However, the highest O₃ and PM_{2.5} concentrations are approaching or are somewhat higher than the applicable NAAQS. These high ozone concentrations of regional concern are associated with high precursor emissions from the Ohio Valley region and long-range transport from southern states.

Nonradiological air emissions from the USEC are predominant sources in Pike County. Currently, USEC has three Ohio Environmental Protection Agency (OEPA) operating permits. These emissions are associated with the boilers at the X-600 steam plant (which provides steam for the Portsmouth reservation), a boiler at the X-611 water treatment plant, an emergency generator, and a trash pump (DOE 2004b). DOE operates numerous small sources that release criteria pollutants and volatile organic compounds (VOCs). Other emission sources at DOE, which include 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 1.0 ton (0.9 metric tons [MT]) per year of conventional air pollutants (on an individual basis).

J.10.5 Water Resources

The Portsmouth reservation is within the Lower Scioto River watershed. Surface waters drain from the Portsmouth Site via a network of tributaries to the Scioto River located approximately 2 mi (3.2 km) to the west. The average flow in the Scioto River is 2.1 x 10⁶ gallons per minute

(7.9×10^6 liters per minute). The Scioto River discharges into the Ohio River approximately 25 mi (40 km) south and downstream of the reservation. There are no known public- or private-water supplies drawn from this section of the Scioto River. Storm water at the Portsmouth Site 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. The largest stream on the Portsmouth Site is Little Beaver Creek, which discharges into Big Beaver Creek, which then discharges into the Scioto River.

The surface water features that drain the Portsmouth 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; and Secondary Contact Recreation.
- Scioto River: Warm Water Habitat; Public Water Supply; Agricultural Water Supply; Industrial Water Supply; and Primary Contact Recreation.

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 601,000 gallons per day (gal/day) (2.3 million liters per day [L/day]), and in 2003, the facility operated at 27 percent of that capacity. The discharge from the sewage treatment plant is within its National Pollutant Discharge Elimination System permit criteria.

The Portsmouth 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 570 feet (ft) (174 meters [m]) above mean sea level in January 1913. The reservation occupies an upland area at an elevation of 670 ft (204 m) above mean sea level.

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. On site, five areas of groundwater contamination have been identified that contain contaminants. The main contaminants are VOCs (mostly trichloroethylene) and radionuclides (e.g., uranium, technetium-99). Data from the 2000 annual groundwater monitoring showed that five contaminants exceeded primary drinking water standards at the Portsmouth Site: beryllium, chloroethane, americium, trichloroethylene, and uranium. Alpha and beta activity also exceeded the standards. The concentration of contaminants and the lateral extent of the plume did not significantly increase in 2001.

J.10.6 Geology and Soils

The topography of the Portsmouth Site area consists of steep hills and narrow valleys, except where major rivers have formed broad floodplains. The site is underlain by bedrock composed of

shale and sandstone. Surface and near-surface geology at the site have been heavily influenced by glaciation and the resultant ice damming and drainage reversals.

The Portsmouth Site is within 60 mi (96 km) of the Bryand Station-Hickman Creek Fault (DOE 2004b). The largest recorded seismic event in this zone was the Sharpsburg, Kentucky, earthquake of July 1980. That earthquake registered a magnitude of 5.3 and a Modified Mercalli intensity of VII. For this site, the evaluation-basis earthquake (EBE) was designated by DOE to have a return period of 250 years. The USGS earthquake database shows that 9 earthquakes have occurred within 62 mi (100 km) of the site since 1973. The magnitudes of the earthquakes ranged from 1.60 to 4.40. The closest earthquake was a distance of 21 mi (34 km), had a magnitude of 3.5 and occurred at a depth of 7 mi (11 km). This earthquake occurred August 17, 1983.

J.10.7 Biological Resources

The vegetative cover in surrounding Pike County consists mostly of hardwood forests and field crops. The most common type of vegetation on the Portsmouth Site is managed grassland, which makes up about 1,100 acres (445 ha). Grasses are the dominant species in these communities.

The other types of habitat on the site include oak-hickory forest which covers 17 percent of the site and occurs on well-drained upland areas; old-field communities, approximately 11 percent of the site, consisting of tall weeds, shade-intolerant trees and shrubs that occur in previously disturbed areas; upland mixed hardwood forest which also covers 11 percent of the site and consists of black walnut, black locust, honey locust, black cherry, and persimmon in these mesic to dry upland communities; and riparian forest which occurs in low, periodically flooded areas near streams, makes up four percent of the site, and for which the dominant species are cottonwood, sycamore, willows, silver maple, and black walnut.

Within the area surrounded by Perimeter Road, the Portsmouth Site consists primarily of open grassland (including areas maintained as lawns) and developed areas consisting of buildings, paved areas, and storage yards. Wetlands are also located around one of the Cylinder Storage Yards and are associated with the tributaries of Little Beaver Creek. The flora associated with the wetlands includes emergent vegetation including sedges, rushes, cat-tails, and various woody species (trees and shrubs) tolerant of the saturated conditions of wetlands.

A wetland survey of the Portsmouth Site was conducted in 1995. Approximately 34 acres (84 ha) of wetlands occur on the site, excluding retention ponds. Forty-one wetlands meet the criteria for jurisdictional wetlands, while four wetlands are non-jurisdictional. Wetlands on the site primarily support emergent vegetation that includes cattail, great bulrush, and rush. Palustrine forested wetlands occur on the site along Little Beaver Creek.

No occurrence of federally listed plant or animal species has been documented on the Portsmouth Site.

J.10.8 Cultural and Paleontological Resources

An archaeological reconnaissance was performed in September 1996, April 1997, and May 1997 on the entire Portsmouth Site, with the exception of areas occupied by plant-related buildings or structures, sanitary landfills, or lagoons. The surveys resulted in the identification of 36 previously undocumented archaeological sites within the boundary of the Portsmouth Site. The 36 sites included 13 remnants of historic farmsteads, seven historic scatters or open refuse dumps, two historic isolated finds, four Portsmouth Site 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.

J.10.9 Socioeconomics

Currently, approximately 92 percent of workers reside in the four selected counties. Geographically, Ross, Jackson, and Scioto counties bound Pike County to the North, East and South, respectively.

The major population centers in the four county region of influence are as follows:

- **Piketon** is the nearest residential center to the Portsmouth Site. Located in Pike County, this town is approximately 4 mi (6.4 km) north of the Portsmouth Site on U.S. Route 23. In 2000, the population of Piketon was 1,907.
- **Waverly** is the largest town in Pike County. Located 8 mi (13 km) north of the Portsmouth Site, the population of Waverly was 4,433 in 2000.
- **Chillicothe**, which is located in Ross County, is the largest population center in the region of influence. Chillicothe is 27 mi (43 km) north of the Portsmouth Site, and had a population of 21,796 in 2000.
- **Portsmouth** is in Scioto County and is 27 mi (43 km) south of the Portsmouth Site. The population of Portsmouth was 20,909 in 2000.
- **Jackson** is located in Jackson County and is 26 mi (42 km) east of the Portsmouth Site. In 2000, Jackson's population was 6,184.

The population of the region of influence was 212,876 people in 2000, having grown 4.3 percent since 1990. This growth was marginally lower than the Ohio population growth rate of 4.7 percent in the same decade.

J.10.10 Environmental Justice

In 2000, of the 206 census tracts within 50 mi (80 km) of the proposed conversion facility at Portsmouth, 12 had minority populations in excess of state-specified thresholds, a total of 7,735 minority persons in all. Within the region of influence, as well as in Pike County, 3.7 percent of the population is minority. There are two census tracts in which minority populations either exceed 50 percent and/or are significantly greater than the State or county percentage.

In 1999, of the 206 census tracts within 50 mi (80 km) of the proposed facilities at Portsmouth, 142 had low-income populations in excess of state-specified thresholds, a total of 133,303 low-income persons in all. In Pike County, 18.6 percent of the individuals for whom poverty status was known in 1999 were low-income. 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.

J.10.11 Public and Worker Health and Safety

The maximum radiation dose to an off-site member of the public as a result of on-site facility operations is estimated to be 2.0 millirem/year (mrem/yr), which is significantly less than the NRC or DOE dose limit for the general public and the 40 CFR Part 190 regulatory limits of 25 mrem/yr for uranium fuel-cycle facilities. According to USEC, the Portsmouth Site reservation worker average whole body dose is less 10 mrem/yr. Radiation exposures of the cylinder yard workers include exposures from activities performed outside the cylinder yards. The average dose in 2001 was 64 mrem/yr. That dose is considerably below the maximum dose limit of 5,000 mrem/yr set for radiation workers (10 CFR Part 835). The average dose in 2001 for all monitored DOE/Portsmouth employees and subcontractors was 1.85 mrem/yr.

Two of the key chemicals of concern—soluble and insoluble uranium compounds and hydrogen fluoride—are historically below permissible exposure limits. Other chemicals have been measured over the years at various levels at the Portsmouth Site. Some of these levels have approached or exceeded occupational health benchmarks. For example, arsenic levels ranged up to 2.1 milligrams per cubic meter (mg/m^3), which is higher than the permissible exposure limit of $0.01 \text{ mg}/\text{m}^3$, and lead levels ranged up to $19.5 \text{ mg}/\text{m}^3$, which is higher than the permissible exposure limit of $0.050 \text{ mg}/\text{m}^3$. 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.

J.10.12 Transportation

The Portsmouth Site is served directly by road and rail. The site is 3.5 mi (5.6 km) south of the intersection of the U.S. Route 23 and Ohio SR 32 interchange. Two rail carriers, CSX and Norfolk Southern, service Pike County. The Norfolk Southern rail line is connected to the CSX Transportation Inc. rail line via a rail spur entering the northern portion of the site. The onsite system is used infrequently.

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. Nearby barge terminals on the Ohio River can be accessed by public road.

The nearest airport is the Greater Portsmouth Regional Airport located approximately 15 mi (24 km) south of the site. 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.

J.10.13 Waste Management

Waste is generated at the Portsmouth Site from DOE cleanup activities and its monitoring activities for stored waste including depleted uranium hexafluoride (UF₆) cylinders, hazardous waste, and classified/sensitive waste. DOE waste types are low-level radioactive waste, mixed (radioactive and *Resource Conservation and Recovery Act* [RCRA] hazardous) waste, RCRA hazardous waste, *Toxic Substances Control Act* (TSCA) waste, and mixed TSCA waste (radioactive and TSCA hazardous) (40 CFR Parts 239-299), (15 U.S.C. 2601 et seq.). Portsmouth does not generate or store high-level radioactive waste or store transuranic (TRU) waste. Solid low level waste generated by DOE activities include refuse, sludge, and debris contaminated with radionuclides, primarily uranium and Technetium-99 (DOE 2004b).

J.11 ROSWELL SITE

This section presents a summary of the affected environments for the Roswell Site. The information was summarized from the Site Characterization Report prepared by the Funding Opportunity Announcement (FOA) grant recipient (SCR 2007g).

J.11.1 Land Use

The Roswell Site is approximately 920 acres (372 hectares [ha]) and is located in the arid high desert rangeland of east-central New Mexico's Chaves County, 40 miles (mi) (64 kilometers [km]) east of Roswell. Currently, there are no existing structures or facilities within the boundaries of the site. Within the Roswell Site, the western 480 acres (194 ha) is zoned industrial for use as a *Resource Conservation and Recovery Act* (RCRA) hazardous waste disposal facility owned by Grandy Marley and permitted by the New Mexico Oil Conservation Division (40 CFR Parts 239-299). The remaining 440 acres (178 ha) are zoned for agricultural use.

J.11.2 Visual Resources

There are currently no existing facilities or structures within the boundaries of the Roswell Site that could affect the aesthetic resources of the area.

J.11.3 Site Infrastructure

There is an existing section of railroad track owned and operated by Burlington Northern and Santa Fe and/or Union Pacific Rail Roads that runs through Roswell and northwest through Elida, approximately 30 mi (48 km) from the site. One electrical power distribution line (>13.5 kv) is located several miles to the east. One existing water well, owned by Robert W. Marley (a principle in Gandy Marley, Inc.), is present within 3 mi (4.8 km) of the site property and two additional wells are permitted for construction. The western 480 acres (194 ha) of the Roswell Site are zoned for use as a RCRA hazardous waste disposal facility.

J.11.4 Air Quality and Noise

The site is located in an arid to semiarid continental climate. The normal average daily temperature ranges from 38°F (3.3°C) in January to 80.8°F (27°C) in July.

There are no non-attainment, maintenance, or near non-attainment areas within the 50 mi (80 km) buffer radius of the Roswell Site. There are no current or existing facilities at the Roswell Site to contribute to radiological air emissions. There are no existing facilities at the Roswell Site resulting in elevated noise levels.

One exceedance of the PM₁₀ concentration of 150 micrograms occurred in Chavez County due to strong prevailing winds. The strong winds resulted in the lifting and blowing of dust. Since this was caused by natural events, the Environmental Protection Agency (EPA) allows States to describe alternative steps and measures to take to avoid nonattainment status by developing a Natural Events Action Plan (NEAP) to protect public health. In October 2004, the NMED submitted to EPA a NEAP for Chaves County to avoid non-attainment.

Average rainfall in New Mexico ranges from less than 10 inches (in) (25 centimeters [cm]) over much of the south desert and the Rio Grande and San Juan Valleys to more than 20 in (51 cm) in the higher elevations in the state. Rainfall at the Roswell Site falls within these averages.

J.11.5 Water Resources

There are no perennial surface water bodies present at or near the site. The only surface water present in the vicinity of the site is runoff from precipitation or snowmelt. The site is located in the arid eastern ranchland of New Mexico where annual potential evaporation of up to 110 inches so greatly exceeds average annual precipitation of 13 to 16 in (33 to 41 cm) that perennial surface water simply does not exist. There are no natural perennial surface water features in the vicinity of the site for which a water quality assessment can be determined. The site is not in or near a 10, 100, or 500 year floodplain delineated by *Federal Emergency Management Act* (42 U.S.C. 5121-5170).

The Roswell Site is situated in the Roswell Artesian Underground Water Basin (UWB), near its boundary with the Lea County UWB. The Roswell UWB is an administrative unit that includes several aquifers, including an alluvial aquifer about 35 mi (56 km) west of the site along the Pecos River, the Roswell Artesian Aquifer, local perched groundwater bodies near the site, and groundwater in formations beneath the site. Formations beneath the site yield little groundwater and water quality is considered poor. The western boundary of the Ogallala Aquifer coincides with Mescalero Ridge about 1 mi (2 km) east of the site. The Ogallala is the only aquifer within 10 mi (16 km) that is known to yield large amounts of groundwater. The closest major body of perennial surface water is the Pecos River, located approximately 35 mi (56 km) west of the site at its nearest point. Ephemeral surface water at the site is derived exclusively from local precipitation and snowmelt.

The saturated thickness in the aquifer near Mescalero Point is approximately 60 to 70 feet (ft) (18 to 21 meters [m]) and transmissivity is reported to be 10,000 to 30,000 gal/day per ft or 1,300 to 4,000 ft² per day. Storativity of the aquifer is approximately 0.2. The expected yield from wells completed in the Ogallala Aquifer is in excess of 100 gpm near the site. No groundwater wells have been completed at the Roswell Site. There are no known future groundwater rights appurtenant to the site. There are no known Native American Tribal water rights that would be affected. There are no known existing permits that will expire, providing available water rights.

J.11.6 Geology and Soils

The Roswell Site is located approximately 40 mi (64 km) east of Roswell, New Mexico in the Pecos River Valley Section of the Great Plains Physiographic Province. Terrain within this province ranges from low-lying plains to rugged canyons. In the area near the Roswell Site, the terrain consists of hummocky eolian deposits, sand ridges and dunes. The site encompasses 920 acres (372 ha) and slopes moderately from east to west from an elevation of 4,260 ft (1,298 m) above sea level to 4,120 ft (1,256 m) above sea level. No faults or folds that have been active in Quaternary time are near the site. The closest capable fault is the Rio Grande Rift approximately 100 mi (161 km) west of the site.

J.11.7 Biological Resources

There are four ecological habitats known to occur within the boundaries of the Roswell Site. These include the loamy, sandhills, deep sand, and sandy plains ecosystems. The most important vegetation communities on the Roswell Site are those that provide habitat for the lesser prairie-chicken and sand dune lizard. These are both federal candidate species.

The privately owned 980 acre (396 ha) Roswell Site is located within the Caprock Wildlife Habitat Management Area (WMA), which encompasses approximately 561,300 acres (227,150 ha) of public, state, and private lands in eastern Chaves County, southwestern Roosevelt County, and northern Eddy County, New Mexico. The WMA was established to protect the Mescalero Sands habitat area that is located primarily to the west of the Roswell Site; protection of this habitat is primarily focused on the lesser prairie-chicken. There are no riparian, wetlands, or aquatic habitats present within or directly adjacent to the Roswell Site. There are no wetlands under jurisdiction of the U.S. Army Corps of Engineers (USACE) at or near the site. The only 2 species that have been documented within or adjacent to the Roswell Site are the sand dune lizard and lesser prairie-chicken.

J.11.8 Cultural and Paleontological Resources

Twelve previously recorded sites were noted in the NMCRIS review for lying near but not within the Roswell Site.

J.11.9 Socioeconomics

The Roswell Site is located in the sparsely populated ranchland of eastern Chaves County, approximately 40 mi (64 km) east of Roswell. Based on the 2000 Census block group data, it is estimated that 91,713 people live within 50 mi (80 km) of the Roswell Site. The construction, mining, and accommodation and food sectors employ the greatest number of workers in the ROI.

At a radial distance up to 50 mi (80 km) of the Roswell Site, the great majority of the area has a population density of less than 10 people per square mile. In some areas of Roswell, Artesia, and Lovington, however, the population density is greater than 1,000 people per square mile. Based on the 2000 Census the average population density within 50 mi (80 km) from the Roswell Site is estimated to be less than 12 people per square mile.

The unemployment level in the ROI for 2006 was 3.9 percent. This level was below the New Mexico average of 4.3 percent and the national unemployment average of 4.6 percent for 2006.

The New Mexico economy is expected to generate about 158,000 new jobs from 2002 to 2012. This represents growth of about 20 percent (an average of approximately 2 percent per year), faster than the projected national increase of 14.8 percent over the same 10-year period. Employment growth for the ROI from 2003 to 2006 has averaged 1.6 to 4.6 percent per year.

J.11.10 Environmental Justice

The average minority population in New Mexico as of the 2000 Census was 55.3 percent. Therefore, block groups with a minority population of 65.3 percent or greater were considered minority areas. During the 2000 Census, there were a total of 83 New Mexico census block groups fully or partially within 50 mi (80 km) of the Roswell Site. A total of 15 block groups within 50 mi (80 km) of the Roswell Site had minority populations that were at least 10 percent greater than the state average.

The low-income population (households below the poverty line) in New Mexico as of the 2000 Census was 18.4 percent. Therefore, New Mexico block groups with a low-income population of 28.4 percent or greater were considered low-income areas. A total of 18 block groups had low-income populations that were at least 10 percent greater than the state average. The low-income census block groups were located in Roswell and Hagerman (in Chaves County).

Two census block groups within 50 mi (80 km) of the Roswell Site were located in Texas. The average minority population in Texas as of the 2000 Census was 47.6 percent. Block groups in Texas with a minority population of at least 57.6 percent were considered minority areas in Texas. The low-income population in Texas as of the 2000 Census was 15.4 percent. Therefore, block groups with a low income population of at least 25.4 percent were considered low-income areas in Texas. Neither of the Texas census block groups within 50 mi (80 km) of the Roswell Site was considered minority or low-income areas.

J.11.11 Public and Worker Health and Safety

There are currently no existing facilities or structures on the Roswell Site to contribute radiological or hazardous chemical contaminants to the environment.

J.11.12 Transportation

Major U.S. Highway 380 is located within 3 mi (5 km) of the site. The nearest rail access is located 30 mi (48 km) northwest of the site. There are currently no forms of transportation on the Roswell Site.

J.11.13 Waste Management

The western 480 acres (194 km) of the Roswell Site are zoned for use as a RCRA hazardous waste disposal facility. The surface waste management facility is permitted to use lined landfill-type cells for the disposal of oilfield waste classified as non-hazardous by RCRA subtitle C exemption or by characteristic testing.

J.12 SAVANNAH RIVER SITE

This section provides a summary of the affected environments for the Savannah River Site (SRS).

J.12.1 Land Use

SRS is located in south-central South Carolina and occupies an area of approximately 198,420 acres (80,300 hectares [ha]) in Aiken, Barnwell, and Allendale Counties (DOE 2005b). The site is approximately 15 miles (mi) (9.5 kilometers [km]) southeast of Augusta, Georgia and 12 mi (7.5 km) south of Aiken, South Carolina (DOE 2003a).

Currently, production and support facilities, infrastructure, research and development (R&D), and waste management facilities account for approximately 10 percent (approximately 19,000 acres [8,000 ha]) of land on the SRS (DOE 2000b; DOE 2003a). Of the remaining 90 percent (approximately 191,000 acres [77,300 ha]), approximately 80 percent is planted pine forest managed by the U.S. Forest Service (USFS) (under an interagency agreement with U.S. Department of Energy [DOE]), with the remainder consisting of aquatic habitats and developed landscapes (DOE 1995d, SRS 2006, Wike et al. 2006). The 19,000 acres (8,000 ha) of developed SRS land includes five non-operational nuclear production reactors, two chemical separations facilities (one is being deactivated), waste treatment, storage and disposal facilities, and various supporting facilities. The site was designed with a buffer zone that provides security and prevents accidental exposure to the general public (DOE 2003a, SRS 2006).

J.12.2 Visual Resources

The industrial areas, including the reactors and large facilities, are primarily located in the interior of the site away from public access (DOE 2003a). SRS facilities are not generally visible from public access roads due to the distance to the boundary from the industrialized areas, the gently rolling terrain, and heavy vegetation (DOE 2003a). The limited public areas that have views of some SRS structures (other than the administrative areas) are approximately 5 mi (8 km) or more away from viewable structures (DOE 2003a).

The facilities are scattered across SRS and are brightly lit at night (DOE 1995d). Typically, the reactors and principal processing facilities are large concrete structures as much as 100 ft (30 m) tall adjacent to shorter administrative and support buildings and parking lots (DOE 1995d). These facilities are visible in the direct line-of-sight when approaching them on SRS access roads. Heavily wooded areas that border the SRS road system and public highways crossing SRS limit views of the facilities (DOE 1995d).

J.12.3 Site Infrastructure

The SRS site has over 1,400 mi (2,250 km) of roads total. About 143 mi (230 km) of these roads are paved, and 34.2 mi (55 km) of onsite roads are public roads. Most of the roads are adequate for the current level of normal transportation activity and could handle increased traffic volume. In addition, there are 64 mi (103 km) of railroad track at SRS.

SRS uses a 115-kilovolt (kV) power line system to supply electricity to the operations areas. Power is supplied by three transmission lines from the South Carolina Electric and Gas Company. The total SRS usage of electrical power is 370,000 megawatt-hours per year (MWh/yr) out of a site capacity of 4,400,000 MWh/yr.

Coal and oil are used at SRS to power steam plants located in A-, D-, H- and K-Areas. Coal is delivered by rail and is stored at coal piles in A-, D-, and H-Areas. Number 2 grade fuel oil is delivered by truck and is used in the K-Area. Natural gas is not used at SRS.

Domestic water supplies at SRS come from a system composed of several wells and water treatment plants.

J.12.4 Air Quality and Noise

The SRS is located in the Augusta-Aiken Interstate Air Quality Control Regions (AQCR). All areas within this region are classified as achieving attainment with the National Ambient Air Quality Standards (NAAQS) (40 CFR Part 50). Ambient air is defined as that portion of the atmosphere, external to buildings, to which the general public has access. The NAAQS define ambient concentration criteria or limits for sulfur dioxide (SO₂), particulate matter equal to or less than 10 microns in aerodynamic diameter (PM₁₀), carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), and lead (Pb). These pollutants are generally referred to as “criteria pollutants.”

Significant sources of regulated air pollutants at SRS include coal-fired boilers for steam production, diesel generators, chemical storage tanks, the Defense Waste Processing Facility (DWPF), groundwater air strippers, and various other process facilities. Another source of criteria pollutant emissions at SRS is the prescribed burning of forested areas across the Site by the USFS.

Atmospheric emissions of radionuclides from DOE facilities are limited under the U.S. Environmental Protection Agency (EPA) regulation “National Emission Standards for Hazardous Air Pollutants (NESHAP),” 40 CFR Part 61, Subpart H. A network of sampling stations in and around SRS monitors the concentrations of tritium and radioactive particulate materials in the air. Except for tritium, specific radionuclides are not routinely detectable at the site perimeter.

Most industrial facilities at SRS are at a sufficient distance from the site boundary that noise levels at the boundary from these sources would not be distinguishable from ambient background noise levels. Major noise sources in active areas at the SRS include industrial facilities and equipment such as cooling systems, transformers, engines, vents, paging systems, construction and materials handling equipment, and vehicles. Outside of active operational areas, vehicles and trains generate noise.

J.12.5 Water Resources

The regional drainage is dominated by the north to south running Savannah River. This major river forms in Lake Hartwell with the confluence of the Seneca and the Tugaloo rivers. It drains a watershed of 10,577 square miles (mi²) (27,394 square kilometers [km²]) in the mountains of North Carolina, South Carolina and Georgia. There are five main watersheds that originate on, or pass through the SRS before discharging into the Savannah River Swamp. Closer to SRS, the flood plain of the Savannah River turns into a swamp and begins to flood over a levee when river flows exceed 15,300 cubic feet [ft³]/s (433 cubic meters [m³]/s) (DOE 2003a).

There are two major artificial bodies of water onsite, Par Pond and L-Lake. There are also approximately 200 Carolina bays, which are naturally occurring pond formations found in parts of the Southeastern United States, that are scattered throughout the site covering a total area of approximately 1,100 acres (445.5 ha). These bays serve as natural habitats for many species of wildlife on the site.

A series of five upstream reservoirs—Jocassee, Keowee, Hartwell, Richard B. Russell, and Strom Thurmond—were built along the river with the objectives to reduce the variability of flow downstream in the area of SRS, create hydroelectric power, and improve navigation and recreation among other things (DOE 2005d).

The Savannah River is classified as a freshwater source that is suitable for primary and secondary contact recreation, drinking after appropriate treatment, balanced native aquatic species development, and industrial and agricultural purposes.

Steel Creek received cooling water from L-Reactor and ash basins runoff, non-process cooling water, powerhouse wastewater, reactor process effluents, sanitary treatment plant effluents, and vehicle wash waters. Releases of radioactive materials to surface water were highest during the early and middle 1960s. Tritium, cesium-137, and strontium-90 were the main radioactive materials of concern for releases to surface streams at SRS. Meyer et al. (1999) estimated that, for all years of operation at SRS, the total tritium released to the Savannah River is 1.8 million curies (Ci), the total cesium-137 released is about 250 Ci and the total strontium-90 released to the river for all years is about 100 Ci (DOE 1995d).

SRS monitors nonradioactive liquid discharges to surface waters through the NPDES, as mandated by the *Clean Water Act* (33 U.S.C. 1251 et seq.). As required by Environmental Protection Agency (EPA) and SCDHEC, SRS has NPDES permits in place for discharges to the waters of the United States and South Carolina. These permits establish the specific sites to be monitored, parameters to be tested, and monitoring frequency—as well as analytical, reporting, and collection methods (SRS 2006).

The hydrostratigraphic units of primary interest beneath SRS are part of the Southeastern Coastal Plain Hydrogeologic Province. Within this sequence of aquifers and confining units are two principal subcategories, the overlying Floridan Aquifer System and the underlying Dublin-Midville Aquifer System. These systems are separated from one another by the Meyers Branch

Confining System. In turn, each of the systems is subdivided into two aquifers, which are separated by a confining unit (WSRC 2005).

In the central to southern portion of SRS, the Floridan Aquifer System is divided into the overlying Upper Three Runs Aquifer and the underlying Gordon Aquifer, which are separated by the Gordon Confining Unit. The water table surface can be as deep as 160 ft (49 m) below ground surface (bgs), but intersects the ground surface in seeps along site streams. The top of the Gordon Aquifer typically is encountered at depths of 150–250 ft (46–76 m) bgs (WSRC 2005).

The shallower groundwater aquifers underneath SRS are contaminated with a variety of elements that range from organic compounds to metals and radionuclides. The sources of the detected groundwater contamination included burial grounds, waste management facilities, canyon buildings, seepage basins, and saltstone disposal facilities (NRC 2005c). The shallower Upper Three Runs Aquifer is contaminated with solvents, metals, and low levels of radionuclides near several SRS areas and facilities, including the F-Area. Tritium has been reported in the Gordon Aquifer under the Separation Areas (F- and H-Areas). The deep Crouch Branch Aquifer is generally unaffected by site operations, except for a location near A-Area, where trichloroethylene (TCE) contamination has been found.

SRS derives its own drinking and production water supply from groundwater. The site ranks as South Carolina's largest self-supplied industrial consumer of groundwater, utilizing approximately 5.3 million gallons (gal)/day (20 million liters (L)/day). SRS domestic and process water systems are supplied from a network of approximately 40 wells in widely scattered locations across the site, of which eight supply the primary drinking water system for the site (WSRC 2005).

J.12.6 Geology and Soils

The Aiken Plateau, the subdivision of the Coastal Plain that includes SRS, is highly dissected and characterized by broad, flat areas between streams and narrow, steep-sided valleys. It slopes from an elevation of approximately 300 to 330 ft (91 to 100 m) above mean sea level (msl) with an average slope of less than four percent (DOE 2002a).

The sediments of the Atlantic Coastal Plain dip gently seaward from the Fall Line thickening from essentially 0 ft (0 m) thick at the Fall Line to more than 4,000 ft (1,219 m) at the coast. The topmost sediment layer (known as the Tinker/Santee Formation) consists of 60 ft (18 m) of Paleocene-age clayey and silty quartz sand and silt (NRC 2005c). Within this layer, there are occasional beds of clean sand, gravel, clay, or carbonate. Deposits of pebbly, clayey sand, conglomerate, and Miocene and Oligocene-age clay occur at higher elevations. This layer is noteworthy because it contains small, discontinuous, thin calcareous sand zones (i.e., sand containing calcium carbonate) that are potentially subject to dissolution by water. These “soft-zone” areas have the potential to subside, causing settling of the ground surface (NRC 2005c). The second layer of sediments overlies bedrock and consists of about 700 ft (210 m) of Upper Cretaceous-age quartz sand, pebbly sand, and kaolinitic clay. The underlying bedrock consists of sandstones of Triassic age and older metamorphic and igneous rocks (DOE 2002a).

The Atlantic Coastal Plain tectonic province in which SRS is located is characterized by generally low seismic activity that is expected to remain subdued (DOE 2005p). There are six subsurface faults at SRS: Pen Branch, Steel Creek, Advanced Tactical Training Area, Crackerneck, Ellenton, and Upper Three Runs. The actual faults do not reach the surface, but stop several hundred feet below grade. The most active seismic zones in the southeastern United States are all located over 100 mi (160 km) away from the site (DOE 2002a).

Seven soil associations are represented within SRS (Rogers 1990). Generally, sandy soils occupy the uplands and ridges and are less fertile than the loamy-clayey soils of the stream terraces and floodplains. The surface soils at the proposed GNEP site range from nearly level to sloping and well-drained, with a sandy surface and subsurface layer and a loamy subsoil. The Fuquay sand is the dominant soil mapping unit in the project area.

Some small gravel deposits were noted in the vicinity of the F-area. However, no other economically viable geologic resources occur (DOE 1995d).

Subsidence (lowering of the ground surface) and soil liquefaction are two geologic processes that are potentially problematic at SRS. Rock strata under some areas of SRS include layers of pockets of carbonate rock that are subject to dissolution, which would cause subsidence and could lead to soil liquefaction. Sites underlain by these “soft zones” are considered unsuitable for structural formations unless extensive soil stabilization is done (NRC 2005c).

J.12.7 Biological Resources

Currently, nearly 90 percent of the land (180,000 acres [72,000 ha]) at the SRS is forested with upland pine, hardwood, mixed (pine and hardwood), and bottomland hardwood forests. The loblolly-longleaf-slash pine community (*Pinus taeda-P. palustris-P. elliotii*) is the dominant community covering approximately 65 percent of the site. Swamp forests and bottomland hardwood forests are found along the Savannah River. Farming, fire, soil, and topography have influenced SRS vegetation patterns.

SRS supports numerous animal species, including 44 species of amphibians, 59 species of reptiles, 258 species of birds and 54 species of mammals (NRC 2005c). The SRS has among the highest biodiversity of herpetofauna (reptiles and amphibians) in the United States because of the area’s warm, moist climate and its wide variety of habitats (NRC 2005c).

Approximately 25 percent of SRS’s surface area is covered by water, including wetlands, bottomland hardwoods, cypress-tupelo swamp forests, two large cooling water reservoirs (i.e., Par Pond and L Lake), creeks, and streams. (Kilgo and Blake 2005, Lide et al. 1995, Wike et al. 2006). Six major streams and several associated tributaries flow through SRS, and the Savannah River bounds the southwestern border of SRS. More than 50 man-made ponds also occur at the SRS. The two largest are L Lake (1,000 acres [405 ha]), which discharges into Steel Creek, and Par Pond (2,640 acres [1,069 ha]), which discharges into Lower Three Runs Creek. Altogether, about 4,940 acres (2,000 ha) of open water occurs at the SRS (NRC 2005c). At least 81 fish species have been identified at SRS (NRC 2005c).

Under the *Endangered Species Act*, the Federal Government provides protection to six species that are known to occur on the SRS: American alligator (*Alligator mississippiensis*); shortnose sturgeon (*Acipenser brevirostrum*); wood stork (*Mycteria americana*); red-cockaded woodpecker (*Picoides borealis*); smooth purple coneflower (*Echinacea laevigata*); and pondberry (*Lindera melissifolia*). SRS contains no designated critical habitat for any listed threatened or endangered species (Wike et al 2006).

Wetlands on SRS encompass approximately 49,030 acres (19,850 ha), or over 20 percent of the SRS area, and are extensively and widely distributed. These wetlands include bottomland hardwood forests, cypress-tupelo swamp forests, floodplains, creeks, impoundments, and over 300 isolated upland Carolina bays and wetland depressions (NRC 2005c).

J.12.8 Cultural and Paleontological Resources

Approximately 60 percent of the SRS site has been inventoried and over 850 archaeological (prehistoric and historic) sites have been identified (NRC 2005c). Sixty-seven of these sites are considered potentially eligible for listing on the National Register of Historic Places (NRHP); however, most of the sites have not been evaluated for eligibility.

Prehistoric resources at SRS consist of villages, base camps, limited-activity sites, quarries, and workshops. Evidence of prehistoric use of the area is present at approximately 800 of the recorded archaeological sites. Fewer than 8 percent of these sites have been evaluated for NRHP eligibility (DOE 2003a).

Historic resources at SRS consist of farmsteads, tenant dwellings, mills, plantations and slave quarters, rice farm dikes, dams, cattle pens, ferry locations, towns, churches, schools, cemeteries, commercial building locations, and roads. Evidence of historic use of the area has been found at approximately 400 of the recorded archaeological sites. About 10 percent of the historic sites have been evaluated for National Register eligibility (DOE 2003a). Systematic historic building surveys have not yet been conducted at SRS. Native American groups with traditional ties to the SRS area include the Apalachee, Cherokee, Chickasaw, Creek, Shawnee, Westo, and Yuchi.

Paleontological resources at SRS date from the Eocene Age (54 to 39 million years ago) and include fossil plants, numerous invertebrate fossils, and deposits of giant oysters, other mollusks, and bryozoa. All resources from SRS are marine invertebrate deposits and, with the exception of the giant oysters, are relatively widespread and common fossils. Therefore, the assemblages have relatively low research potential or scientific value (DOE 2003a).

J.12.9 Socioeconomics

Socioeconomic characteristics addressed at SRS include employment, income, population, housing, and community services. These characteristics are analyzed for a four-county region of influence (ROI) consisting of Aiken and Barnwell Counties in South Carolina, and Columbia and Richmond Counties in Georgia, where 88 percent of site employees reside.

SRS employs approximately 15,112 workers, including DOE employees and multiple contractors. This represents approximately 7.3 percent of area employment. The labor force of

the Regional Economic Area grew by approximately 8 percent from 209,560 in 2000 to 226,087 in 2005. The overall ROI employment experienced a comparable growth rate of 6 percent with 195,162 in 2000 to 207,162 in 2005.

The ROI unemployment rate was 8.4 percent in 2005, which was higher than the unemployment rate of 6.9 percent in 2000. In 2005, unemployment rates within the regional economic area ranged from a low of 5.4 percent in Columbia County to a high of 10.9 percent in Richmond County. The unemployment rate in South Carolina was 6.7 percent in 2005, while the unemployment rate in Georgia was 5.2 percent (BLS 2005b, TtNUS 2006f).

Per capita income in the ROI was \$26,621 in 2004, a 54.9 percent increase from the 1990 level of \$17,188. Per capita income in 2004 in the ROI ranged from a low of \$19,809 in Barnwell County, South Carolina to a high of \$33,523 in Columbia County, Georgia. The 2004 per capita income in South Carolina was \$27,185 and \$29,782 in Georgia (BEA 2006a).

In 2000, approximately 563,501 people lived within census tracts, all or part of which are within a 50 mi (80 km) radius of SRS. The ROI population increased by 16 percent during the 15 year period, while the population in South Carolina and Georgia increased by 18 percent and 36 percent respectively.

J.12.10 Environmental Justice

Census data from 2000 was used to determine minority and low-income characteristics by block group within 50 mi (80 km) of SRS. A block group was included if any part of its area was within 50 mi (80 km) of the centroid of SRS. The 50 mi (80 km) radius includes 522 block groups (TtNUS 2006b). The geographic area was defined as Georgia and South Carolina, independently, for analysis of block groups in each state.

One-hundred-ninety-four block groups have a significant Black or African American minority population and 207 block groups have significant aggregate minority percentages. One census block group within the 50 mi (80 km) radius has a significant Hispanic ethnicity population (TtNUS 2006b).

Based on the “more than 20 percent” or the “exceeded 50 percent” criteria, no American Indian or Alaskan Native, Asian, Native Hawaiian or Other Pacific Islander, Some other race, or Multi-racial minority block groups exist in the geographic area (TtNUS 2006b).

Sixty seven census block groups within the 50 mi (80 km) radius have a significant percentage of low-income households (TtNUS 2006b).

J.12.11 Public and Worker Health and Safety

An individual’s radiation exposure in the vicinity of SRS amounts to approximately 357 millirem (mrem), and is comprised of natural background radiation from cosmic, terrestrial, and internal body sources; radiation from medical diagnostic and therapeutic practices; weapons test fallout; consumer and industrial products, and nuclear facilities.

Releases of radionuclides to the environment from SRS operations provide another source of radiation exposure to individuals in the vicinity of SRS. Types and quantities of radionuclides released from SRS operations in 2004 are listed in the Savannah River Site Environmental Report for 2004 (WSRC 2005). The radionuclide emissions contributing the majority of the dose to the offsite maximally exposed individual (MEI) from liquid releases were tritium and cesium-137 (WSRC 2005). For atmospheric releases, the radionuclides contributing the majority of the dose to the offsite MEI were tritium, iodine-129, and unspecified alpha emissions (estimated to be from diffuse and fugitive sources). These doses fall within the radiological limits given in DOE Order 5400.5 (DOE O 5400.5), *Radiation Protection of the Public and the Environment*, and are much lower than those from background radiation (WSRC 2005).

The average radiation dose recorded for workers at SRS in 2005 was 51.4 mrem (SRS 2006). The cumulative dose to all workers at SRS from operations in 2001 was 121.3 person-rem. These doses fall within the radiological regulatory limits of 10 CFR Part 835.

Major non-radiological emissions of concern from stacks at SRS facilities include sulfur dioxide, carbon monoxide, oxides of nitrogen, PM₁₀, volatile organic compounds (VOCs), and toxic air pollutants. Emissions from SRS sources are determined during an annual emissions inventory from calculations using source operating parameters such as fuel oil consumption rates, total hours of operation, and the emission factors provided in the EPA "Compilation of Air Pollution Emission Factors."

Air dispersion modeling was conducted during 2004 for new emission sources or modified sources as part of the sources' construction permitting process. The modeling analysis showed that SRS air emission sources were in compliance with applicable regulations (WSRC 2005).

J.12.12 Transportation

SRS is surrounded by a system of interstate highways, U.S. highways, state highways, and railroads. The regional transportation network services the four South Carolina counties (Aiken, Allendale, Bamberg, and Barnwell) and two Georgia counties (Columbia and Richmond) that generate nearly all of the SRS commuter traffic.

Railroads on the Site include both CSX Transportation tracks and 33 mi (53 km) of operational SRS track (DOE 2005d).

The Savannah River is navigable to the barge slip at SRS located at river mile 157 (SCR 2007b). The Savannah River barge dock is located approximately two miles northwest of the D Area on SRS and is surrounded by wooded areas (DOE 1992b). An on-site heavy-duty construction access road originates at the barge dock and extends approximately 2 mi (3.2 km) and connects with SC-125 (Atomic Road) (SCR 2007i).

J.12.13 Waste Management

SRS manages spent nuclear fuel, high level waste (HLW), low level waste (LLW), mixed low level waste (MLLW), transuranic (TRU) waste, hazardous waste, sanitary solid waste, low-level wastewater, and sanitary sewage.

Each operation at SRS has the goal of identifying and implementing measures that minimize waste and prevent pollution. Pollution prevention is integral to the SRS Environmental Management System. SRS's Pollution Prevention Program establishes the preference of source reduction and recycling over treatment, storage, and disposal. Accomplishments during 2004 included completion of 51 pollution prevention projects, resulting in an annualized avoidance of 9,277 yd³ (7,093 m³) of waste, with an accompanying cost avoidance of \$41.5 million (WSRC 2005).

SRS is also engaged in cleanup and decommissioning and demolition projects. SRS is responsible for cleaning up more than 500 waste and groundwater units to reduce risk and protect human health and the environment. In 2004, SRS had completed more than 300 of the units. By 2025, all inactive SRS waste sites that pose a risk to human health or the environment will be remediated and controlled, and contaminated surface and groundwater will be remediated, in remediation, or closely monitored. By the end of 2006, more than 250 buildings were scheduled to be demolished. Across the site, there are about 6,000 buildings, encompassing about 10 million ft² (929,030 m²). Decommissioning and decontamination (D&D) work is expected to continue until about 2025 (WSRC 2005).

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