Environmental Assessment

for the

Modernization of Facilities and Infrastructure for the Non-Nuclear Production Activities Conducted at the Kansas City Plant

DOE/EA – 1592

April 21, 2008

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COVER SHEET

RESPONSIBLE AGENCIES:

United States General Services Administration (GSA) and National Nuclear Security Administration (NNSA)

TITLE:

Modernization of Facilities and Infrastructure for the Non-Nuclear Production Activities Conducted at the Kansas City Plant (DOE/EA-1592)

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Abstract: The United States General Services Administration (GSA) and the United States Department of Energy's National Nuclear Security Administration (NNSA) have prepared an Environmental Assessment (EA), DOE/EA-1592, to relocate certain non-nuclear component production and procurement activities currently conducted at NNSA's Kansas City Plant (KCP) to a smaller new facility. The preferred alternative is for GSA to procure the construction of a new facility at the intersection of Botts Road and Missouri Highway 150 in Kansas City, Missouri. GSA would lease the facility on NNSA's behalf, and NNSA would move its operations from the existing Bannister Federal Complex to the new facility, and conduct production and procurement operations for electrical and mechanical components there (the phrase "electrical and mechanical" non-nuclear components also includes electronics, electromechanical parts, and engineered materials such as plastics, ceramics, glass, polymers and foams). In addition to the preferred alternative, the EA analyzes: a No Action Alternative; alternatives that would renovate existing GSA office and warehouse space at the existing Bannister Federal Complex; and alternatives that would relocate the non-nuclear operations to Sandia National Laboratories in New Mexico, Lawrence Livermore National Laboratory in California, or Los Alamos National Laboratory in New Mexico. After considering all the comments received as a result of the public review process, GSA and NNSA have revised the EA, which now includes the analysis of additional alternatives outside of the Kansas City area.

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LIST OF ACRONYMS

AFCF	Advanced Fuel Cycle Facility
APWA	American Public Works Association
AQCR	Air Quality Control Region
BAAQMD	Bay Area Air Quality Management District
bgs	Below Ground Surface
BLS	Bureau of Labor Statistics
CATEX	Categorical Exclusion
CEQ	Council on Environmental Quality
CNPC	Consolidated Nuclear Production Center
CY	Calendar Year
dBA	A-Weighted Noise Level
DBT	Design Basis Threat
DOE	Department of Energy
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPZ	Emergency Planning Zone
ERPG	Emergency Response Planning Guidelines
ETF	Environmental Test Facility
FPPA	Farmlands Protection Policy Act
FONSI	Finding of No Significant Impact
FY	Fiscal Year
GSA	General Services Administration
HAPs	Hazardous Air Pollutants
HE	High Explosive
HVAC	Heating Ventilation Air Conditioning
KAFB	Kirtland Air Force Base
KCP	Kansas City Plant
LANL	Los Alamos National Laboratory
LANSCE	Los Alamos Neutron Science Center
LEED	Leadership in Energy and Environmental Design
LLNL	Lawrence Livermore National Laboratory
LLW	Low Level Radioactive Waste
MAC	Maximum Allowable Concentration
MCL	Maximum Contaminant Level
MDNR	Missouri Department of Natural Resources
MOA	Memorandum of Agreement
NAAQS	National Ambient Air Quality Standard
NPDES	National Pollutant Discharge Elimination System
NESHAP	National Emission Standards for Hazardous Air Pollutants
NEPA	National Environmental Policy Act
NMED	New Mexico Environment Department
NNSA	National Nuclear Security Administration

NOA	Notice of Availability
NOI	Notice of Intent
NPT	Non-proliferation Treaty
OMB	Office of Management and Budget
OSHA	Occupational Safety and Health Administration
PAC	Protective Action Criteria
PBS	Public Buildings Service
PM	Particulate Matter
PCBs	Polychlorinated Biphenyls
PEIS	Programmatic Environmental Impact Statement
PEM	Palustrine Emergent Wetland
POC	Precursor Organic Gas
POTW	Publicly Owned Treatment Works
PSS	Palustrine Scrub-shrub Wetland
R&D	Research and Development
RCRA	Resource Conservation and Recovery Act
ROD	Record of Decision
ROG	Reactive Organic Gas
ROI	Region of Influence
RGA	Former Richards Gebaur Air Force Base
RRW	Reliable Replacement Warhead
SAAQS	State Ambient Air Quality Standard
SAIC	Science Applications International Corporation
SHPO	State Historic Preservation Officer
SNL/CA	Sandia National Laboratories, California
SNL/NM	Sandia National Laboratories, New Mexico
SNM	Special Nuclear Material
SPEIS	NNSA Complex Transformation Supplemental Programmatic Environmental Impact Statement
SWMUs	Solid Waste Management Units
SWPPP	Storm Water Pollution Prevention Plan
SRS	Savannah River Site
TA	Technical Area
TCP	Traditional Cultural Property
TNW	Traditional Navigable Water
TPH	Total Petroleum Hydrocarbon
TRU	Transuranic
USACE	United States Army Corps of Engineers
USAF	United States Air Force
USEPA	United States Environmental Protection Agency
USFS	United States Forestry Service
USFWS	United States Fish and Wildlife Service
VOC	Volatile Organic Compound

1.0 INTRODUCTION AND BACKGROUND

The General Services Administration (GSA), as the lead agency, and the National Nuclear Security Administration (NNSA), as a cooperating agency, have prepared this Environmental Assessment (EA) to evaluate the potential environmental impacts of the relocation and modernization of facilities and infrastructure for the non-nuclear production and procurement activities currently conducted at the NNSA's Kansas City Plant (KCP). This plant produces and procures non-nuclear electrical and mechanical components for use in nuclear weapons.[1]

NNSA, a semi-autonomous agency within the Department of Energy (DOE or Department), proposes to relocate these activities from the KCP, located in Kansas City, Jackson County, Missouri (Kansas City), to a modern, new facility to reduce annual operating costs while improving responsiveness and facility utilization.

GSA serves as a centralized procurement and property management agency for the federal government. GSA's mission is to provide superior workplaces, expert technology solutions, acquisition services, and management policies, at best value, allowing federal agencies to focus on their core missions. GSA provides workspace and related services for over one million federal workers with approximately 8,600 government-owned or leased buildings across the country.

The preferred alternative identified by the agencies is to relocate the non-nuclear production and procurement operations to a new facility in Kansas City at the intersection of Botts Road and Missouri Highway 150. This location is about eight miles from the existing facility at the Bannister Federal Complex. The proposed new facility would be a smaller production facility designed for flexibility to enable rapid reconfiguration to meet changing production requirements. It would be at least 50% smaller in size than the current facility, resulting in reduced maintenance and energy costs. This EA analyzes the potential environmental impacts of relocation to the Botts Road site and other alternatives. These alternatives include continuing operation at the existing facility at the Bannister Federal Complex, three alternatives involving renovation or new construction at the Bannister Federal Complex, and relocation to other NNSA sites in New Mexico and California.

The National Environmental Policy Act of 1969 (NEPA) requires federal officials to consider the environmental consequences of proposed actions prior to making decisions. The purpose of this EA is to provide federal officials sufficient information and analysis

[1] For the remainder of the EA, the work conducted at KCP is referred to as the production and procurement of "electrical and mechanical" components, which includes electronics, electromechanical parts, and engineered materials (e.g. plastics, ceramics, glass, polymers, and foam). KCP performs these activities for NNSA, DOE programs, and other federal agencies ("work for others").

to determine whether to issue a Finding of No Significant Impact (FONSI) or to prepare an Environmental Impact Statement (EIS). This EA has been prepared pursuant to NEPA and regulations implementing NEPA issued by the Council on Environmental Quality (40 CFR Parts 1500-1508), GSA (ADM 1095.1F), and DOE (10 CFR Part 1021).

The EA process is a systematic approach for determining the impact of the evaluated alternatives on the environment. Potentially affected resources, including physical (including, but not limited to, air, hydrology, ecology, soils, plants and animals), cultural (including, but not limited to, archeological and historical) and socioeconomic (including, but not limited to, traffic, utilities, infrastructure) resources, are to be identified and characterized prior to implementation of the proposed action. The EA is used to identify and analyze potentially significant adverse environmental and socioeconomic impacts associated with the proposed activities. The No Action Alternative provides the environmental baseline for performing the analysis. Effects are compared against the impacts of taking no action. If deemed appropriate, potential mitigation measures are also evaluated.

1.1 Background

A typical nuclear weapon contains thousands of components, most of which are non-nuclear (i.e., they do not contain special nuclear materials as defined in Section 11aa. of the Atomic Energy Act of 1954, e.g. plutonium or enriched uranium). Production of these components generates hazardous wastes (e.g., acidic and alkaline liquids, solvents, oils, and coolants) and small quantities of low-level radioactive waste. These wastes are similar to those generated by other manufacturing industries and are managed consistent with general industry practices and in compliance with state and federal laws.

NNSA (and, before NNSA's creation in 2000, DOE) has been consolidating non-nuclear production and procurement activities since the early 1990s. Prior to 1993, eight DOE sites conducted these activities: KCP, the Los Alamos National Laboratory (LANL) in New Mexico, the Mound Plant in Ohio, the Y-12 Plant in Tennessee, the Pinellas Plant in Florida, the Rocky Flats Plant in Colorado, Sandia National Laboratories (SNL/NM) in New Mexico, and the Savannah River Site (SRS) in South Carolina. Based on the analyses in the *Nonnuclear Consolidation Environmental Assessment* (DOE/EA-0792; June 1993), the Department found there would be no significant environmental impacts from consolidating these non-nuclear operations at four sites: KCP, SNL/NM, LANL, and SRS (FONSI; 58 Fed. Reg. 48,043; Sept. 14, 1993).

Today, the Rocky Flats, Mound, and Pinellas Plants are closed, and Y-12 maintains only limited capabilities involving the production and procurement of non-nuclear components. Production and procurement of electrical components, mechanical components, lithium batteries, and other special products were consolidated at KCP. Tritium operations were transferred to SRS. SNL/NM was assigned responsibility for manufacturing neutron generators, cap assemblies, milliwatt heat sources, and thermal batteries. LANL was responsible for manufacturing high power detonators, beryllium technology, and some special products. LANL also took over pit support work from

Rocky Flats. For the most part, the two laboratories also maintained their research and development activities relating to non-nuclear components.

In addition to consolidation at KCP, the 1993 EA looked at three other sites for consolidation of fabrication capabilities for electrical and mechanical components – Rocky Flats, Mound, and Pinellas. As noted above, these facilities are now closed. In 1996, the Department again looked at alternatives for consolidating fabrication of these two types of non-nuclear components as part of the *Programmatic Environmental Impact Statement for Stockpile Stewardship and Management* (DOE/EIS-0236, November 1996) (1996 PEIS). The 1996 PEIS looked at two alternatives for further consolidation regarding electrical and mechanical components: (1) maintaining the fabrication activities at the KCP while consolidating (i.e., reducing the footprint) within the existing facilities at the Bannister Federal Complex; or (2) closing KCP and dispersing these fabrication activities among three weapons laboratories (SNL/NM, LANL and Lawrence Livermore National Laboratory in California (LLNL)).[2] In December 1996, the Department selected the first of these two alternatives, *Record of Decision Programmatic Environmental Impact Statement for Stockpile Stewardship and Management,* 61 Fed. Reg. 68,014 (December 26, 1996). The reasons for this decision were that consolidation within existing facilities at KCP would cost less, avoid the technical risks posed by relocation and requalification of manufacturing capabilities, and have fewer potential adverse environmental impacts than the dispersal alternative, and DOE based its decision on these factors.

Since 1996, the KCP has rearranged and consolidated several product lines into a smaller process-based footprint. While this endeavor has been somewhat successful, the scope of KCP work also grew during this period, so the total square footage reduction was not as great as originally planned.

1.2 Public Comment

The GSA and NNSA issued a Notice of Intent (NOI) on May 1, 2007, in the Federal Register (Vol. 72, No. 83, page 23822) informing the public of the proposed action and inviting public comments on the scope of the EA. The NOI also stated that a public scoping meeting would be held in Kansas City on May 23, 2007. A total of 97 people signed in at the public meeting. Fourteen written comments were submitted and 24 speakers provided comments that were transcribed for the record. Everyone who requested to speak was provided the opportunity to do so. Additional public comments were received, including by mail and email, during the scoping period which ended on May 30, 2007. Approximately 500 people provided comments during the public scoping process. All comments were considered during the preparation of the draft EA. A copy

[2] The 1996 PEIS also looked at the No Action Alternative for KCP's manufacturing capabilities, which would not have resulted in further consolidation of electrical and mechanical component fabrication.

of the transcript from the scoping meeting is available on the GSA website (www.gsa.gov/kansascityplant) by following the "NEPA library" link.

On December 10, 2007, the GSA and NNSA issued a Notice of Availability (NOA) of the draft EA in the Federal Register (Vol. 72, No. 236, page 69690) informing the public that the draft EA was available for review and comment. The NOA stated that public comments should be submitted by January 14, 2008. An electronic copy of the draft EA, a feature allowing individuals to request copies of the comments submitted by the public, and other supporting documents were also posted on the GSA website.

On January 14, 2008, the GSA and NNSA notified the public through the website that the public comment period was being extended until January 30, 2008. On January 17, 2008, the federal agencies issued a Notice of Extension of Comment Period in the Federal Register (Vol. 73, No. 12, page 3256) informing the public of the extension. More than 250 public comments on the draft EA were submitted to GSA and NNSA. All of the comments, including those received after the comment period closed, were considered during the preparation of this EA. Responses to the comments are provided in Appendix B of this EA and, as appropriate, changes have been made in the text of this EA.

2.0 PURPOSE AND NEED

The KCP produces and procures non-nuclear electrical and mechanical components for nuclear weapons; these two general types of non-nuclear components constitute approximately 85% of all the components in a nuclear weapon. As a result of the consolidation undertaken over the last 15 years, the remaining operations at the KCP are essential and do not duplicate operations at other sites in the nuclear weapons complex. The KCP occupies a large and aging industrial plant in Kansas City located on a site contiguous with GSA facilities. Despite the consolidation that followed the 1996 decision to downsize KCP's facilities and operations, the current plant is still much larger than NNSA requires, due primarily to continuing reductions in the nuclear weapons stockpile and the outsourcing of some fabrication activities. Moreover, the design of the existing facility at the Bannister Federal Complex limits the ability to achieve cost reduction and other improvements through further renovation. The cost of operating the KCP continues to increase because of its age and size. The possibility of updating the aging infrastructure and transforming the existing KCP into a flexible, responsive operation could result in complete shutdown of operations for two or three years pending completion of construction activities. As a result of these factors, the federal agencies have determined there is a need to relocate KCP's non-nuclear production and procurement activities to a new facility in order to increase the flexibility and reliability of fabrication activities, and reduce operation and maintenance costs.

2.1 Proposed Action

In order to continue reducing the facility space devoted to electrical and mechanical component production, increase the flexibility and reliability of fabrication activities, and

reduce facility maintenance costs, NNSA proposes to relocate to a new facility that would better accommodate the continued consolidation of NNSA's non-nuclear component production and procurement activities.

The proposed facility would be smaller and designed for rapid reconfiguration to provide flexibility in meeting changing requirements and demands. It would be at least 50% smaller than the current facility, resulting in reduced maintenance and energy costs. The proposed action considered in this EA consists of the construction and subsequent operation of such a facility. The proposed action is expected to result in savings of up to $100 million per year (in 2006 dollars) once the facility becomes operational.

The GSA and NNSA are committed to the construction of a high-performing, environmentally sustainable facility. The new facility would be constructed to pursue a Leadership in Energy and Environmental Design (LEED), Version 2.2, Gold certification, as defined by the US Green Building Council. In addition, the facility would meet all executive orders on energy conservation.

For the preferred alternative, GSA has issued a Solicitation for Offers to the real estate development community. The successful developer would partner with GSA and NNSA to design and construct a facility that meets NNSA's needs. GSA has not purchased the Botts Road site, but holds an assignable option to purchase it. The purchase option was acquired at no cost to the government. The successful developer would be assigned the purchase option, be required to purchase the site and would work with GSA and NNSA to design and construct a facility that meets NNSA's needs.

2.2 Disposition of the KCP

The KCP is located in the Bannister Federal Complex with GSA operations and shares both individual buildings and utilities with GSA's operations. GSA may at some future date decide to relocate to new office space and vacate the Bannister Federal Complex. Should both NNSA and GSA move, both agencies would coordinate the disposition or redevelopment of the Bannister Federal Complex, and it is likely that the agencies would manage this as a single real property project. This would require extensive discussions with the Missouri Department of Natural Resources (MDNR) and subsequent changes to the Hazardous Waste Management Facility Part I Permit issued by MDNR to NNSA.[3]

The federal agencies recognize that some action might be required to prepare the site for sale, including demolition of some outbuildings, cleanup of the remaining buildings, and disposition of excess personal property. The upper bound cost estimate for these tasks is

[3] The Missouri Hazardous Waste Management Facility Part I Permit establishes regulatory requirements for continuing maintenance of the remaining solid waste management units, serves as the regulatory document for continuing corrective action under the Long Term Stewardship Program, and would serve as the regulatory regime for any future transfer of environmental liability to other public or private parties.

$29 million ($52 million in 2016 dollars). Remediation of the identified solid waste management units at the site is complete with the exception of ongoing groundwater treatment and monitoring, and the execution of institutional controls established in the Part I Permit. MDNR must approve any actions subject to the permit taken at the site to ready it for sale, including any additional remediation it deems necessary to support the identified future use of the site.

Based on a GSA Disposal Options Study completed in September 2007, the disposition of the Bannister Federal Complex (both the GSA and NNSA portions) would likely be handled as one action should both agencies decide to relocate. The highest and best use identified in the study is the fee simple sale of the property to a private entity for a warehouse or manufacturing facility. The study identified a strong real estate market in the area for this type of facility and estimated the combined value of the property as $28 - $58 million (GSA 2007). Should GSA choose to remain at the Bannister Federal Complex after the NNSA relocates, NNSA would continue the disposition process for its portion of the complex.

As the federal agencies do not yet have proposals regarding the continued occupancy of the Bannister Federal Complex by GSA, or the disposition or redevelopment of the Bannister Federal Complex, there are no proposed federal actions or alternatives related to this action that can be assessed within this EA.

3.0 ALTERNATIVES

The draft environmental assessment (draft EA) released in December 2007 analyzed the potential environmental impacts of reasonable alternatives for the modernization and further consolidation of NNSA's facilities for production and procurement of electrical and mechanical non-nuclear components. The alternatives evaluated in the draft EA were limited to ones in the Kansas City area. First, DOE had twice decided, after examining a number of alternatives outside of Kansas City in the 1993 EA and 1996 PEIS, to consolidate these activities for electrical and mechanical parts in Kansas City, and has been implementing these decisions for more than a decade. Second, as the 1996 record of decision concluded, the technical risk associated with relocating and re-qualifying these activities at one or more of NNSA's other sites is great. This conclusion was confirmed by the Department's experience in consolidating the manufacture of

neutron generators at SNL/NM from Pinellas after the 1993 EA.[4] Third, studies conducted on NNSA's behalf by Science Applications International Corporation (SAIC) indicated that moving these operations to a distant location would be prohibitively expensive (SAIC 2008).

A number of comments received on the draft EA stated that the federal agencies should evaluate alternatives at locations outside of Kansas City. Many of these comments suggested that NNSA should evaluate moving its KCP operations to SNL/NM in Albuquerque, New Mexico. Although NNSA believes that alternatives involving long-distance relocations of production and procurement activities for these two types of non-nuclear components remain unreasonable, it decided to analyze several such alternatives in response to these comments. The action alternatives analyzed in this EA include those analyzed in the draft EA, as well as alternatives that would require relocation beyond the Kansas City metropolitan area.

The alternative sites outside of the Kansas City metropolitan area that have been added in this EA are the same as those analyzed in the 1996 PEIS: SNL/NM, LANL, and LLNL. This EA analyzes alternatives to construct a modern facility as contemplated in the preferred alternative, at each laboratory. This EA also evaluated two other alternatives: (1) using existing space at LANL for some KCP activities and building a smaller modern facility for the KCP activities that cannot be accommodated in LANL's existing space; and (2) using existing space at SNL/NM and constructing a smaller modern facility for those activities that do not fit in that existing space. LLNL does not have sufficient existing space to allow for such a "hybrid" alternative, so the only alternative for LLNL consists of building a new facility there that could accommodate all of KCP's activities. The federal agencies considered, but did not further analyze, an alternative that would have dispersed KCP's activities between existing facilities at SNL/NM, LANL, and

[4] While some savings have been realized by closing Pinellas, the transition of neutron generator production to SNL/NM did not meet the pre-transfer forecasts regarding potential benefits and savings. Specifically, the square footage requirement is 64% of the old operation while the capacity has been cut by two-thirds. Costs have risen to $140 million per year, even more than the inflation adjusted cost for the product line at Pinellas. Production ceased for more than five years. SNL/NM acknowledges that it underestimated the cultural challenges in collocating design and production, including the observation that attempting to fabricate development components in a production environment was very difficult. Finally, SNL/NM concluded that building an autonomous production facility near a design facility was not cost effective as the final cost was more than double the original estimate (Sandia 2005).

LLNL without constructing a new facility at any site.[5] The full set of alternatives included in this EA are described in Sections 3.1 through 3.8. Additional alternatives that GSA and NNSA considered but did not analyze in detail are discussed in Section 3.9.

3.1 Alternative 1 - No Action

Under the No Action Alternative, NNSA's current operations at the Bannister Federal Complex would continue without significant modification (Figures 3-1 and 3-2). This alternative would maintain the status quo with a few exceptions: only those changes that NNSA has already decided to implement (e.g., outsourcing of some plating operations) would be made. NNSA would need to develop and incorporate certain infrastructure improvements into NNSA's operating budgets to ensure continuity of operations and maintain the viability of the plant.

3.2 Alternative 2 - Renovate Existing GSA Office and Warehouse Space at the Bannister Federal Complex

Under this alternative, the existing GSA office and warehouse space (Buildings #1 and #2) located on the western portion of the Bannister Federal Complex (see Figure 3-3) would be renovated. NNSA's operations would subsequently relocate to the renovated facility. The office building would be reconfigured to maximize the space available for open workstations and the warehouse building would be converted to a manufacturing environment. The renovation alternative requires 20% more space then new construction due to space inefficiencies. Small outbuildings located north of the renovated GSA warehouse space would be demolished, a new manufacturing building (approximately 125,000 square feet) to house specialty manufacturing operations, and a new covered storage structure would be constructed. The two manufacturing buildings would be connected with enclosed, secured vehicle and pedestrian traffic ways. Office renovation work would include new carpeting, ceilings, walls, lighting, plumbing, heating,

[5] The agencies concluded this alternative is wholly unreasonable because it would not meet NNSA's need to modernize and consolidate KCP's activities. First, dispersing KCP's production activities among the three weapons laboratories would require NNSA to replicate many capabilities at each laboratory. For example, processes such as laser welding, precision cleaning, and painting in a single facility can serve all of the products fabricated at that facility. If these products were dispersed at three sites, NNSA would need to install these processes at each site. Second, because non-nuclear products are diverse and production volumes are low, many capabilities must be maintained but are not used at full capacity. The KCP has moved from a product-based factory to a process-based facility in order to eliminate equipment and capability redundancies, and to improve utilization of capital assets. Third, over 50% of non-nuclear components are currently procured from more than 350 commercial suppliers under a procurement system managed by the KCP. Dispersing KCP's responsibilities among the three laboratories would require that each lab manage a subset of these suppliers. In addition, the supply chain staffs at each site would need to increase to handle these responsibilities. Finally, the KCP currently manages the scheduling for nearly all major non-nuclear components and assemblies with a single integrated enterprise resources planning system. The dispersion of products to the laboratories would result in a significant increase in scheduling complexity, requiring the integration of systems at the three laboratories to maintain delivery reliability.

ventilation and air conditioning (HVAC), electrical, telephone, and data network infrastructure. The exterior façade of the building would be removed and replaced.

The warehouse renovation would include the removal and replacement of floor slabs and supporting structures, reconstruction of the roof and removal and replacement of the exterior façade, along with the renovation of the utility and data network infrastructure as described for the renovation of the office building. The relocation would involve moving approximately two-thirds of the existing capital and process equipment to the new facility. The existing industrial wastewater pretreatment facility could be used to service the new and renovated buildings.

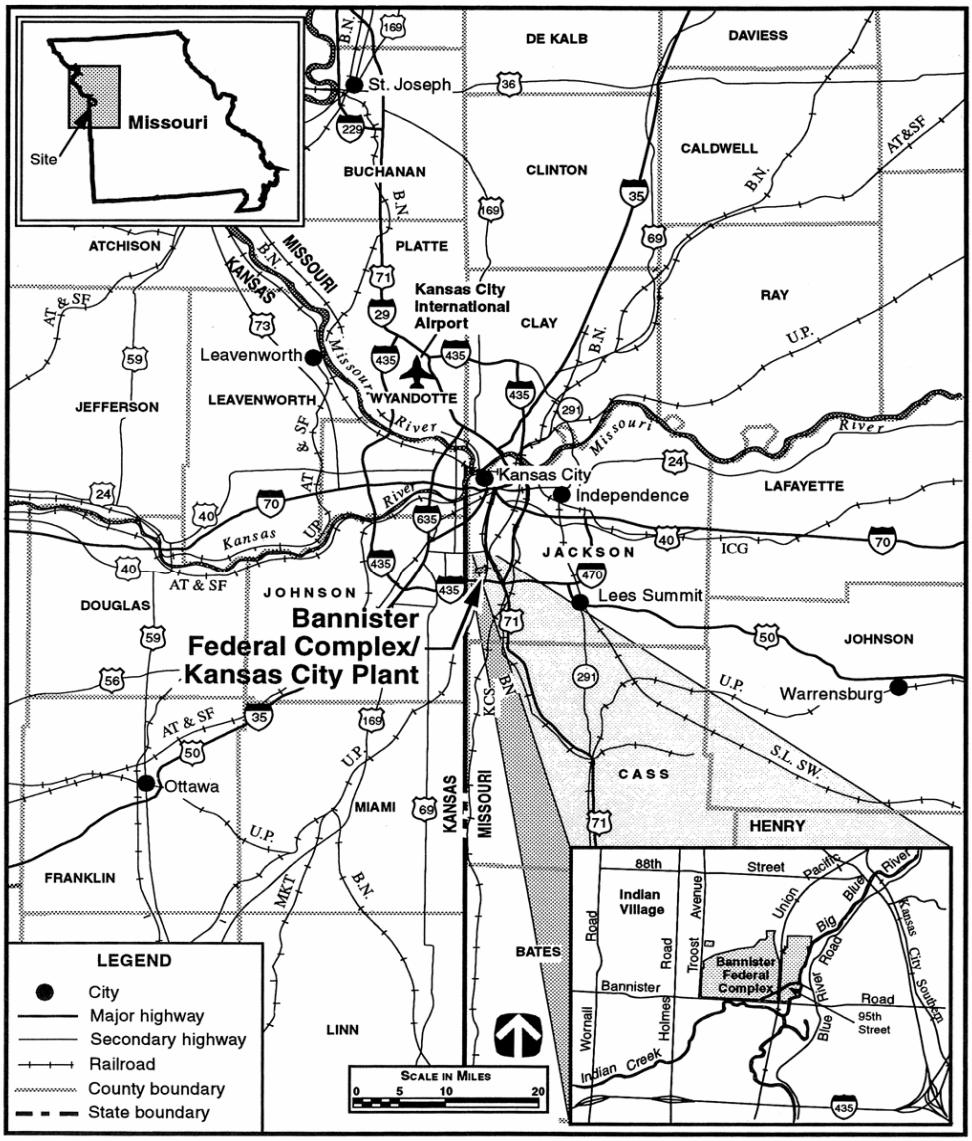


Figure 3-1 — Location of Existing KCP Operations

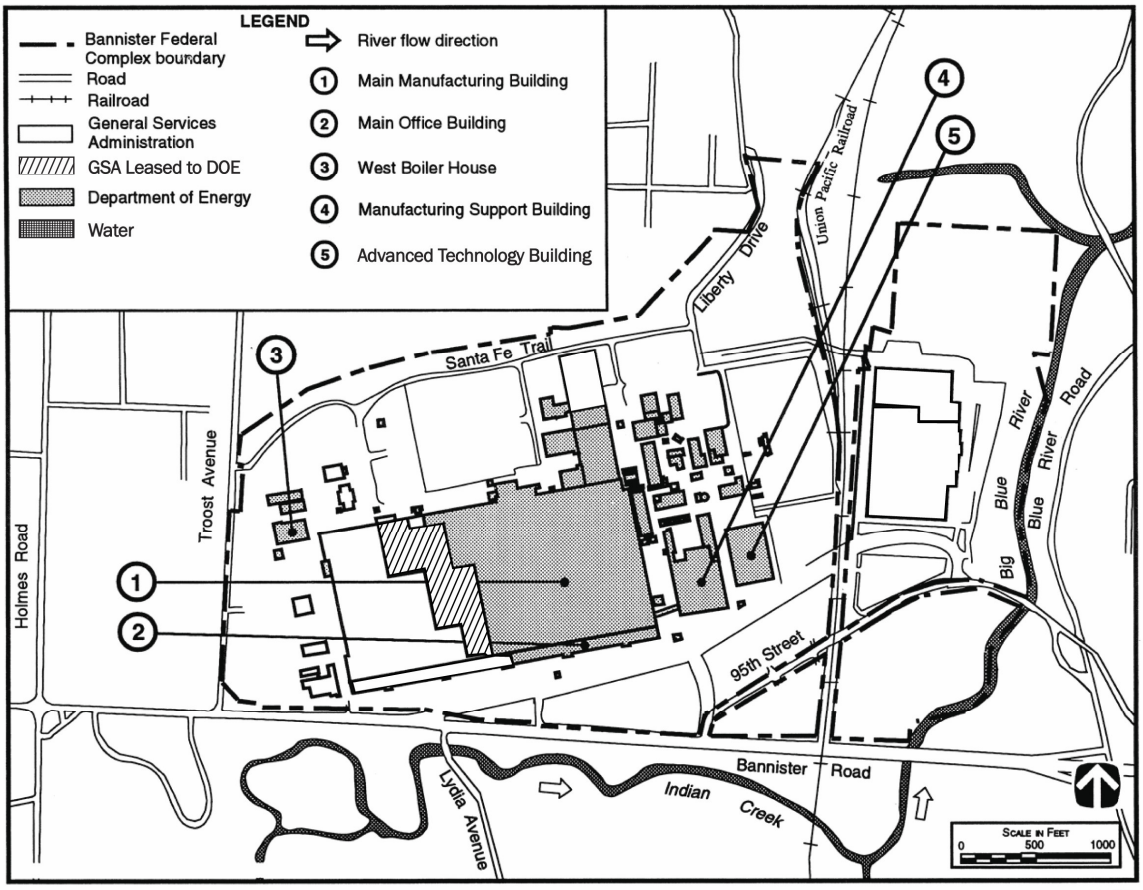


Figure 3-2 — No Action Alternative: Existing KCP Facilities

3.3 Alternative 3 - Renovate Existing GSA Office Space, Demolish Warehouse, and Build a New Manufacturing Facility at the Bannister Federal Complex

This alternative includes renovation of the existing GSA office space (500,000 square feet, Building #2) and demolition of the existing GSA warehouse (Building #1) (see Figure 3-3). A new manufacturing, laboratory, and warehouse facility for NNSA's KCP operations would be constructed adjacent to the renovated office space. Small outbuildings north of the existing GSA warehouse space would be demolished, a second new manufacturing building (approximately 125,000 square feet) to house specialty manufacturing operations, and a new covered storage structure would be constructed. New construction would total approximately 810,000 square feet. The two new buildings and the renovated office building would be connected using enclosed, secured vehicle and pedestrian traffic ways. The new manufacturing building would include high bay, clear span manufacturing space to accommodate large equipment and operations. Renovation of the office building would be as described in Alternative 2. The relocation would involve moving approximately two-thirds of the existing capital and process equipment to the new facility. The existing industrial wastewater pretreatment facility could be used to service the new and renovated buildings.

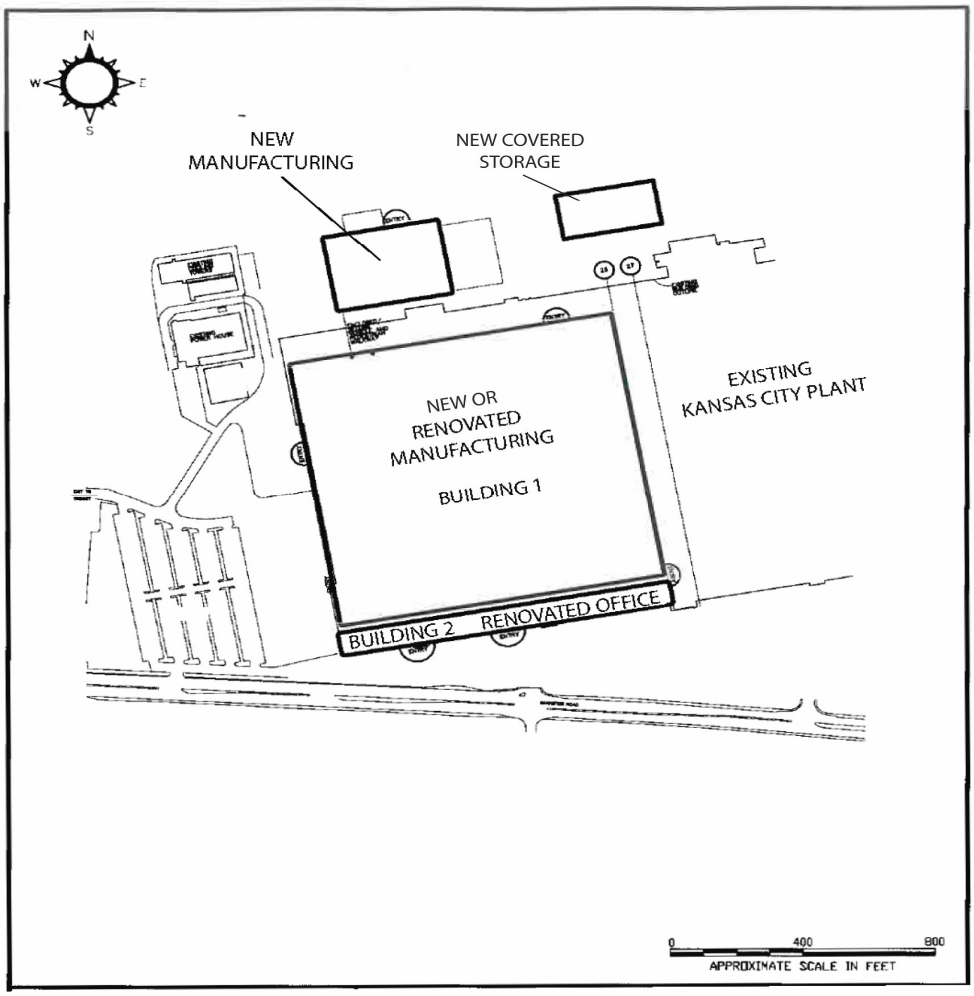


Figure 3-3 — Facilities Associated with Alternatives 2 and 3

3.4 Alternative 4 - Demolish Existing GSA Office and Warehouse Space and Construct New Office and Manufacturing Facilities at the Bannister Federal Complex

Alternative 4 consists of demolishing the existing GSA office and warehouse spaces (Buildings #1 and #2) and the small outbuildings located north of the existing GSA warehouse. Following demolition, new office and manufacturing facilities would be constructed on GSA's portion of the Bannister Federal Complex. The proposed new construction would cover approximately 1.4 million rentable[6] square feet (see Figure 3-4). Small outbuildings north of the existing GSA warehouse space would be demolished,

[6] Rentable square footage includes the useable square footage (any space that houses the tenant's furniture, fixtures, and equipment) as well as all of the common spaces that support the facility such as restrooms, mechanical and electrical rooms, fire egress corridors, and lobbies.

a second new manufacturing building to house specialty manufacturing operations, and a new covered storage structure would be constructed. The two new manufacturing buildings and the new office building would be connected using enclosed, secured vehicle and pedestrian traffic ways. The new manufacturing buildings would include high bay, clear span manufacturing space to accommodate large equipment and operations. The relocation would involve moving approximately two-thirds of the existing capital and process equipment to the new facility.

The existing industrial wastewater pretreatment facility could be used to service the new buildings.

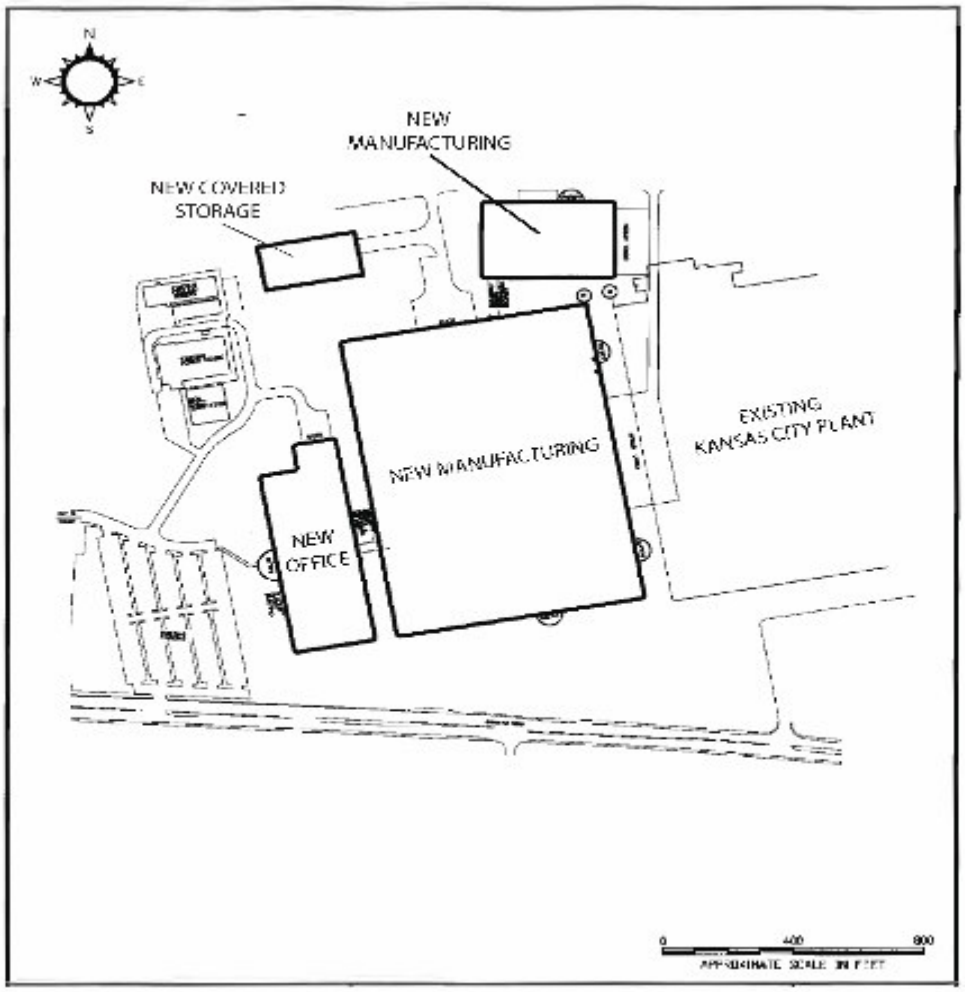


Figure 3-4—Facilities Associated with Alternative 4

3.5 Alternative 5 – New Facility at Botts Road in Kansas City (Preferred Alternative)

The preferred alternative is for GSA to procure the construction of a new facility and for NNSA to operate the proposed facility for the production and procurement of non-nuclear electrical and mechanical components. The new facility would be located approximately eight miles south of the existing plant on a site currently zoned for agriculture situated at

the northwest corner of Missouri Highway 150 and Botts Road in Kansas City (see Figure 3-5). Utilities such as sanitary and storm sewer would need to be installed. GSA has issued a Solicitation for Offers to real estate developers. The selected developer would partner with GSA and NNSA to design and construct a facility that meets NNSA's needs. GSA would lease the facility on NNSA's behalf and NNSA would move its operations from the Bannister Federal Complex to the new facility and conduct its production and procurement operations for electrical and mechanical components there.

The proposed facility would cover approximately 1.4 million rentable square feet and provide up to 2,900 surface parking spaces. The current KCP contains approximately 3.1 million square feet. The proposed facility would meet current and foreseeable production requirements for electrical and mechanical components in a modern, cost effective, and flexible manner while significantly reducing operational, maintenance, security, and energy costs. The relocation would involve moving approximately two-thirds of the existing capital and process equipment to the new facility.

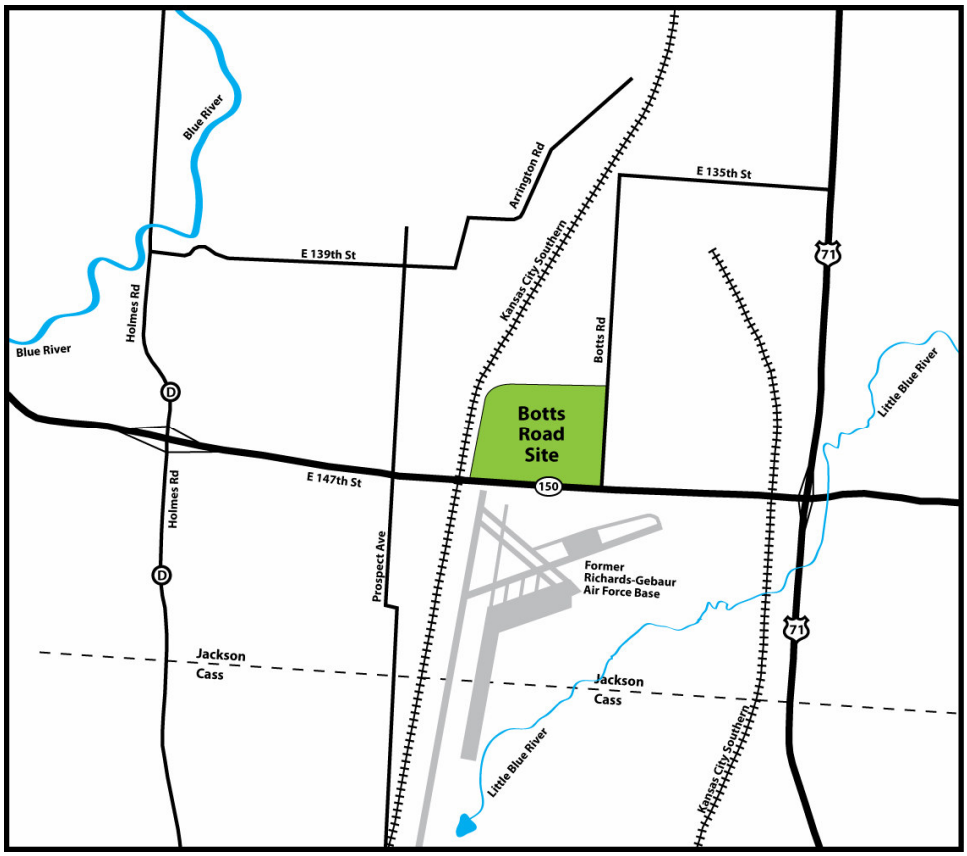


Figure 3-5 — Botts Road Site in Kansas City (Preferred Alternative)

3.6 Alternative 6 – SNL/NM Alternatives

SNL/NM conducts research, design, and development of non-nuclear components, and manufactures neutron generators for the stockpile. Because of SNL/NM's non-nuclear

operations, there is a possibility of synergies that could be realized by moving KCP's non-nuclear operations to this laboratory. For this site, two options are evaluated: a new construction option in which a new facility covering approximately 1.4 million square-feet would be constructed and operated similar to the preferred alternative; and a reuse/new construction option consisting of existing facilities and a smaller new facility. Figure 3-6 identifies the location for a new facility at SNL/NM. The proposed facility would meet current and foreseeable production requirements for electrical and mechanical components in a modern, cost effective, and flexible manner while significantly reducing operational, maintenance, security, and energy costs.

For the reuse/new construction option, as many as seven existing facilities, all in Technical Area (TA)-1, would be used to house some of KCP's operations. New construction requirements would be 900,000 square feet. The relocation would involve moving approximately two-thirds of the existing KCP capital and process equipment to the new facility.

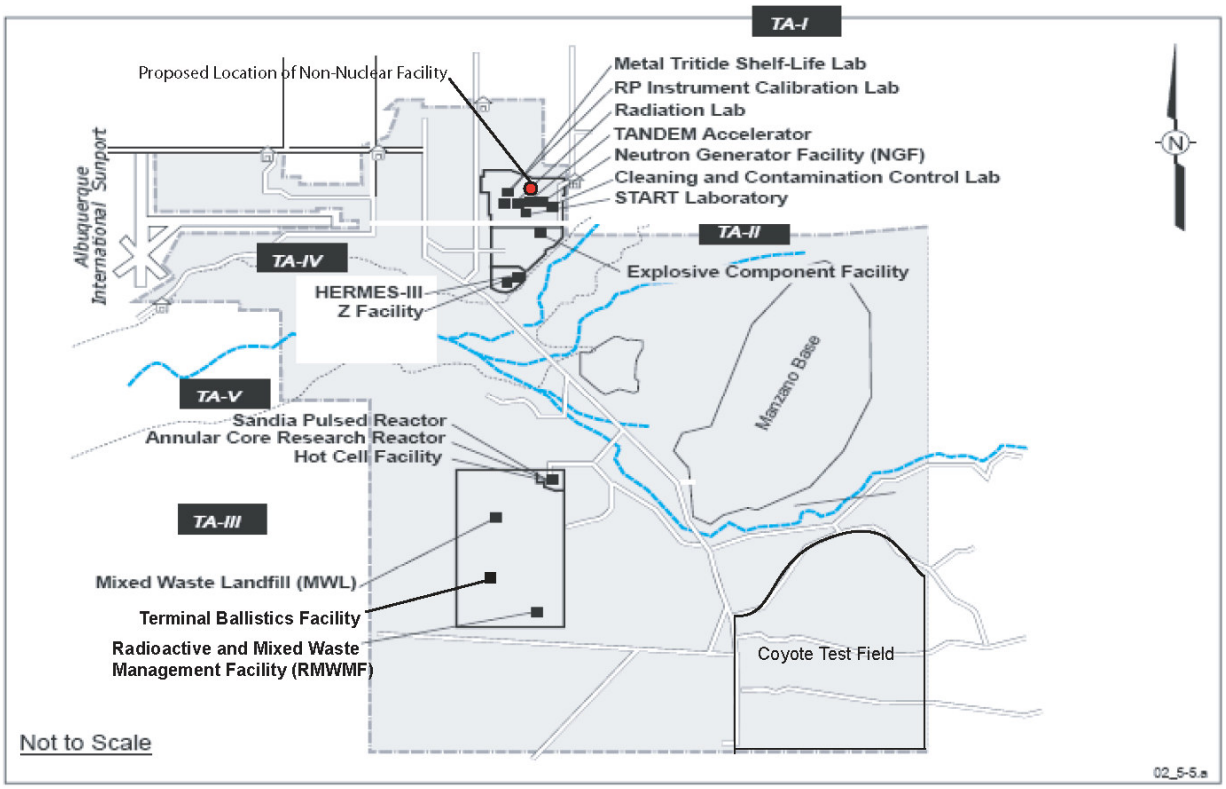


Figure 3-6 – Proposed Location of New Non-Nuclear Facility at SNL/NM

3.7 Alternative 7 – LLNL Alternative

LLNL also performs non-nuclear design and engineering work. Because of LLNL's non-nuclear operations, there is a possibility of synergies that could be realized by moving KCP's non-nuclear operations to this laboratory. For this site, only a new construction option is assessed (LLNL does not have sufficient available space for a reuse/new construction option). Under this alternative a new facility covering approximately 1.4

million square-feet would be constructed and operated similar to the preferred alternative. This new facility would be located in the northwest portion of LLNL as shown on Figure 3-7. The relocation would involve moving approximately two-thirds of the existing KCP capital and process equipment to the new facility. The proposed facility would meet current and foreseeable production requirements for electrical and mechanical components in a modern, cost effective, and flexible manner while significantly reducing operational, maintenance, security, and energy costs.

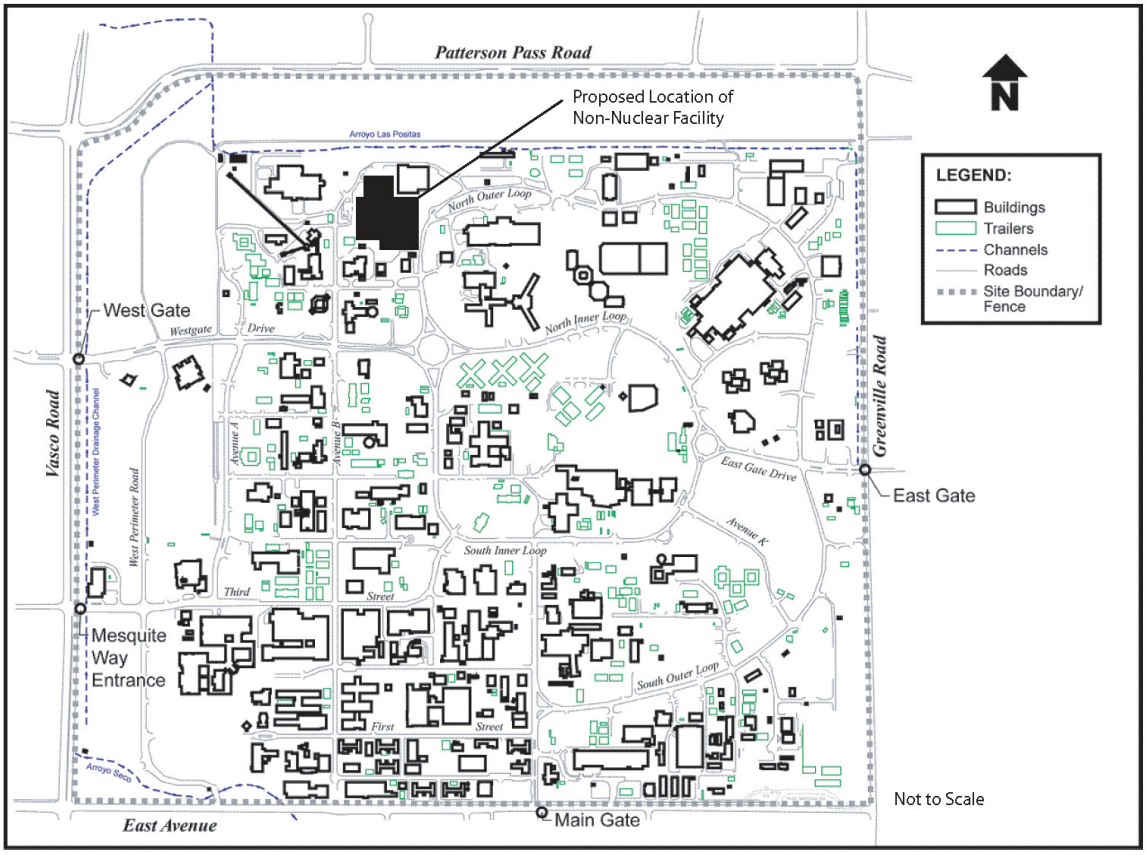


Figure 3-7 – Proposed Location of New Non-Nuclear Facility at LLNL

3.8 Alternative 8 – LANL Alternatives

LANL manufactures a few non-nuclear components and conducts surveillance on certain non-nuclear components. Because of these non-nuclear operations, there is a possibility of synergies that could be realized by moving KCP's non-nuclear operations to this laboratory. For this site, two options are evaluated: a new construction option in which a new facility covering approximately 1.4 million square-feet would be constructed and operated similar to the preferred alternative; and a reuse/new construction option consisting of existing facilities and a smaller new facility. Any new facility at LANL would be located at TA-16 (Figure 3-8).

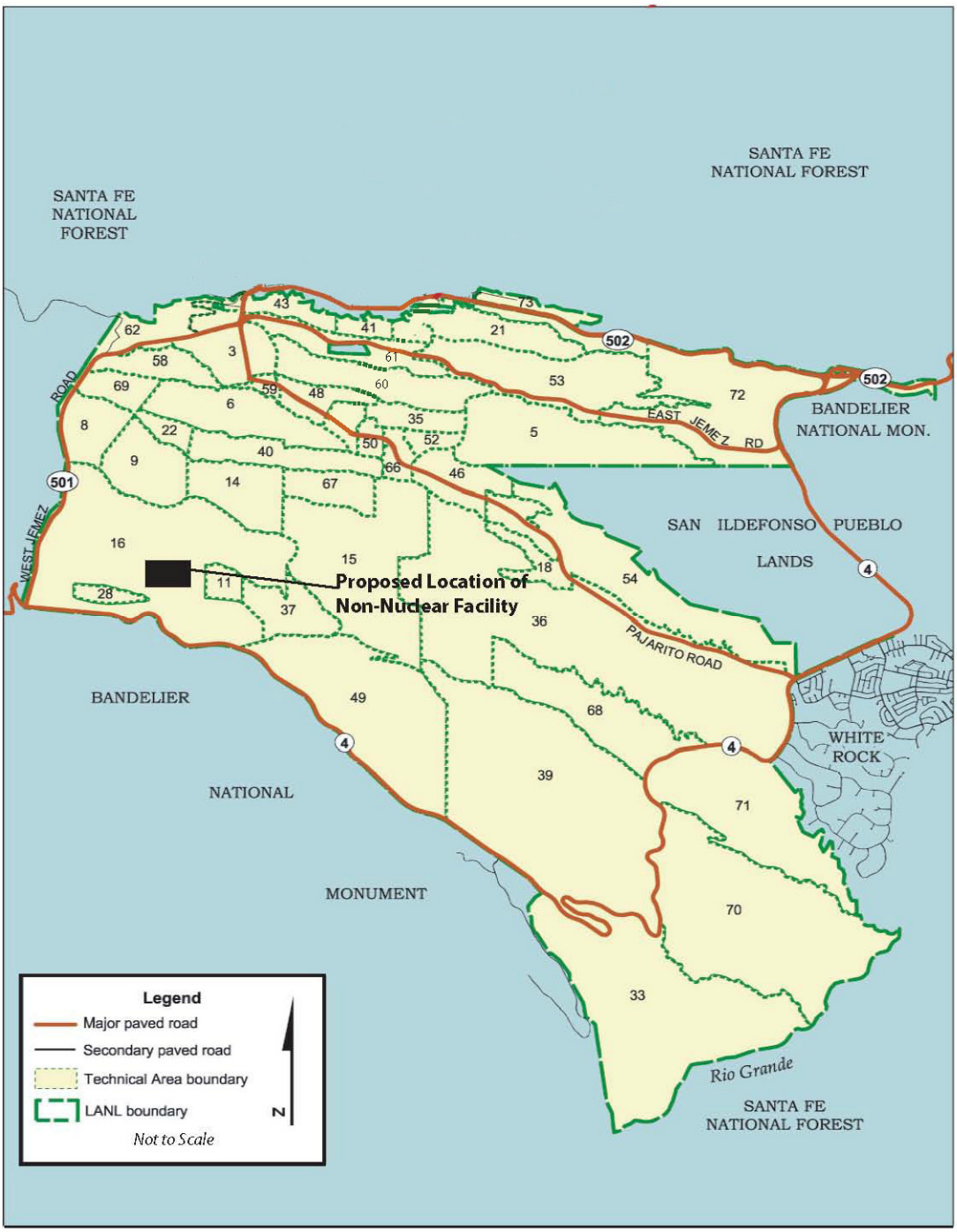


Figure 3-8 – Proposed Location of New Non-Nuclear Facility at LANL

For the new construction option the relocation would involve moving approximately two-thirds of the existing KCP capital and process equipment to the new facility. The proposed facility would meet current and foreseeable production requirements for electrical and mechanical components in a modern, cost effective, and flexible manner while significantly reducing operational, maintenance, security, and energy costs.

For the reuse/new construction option, facilities at TA-3 (Figure 3-9) could be reconfigured to support KCP's machining and special process welding work. The necessary upgrades would include HVAC improvements to control temperature, and electrical distribution system improvements. The precision machining capability for electrical and mechanical components would be established with either machines from the KCP or new machines. A controlled environment machine shop would need to be installed inside the unused bay of TA-3 Building SM-39. The existing electro-plating shops, heat treating and brazing shops inside TA-3 Building SM-66 (1959 vintage building) would be used to support product requirements. New space for the electronic assembly shops, printed circuit board fabrication shops, and clean rooms would be required. Any new construction needed to complete this capability would be located in TA-16. Approximately 500,000 square feet of new manufacturing and office facilities would be needed for the reuse/new construction option at LANL.

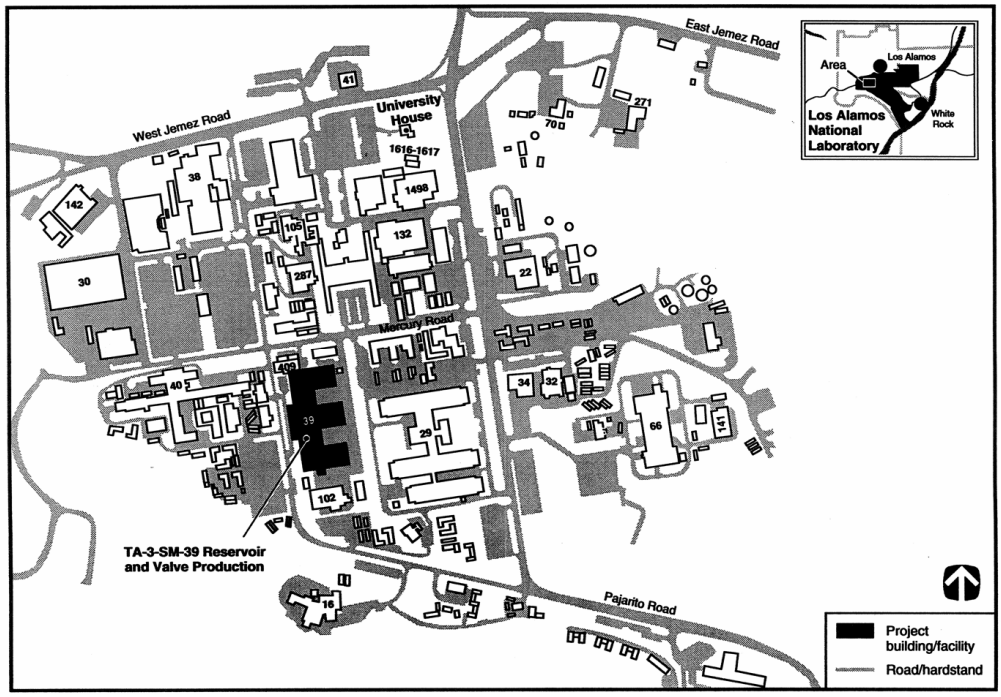


Figure 3-9 — Existing Facilities at TA-3, LANL Reuse/New Construction Option

3.9 Alternatives Considered but not Further Evaluated

3.9.1 Alternatives Considered in Kansas City Metropolitan Area

The decision to acquire a property interest is subject to a GSA CATEX.[7] Several alternative locations for the KCP operations were considered before GSA obtained a

[7] GSA's NEPA implementing regulations, the GSA Public Buildings Service (PBS) NEPA Desk Guide (October 1999), provide an automatic "categorical exclusion" (CATEX) for the acquisition of property interests such as the option to purchase and develop the Botts Road site. GSA's NEPA standards also

purchase option for the development rights to acquire the Botts Road site. In particular, multiple sites in the Kansas City metropolitan area were visited and evaluated during a GSA-conducted market survey held in 2007. These sites were examined and ranked using criteria that included lot size, topography, employee impact, zoning, land-use development potential, accessibility, existing conditions, and available services and utilities. The property located at the northwest corner of Botts Road and Missouri Highway 150 became the preferred site for relocation of the existing KCP operations because the results of applying these criteria favored its selection. In particular, the Botts Road site:

- represented the least disruption to the commuting patterns of the existing plant workers;
- provided excellent access to existing road and rail infrastructure with plans by the City, County, and State to further upgrade the roads to reduce potential adverse impacts on traffic attributable to development of the Botts Road site; and
- while currently zoned for agricultural use, the proposed construction at this site would be consistent with the proposed zoning plans for development of the area, as is set forth in the Kansas City Planning Commission Area Plan (KCPC 2001).

The second ranked site already had an existing purchase option on the property by another developer and so it was considered unavailable. Other metropolitan area sites investigated either did not satisfy or only partially satisfied project needs and were not further evaluated due to adverse impacts to employee commute, inadequate site accessibility, undesirable proximity to residential areas, need for extensive site work or lack of infrastructure support. In sum, the Botts Road site represented the best business case decision and the environmental impacts of its development (as well as other alternatives) are evaluated in this EA.

An option to renovate the NNSA KCP (rather than the GSA portions of the Bannister Federal Complex, as described in Alternatives 2, 3, and 4) was also considered but eliminated from further evaluation due to program risk and the high costs of the extensive renovation required. It would be difficult, if not impossible, to completely replace infrastructure and transform the facility into a flexible, responsive operation without a complete shutdown of operations for two to three years. This alternative would involve extensive build-ahead planning and upfront investment to accommodate the extended product line interruption associated with renovation of the KCP. Less extensive renovation has been performed on several occasions, always at considerable cost and disruption to continuity of operations at the KCP.

require any post-acquisition use of such property interests be analyzed under NEPA prior to their actual or intended use. This EA fulfills GSA's requirement to conduct a NEPA analysis on property interests acquired pursuant to this CATEX.

3.9.2 Alternatives Considered Outside Kansas City Metropolitan Area

GSA-Leased Facility in Albuquerque, Los Alamos or Livermore

The federal agencies did not consider alternatives that involved GSA procuring a facility near (but not within) one of NNSA's nuclear weapons laboratories. That is, they did not consider an alternative similar to the preferred alternative but located in Albuquerque, New Mexico near SNL/NM; in Los Alamos, New Mexico, near LANL; or in Livermore, California, near LLNL. SAIC's business case study indicated that, if NNSA were to consider a distant relocation of KCP's activities, it should move those activities to an existing NNSA facility because that option presented some opportunity to offset the risks and costs of relocation with savings in labor and infrastructure costs (SAIC 2008). The agencies therefore limited the alternatives involving a distant relocation to ones that involved structures located on SNL/NM, LANL and LLNL (see sections 3.6 through 3.8); they did not consider alternatives that involved GSA procuring a leased facility near one of these laboratories. In any event, the potential synergies resulting from moving to one of the laboratories are unlikely to result in savings that would offset the risks and costs of moving there (SAIC 2008; Appendix B, Issue #14).

Dispersing KCP's Activities among NNSA's Weapons Laboratories

One alternative the 1996 PEIS examined, for consolidation of KCP's activities associated with the production and procurement of electrical and mechanical components, was the closure of KCP and the dispersion of its production activities to the weapons laboratories responsible for the research and design of each particular type of electrical and mechanical component. This alternative was rejected as the preferred alternative in the 1996 PEIS. The Record of Decision for that PEIS noted, among other factors, that such relocation would involve significant costs, posed increased technical risks from the need to relocate and re-qualify production activities, and would have had a large negative socio-economic impact on the Kansas City metropolitan area.

The agencies considered this alternative for inclusion in this EA but did not analyze it further for the following reasons:

- **Unnecessary Replication of Capabilities:** Dispersing KCP's production and procurement activities among the three weapons laboratories would require NNSA to replicate many capabilities at the laboratories. For example, processes such as laser welding, precision cleaning, and painting in a single facility can serve all of the products fabricated at that facility; but if these products are dispersed among different sites, NNSA would need to install these processes at each site. This is not cost effective and is counter to the Department's efforts to consolidate the production of non-nuclear electrical and mechanical components that it has been pursuing since 1993.

- **Loss of Production Efficiencies and Economies of Scale:** Because non-nuclear products are diverse and production volumes are low, many capabilities must be

maintained, although they are not used at full capacity. Over the past 15 years, the KCP has moved from a product-based factory to a process-based facility in order to eliminate equipment and capability redundancies, and to improve utilization of capital assets. Pursuit of this commercial best practice would be thwarted if KCP's products were dispersed among the three laboratories as manufacturing efficiencies would decrease and process capability and control would be difficult to maintain with limited production volumes divided among the laboratories.

- **Supply Chain Inefficiencies:** Over 50% of non-nuclear components are currently procured from more than 350 qualified commercial suppliers under a procurement system managed by KCP. Dispersing KCP's responsibilities among the laboratories would require that each laboratory manage a subset of these suppliers. In addition, the supply chain staffs at each site would need to increase to handle these responsibilities.

- **Increased Scheduling Complexity:** Currently, KCP manages the scheduling for nearly all major non-nuclear components and assemblies with a single integrated enterprise resources planning system. The dispersion of products among the laboratories would result in a significant increase in scheduling complexity, and require the integration of systems at the three laboratories to maintain delivery reliability.

For these reasons, the federal agencies concluded that dispersing KCP's activities among the three weapons laboratories is not a reasonable alternative and therefore did not merit further evaluation.

4.0 AFFECTED ENVIRONMENT

4.1 Introduction

The purpose of this EA is to evaluate potential environmental impacts, thus providing the scientific and technical basis for comparing the alternatives and for determining whether the potential impacts are significant. This section describes the affected environments at each alternative site, providing the context for understanding the environmental impacts described in Section 5. The current environmental conditions at the Bannister Federal Complex, the Botts Road site, SNL/NM, LLNL, and LANL are described below.

4.2 Baseline Environmental Conditions at Bannister Federal Complex

4.2.1 Location and Physical Description

The Bannister Federal Complex is located within the corporate city limits of Kansas City, approximately eight miles south of the city center. It can be accessed via several major highways (Interstate 435 and Highway 71), as well as other auxiliary and smaller

secondary streets. It occupies approximately 310 acres and houses facilities used by multiple federal agencies including NNSA and GSA. The KCP currently occupies approximately 136 acres of the Bannister Federal Complex.

4.2.2 Land Use

The Bannister Federal Complex currently houses GSA office and warehouse space, as well as NNSA office space, warehouse space and manufacturing facilities. The 310-acre complex has 53 buildings, 38 of which are used by NNSA and 15 by GSA. Many buildings are contiguous. If the complex is viewed from the air, it appears as if there are only 16 separate buildings (see Figure 3-2). There are no residences within and no agricultural activities or farmlands on the Bannister Federal Complex. The adjoining property is mostly residential with isolated commercial tracts, except along the east and north sides, which have been designated for public and recreational uses.

4.2.3 Socioeconomic Resources

Demographics

Socioeconomic characteristics are typically presented for a region of influence (ROI). The ROI is defined as those counties where approximately 90% of the KCP workforce lives. The ROI includes Cass, Clay, and Jackson Counties in Missouri and Johnson County in Kansas.

In 2000, Kansas City had a population of 441,545 people; with 25.4% of the population under 18 years of age and 11.7% over 65. Almost 61% of the population was white, and slightly more than 39% was self designated as minority. The median household income in 1999 was $37,198 (USCB 2007a).

In 2000, Missouri's Jackson County had a population of 662,959 people; with 25.2% of the population under 18 years of age and 12.2% of the population over the age of 65. In 2005, almost 73% of the population was white and slightly more than 27% was self designated as minority. The 2003 median household income was $42,066 (USCB 2007b).

According to the 2000 census, 66,148 people lived within three miles of the Bannister Federal Complex, with 24.4% of the population under the age of 19 years and 17.8% of the population over the age of 65 years. Just over 67% of the population was white and almost 33% was self designated as minority. The median household income was $41,318 (KC, MO 2007a), with 8.3% of the population below poverty level.

Employment and Income

The KCP employs approximately 2,400 workers. The civilian labor force of the ROI grew by approximately 3% from 766,608 in 2000 to 789,417 in 2005. The overall ROI

experienced an employment growth rate of 0.6% with 743,163 in 2000 to 747,350 in 2005 (BLS 2008).

The ROI unemployment rate was 5.3% in 2005 and 3.1% in 2000. In 2005, unemployment rates within the ROI ranged from a low of 4.3% in Clay County to a high of 6.3% in Jackson County. The unemployment rate in Missouri in 2005 was 5.3% and 5.1% in Kansas (BLS 2008).

Jackson County is at the lower end of the ROI with a median household income in 2004 of $42,351 and a per capita income of $32,262. Johnson County had the highest median household income in the ROI at $68,013 and a per capita income of $46,443 (BEA 2007).

Health and Safety

There are no releases of radioactive material at the Bannister Federal Complex; therefore, background radiation doses are unrelated to operations. Sources of radiation exposure to individuals in KCP's vicinity include cosmic and external terrestrial radiation, internal terrestrial radiation, radon from soil, diagnostic x-rays and nuclear medicine; weapons test fallout, air travel, and consumer and industrial products (DOE 1996).

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 food grown in that soil) (DOE 1996).

Exposure pathways to KCP workers during normal operation may include inhaling the workplace atmosphere, drinking potable water, and contact with hazardous material associated with work assignments. The potential for health impacts varies from facility to facility and from worker to worker.

The major noise sources at the Bannister Federal Complex include various industrial facilities, equipment, and machines. Most industrial operations occur far enough from the site boundary that noise from these sources at the boundary are barely distinguishable from background noise. However, it is assumed that some noise from operations can be heard by residents living south of the complex.

Transportation

The existing Kansas City Plant (KCP) is located in the Bannister Federal Complex, just north of Bannister Road, about eight miles south of the downtown area of Kansas City. KCP is bordered on the east by Blue River Road and the west, by Troost Avenue. Interstate 435 is located one mile to south, running east and west, and changes direction heading north about a mile and a half east of KCP. Highway 71 runs north-west to south-

east, about a mile east of KCP. There are no additional major facilities placing heavy demands on the existing transportation system around the KCP.

The KCP produces non-nuclear components for nuclear weapons. These components are primarily transported from the KCP to NNSA's Pantex Plant in Amarillo, Texas, and to the Savannah River Site in Aiken, South Carolina. A limited number of components are also shipped from KCP to the Lawrence Livermore and Los Alamos National Laboratories for reliability testing. Components are transported by commercial truck (DOE 1996); approximately one shipment occurs per month.

4.2.4 Climate

The climate in the region is characterized as humid and continental, with warm summers, moderately cold winters, and moderate annual precipitation. From 1971 to 2000, the annual mean temperature in Kansas City was 56.5° F. The coldest month is January, with a mean temperature of 29.3° F and the warmest month is July, with a mean temperature of 81.3° F. The coldest recorded temperature was -19° F in December 1989 and the highest recorded temperature was 112° F in July 1954. The annual mean precipitation is 35.51 inches and the annual mean snowfall is 12.6 inches (NCDC 2004).

4.2.5 Geology

The Bannister Federal Complex is underlain by stream alluvium. The alluvium is approximately 40 to 45 feet thick and includes a continuous upper layer of thin-bedded clayey silt, with minor amounts of sand and basal gravel within a sand-silt-clay matrix. The basal gravel ranges in thickness from a few inches to 8 feet and consists of fragments of eroded bedrock in a sand-silt-clay matrix. The basal gravel is continuous throughout the site. The uppermost clayey silt and basal gravel layers are separated in certain areas by a layer of olive to blue-green clayey silt.

The bedrock underlying the alluvium consists of shales and sandstones of the Pleasanton Group. The overlying Kansas City Group has been eroded away and is no longer present at the Bannister Federal Complex. The erosional surface of the Pleasanton Group is in direct contact with the alluvium and slopes gently to the east towards the Blue River.

The Knobtown Sandstone underlies the alluvium across the central portion of the Bannister Federal Complex. This sandstone is a well-sorted, very fine-grained, well-cemented, lithic arkose of marine origin. Generally, the Knobtown consists of monocrystalline quartz, sedimentary rock fragments, authigenic clay, potassium feldspar, plagioclase, chlorite from altered biotite, muscovite, and carbonaceous material. The Knobtown ranges in thickness from approximately 5 to 10 feet and is present in the upper 30 feet of the Pleasanton Group, except where it has been removed by Quaternary erosion. The surrounding unnamed shales of the Pleasanton Group show transitional features due to their formation in near-shore sands to off-shore muds. Approximately 20 feet of shale are present over the Hepler sandstone with at least 20 feet of shales present below the Hepler based on logs of historical bedrock wells at the facility.

4.2.6 Soils

The Bannister Federal Complex is underlain by urban bottomland and udifluvents. Urban bottomland consists of areas where more than 85% of the surface is covered by concrete, asphalt, buildings, or other impervious material. In many parts of the facility, fill material has been added over the years and comprises near surface material. Due to the extensive amount of construction on the complex, native soils are rare or nonexistent. Vegetation consists mainly of ornamental trees, shrubs, and lawn grasses.

Some areas of soil are known to be contaminated with volatile organic compounds (e.g., trichloroethylene), polychlorinated biphenyls (PCBs) and total petroleum hydrocarbons (TPH). Three solid waste management units (SWMUs), addressed by DOE as a part of environmental restoration activities performed under the Resource Conservation and Recovery Act (RCRA), are located within the areas that would be disturbed during the demolition and reconstruction activities. In addition, Building 50, currently being investigated by GSA for contaminant releases, is also located in an area that would be disturbed. The potentially impacted areas are described below.

- SWMU 16 – Former Sales Building. This building was constructed in the mid 1940s as a bus or trolley stop. Sometime early in its history, the building was enclosed. From the 1940s to 1972 it was used to store surplus equipment for sale. The building was razed in 1981 and the area was paved with asphalt. Degreasing solvents may have been used inside the building while it was used as a storage building and may have contributed to the groundwater contamination in the area.

- SWMU 18 – North Lot. An area of the north parking lot north of Building 1 was used to store drums and equipment based on analysis of historical aerial photographs. However, no contamination has been detected at this location.

- SWMU 40 – Former Aluminum Chip Handling Building. This building was constructed in 1944 to store and recycle aluminum chips from manufacturing processes within the plant. Metal chips soaked in oil and solvents were stored at this site. The facility was last used in 1949. The building was subsequently used to store equipment. The building was razed in 1974 and the area paved with asphalt.

Environmental investigations of SWMU 18 revealed no evidence of contamination. As a result, EPA granted a "No Further Action" determination for this SWMU. Therefore, any excavation conducted in the area of SWMU 18 during the demolition or remodeling of the existing KCP would not adversely impact the environment or workers.

Subsurface contamination was identified at SWMUs 16 and 40 during environmental investigations. Specifically, groundwater contamination by chlorinated solvents was found during clean up activities that started in 1998. Clean-up activities include the collection of groundwater, treatment in an on-site system and discharge of the treated groundwater to the sanitary sewer. Groundwater in the vicinity of SWMUs 16 and 40 is

captured by building footing tile drains located in the basement of the main manufacturing building. This captured groundwater is pumped to the on-site treatment facility.

Data collected in 1991 indicated soil contamination at SWMUs 16 and 40 has not been detected at levels above site clean up standards at depths less than approximately 14 feet below ground surface (bgs). However, the presence of shallow soil contamination cannot be precluded based on the limited data collected in 1991. Therefore, excavation in the area of the Former Sales Building and the former Aluminum Chip Handling Building may expose workers to pockets of soil contamination. Excavations in contaminated soil at the KCP are managed through institutional controls implemented as a part of the facility's Missouri Hazardous Waste Management Facility Part I Permit. To assure that excavations are performed safely, the MDNR requires the submission of a notification or work plan, depending on the specific area of soil contamination, for work that may occur. The document describes the work to be performed, the size of the excavation, the nature and level of contamination in the excavation area based on actual sampling, how long the excavation will remain open and how the excavated soil will be managed. Information regarding the contaminants present in the soil is also conveyed to those persons performing the work so they are aware of potential hazards posed by the contaminants and appropriate personal protective equipment may be worn.

Building 50 (Figure 4-1) was constructed in the early to mid 1950s and was apparently used as a fuel components laboratory for jet engine development work that was occurring elsewhere on the Bannister Federal Complex. A Low Power Components laboratory was housed there as well. The building is slab-on-grade with concrete walls and blast-away ceilings. It included large refrigeration units that were powered by a unit substation. There were two above-ground storage tanks on the northeast side of the building.

Environmental releases from this building are being addressed pursuant to a Memorandum of Agreement (MOA) between GSA, NNSA and the U.S. Army Corps of Engineers. A number of voluntary environmental investigations have been conducted at Building 50 over the past 10 years. Releases to soil and groundwater have been documented by these investigations, primarily consisting of chlorinated solvents, PCBs and petroleum hydrocarbons.

Based on GSA investigations conducted to date, the GSA has concluded that the primary source of volatile organic compound (VOC) contamination at Building 50 is located near the northeast corner of the building, either just outside or beneath it. This contamination has impacted groundwater in the vicinity of the building. Groundwater flows west and south from the building. This contaminated groundwater is believed to be captured by building footing tile drains near the West Boilerhouse and the Main Manufacturing Building (Building 1). Additional investigatory work continues at the site primarily relating to an evaluation of potential indoor air impacts from chlorinated solvents and PCBs in the soil.

GSA also has concluded that petroleum hydrocarbon contamination exists in soils at the site, over 700 parts per million, derived from a former underground tank farm that existed in the area. The tanks have been removed and MDNR has stated that no further work with regard to petroleum derived from the former tank farm is required.

Upon completion of all investigations, it is anticipated that regulatory concurrence will be required to formalize the adequacy of work performed to date at Building 50. It is expected that institutional controls similar those already in place for NNSA controlled areas would be implemented for releases at Building 50.

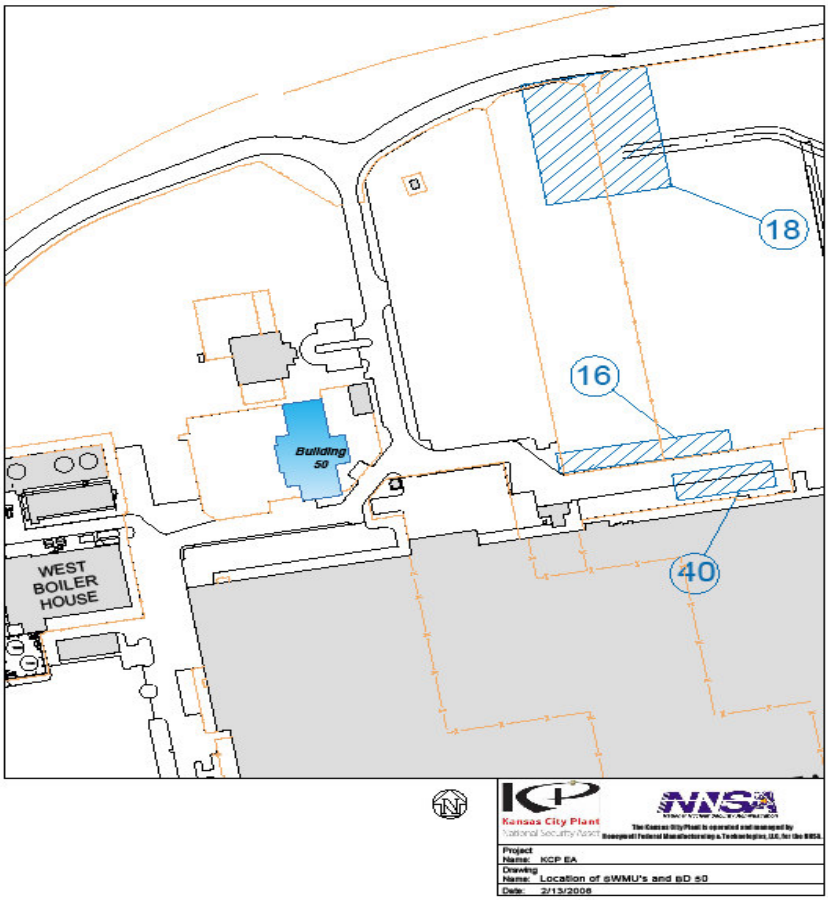


Figure 4-1 - Bannister Federal Complex, Building 50 and SWMUs 16, 18, and 40

4.2.7 Groundwater Hydrology

The Western Interior Plains aquifer system underlies most of Kansas, the eastern and southern parts of Nebraska, and a small area in west-central Missouri. The aquifer system consists of lower units in rocks of the Ordovician and Cambrian age, a shale confining unit of Mississippian and Devonian age, and an upper aquifer unit comprised of

Mississippian limestone. The thickness of the aquifer (including the confining unit) ranges from less than 500 feet to more than 3,000 feet. The aquifer system is thin or absent on structural uplifts and is thickest in downwarps.

Regional groundwater in the aquifer system flows towards the southeast-east. Much of the water discharges from the aquifer system in the transition zone between the Western Interior Plains and the Ozark Plateaus aquifer systems. The aquifer system is considered to have a low permeability.

Dissolved-solids concentrations of water in the Western Interior Plains aquifer system are typically greater than 1,000 milligrams per liter. In thick, deeply buried parts of the aquifer system, dissolved-solids concentrations of more than 200,000 milligrams per liter have been reported. The elevated concentrations are due in part to the slow movement of groundwater in the aquifer system.

The Western Interior Plains aquifer system is not generally developed for potable use because it is deeply buried and contains highly mineralized water. Locally, deeply buried parts of the aquifer system contain oil and gas; some brine (that is a by-product of hydrocarbon production) is injected into disposal wells, which are completed in permeable parts of the system (USGS 1997).

Background groundwater quality in the alluvial aquifer is considered poor due to high iron and manganese concentrations (DOE 1996). In 1994, three separate groundwater contaminant plumes were identified within the boundaries of the Bannister Federal Complex. These contaminant plumes are the result of past activities at several sites within the Bannister Federal Complex.

Potentially contaminated groundwater sites include solid waste management units (SWMUs) 16 and 40, where the depth to groundwater ranges from approximately 8 to 15 feet bgs, but may be shallower during times of high precipitation. Residual groundwater contamination also is present at these SWMUs.

A number of voluntary environmental investigations have been conducted at Building 50 over the past 10 years. These have detected the presence of groundwater contamination consisting of VOCs in the vicinity of Building 50. This contamination is being addressed by GSA pursuant to a MOA among GSA, NNSA and the Corps of Engineers.

4.2.8 Surface Water Hydrology

The Bannister Federal Complex is located in the alluvial flood plain of the Blue River and Indian Creek. The facility is drained by a combination of four National Pollutant Discharge Elimination System (NPDES) permitted storm sewer systems, six non-permitted (i.e., non-industrial) storm sewers, and surface drainage ditches. Selected fire

protection system test flows, HVAC condensate, and rainwater from building roofs and paved areas in the manufacturing areas drain into a network of underground laterals which connect to storm sewer system mains and then to the outfall areas that empty into the two streams. Some parking and undeveloped areas within the facility are drained through a ditch system along the western, southeastern, and a portion of the northern site boundaries.

Surface waters around the Bannister Federal Complex consist of the two bordering streams and intermittent stormwater runoff in the drainage ditches. Sampling by the KCP is periodically performed at locations along the streams and at the four permitted storm sewer outfalls in compliance with the NPDES permit.

The Blue River and Indian Creek are subject to frequent flooding due to intense urban development, especially in the lower basin of the river. This has caused even moderate flood flows to become a serious problem. The Blue River and Indian Creek leave their banks several times a year; however, the water generally flows onto undeveloped land, including currently vacant portions of Bannister Federal Complex (i.e., primarily the northeast portion of the property, along the Blue River). A flood-protection system completed in 1994 is designed to prevent 500-year floods from reaching any of the structures located on the Bannister Federal Complex.

Operating under an industrial wastewater discharge permit issued by Kansas City, the existing plant discharges approximately 236,000 gallons/day of wastewater to the Blue River Wastewater Treatment facility; Kansas City's largest publicly owned treatment works (POTW). Water generated from onsite groundwater treatment, as well as water from regulated process and industrial discharges is treated at the onsite industrial wastewater pretreatment facility prior to discharge. The remainder of the regulated industrial wastewater is treated prior to reuse as cooling tower make-up water or discharge to the sanitary sewer system.

In the near term and regardless of whether NNSA decides to relocate to a new facility, NNSA plans to outsource certain production processes at the KCP to the commercial sector. NNSA plans to outsource the chrome plating process and much of the other plating operations to the commercial sector and they will no longer contribute to industrial wastewater discharges. This outsourcing will result in reductions to both the total discharge to the Blue River Wastewater Treatment facility and the volume of industrial wastewater treated at the pretreatment facility. The No Action Alternative as revised in this EA indicates that these outsourcing activities will continue and are planned to be completed before any of the action alternatives are implemented.

Facilities at the Bannister Federal Complex do not withdraw surface water for use. The existing KCP uses approximately 414,000 gallons of potable water per day from the City of Kansas City. Of this volume, approximately 30% is used for domestic purposes and miscellaneous processes, 6% is used to operate the boilers, 46% is used in the cooling towers, 13% in unregulated processes (e.g., steam condensate and sprinkler drains), and

5% in regulated industrial processes (e.g., laboratory drains, plating rinse water, and other manufacturing process rinse water).

Most of the water that is not used in the cooling towers is ultimately discharged to the Blue River Wastewater Treatment Facility; a POTW. In addition, approximately 24,000 gallons of water from the on-site groundwater treatment facility is also discharged to the POTW on a daily basis. The total amount of wastewater at the KCP that is discharged to the POTW is approximately 236,000 gallons per day.

4.2.9 Flora and Fauna

The majority of the Bannister Federal Complex is currently developed with buildings, roads, lawns, and parking lots. There are several small vegetated areas around the site and a larger vegetated area on the northwest corner of the complex. Wildlife at the Bannister Federal Complex is dominated by human tolerant species. Animal species found on complex would be limited to species such as American robin, house sparrows, and squirrels. A more diversified fauna would be expected within Legacy Park and the riparian forests bordering the Blue River and Indian Creek. No resident game species would be expected within the Bannister Federal Complex. While raptors occasionally fly over the complex, none would be expected to nest or forage there. Due to the developed nature of the site, carnivores would not be expected (DOE 1996). There are no records of species or habitats of federal or state conservation concern within one mile of the site (MDC 2007a). No threatened or endangered species are known to occupy the site.

4.2.10 Air Quality & Permitting

The Bannister Federal Complex is located in the Metropolitan Kansas City Interstate Air Quality Control Region (AQCR) 94. The AQCR 94 is currently in attainment status for all criteria pollutants (MDNR 2007). The current annual air emissions from the KCP are 17.8 tons. The primary sources are the boilers, emergency generators and process heaters (13.8 tons of nitrogen oxides (NOx), sulfur oxides (SOx), and carbon monoxide (CO)); electronic solvent spray cleaning operations (3.5 tons of VOCs); painting operations (0.4 tons of VOCs); and plating operations (0.1 tons of VOCs and metals such as nickel, cadmium and chromium). Chrome plating operations will be outsourced by the end of 2008. The KCP is currently designated as a major source as defined by the National Emission Standards for Hazardous Air Pollutants (NESHAP) of the Clean Air Act.

4.2.11 Historical and Cultural Resources

A Cultural Resource Assessment was performed by SCI Engineering, Inc. for the Bannister Federal Complex. Due to the fact that the property has been previously disturbed by the construction of the existing complex, and the fact that any proposed construction would occur on developed portions of the site, there is a low probability for finding Native American and Euro-American archeological sites within the project area.

The KCP may, however, be eligible for listing on the National Register of Historic Places under Criteria A, Events, because of the widespread use of Pratt & Whitney's engines during World War II and for KCP's role in the development of the nuclear program; and also under Criteria C, Architecture, for its facility design. The agencies will consult with the Missouri State Historic Preservation Officer (SHPO) to determine the level of protection necessary. A copy of the SHPO determination is provided in Appendix A.

4.2.12 Solid and Hazardous Waste

KCP operations generate approximately 4.4 million pounds of waste per year. This waste can be categorized as routine and non-routine and further characterized as either hazardous or non-hazardous. Routine waste is generated from normal production, maintenance, or support activities while non-routine waste is typically generated from construction or refurbishment activities and environmental restoration activities. The KCP disposes of approximately 37,000 pounds of routine hazardous waste per year. Disposal of non-routine hazardous waste from environmental restoration activities, construction projects, or maintenance activities conducted within contaminated areas is approximately 390,000 pounds per year. Routine non-hazardous waste accounts for 1.4 million pounds per year while non-routine non-hazardous waste totals 0.6 million pounds per year. An additional 1.9 million pounds of hazardous and non-hazardous waste is recycled each year, representing approximately 43% of the total waste amount of waste generated. Approximately 40 pounds of low level radioactive waste (LLW) is generated each year from typical industrial processes. This LLW is shipped to the Nevada Test Site or a commercial LLW facility for disposal.

4.3 Baseline Environmental Conditions at Botts Road

4.3.1 Location and Physical Description

The property is located approximately 16 miles south of the center of Kansas City within the incorporated city limits (see Figure 3-5). It consists of approximately 185 acres of land that is zoned for agriculture and is located on the northwest corner of the intersection of Missouri Highway 150 and Botts Road. The site is bordered on the west by an active railroad line owned by the Kansas City Southern Railroad Company and on the north by property owned by the Kansas City Southern Railroad Company for the future extension of the railroad. Remnants of agricultural and housing structures are located along a former roadway extending in an east-west direction through the central portion of the property. A separate north-south trending roadway extends from Missouri Highway 150, near the southwest corner of the property, approximately 915 feet into the property. Remnants of structures associated with a former radio beacon used by the Air Force for the former Richards-Gebaur Air Force Base are partially fenced-in and located at the terminus of this roadway. A small vacant building is located within the fenced-in area.

4.3.2 Land Use

The property consists of approximately 185 acres (see Figure 4-1). Portions of the property previously have been used for a residence, scattered auxiliary farm structures

and a radio beacon for the former air base. The majority of the site is currently devoted to agriculture, although some remnants of former farm structures (e.g. ponds and berms) remain. The partially fenced radio beacon parcel contains a small vacant building and several concrete slabs. A petroleum pipeline, held in nitrogen and owned by Magellan Midstream Partner, L.P., transects the northern half of the site from east to west.

There are several vegetated areas around the perimeter of the site, vegetation along some tributaries and ditches, and several scattered stands of scrub trees and grasses. Surrounding land use is primarily agricultural, commercial warehousing, industrial, and retail.

4.3.3 Socioeconomic Resources

The general description of socioeconomic resources for the Botts Road site are the same as that described for the Bannister Federal Complex in Section 4.2.3, with the following differences.

Demographics

According to the 2000 census, 33,406 people live within a three mile radius of the Botts Road site, with 31.4% of the population under the age of 19 years and 9.4% of the population over the age of 65 years. The majority of the population was white (78.7%); 21.3% were self designated as minority. The median household income was $42,242 (KC, MO 2007b), with 9.7% of the population below poverty level.

Health and Safety

There have been no known releases of radioactive or chemical materials (excluding any associated with the present farming operation) at the Botts Road site. Noise at the site is limited to traffic on the adjacent roadways, rail traffic on the adjacent railroad, and the periodic usage of farm equipment onsite.

Transportation

The site can be accessed by Missouri Highway 150 as well as other smaller secondary streets.

4.3.4 Climate

The climate is the same as that described for the Bannister Federal Complex in Section 4.2.4.

4.3.5 Geology

The Kansas City Group includes a succession of beds that extends from the base of the Hertha Formation to the top of the Bonner Springs Shale. The succession is divided into

three subgroups, in ascending order: the Bronson, the Linn and the Zarah. The top and base of the Kansas City Group are conformable with strata above and below, and the subgroup boundaries are also conformable. The Group is well exposed at many localities in western and northern Missouri. The Bronson Subgroup is approximately 80 feet thick and contains the Hertha, Ladore, Swope, Galesburg and Dennis formations. The Bethany Falls and Winterset Limestone are the most prominent lithologic units in the subgroup.

The Botts Road site is underlain by the Bonner Springs Formation, which consists of the Bonner Springs Shale. The Bonner Springs Shale is composed principally of silty, gray, micacecous shale, but includes lenticular sandstone and locally, silty limestone in the upper part. An extremely thin, irregular coal bed has been reported to occur in the uppermost part of the formation at some localities in northern Missouri. The lower and middle parts of the formation at some localities contain scattered clay-ironstone concretions. The thickness of the formation ranges from less than 20 feet to as much as 40 feet.

The Bonner Springs Formation is underlain by the Wyandotte Formation, which consists of interbedded shale and limestone. The upper member of the Wyandotte Formation is the Farley Limestone Member. The Farley Limestone Member contains two limestone units and an intervening shale bed in its type area. The lower limestone unit is oolitic and extremely variable in thickness. The overlying shale contains a poorly-defined coal horizon in its upper part. The upper limestone is largely composed of algal debris and ranges in thickness from 2 to 3 feet. The member contains many gastropods and pelecypods. The average thickness of the Farley Limestone Member is about 15 feet (Thompson 1995) (Gentile 1983).

4.3.6 Soils

The soil on the western portion of the Botts Road site is Sharpsburg silt loam, with 2% to 5% slopes. This loam is characterized by deep, gently sloping, moderately well drained soil on convex ridge tops. Permeability is moderately slow and surface runoff is medium. Natural fertility and available water capacity are high. Organic matter content is high and the shrink-swell potential is moderate.

The soil on the southwestern portion of the site is also Sharpsburg silt loam with 5% to 9% slopes, was identified as being located on the southwest portion of the subject property. This moderately sloping, moderately well drained soil occurs on convex side slopes and narrow, convex ridge tops. Permeability is moderately slow and surface runoff from cultivated areas is medium. Natural fertility is medium and available water capacity is high. The organic matter content and the shrink-swell potential are moderate.

Greenton silty clay loam, with 5% to 9% slopes, is located on the eastern portion of the subject property. This deep, moderately sloping, somewhat poorly drained soil occurs on upland side slopes. Permeability is slow and surface runoff from cultivated areas is medium. The available water capacity and natural fertility are high. Organic matter content is moderate. The shrink-swell potential is high in the subsurface.

4.3.7 Groundwater Hydrology

The general description of groundwater resources for the Botts Road site is the same as that described for the Bannister Federal Complex in Section 4.2.7. There is no known groundwater contamination on the site.

4.3.8 Surface Water Hydrology

The Botts Road site is located in the Little Blue River Watershed. Site runoff flows into unnamed tributaries that flow generally to the east into the Little Blue River. The Little Blue River then drains into the Missouri River. The Botts Road site does not lie within the 100- or 500-year floodplains.

A study was conducted by Adaptive Ecosystems, Inc. to comply with 10 CFR Part 1022 to identify potential wetlands that may be impacted. Based on this study, aquatic resources on the site include approximately 8,541 linear feet (l.f.) (0.26 acre) of tributaries and 1.37 acres of wetlands (See Table 4-1 and Figure 4-2) (AEI 2007).[8] Approximately 0.39 acres of the wetlands onsite are considered jurisdictional wetlands (AEI 2007). Based upon preliminary site design plans and the widespread nature of the tributaries and wetland areas onsite, impacts to the tributaries and wetlands would be anticipated (See Table 4-2).

Jurisdictional Aquatic Resources in the Project Area

Aquatic resources were evaluated by the U.S. Army Corps of Engineers (USACE). The USACE assumed jurisdiction over three reaches and their associated wetlands (Figure 4-3). The USACE determined that Reaches 3 (572 l.f.; 0.03 ac.) and 8 (2,688 l.f.; 0.09 ac.) and the associated wetlands 2 (0.14 ac.), 3 (0.78 ac.), 5 (0.04 ac.), and 6 (0.16 ac.) exhibit a significant nexus to the traditional navigable water (TNW) (Table 4-2). The USACE was not able to demonstrate a significant nexus for the other reaches. The jurisdictional determination has been forwarded to the U.S. Environmental Protection Agency (USEPA) for review.

The U.S. EPA is reviewing the determination made by the USACE. The USACE's jurisdictional determination is preliminary and subject to revision. There currently are no water rights at the Botts Road site.

[8] Aquatic resources are defined as all jurisdictional and non-jurisdictional tributaries, wetlands, and open waters in the project area.

Table 4-1: Aquatic Resources in the Botts Road Site

Feature ID	Resource Type	Total Stream (linear feet)	Total Area (acres)
Tributaries			
I-1	Intermittent	1,313	0.045
I-2	Intermittent	2,342	0.054
I-3	Intermittent	952	0.044
E-1	Ephemeral	1,026	0.047
E-2a	Ephemeral	372	0.004
E-2b	Ephemeral	989	0.022
E-3	Ephemeral	1,053	0.024
E-4	Ephemeral	494	0.017
		8,541	**0.26**
Wetlands			
PEM-1	Palustrine Emergent Wetland	-	0.030
PEM-2	Palustrine Emergent Wetland	-	0.781
PEM-3	Palustrine Emergent Wetland	-	0.138
PEM-4	Palustrine Emergent Wetland	-	0.042
PSS-1	Palustrine Scrub-shrub Wetland	-	0.045
PSS/PEM-1	Palustrine Scrub-shrub / Palustrine Emergent Wetland	-	0.179
PSS/PEM-2	Palustrine Scrub-shrub / Palustrine Emergent Wetland	**-**	0.159
Total Wetlands		**-**	**1.37**
Total Aquatic Resources		**8,541**	**1.63**

Notes:

1. All values are approximate.
2. Areas are the tributary length within the project area multiplied by the tributary width between the OHWM elevations, converted to acres.

- Measurements are not applicable or are unavailable.

Table 4-2: Jurisdictional Aquatic Resources in the Botts Road Site

Feature ID	Resource Type	Rapanos Classification	Total Stream (linear feet)	Total Area (acres)
Tributaries				
Reach 3	Intermittent	Non-RPW	572	0.026
Reach 8	Intermittent	Non-RPW	2,688	0.092
		Subtotal	**3,260**	**0.12**
Adjacent and Abutting Wetlands				
Wetland 2 (PEM-3)	Palustrine Emergent Wetland	Adjacent to Reach 3	-	0.138
Wetland 3 (PEM-2)	Palustrine Emergent Wetland	Adjacent to Reach 8	-	0.781
Wetland 5 (PEM-4)	Palustrine Emergent Wetland	Adjacent to Reach 8	-	0.042
Wetland 6 (PSS/PEM-2)	Palustrine Scrub-shrub / Palustrine Emergent Wetland	Adjacent to Reach 8	-	0.159
		Subtotal	**-**	**1.12**
	Total of Jurisdictional Features		**3,260**	**1.24**

Notes:

1. All values are approximate.
2. Areas are the tributary length within the project area multiplied by the tributary width between the OHWM elevations, converted to acres.

- Measurements are not applicable or are unavailable.

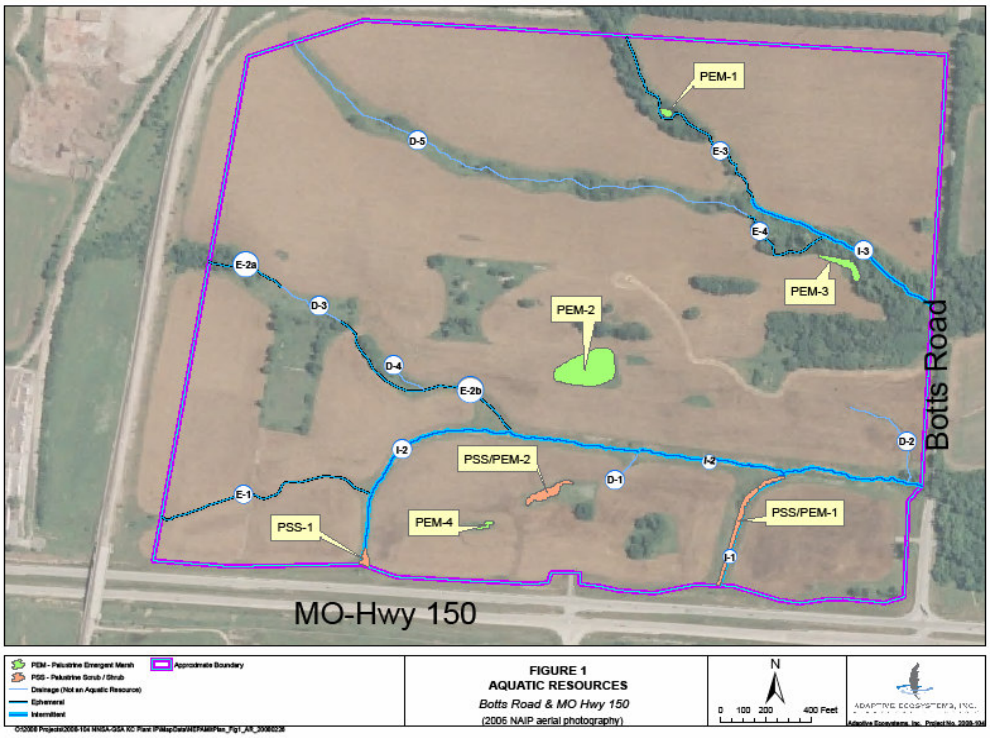


Figure 4-2 - Aquatic Resources at Botts Road Site

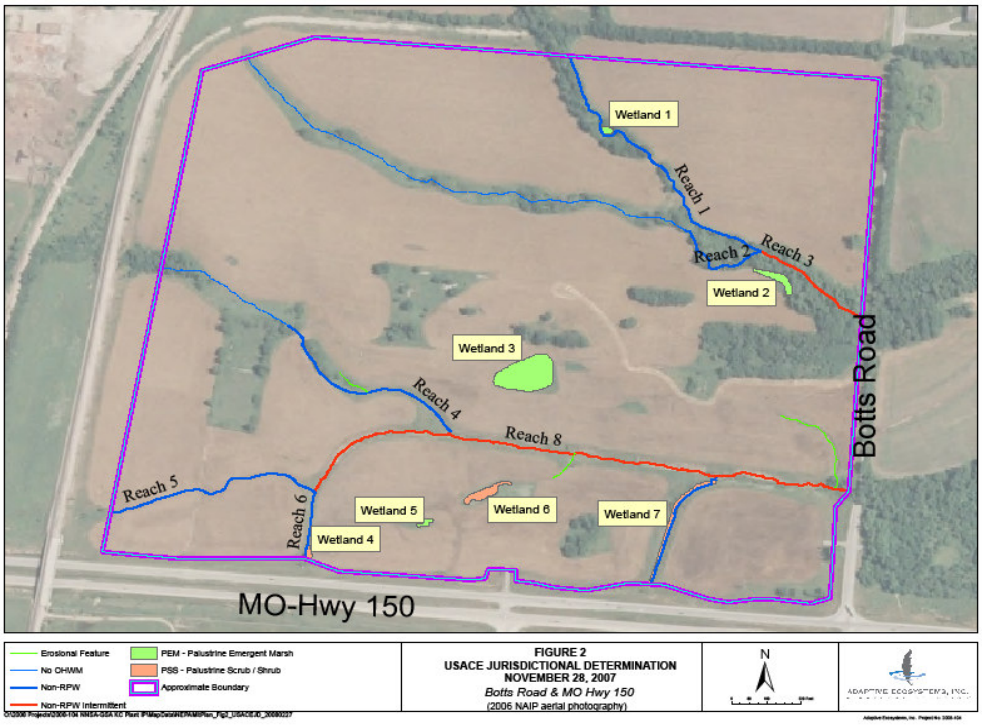


Figure 4-3 – USACE Jurisdictional Determination

4.3.9 Flora and Fauna

The majority of the 185 acres at the Botts Road site are used for agriculture. In addition to the seasonal crops in the field, there are several vegetated areas around the perimeter of the site, vegetation along some tributaries and ditches, and several scattered stands of scrub trees and grasses. There are no records of species or habitats of federal or state conservation concern within one mile of the site (MDC 2007b). No threatened or endangered species under any jurisdiction are known to occupy the property.

4.3.10 Air Quality & Permitting

Like the Bannister Federal Complex, the Botts Road site is located in the Metropolitan Kansas City Interstate AQCR 94, which is currently in attainment status for all criteria pollutants (MDNR 2007). As the site is zoned for agriculture, no air quality issues exist. The aesthetics of the site are characteristic of farm land, and noise is limited to traffic on the adjacent roadways and railways, and to periodic use of farm equipment onsite.

4.3.11 Historical and Cultural Resources

The Cultural Resource Assessment by SCI Engineering, Inc. did not identify specific areas of concern within the 185 acre site. No previously recorded archeological sites are located within the property. The largest area surveyed is the 2,000-acre former Richards-Gebaur Air Force Base located immediately south of the site. It was surveyed in the early 1980s and no archeological sites were recorded.

Native Americans inhabited this entire region prior to European Settlement. Border war and Civil War skirmishes also occurred within this region, but none are known to have occurred within the site. The American Indian Council was contacted on June 19, 2007, and it indicated that no federally recognized Indian land exists in Jackson County, Missouri.

The Kansas City Southern Railroad Line, established in the late 1800s, forms the western border of the site. The depot is to the northeast in the town of Grandview with no other stops located near the site. None of the people associated with this property were considered to be historically significant. The only exception to this would be Solomon Young, as the maternal grandfather of Harry S. Truman. Solomon owned 80-acres of the Botts Road site for a short time; however, no residences associated with him were documented on this parcel. No cemeteries or family plots are known to exist within the site.

Based upon the assessment, there is a medium probability of finding Native American and Euro-American archeological sites within the site. There are a relatively low number of known sites within the area; however, the Botts Road site lies within a dissected upland close to water sources. There is a low probability for long-term occupation sites, but a medium probability for short-term camp sites within this location. The historic atlases also show structures along Botts Road. There is a possibility that remains of 19th

Century residences (i.e. houses, cellars, wells or cisterns) may exist in this portion of the site (SCI 2007).

The SHPO reviewed the Cultural Resource Assessment and determined that a Phase One Archeological Survey is not required and no historic properties would be affected by construction at the Botts Road site. The SHPO determination letter is attached in Appendix A.

4.3.12 Solid and Hazardous Waste

Current agricultural operations at the site do not result in the generation of hazardous waste or significant quantities of solid waste.

4.4 Baseline Environmental Conditions at Sandia National Laboratories in New Mexico

4.4.1 Location and Physical Description

Sandia National Laboratories, New Mexico (SNL/NM) was established in 1949 as an ordnance design, testing, and assembly facility. It was located on what is currently the Kirtland Air Force Base (KAFB), in Albuquerque, New Mexico, to be close to an airfield and work closely with the military. SNL/NM provides engineering design for all non-nuclear components of the nation's nuclear weapons. SNL has facilities in Albuquerque, NM; Livermore, CA; Tonopah, NV; and Kauai, Hawaii. The descriptions in this section are of the main DOE/NNSA Albuquerque site including SNL/NM, all of which are located on approximately 2,935 acres of the KAFB (Figure 4-4). An additional 5,817 acres are available for NNSA use through various agreements, land use permits, and leases from the U.S. Air Force (USAF), the U.S. Forestry Service (USFS), and the Bureau of Land Management to conduct operations.

The principal NNSA missions at SNL/NM are engineering of nuclear weapons; designing certain non-nuclear components; conducting field and laboratory non-nuclear testing; conducting research and development on nuclear weapons designs; manufacturing a limited number of non-nuclear weapon components; conducting safety and reliability assessments of the stockpile; and manufacturing neutron generators for the stockpile.

4.4.2 Land Use

SNL/NM is located approximately seven miles southeast of downtown Albuquerque (Figure 4-4). There are no farmlands at SNL/NM (DOE 2006). There are five SNL/NM technical areas (TA), which cover approximately 2,560 acres of land within the boundary of KAFB: TAs-I, -II, and -IV encompass approximately 645 acres. TA-III encompasses approximately 1,890 acres, and TA-V encompasses approximately 25 acres (DOE 2003).

The USAF and DOE are the principal land users within KAFB, occupying over 90% of the area. DOE owns only a small portion of the land it needs and is required to conduct many of its activities under permit on land owned or withdrawn by the USAF. SNL/NM

facilities and operations make up a majority of DOE's land use requirements on KAFB. The military living quarters on KAFB is the most heavily developed area on the base and is located adjacent to TA-I. The closest military quarters to TA-I is more than 1,000 feet from any SNL/NM facility (DOE 2006).

Except for vacant land on both sides of Tijeras Arroyo east of TA-I and some unmanned utility facilities, the land east of SNL/NM is part of the city of Albuquerque. The urban area consists of a mixture of residential, commercial, industrial, institutional, and various supporting public uses. The closest residence to the KAFB boundary is approximately 20 feet to the north. Commercial uses are primarily concentrated north of the site along Central Avenue and Gibson Boulevard. SNL/NM does not contain any public recreation facilities (DOE 1999).

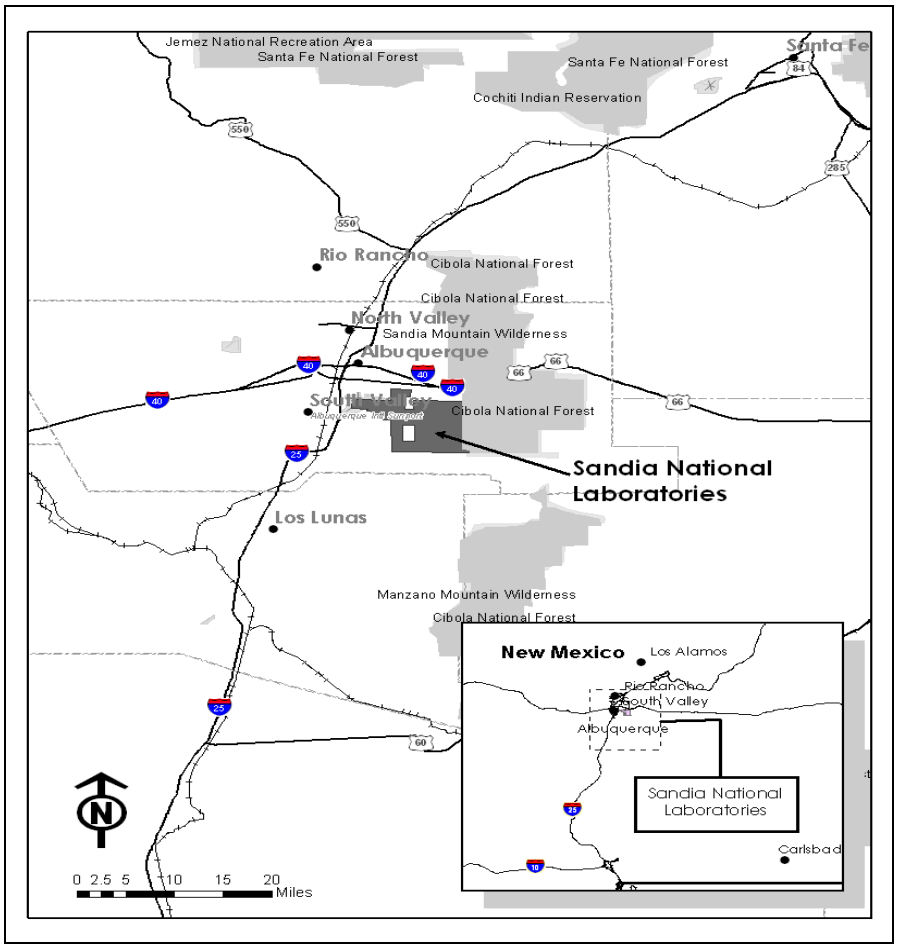


Figure 4-4 - Location of SNL/NM

4.4.3 Socioeconomic Resources

Socioeconomic characteristics are presented for a ROI. The ROI was identified based on the distribution of residences for current SNL/NM employees. The ROI is defined as those counties where approximately 90% of the workforce lives. SNL/NM is located in Bernalillo County, New Mexico. Statistics for socioeconomic characteristics are

presented for the ROI, a region consisting of Bernalillo, Sandoval, Torrance, and Valencia Counties.

Demographics

Between 1990 and 2000, the ROI population increased 22% from 599,416 in 1990 to 729,649 in 2000. From 2000 to 2005, the population of the ROI increased 9% to 797,517 in 2005. Sandoval County experienced the largest population growth within the ROI between 2000 and 2005 with an increase of 19% (USCB 2007).

In 2000, persons self-designated as minority individuals in the potentially affected area constituted 59.3% of the total population. Hispanic residents are the largest group within the minority population. As a percentage of the total resident population in 2000, New Mexico had a minority population of 55% and the U.S. had a minority population of 30.9% (USCB 2007).

According to 2000 census data, approximately 126,580 individuals residing within census tracts in the 50-mile radius of SNL/NM were identified as living below the federal poverty threshold, which represents approximately 14% of the census tracts population within the 50-mile radius. There was one census tract located in Cibola County with populations greater than 50% identified as living below the federal poverty threshold. In 2000, 18.4% of individuals for whom poverty status is determined were below the poverty level in New Mexico and 12.4% in the U.S. (USCB 2007).

Employment and Income

SNL/NM employs approximately 11,300 people (DOE 2006). The civilian labor force of the ROI grew by approximately 6% from 370,858 in 2000 to 391,884 in 2005. The overall ROI employment experienced a growth rate of nearly 5% with 355,580 in 2000 to 372,371 in 2005 (BLS 2007).

The ROI unemployment rate was 5% in 2005 and 4.1% in 2000. In 2005, unemployment rates within the ROI ranged from a low of 4.8% in Bernalillo County to a high of 5.5% in Valencia County. The unemployment rate in New Mexico in 2005 was 5.3% (BLS 2007). Torrance is at the low end of the ROI with a median household income in 2004 of $30,347 and a per capita income of $21,111. Bernalillo had a median household income of $43,047 and a per capita income of $31,441 (BEA 2007).

Health and Safety

Current activities associated with routine operations at SNL/NM have the potential to affect worker and public health. The following discussion characterizes the human health impacts from current releases of radioactive and nonradioactive materials at SNL/NM. It is against this baseline that the potential incremental and cumulative impacts associated with the alternatives are compared and evaluated.

Radiological and non-radiological hazardous materials released from SNL/NM facilities could reach the environment and people through different transport pathways. Of the transport pathways that could potentially impact human health, only the air exposure pathway from air emissions provides a complete exposure pathway. Soils, groundwater, and surface water exposure do not provide complete exposure pathways and are not expected to lead to radiological or non-radiological exposure to public receptors.

Based on the 2005 operational data, SNL/NM emitted a dose to the maximally exposed member of the general public of 0.00082 millirem per year (SNL/NM 2006). This dose is less than 1% of the DOE public dose limit for all pathways and less than 1% of the EPA maximum permissible exposure limit to the public (and the DOE "air pathway" limit) of 10 millirem per year. SNL/NM met all NESHAP compliance requirements in 2005 (SNL/NM 2006).

The 2005 collective dose for the regional population (793,740 estimated to be living within 50-mile radius of SNL/NM) is 1.7×10^{-4} person-rem per year. In 2005, the collective dose to KAFB residence was 2.4×10^{-4} person-rem per year (SNL/NM 2006).

Non-radiological chemical air pollutants are released from SNL/NM facilities that house chemistry laboratories or chemical operations. Air samples collected near known chemical emission sources are the highest expected chemical air pollutant levels from current SNL/NM operations. The maximum ambient concentrations of VOCs measured by monitoring stations onsite at SNL/NM are below safety levels established for workers in industrial areas.

Small amounts of non-radiological chemical contamination, released by past operations, have been identified in other environmental resources (such as groundwater and soils subsurface). Chemicals existing in the environment have the potential to reach members of the public through these different transport pathways. Environmental sampling programs involving resources such as groundwater, soils, and surface water, are designed to monitor and assess the potential for public exposure to these pollutants through these different media. Evaluations of groundwater, soils, and surface water information indicate that the public is not in contact with these areas of contamination within SNL/NM's site boundaries and that the contamination is not being transported offsite (SNL/NM 2006). Non-radiological chemical air emission values were reviewed in the 2006 SNL/NM SA. Because the emissions had not changed significantly from the results presented above, the concentrations of VOCs remain below health-risk levels (SNL/NM 2006).

Noise levels remain within levels characteristic of a light industrial setting in the range of 50 and 70 dBA.

Transportation

Nearly all of SNL/NM's activities in the vicinity of Albuquerque are conducted within the boundaries of KAFB. Three principal entrances of KAFB, the Wyoming, Gibson, and Eubank Gates, provide access to the laboratory. Additional entrances are located at

the Truman/Gibson and Carlisle/Gibson intersections. Average weekday traffic volume (two-way) on Wyoming Boulevard south of the Gibson Boulevard intersection is 16,211 vehicles per day. Traffic entering the intersection of G Avenue and 20th Street from the east (traveling from the direction of the Eubank gate) is 20,066 average weekday traffic volume (DOE 2006).

Traffic in the KAFB vicinity is predominantly associated with USAF operations. In addition to Air Force and SNL/NM activities, other federal agencies conduct operations at KAFB including the Department of Homeland Security, the Defense Threat Reduction Agency, and the U.S. Geological Survey (USGS).

4.4.4 Climate

Large diurnal temperature ranges, summer monsoons, and frequent drying winds are characteristics of the regional climate in the Albuquerque Basin and Sandia and Manzano Mountains. Temperatures are typical of mid-latitude dry continental climates with summer high temperatures in the basin in the 90s°F and winter high temperatures around 50° F. Daily low temperatures range from around 60° F in the summer to the low 20s°F in the winter. The dry continental climate also produces low average humidity in the late spring and summer prior to the onset of the monsoon season. Average annual precipitation based on 10 years of data collected between 1995 and 2004 is around 8.5 inches at SNL/NM with 10.9 inches in the lower foothills. Annual precipitation recorded at the NWS cooperative stations in mountain elevations varies between 10 and 23 inches. The strongest winds occur in the spring when monthly wind speeds average 10.3 miles per hour. Wind gusts can commonly reach 50 miles per hour (SNL/NM 2006).

4.4.5 Geology

The regional geologic setting in which SNL/NM and KAFB are situated has been subjected to relatively recent episodes of basaltic volcanism and ongoing regional rifting (crustal extension). The Rio Grande rift has formed a series of connected down-dropped basins in which vast amounts of sediments have been deposited. The Rio Grande rift extends for about 450 miles from Leadville, Colorado to northern New Mexico (SNL/NM 2006).

4.4.6 Soils

Soils at SNL/NM are derived primarily from eroded bedrock in the Manzanita Mountains that was transported down slope by water. Soil layers formed by these sediments tend to be discontinuous. The chemical composition of these soils reflect the composition of the source bedrock, and soils at SNL/NM frequently have high naturally occurring (background) concentrations of the metals arsenic, beryllium, and manganese (DOE 2006).

As a result of past activities of the laboratory and other occupants of the air base, soil contamination exists or may exist at a number of locations at KAFB, although most sites

are less than 1 acre in size. Remediation of these contaminated sites is regulated under RCRA. SNL/NM investigates and remediates these sites through the Long Term Environmental Stewardship Program.

Soil contamination also exists at some active laboratory outdoor test facilities. In the past decade, environmental controls on testing have reduced the concentrations or extent of additional soil contamination. The Long Term Stewardship Program addresses soil contamination resulting from past testing (DOE 2006). Most of the soil contamination at these active sites is shallow surface contamination stemming from the explosion, destruction, or burning of tested devices containing hazardous material. The primary contaminants at these active sites are depleted uranium and lead (SNL/NM 2006).

4.4.7 Groundwater Hydrology

The groundwater beneath the KAFB and adjacent areas is the source of drinking water for SNL/NM, KAFB, portions of Albuquerque, and the Pueblo of Isleta. All known groundwater contamination is the result of past activities. No current or planned future activities are expected to adversely impact groundwater quality. Investigations or remediation of this contamination is ongoing (SNL/NM 2006).

The EPA regulates drinking water constituents by setting maximum contaminant levels (MCLs). The New Mexico Water Quality Control Commission regulates drinking water constituents by establishing maximum allowable concentrations (MACs). During August 2005, annual sampling of groundwater was conducted by the Groundwater Protection Program Groundwater Surveillance Task. Samples were collected from 14 wells. No groundwater samples exceeded MCLs for VOCs. Only bromoform and carbon disulfide were detected at quantifiable values about the reporting limits. No groundwater samples exceeded established MCLs for any of the non-metallic inorganic constituent analytes. Of the metals, only manganese and iron exceeded their established MACs for aesthetic purposes. No groundwater samples were found to exceed the MCLs for radionuclide activity (SNL/NM 2006).

Most of the City of Albuquerque's water supply wells are located on the east side of the Rio Grande. As a result of groundwater withdrawal, the water table has dropped by as much as 141 feet (Thorn et al. 1993).

Potable water to KAFB and SNL/NM facilities is supplied by on-site production from 10 wells. In 2005, KAFB pumped approximately 1.13 billion gallons of groundwater (DOE 2006). Groundwater withdrawals from KAFB and the City of Albuquerque wells at the north end of KAFB have created a trough-like depression in the water table causing flow to be diverted northeast in the direction of the well fields (SNL/NM 2006).

4.4.8 Surface Water Hydrology

Surface discharges are releases of water and water-based compounds to roads, open areas, or impoundments. SNL/NM contributes to the Rio Grande due to storm water

runoff and discharges to the Southside Water Reclamation Plant. Extended drought conditions have resulted in reduced surface water flows. Surface water flows peaked in 2004 due to near normal levels of precipitation (SNL/NM 2006).

Six wetlands have been identified that are associated with natural springs and are cumulatively less than one acre (DOE 1999). Coyote Springs is the largest natural wetland onsite and consists of four separate seep areas. Two other wetlands are Sol se Mete and Burn Site Springs. Species characteristic of these wetlands include wire rush, three-square, Torrey rush, and cattail (USACE 1995). Only the Burn Site Spring is on land used by SNL/NM.

Five small unnamed springs occur around the Four Hills. Three support wetland vegetation and the other two are rock seeps and do not support wetland vegetation, but may provide surface water to wildlife (SNL/NM 2004). Natural spring-fed wetlands form a minor component of the riparian habitat on KAFB and are cumulatively less than 1 acre in size. The USFS manages a tank that collects water for wildlife at this spring and Sol se Mete Spring. The USAF administers constructed ponds on KAFB Tijeras Arroyo Golf Course and a constructed lake, Christian Lake, in the southern part of KAFB (DOE 1999).

Past sampling results from 1998 and 1999 have shown a presence of metals such as zinc, magnesium, and iron elevated above the benchmark values. All monitoring points show elevated levels of magnesium even though they are separated by several miles and collect runoff from several different drainage areas. The presence of zinc, magnesium, and iron is likely due to natural conditions associated with rocks and soils derived from the igneous/metamorphic complex of the Manzanita Mountains. The 1999 SNL/NM Site-wide EIS identified oil and grease runoff and increased frequency of outdoor testing to be sources of contaminants of concern (DOE 1999).

Floods and runoff occur most commonly during the summer thunderstorm season (July through September) when approximately 50% of the average annual rainfall occurs. Snow in the Manzanita Mountains can produce local runoff that rarely reaches the lower portions of the arroyos or the Rio Grande. The 100- and 500-year floodplains are narrow and confined to existing drainage channels and several low-lying streets and vacant areas (DOE 2006).

4.4.9 Flora and Fauna

There are four major habitat types at KAFB: grassland, woodland, riparian, and altered. Much of the unaltered habitats receive minimal disturbance from site operations. Altered habitat at SNL/NM and elsewhere at KAFB includes buildings and the areas surrounding buildings, field testing areas, training areas, a golf course, residential areas, roadways, utilities, runways, and taxiways. The vegetation in this habitat type varies greatly and includes bare ground and manicured landscapes, but the bulk of this habitat is occupied by non-native, weedy species of plants. Increasingly, efforts are underway to reseed altered areas with native plant species to assist natural vegetation (SNL/NM 2004).

Each of the major habitat types within the KAFB boundary supports a variety of wildlife species. Bird communities are particularly dynamic; some resident species remain on-site throughout the year, and many migratory species frequent SNL/NM. Some common wildlife species at SNL/NM include coyote, deer mouse, rock squirrel, common raven, American robin, and the house finch (SNL/NM 2004).

Fifteen threatened, endangered and other species of concern were identified as potentially occurring in Bernalillo County (USFWS 2005). Of the fifteen species, four have been documented on KAFB (SNL/NM 2006). Of the state-listed threatened and endangered wildlife species, only the gray vireo is known to regularly breed onsite. The American peregrine falcon is listed as a species of concern by the U.S. Fish and Wildlife Service (USFWS) (USFWS 2005). No active nests of this species have been observed, and only a small amount of falcon nesting habitat exists on KAFB (SNL/NM 2004).

No plant species currently listed as threatened or endangered are known to occur at KAFB. The Santa Fe milkvetch has been observed at the SNL/NM site and is listed in the New Mexico Rare Plants List (SNL/NM 2004).

4.4.10 Air Quality & Permitting

Bernalillo County has been designated as a maintenance area under the Clean Air Act for carbon monoxide emissions and is in attainment for other federally regulated pollutants. Depending on emission levels, modification to existing sources or construction of new sources emitting carbon monoxide may require a general or transportation conformity analysis as well as additional levels of controls to comply with the National Ambient Air Quality Standards (NAAQS). In addition, modification to existing sources or construction of new sources emitting the other criteria pollutants (sulfur dioxide, nitrogen dioxide, ozone, particulate matter (PM), 10 micron cutoff, and lead) for which a pre-construction permit must be obtained are required to comply with the NAAQS (DOE 2003).

4.4.11 Historical and Cultural Resources

Archaeological surveys of 100% of the area within the five DOE-owned TAs were conducted in the 1990s. In addition, portions of these technical areas had been surveyed for specific projects. There are no known archaeological sites within these five TAs (SNL/NM 2004).

Extensive archaeological surveys have been conducted of the remainder of KAFB since 1999. The types of archaeological sites identified on KAFB have remained consistent with those known by 1999. The number and density of sites have increased overall due to the comprehensive nature of the recent surveys.

A Traditional Cultural Property (TCP) is a place or object that is significantly associated with the cultural practices and beliefs that are rooted in a community's history and are important in maintaining the cultural identity of the community. Consultations with Tribes have been conducted and no specific TCPs were identified (KAFB 2006).

4.4.12 Solid and Hazardous Waste

SNL/NM is a large facility and has many existing activities that generate waste. The laboratory generates LLW, hazardous waste, and non-hazardous solid waste. Waste is processed at five waste management facilities within SNL/NM. In 2005, SNL/NM generated approximately 112,000 pounds of hazardous waste, 2.4 million pounds of solid waste, and more than 400,000 pounds of non-hazardous waste. Most of the waste generated is associated with environmental restoration activities, which NNSA expects to decrease as this project is completed. Approximately 1,055 cubic yards of LLW is generated each year at SNL/NM. This LLW is disposed of on-site at SNL/NM (DOE 2006).

4.5 Baseline Environmental Conditions at LLNL

This section describes the environmental setting and existing conditions associated with the current operations of Lawrence Livermore National Laboratory (LLNL).

4.5.1 Location and Physical Description

Established in 1952, LLNL is a multi-program laboratory consisting of two sites—the main Livermore site located in Livermore, California, and the rural Experimental Test site, Site 300 located approximately 12 miles east, near Tracy, California, in San Joaquin and Alameda Counties (see Figure 4-5). The main Livermore site occupies approximately 821 acres, while Site 300 occupies approximately 7,000 acres. For NNSA, LLNL conducts research and development of nuclear weapons; designs and tests advanced technology concepts; designs weapons; maintains a limited capability to fabricate plutonium components; and provides safety and reliability assessments of the stockpile. LLNL also maintains Category I/II quantities of special nuclear materials (SNM) associated with the weapons program and material no longer needed by the weapons program. Site 300 is not a candidate site for relocation of KCP activities, and the following description is limited to the main laboratory site near Livermore.

4.5.2 Land Use

Land uses at the 821-acre Livermore site include offices, laboratory buildings, support facilities such as cafeterias, storage areas, maintenance yards, and a fire station; roadways, parking areas, buffer zones, and landscaping. The laboratory also has internal utility and communication networks. A 500-foot-wide security buffer zone lies along the northern and western borders of the site. There are no prime farmlands on the laboratory site (DOE 2005).

The laboratory lies just east of Livermore. Adjoining the site to the south is Sandia National Laboratories/California (SNL/CA), operated by Lockheed-Martin under DOE contract. To the south of LLNL are mostly low-density residential and agricultural areas devoted to grazing, orchards, and vineyards. Farther south, property is primarily open

space and ranchettes with some agricultural use. Residential developments, including houses and apartments, abut the site immediately to the west. A small business park lies to the southwest.

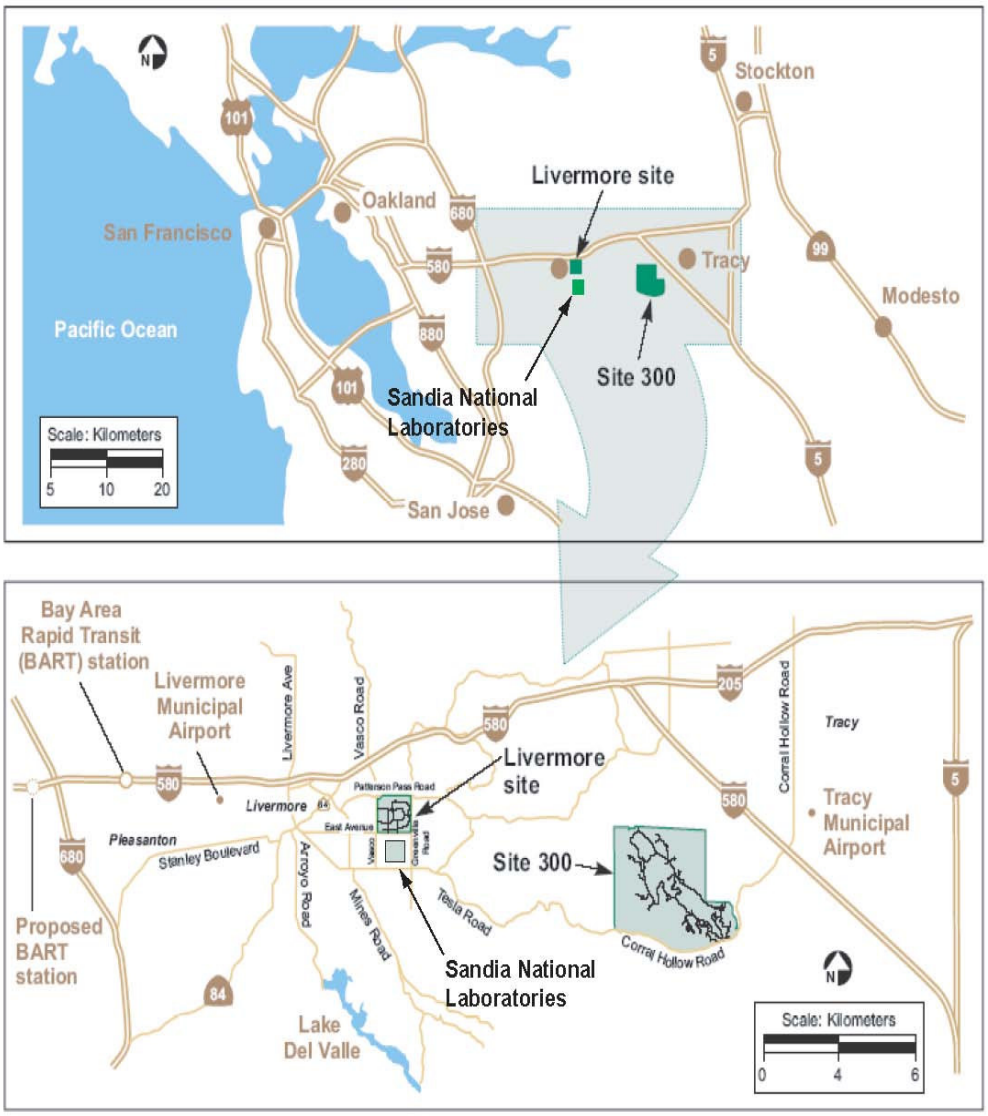


Figure 4-5 – Location of LLNL

A small amount of very low density residential development lies to the east of the laboratory, and agricultural land extends to the foothills that define the eastern margin of the Livermore Valley. An extensive business park is located to the north, and a 500 acre parcel of open space to the northeast has been rezoned to allow development of light industry. Land uses farther north include vacant land, industrial, and Interstate 580 (I-580). Land northeast of the site is agricultural and used primarily for grazing. Wind turbines are installed on the hills of the Altamont Pass, northeast of the site. The closest residences to the boundaries of the Livermore site are 0.25 mile to the east, 0.35 mile to the west, 1.2 mile to the north, and 0.5 mile to the south.

4.5.3 Socioeconomic Resources

Socioeconomic characteristics at LLNL include employment, regional economy, and population, housing, and community services. Socioeconomic characteristics for a ROI was identified based on the distribution of residences for current LLNL employees. The ROI is defined as those counties where approximately 90% of the workforce lives. For LLNL the ROI includes the counties of San Joaquin, Stanisaus, Alameda, and Contra Costa.

Demographics

According to 2000 census data, approximately 554,074 individuals residing within census tracts in the 50-mile radius of LLNL were identified as living below the federal poverty threshold, which represents approximately 9.8% of the census tract population in the 50-mile radius. This percentage is lower than the 2000 national average of 12.4% and the statewide figure of 14%. There were five census tracts located in Alameda and San Joaquin counties with populations greater than 50% identified as living below the federal poverty threshold. In 2000, 14.2% of individuals for whom poverty status is determined were below the poverty level in California and 12.4% in the U.S. (USCB 2007).

In 2000, persons self-designated as minority individuals in the potentially affected area constituted 50.1% of the total population. This minority population is composed largely of Asian residents. As a percentage of the total resident population in 2000, California had a minority population of 53.3% and the U.S. had a minority population of 30.9% (USCB 2007).

Income and Employment

LLNL employs approximately 8,220 workers, including DOE employees and multiple contractors. The civilian labor force of the ROI grew by approximately 2% from 1,736,690 in 2000 to 1,775,645 in 2005. The overall ROI employment experienced a growth rate of 1% with 1,657,064 in 2000 to 1,670,539 in 2005 (BLS 2007). The ROI unemployment rate was 5.9% in 2005 and 4.6% in 2000. In 2005, unemployment rates within the ROI ranged from a low of 4.9% in Contra Costa County to a high of 8.4% in Stanislaus County. The unemployment rate in California in 2005 was 5.4% (BLS 2007).

Stanislaus County is at the lower end of the ROI with a median household income in 2004 of $43,072 and a per capita income of $25,915. Contra Costa had the highest median household income in the ROI at $65,459 and a per capita income of $46,995 (BEA 2007).

Health and Safety

Current activities associated with routine operations at LLNL have the potential to affect worker and public health. The following discussion characterizes the human health impacts from current releases of radioactive and nonradioactive materials at LLNL.

Releases of radionuclides to the environment from LLNL operations provide a source of radiation exposure to individuals in the vicinity of LLNL. Within 50 miles of the main laboratory site, there are 7.1 million residents. The potential collective dose attributed to this population was 1.17 person-rem, the corresponding collective dose from Site 300 operations was 1.71 person-rem. These values are both within the normal range of variation seen from year to year. The total dose to the maximum exposed individual from Livermore operations in 2005 was 0.0065 millirem per year (LLNL 2007). The total radiation dose to all workers during 2005 was 10.0 person-rem. The maximum individual dose to a worker was less than 2 rem. This is within the regulatory standard for radiological workers, those given unescorted access to radiation areas, of 5 rem per year.

With respect to potential hazards, workers are protected from hazards specific to the workplace through appropriate training, protective equipment, monitoring, and management controls. LLNL workers are also protected by adherence to Occupational Safety and Health Administration (OSHA) and EPA occupational standards that limit atmospheric and drinking water concentrations of potentially hazardous chemicals. Appropriate monitoring, which reflects the frequency and amounts of chemicals used in the operation processes, ensures that these standards are not exceeded. Additionally, DOE requirements ensure that conditions in the workplace are as free as possible from recognized hazards that cause or are likely to cause illness or physical harm. Therefore, worker health conditions at LLNL are expected to be substantially better than required by standards.

Noise sources at LLNL are, for the most part, common to other local industrial/commercial settings, although on a somewhat larger scale. Because of the size of the site, perimeter buffer zone, and intervening roads, the site's contribution to offsite noise levels offsite is small. The contribution of mobile noise sources associated with heavy-duty trucks and employee vehicles is greater, due to the relatively large number of shipments of materials and waste to and from the site and the large employment base compared with other area businesses. High explosive tests are conducted regularly (daily and/or weekly) at the laboratory in the High Explosives Application Facility, Building 191. The maximum allowable sound pressure level of 126 decibels is not exceeded in populated areas (DOE 2005).

Transportation

LLNL is located approximately 36 miles east of Oakland, CA. Regional access to the Livermore site by motor vehicle is from I-580, which runs east and west approximately one mile north of the site. The Vasco Road/I-580 interchange provides access to the western site boundary, and the Greenville Road/I-580 interchange provides access to the eastern site boundary. The major street system in the vicinity of LLNL includes I-580, South Vasco Road, Greenville Road, East Avenue, and Patterson Pass Road. Most of these are primarily located in the city of Livermore, but with portions of all streets lying in unincorporated portions of Alameda County.

Approximately 35% of the laboratory's employees live within 12 miles of the site (DOE 2005). The remaining employees come to work from greater distances, mostly from the counties of Alameda, San Joaquin, Contra Costa, and Stanislaus. Many of these commuters travel in personal vehicles and arrive either on local roads or on I-580. Trucks carrying radioactive or hazardous material shipments almost exclusively arrive from or depart to the east on I-580 and I-5, except for local deliveries from the Bay Area.

4.5.4 Climate

The climate of the region is classic Mediterranean with hot dry summers and cold wet winters. Temperatures typically range from 25° F during the coldest winter mornings to 104° F during the warmest summer afternoons. The average annual temperature at the Livermore site is 54.5° F. The highest and lowest annual precipitations on record are 30.8 inches and 5.4 inches, respectively. Prevailing winds at the Livermore site are from the west and southwest (DOE 2005).

4.5.5 Geology

The site is underlain by late Tertiary and Quaternary rocks that lie on basement rocks of the Franciscan assemblage, which consist of severely deformed sandstone, shale, and chert. In the Livermore area, this unit is mainly sandstone. The Livermore Valley topographic and structural basin was formed in Pliocene time by movements along faults to the east and west. The basin is filled with 4,000 feet of Pliocene to Holocene alluvial gravels, sands, and lacustrine clays of the Livermore Formation. Late Quaternary alluvial deposits immediately underlie the Livermore site.

4.5.6 Soils

The soils in the Livermore Valley beneath the site are formed primarily upon sediments deposited by local streams. Most of the deposits in the eastern part of the valley are relatively young, and thus, the soils are only moderately developed. These soils, generally loam, have minimal horizon or development of layers and can be locally several meters thick. The soils are used for crop production when provided with sufficient water and nutrients or minerals. Four soils cover most of the site. In order of decreasing extent, they are Rincon loam, Zamora silty clay loam, San Ysidro loam, and Yollo gravelly loam. These soils are primarily Alfisols, or moderately developed soils, and grade into Mollisols, which are grassland soils. At the Livermore site, there is generally little potential for non-seismically induced landslides because the site is situated on gently sloping to nearly flat topography (DOE 2005).

4.5.7 Groundwater Hydrology

Groundwater at the Livermore site is contaminated from historical operations; the site and its groundwater are being cleaned up pursuant to Comprehensive Environmental Response, Compensation, and Liability Act. Within LLNL's boundaries, groundwater monitoring has detected VOCs in groundwater at various locations in concentrations above drinking water quality standards: trichloroethylene, perchloroethylene, 1,1-

dichloroethylene, chloroform, 1,2-dichloroethylene, 1,1-dichoroethane, 1,2-dichloroethane (1,2-DCA), trichlorotrifluoroethane (Freon 113), trichlorofluoromethane (Freon 11), and carbon tetrachloride (DOE 2005). Cleanup began in 1989. LLNL removes contaminants from groundwater beneath the laboratory through a system of 27 treatment facilities located throughout the six hydrostratigraphic units containing contaminants of concern. Since remediation began in 1989, approximately 1,960 million gallons of groundwater have been treated. Contaminated groundwater is pumped from individual wells and sent to a treatment facility (LLNL 2007).

Groundwater near the Livermore site is generally suitable for use as a domestic, municipal, agricultural, and industrial supply; however, use of some shallower groundwater may be limited by its marginal quality. Groundwater less than 300 feet deep is usually unsuitable for domestic use without treatment (LLNL 2007).

4.5.8 Surface Water Hydrology

Four major intermittent streams drain into the eastern Livermore Valley: Arroyo Mocho, Arroyo Seco, Arroyo Las Positas, and Altamont Creek. Arroyo Seco and Arroyo Las Positas pass through the Livermore site, while Altamont Creek and Arroyo Mocho flow offsite to the north and southwest, respectively. Arroyo Las Positas drains in the hills directly east and northeast of the site and usually flows only after storms. Arroyo Seco flows through the very southwest corner of the site. Arroyo Las Positas flows into Arroyo Seco west of the site. Both stream channels are dry for most of the year. Nearly all surface water runoff at the laboratory is discharged into Arroyo Las Positas; only surface water runoff along the southern boundary and some storm drains in the southwest corner of the Livermore site drain into Arroyo Seco. Although surface drainage and natural surface infiltration at the site are generally good, drainage decreases locally with increasing clay content in surface soils. Surface flow may occur intermittently from October to April, during the valley's wet season. Only intermittent streams flow into the eastern Livermore Valley from the surrounding uplands and low hills, where they merge on the valley floor (DOE 2005).

The Livermore site's primary water source is the San Francisco Hetch Hetchy Aqueduct system. This system obtains its water from a reservoir in the Hetch Hetchy Valley of Yosemite National Park. The secondary or emergency water source is the Alameda County Flood and Water Conservation District, Zone 7. This water is a mixture of groundwater and water from the South Bay Aqueduct of the state water project. In 2002, 1.2 million gallons per day were derived from the Hetch Hetchy Aqueduct and Zone 7 for use at the Livermore site. Water is primarily used for industrial cooling processes, sanitary systems, and irrigation at the Livermore site.

In 2005, LLNL discharged an average of 285,306 gallons per day of wastewater to the City of Livermore sewer system, 4% of the total flow into the city's system. This volume includes wastewater generated by SNL/CA and very small quantities (26,420 gallons in 2005) of Site 300 wastewater, which is discharged to the LLNL collection system and

combines with LLNL sewage before it is released at a single point to the municipal collection system.

Wetlands, although very limited in the developed areas of the Livermore site, do occur along Arroyo Las Positas at the northern perimeter of the site. These wetlands occur in three distinct areas and are associated with culverts that channel runoff from the surrounding area into this arroyo. In 1992, three areas totaling 0.36 acre were determined to qualify as jurisdictional wetlands. The wetlands were dominated by salt grass and a third by cattails. Since 1992, wetlands along Arroyo Las Positas have increased due to the release of water associated with environmental restoration activities at the Livermore site. In 1997, an additional wetland delineation study was performed along Arroyo Las Positas. That study determined that the size of jurisdictional wetlands had expanded to 1.96 acres. Approximately 1,800 feet of Arroyo Seco is on the Livermore site. In July 2001, a wetland delineation survey was performed. Within the arroyo, six vegetated areas were determined to be potential jurisdictional wetlands, totaling 0.04 acre (DOE 2005) which would expand jurisdictional wetlands to 2.0 since the 1997 survey.

Two areas on the Livermore site are within the 100-year floodplains of the Arroyo Las Positas and Arroyo Seco. However no existing onsite structures are within the 100-year floodplain. The channels routing Arroyo Las Positas and Arroyo Seco through the Livermore site would be able to contain a 100-year flood. No structures are located within the 100- or 500-year flood plains (DOE 2005).

4.5.9 Flora and Fauna

The Livermore site covers 821 acres of which approximately 640 acres are developed. Vegetation surveys at the site have been conducted as part of previous projects. The developed areas are planted with ornamental vegetation and lawns. There are also small areas of disturbed ground with early successional plant species. The undeveloped land in the security zone is an introduced grassland plant community dominated by non-native grasses such as wild oat, brome grasses, foxtail barley, curly dock, and wild radish. Wildlife includes species that live in the undeveloped grassland in addition to a number of species that live in the developed areas of the site or along the arroyo.

The California red-legged frog (a federally listed threatened species) occurs at the site. This species is the largest native frog in California, growing to more than five inches in length. The frog is found in the Arroyo Las Positas and in the Drainage Retention Basin at the Livermore site in addition to other locations throughout the site.

4.5.10 Air Quality & Permitting

Ambient air pollutant measurements are used in determining an area's status with respect to NAAQS or State Ambient Air Quality Standards (SAAQS) (i.e., as an attainment or nonattainment area). While attaining and maintaining compliance with NAAQS or SAAQS is a primary goal of all air pollution control agencies, the Bay Area has been designated as nonattainment areas with respect to both the federal ozone standard and the

more stringent state standard. The Bay Area air district is classified as nonattainment with respect to California standards for particulates, attainment for the federal PM10 annual standard, and unclassified for both PM2.5 and 24-hour PM10 standards. Particulates are recognized as a regional problem. The Bay Area has been a nonattainment area for carbon monoxide; however, in 1998, the Bay Area was re-designated as an attainment area for carbon monoxide, and further problems are not anticipated (DOE 2005).

Regionally, the most complex air quality problem has been ozone. Ozone is not regulated directly because it is formed in the atmosphere by photochemical reactions (i.e., in the presence of sunlight). Although the Bay Area's highest ozone levels can fluctuate from year to year depending on weather conditions, ambient ozone standards are exceeded most often in the Santa Clara, Livermore, and Diablo valleys. These same locations typically register the highest particulate levels as well, although in this case, the high levels are due to the dry conditions and limited mixing within the sheltered terrain.

With the goal of expeditiously attaining conformance with NAAQS, the *California Clean Air Act* requires air districts to reduce emissions of nonattainment pollutants or precursors by 5% per year, and requirements are adopted within each air district's clean air plan. As part of this process, the Bay Area Air Quality Management District (BAAQMD) has adopted "no net increase" provisions within their clean air plans. The "no net increase" programs require that, as a precondition to the issuance of an air permit for a significant new or modified emission source, any increases in emissions of nonattainment pollutants or precursors be offset by mandatory reductions in emissions of other sources onsite or potentially at other facilities. In the BAAQMD, the offset requirement is triggered for mid-size facilities (emissions of 15 tons per year or more of nonattainment pollutants), and a greater burden is placed on large facilities (emissions of 50 tons per year or more). The Livermore site falls into the mid-size facility category and must abide by the requirements of the BAAQMD for emission offsets.

Several PSD Class I areas have been designated in the vicinity of the Livermore site, including Point Reyes National Wilderness Area, approximately 55 mi to the northwest; and Desolation National Wilderness Area, Mokelumne National Wilderness Area, Emigrant National Wilderness Area, Hoover National Wilderness Area, and Yosemite National Park, approximately 100 to 120 mi, respectively, to the east and northeast. Since the promulgation of the PSD regulations (40 CFR 52.21) in 1977, no PSD permits have been required for any emission sources at the Livermore site.

The Livermore site currently emits approximately 332 pounds/day of regulated air pollutants as defined by the Clean Air Act, including nitrogen oxides, sulfur oxides, PM10, carbon monoxide, and reactive organic gases/precursor organic compounds (ROGs/POCs). The stationary emission sources that release the greatest amount of regulated pollutants at the site are natural gas fired boilers, internal combustion engines (such as diesel generators), solvent cleaning, and surface coating operations (such as painting) (DOE 2005).

LLNL air pollutant emissions are very low compared with daily releases of air pollutants from all sources in the entire Bay Area. For example, the total emissions of nitrogen oxides released in the Bay Area for 2005 were approximately 1.1×10^6 pounds/day, compared with the estimated release from the Livermore site of 151 pounds/day, which is 0.014% of total Bay Area source emissions for nitrogen oxides. The 2005 BAAQMD estimate for ROGs/POCs emissions was 7.9×10^5 pounds/day, while the estimated releases for 2005 from the Livermore site were 54.8 pounds/day, or 0.007% of the total Bay Area source emissions for ROGs/POCs (DOE 2005).

4.5.11 Historical and Cultural Resources

Field surveys and records searches conducted prior to and for the 2005 LLNL Environmental Impact Statement/Environmental Impact Report did not reveal the presence of prehistoric resources on the Livermore site. Previous work included archival reviews conducted at the Northwest Information Center at Sonoma State University; the Central California Information Center at California State, Stanislaus; a records search at Basin Research Associates in San Leandro, California; and review of the archaeological files at LLNL. In addition, field surveys conducted by Holman & Associates in the undeveloped western and northern perimeter areas, including a 500-foot-wide buffer, and an undeveloped area survey conducted in 1991 did not reveal the presence of prehistoric resources. Because most of the Livermore site is developed, the likelihood of finding unrecorded and undisturbed prehistoric sites is low; however, there is still the possibility that undisturbed prehistoric sites lay buried under the modern landscaping (DOE 2005).

The Livermore site has a number of buildings associated with historic events or significant LLNL achievements. These include buildings from the World War II-era Livermore Naval Air Station as well as buildings built after 1952 that are associated with the Cold War. An assessment of LLNL's buildings, structures, and objects for potential historic significance was undertaken in 2004 (Sullivan and Ullrich 2004). As a result of this assessment, DOE/NNSA, in consultation with the SHPO, determined that four individual buildings and objects within one other building at the Livermore site are eligible for listing in the NRHP because of their association with important research and development that was undertaken within the context of the Cold War. No traditional cultural resources have been identified on the Livermore site (LLNL 2007).

4.5.12 Solid and Hazardous Waste

LLNL is a large facility and has many existing activities that generate waste. The laboratory generates hazardous waste, non-hazardous waste, and LLW. The hazardous waste generated at LLNL is predominantly chemical laboratory trash generated by experiments, tests, other R&D activities, and infrastructure fabrication and maintenance. In 2006, LLNL generated approximately 150 tons of hazardous waste and 15,000 tons of non-hazardous solid waste in 2006. Approximately 14,000 tons of non-hazardous solid waste was diverted through reuse or recycling, which represents a diversion rate of 90%. Only 10% of non-hazardous waste was sent to offsite landfills. LLNL generated approximately 86 cubic yards of LLW. LLNL disposes of solid LLW offsite primarily at

the Nevada Test Site (LLNL 2007). LLNL also generates and disposes of other radiological waste such as transuranic (TRU) waste; however, because the non-nuclear activities analyzed in this EA would not generate any of these other waste types, they are not included in the description of the affected wastes.

4.6 Baseline Environmental Conditions at LANL

4.6.1 Location and Physical Description

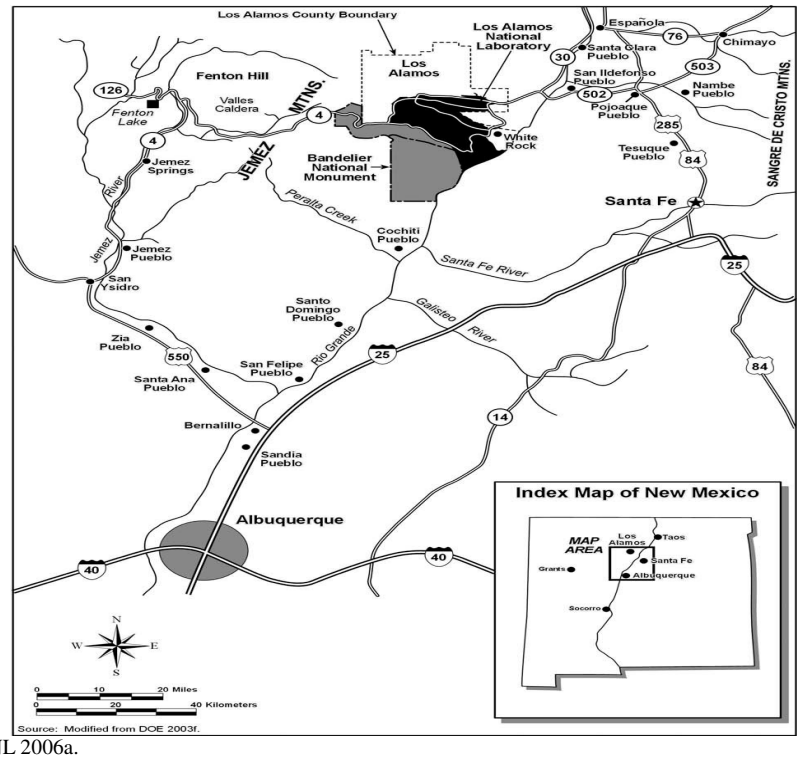
LANL was established as a nuclear weapons design laboratory in 1943. Its facilities are located on approximately 25,600 acres in north-central New Mexico. It is 60 miles north-northeast of Albuquerque, 25 miles northwest of Santa Fe, and 20 miles southwest of Española in Los Alamos and Santa Fe Counties. The location of the facility is shown in Figure 4.6-1.

LANL's principal missions are research and development of nuclear weapons; design and testing of advanced technology concepts; providing safety and reliability assessments of the stockpile; maintaining interim production capabilities for limited quantities of plutonium components (e.g., pits); and manufacturing nuclear weapon detonators for the stockpile. LANL maintains Category I/II quantities of SNM for the nuclear weapons program and materials no longer needed by that weapons program.

4.6.2 Land Use

LANL is divided into technical areas (TAs) that are used for buildings, experimental areas, support facilities, roads, and utility rights-of-way (see Figure 4-6). However, these uses account for only a small part of the total land area; much of the LANL land provides buffer areas for security and safety or is held in reserve for future use. LANL has approximately 2,000 structures with approximately 8.6 million square feet under roof, spread over an area of approximately 25,600 acres. Approximately 826 acres of land are available for development or redevelopment (LANL 2006a). There are no agricultural activities present at LANL, nor are there any prime farmlands in its vicinity. LANL is separated into the following internal land use categories: service and support, experimental science, high explosives research and development, high explosives testing, nuclear materials research and development, physical and technical support, public and corporate interface, reserve, theoretical and computational science, and waste management (LANL 2003a).

The land surrounding LANL is largely undeveloped, and large tracts of land north, west, and south of the LANL site are held by the Santa Fe National Forest, the U.S. Bureau of Land Management, the Bandelier National Monument, private land owners, the State of New Mexico, and the Los Alamos County. Pueblo de San Ildefonso borders the LANL to the east (LANL 2006a). The closest town to LANL (other than Los Alamos itself) is White Rock, which is approximately one mile away. Residents of San Ildefonso are approximately 2.75 miles northeast of LANL.



Source: LANL 2006a.

Figure 4-6 — Location of LANL

The lands of the Pueblo of San Ildefonso are located immediately east of LANL. The Pueblo owns or has use of 30,241 acres of land, including approximately 2,106 acres recently transferred from DOE. Land use at the Pueblo is a mixture of residential use, gardening and farming, cattle grazing, hunting, fishing, food and medicinal plant gathering, and firewood production, along with general cultural and resource preservation (LANL 2006a).

4.6.3 Socioeconomic Resources

LANL is located in Los Alamos County, New Mexico. Statistics for employment and regional economy, population, housing, and community services are presented for the ROI, a tri-county region consisting of Los Alamos, Rio Arriba, and Santa Fe Counties.

Demographics

Between 1990 and 2000, the ROI population increased 25% from 151,408 in 1990 to 188,825 in 2000. From 2000 to 2005, the population of the ROI increased 6% to 200,292 in 2005. Santa Fe County experienced the largest population growth within the ROI between 2000 and 2005 with an increase of 10%. Los Alamos County had a 3.7% increase from 18,343 in 2000 to 18,858 in 2005 (USCB 2007a).

In 2000, persons self-designated as minority individuals in the potentially affected area constituted 54.4% of the total population. This minority population is composed largely of Hispanic and Latino residents. As a percentage of the total resident population in

2000, New Mexico had a minority population of 55% and the U.S. had a minority population of 30.9% (USCB 2007). Census tracts with minority populations exceeding 50% were considered minority census tracts.

Census tracts were considered low-income census tracts if the percentage of the populations living below the poverty threshold exceeded 50%. According to 2000 census data, there were no census tracts within the 50-mile radius of LANL where more than 50% of the census tract population was identified as living below the federal poverty threshold. In 2000, 18.4% of individuals for whom poverty status is determined were below the poverty level in New Mexico and 12.4% in the U.S. (USCB 2007).

Employment and Income

In 2005, a total of 13,504 persons were employed by LANL contractors of which approximately 12,650 resided in New Mexico (LANL 2006a). The civilian labor force of the ROI grew by approximately 9% from 132,244 in 2000 to 143,856 in 2005. The overall ROI employment experienced a growth rate of 8.6% with 126,066 in 2000 to 136,612 in 2005 (BLS 2007).

The ROI unemployment rate was 4.4% in 2005 and 4.0% in 2000. In 2005, unemployment rates within the ROI ranged from a low of 2.8% in Los Alamos County to a high of 5.9% in Rio Arriba County. The unemployment rate in New Mexico in 2005 was 5.3% (BLS 2007).

There are major differences in the income levels among the counties making up the ROI, especially between Rio Arriba County at the low end with a median household income in 2004 of $32,935 and a per capita income of $22,194 and Los Alamos County at the upper end with a median household income of $94,640 and a per capita income of $52,524 (BEA 2007).

Health and Safety

Current activities associated with routine operations at LANL have the potential to affect worker and public health. The 2005 collective population dose attributable to LANL operations to persons living within 50 miles of the site was 2.46 person-rem, which is significantly higher than the dose of 0.90 person-rem reported for 2004 (LANL 2006b). Until 2005, population doses for the past 12 years had declined from a high of about 4 person-rem in 1994 to less than 1 person-rem in 2004. The collective population dose is expected to decrease in 2006 to the 2004 level. The collective Total Effective Dose Equivalent for the LANL workforce during 2005 was 156 person-rem (LANL 2006b).

Tritium concentrations near the LANL perimeter are measurably higher than regional concentrations, but the resulting doses from food stuffs grown there are far below 0.1 millirem per year. The concentrations of other radionuclides are either consistent with global fallout or below levels that would result in a dose of 0.1 millirem per year per pound consumed.

Arsenic was identified as having a hazard index near one in groundwater that supplies Los Alamos County and San Ildefonso Pueblo. While the risk associated with arsenic ingestion was greater than one in one million per year, the arsenic was not associated with discharges at LANL. Arsenic is endemically present in the geology, soils, groundwater, and surface waters in the region in which New Mexico is located (LANL 2006a).

Noise, air blasts, and ground vibrations are intermittent aspects of the LANL environment. Existing LANL-related publicly detectable noise levels are generated by a variety of sources, including onsite transport via truck and automobile, high explosive tests, and firearms practice activities. Noise levels within Los Alamos County unrelated to LANL are generated predominantly by traffic and to a much lesser degree by residential, commercial, and industrial-related activities within the nearby areas. Los Alamos County has promulgated a local noise ordinance that establishes noise level limits for residential land uses. Noise levels that affect residential receptors are limited to a maximum of 65 dBA in the daytime and 53 dBA at night (i.e. between 9 p.m. and 7 a.m.). Background noise levels were found to range from 31 dBA to 35 dBA at the vicinity of the entrance to Bandelier National Monument and New Mexico State Route 4 (LANL 2006a).

Transportation

Motor vehicles provide the predominant mode of transportation utilized at LANL. Only two major roads, NM 502 and NM 4, access Los Alamos County. Traffic volume on the Los Alamos County segments of these roads is primarily associated with LANL activities. Most commuter traffic originates from Los Alamos County or east of the county. Less than 5% of commuters travel to LANL from the west along NM 4. Most commuter traffic originates from Los Alamos County or east of Los Alamos County (Rio Grande Valley and Santa Fe) as a result of the large number of LANL employees that live in these areas. The passenger rate assumed is three passengers per vehicle, mainly due to park and ride services offered at many communities between Albuquerque and Los Alamos.

4.6.4 Climate

Los Alamos has a semiarid, temperate mountain climate. This climate is characterized by seasonable, variable rainfall with precipitation ranging from 10 to 20 inches per year. Normal (30-year mean) precipitation for the communities of Los Alamos and White Rock and the extremes of precipitation are unchanged for the expanded period 1971 through 2000 (LANL 2006a).

Normal (30-year mean) minimum and maximum temperatures for the community of Los Alamos range from a mean low of 17.4° F in January to a mean high of 80.6° F in July. Los Alamos town site temperatures have dropped as low as -18° F and have reached as high as 95° F. The normal annual precipitation for Los Alamos is approximately 19

inches. The lowest recorded annual precipitation in Los Alamos town site was seven inches and the highest was 39 inches (DOE 2002a).

4.6.5 Geology

LANL is located on the Pajarito Plateau within the Southern Rocky Mountains Physiographic Province. The Pajarito Plateau lies between the Sierra de Los Valles and the Jemez Mountains to the west and the Rio Grande to the east. It is formed of volcanic tuffs (welded volcanic ash) deposited by past volcanic eruptions from the Jemez Mountains to the west. The geology of the region is the result of complex faulting, sedimentation, volcanism, and erosion over the past 20 to 25 million years (LANL 2006a).

A comprehensive update to the LANL seismic hazards analysis was completed in 2007 (LANL 2007); the analysis presents estimated ground-shaking hazards and the ground motions that may result. The dominant contributor to seismic risk at LANL is the Pajarito Fault System. Five small earthquakes (magnitudes of two or less on the Richter scale) have been recorded in the Pajarito Fault since 1991. These small events, which produced effects felt at the surface, are thought to be associated with ongoing tectonic activity within the Pajarito Fault zone (LANL 2006a).

4.6.6 Soils

Most of the LANL facilities are located on mesa tops, where the soils are generally well-drained and thin (0 to 40 inches). In May 2000, the Cerro Grande Fire burned approximately 43,000 acres, including about 7,700 acres on LANL (Balice, Bennett, and Wright 2004). The fire severely burned much of the mountainside that drains onto LANL (Gallaher and Koch 2004). The effects of the fire included increased soil erosion due to loss of vegetative cover, formation of hydrophobic soils, and soil disturbance during construction of fire breaks, access roads, and staging areas (DOE 2000). The increased potential for flooding and erosion led to construction of mitigation structures to retain floodwaters and reinforce road crossings (DOE 2002b).

Combined with loss of vegetation, hydrophobic soil formation enhances the potential for increased runoff, soil erosion, down slope flooding, and degradation of water quality (Gallaher and Koch 2004). Approximately 9,310 acres of hydrophobic soils were formed in the Jemez Mountains from the Cerro Grande Fire (DOE 2000).

Typical subsurface stratigraphy at LANL consists of welded and poorly welded volcanic tuffs that constitute the Tshirege Member of the Bandelier Tuff Formation. Site-specific investigations in Pajarito Canyon have found the tuff to be highly weathered and unwelded, with the upper 10 to 15 feet of the material classified as clayey sand or sandy clay. However, surrounding cliff faces consist of welded tuff exhibiting vertical jointing. The canyon tuff is overlain by up to 15 feet of sandy and silty alluvium. Soils derived from these deposits are typically sandy loams (DOE 2002b).

4.6.7 Groundwater Hydrology

The regional aquifer of the Los Alamos area occurs at a depth of approximately 1,200 feet along the western edge of the plateau and about 600 feet along the eastern edge. The regional aquifer lies about 1,000 feet beneath the mesa tops in the central part of the plateau. Water in the aquifer flows generally east or southeast toward the Rio Grande and groundwater model studies indicate that underflow of groundwater from the Sierra de los Valles in the Jemez Mountains is the main source of recharge for the regional aquifer (Nylander et al. 2003).

Deep below the ground surface, there is an area of saturation that forms the regional groundwater aquifer. The regional aquifer is the only aquifer in the area capable of serving as a municipal water supply; the regional aquifer supplies various customers including LANL, Los Alamos County, and others located in parts of Santa Fe and Rio Arriba Counties (LANL 2005b).

The discharge of radioactive effluents has caused alluvial groundwater contamination in DP Canyon, Los Alamos Canyon, and Mortandad Canyon. None of the radionuclide levels exceeded the 100-millirem-per-year DOE Derived Concentration Guide for public dose (LANL 2004b, LANL 2005b).

4.6.8 Surface Water Hydrology

Watersheds that drain LANL are dry for most of the year. No perennial surface water extends completely across LANL land in any canyon. The canyons consist of over 85 miles of watercourses located within LANL and immediately upstream of LANL within Los Alamos Canyon. Of the 85 miles of watercourse, approximately two miles are naturally perennial, and approximately three miles are perennial waters created by effluent (LANL 2006a).

The remaining 80 or more miles of watercourse are dry for varying lengths of time. The area's surface water flows primarily in intermittent streams in response to local precipitation or snowmelt. Intermittent streams may flow for several weeks to a year or longer (LANL 2006a).

Some of the surface water at LANL comes from groundwater discharging as springs into canyons. Surface water at LANL is not a source of municipal, industrial, irrigation, or recreational water, though it is used by wildlife. Although there is minimal direct use of surface water within LANL boundaries, flows may extend beyond site boundaries where there is more potential for use. Surface waters that flow off LANL may reach the Rio Grande, where contaminants could flow downstream (LANL 2006a, LANL 2006b).

Surface water quality has been affected by LANL operations, with the greatest effects caused by past discharges into Acid, Pueblo, Los Alamos, and Mortandad Canyons. The following are potential sources of contamination to local surface water resources (LANL 2006):

- Industrial effluents discharged through National Pollutant Discharge Elimination System (NPDES) permitted outfalls. This source is referred to as "NPDES-permitted outfalls" and includes point-source discharges from LANL wastewater treatment plants and cooling towers;
- Stormwater runoff, including stormwater runoff from certain industrial activities, construction activities, and solid waste management units ;
- Dredge and fill activities or other work within perennial, intermittent, or ephemeral water courses ; and
- Sediment transport.

Recent data from stormwater runoff monitoring detected some contaminants onsite and offsite, but the exposure potential for these contaminants is limited. Radionuclides have been detected in runoff at higher than background levels in Pueblo, DP, Los Alamos, and Mortandad Canyons, with sporadic detections extending offsite in Pueblo and Los Alamos Canyons. Dissolved copper, lead and zinc have been detected in many canyons above the New Mexico acute aquatic life stream standards, and these metals were detected offsite in Los Alamos Canyon. Some of these contaminants detected were upstream of LANL facilities, which indicate that non-LANL urban runoff was one source of the contamination. Mercury was detected slightly above wildlife habitat stream standards in Los Alamos and Sandia Canyons (LANL 2005b).

LANL has an NPDES permit covering its operations. LANL's current NPDES point-source permit was issued on June 2007 and became effective on August 1, 2007, and includes one sanitary outfall and 16 industrial outfalls (LANL 2006a, EPA 2007).

Approximately 34 acres of wetlands were identified within LANL boundaries during a survey in 2005 with 45% of these located in Pajarito Canyon. Wetlands in the LANL region are primarily associated with canyon stream channels or are present on mesas, often in association with springs, seeps, or effluent outfalls. Wetlands in the general LANL region provide habitat for reptiles, amphibians, and invertebrates, and potentially contribute to the overall habitat requirements of a number of species, including sensitive species (LANL 2004a, LANL 2006a).

Floodplains are areas adjacent to watercourses that can become inundated with surface waters during high flows from runoff due to precipitation or snowmelt. At LANL, the floodplains are generally located in the canyons that lie between the mesa fingers (DOE 2002b).

4.6.9 Flora and Fauna

Five vegetation zones have been identified within LANL. The five zones include: Juniper Savannas; Juniper Woodlands; Grasslands; Ponderosa Pine Forests; and Mixed Conifer Forests. This diversity in vegetative communities has resulted in the presence of over 900 species of vascular plants. There is a comparable diversity in regional wildlife with 57 species of mammals, 200 species of birds, 28 species of reptiles, nine species of

amphibians, and over 1,200 species of arthropods having been identified (LANL 2006a, LANL 2004a).

Approximately 2,106 acres of land have been conveyed to Los Alamos County or transferred to the Department of the Interior to be held in trust for the Pueblo of San Ildefonso (LANL 2004a). This resulted in a reduction in the size of LANL to its present size of 25,600 acres. Much of the transferred land is in a natural state and falls within the Piñon-Juniper Woodland and Ponderosa Pine Forest Vegetation Zones.

The Rio Grande is a designated Wild and Scenic Rivers. Twelve species of fish (found in the Rio Grande, Cochiti Lake, and the Rito de los Frijoles) have been identified in the LANL region (LANL 2006a, LANL 2004a). No fish species have been found within LANL boundaries (LANL 2006a, LANL 2004a).

Federally-listed wildlife includes two endangered species, two threatened species, one candidate, and eight species of concern. New Mexico protected and sensitive plants and animals include three endangered species, seven threatened species, two species of concern, and 14 sensitive species. Additionally, 18 species of birds are listed as birds of conservation concern.

4.6.10 Air Quality & Permitting

Only a limited amount of ambient air monitoring has been performed for non-radiological air pollutants within the LANL region. New Mexico Environment Department (NMED) operated a DOE-owned ambient air quality monitoring station adjacent to Bandelier National Monument between 1990 and 1994 to record sulfur dioxide, nitrogen dioxide, ozone, and PM10 levels. DOE and NMED discontinued operation of this station in fiscal year 1995 because recorded values were well below applicable standards.

Criteria pollutants released from LANL operations are emitted primarily from combustion sources such as boilers and emergency generators. Approximately two-thirds of the most significant criteria pollutants, nitrogen oxides, result from the TA-3 steam plant. In late 2000, NNSA received a permit from the NMED to install flue gas recirculation equipment on the steam plant boilers to reduce emissions of nitrogen oxide. This equipment became operational in 2002, and initial source tests indicated a reduction in emissions, of approximately 64%. The water pump, which was a large source of nitrogen oxide emissions, was transferred to Los Alamos County in November 2001 (LANL 2003a, 2004c).

Under the Title V air operating permit program, LANL is a major source, based on the potential to emit, for NOx, CO, and VOCs. In 2005, the TA-3 steam plant and boilers located across the LANL were the major contributors of NOx, CO, and PM. R&D activities were responsible for most of the VOC and hazardous air pollutants emissions.

The LANL radiological air-sampling network, referred to as AIRNET, measures the environmental levels of airborne radionuclides, such as plutonium, americium, uranium,

tritium, and activation products that could be released from LANL operations. Most regional airborne radioactivity comes from the following sources: (1) natural radioactive constituents in particulate matter (such as uranium and thorium), (2) terrestrial radon diffusion out of the Earth and its subsequent decay products, (3) material formation from interaction with cosmic radiation, and (4) fallout from past atmospheric nuclear weapons tests conducted by several countries.

In 2005, 28 stacks were continuously monitored for the emission of radioactive material to the ambient air. A total of 19,100 curies of stack emissions were measured for year 2005. This included 704 curies of tritium emissions and 18,400 curies of activation products from the Los Alamos Neutron Science Center (LANSCE). Airborne emissions of plutonium, uranium, americium, and thorium were less than 0.00002 curies. Overall, radiological air emissions at LANL tend to be dominated by emissions from LANSCE stacks and tritium (LANL 2006a).

4.6.11 Historical and Cultural Resources

As of 2005, cultural and paleontological surveys have been conducted on approximately 90% of the land within LANL boundaries with 86% having been intensively surveyed. The majority of these surveys emphasized American Indian cultural resources. Information on these resources was obtained from the LANL cultural resources database, which is organized primarily by site type. Although about 400 cultural and paleontological resource sites have been determined to be National Registry of Historic Places eligible, most of the remaining sites have yet to be formally assessed and are therefore assumed to be eligible until assessed (LANL 2005a).

Two potential National Historic Landmarks and one potential National Register Historic District have been proposed at LANL. Within LANL's boundaries there are ancestral villages, shrines, petroglyphs (carvings or line drawings on rocks), sacred springs, trails, and traditional use areas that could be identified by Pueblo and Hispanic communities as traditional cultural properties. Under DOE directives, American Indian tribes may request permission for visits to sacred sites within LANL boundaries for ceremonies (LANL 2006a).

4.6.12 Solid and Hazardous Waste

LANL is a large facility and has many existing activities that generate waste. The laboratory generates hazardous waste, non-hazardous waste, and LLW. The hazardous waste generated at LANL is predominantly chemical laboratory trash generated by experiments, tests, other R&D activities, and infrastructure fabrication and maintenance. In 2005, LANL generated approximately 4 million pounds of hazardous waste and 6,400 tons of non-hazardous solid waste. Through an aggressive waste minimization and recycling program, the amount of solid waste at LANL requiring disposal has been greatly reduced compared to previous years. Previously, solid waste and construction waste generated at LANL was disposed at the Los Alamos County Landfill, located within LANL boundaries, but operated by Los Alamos County. The County operates a

new transfer station, which would transport that waste to other commercially available solid waste landfills within the state. LANL generated approximately 7,000 cubic yards of LLW in 2005. Most LLW generated at LANL is disposed of onsite at TA-54, Area G (LANL 2006a). LANL also generates and disposes of other radiological waste such as transuranic (TRU) waste; however, because the non-nuclear activities analyzed in this EA would not generate any of these other waste types, they are not included in the description of the affected wastes.

5.0 ENVIRONMENTAL CONSEQUENCES

This section addresses the potential environmental impacts of the alternatives. The specific environmental impacts are presented in more detail for each alternative in the following sections. The impacts of component production and procurement operations on the human environment are not likely to be significantly different for each alternative considered, including the No Action Alternative. Production requirements would not vary among alternatives and the impacts associated with the operations would apply equally to each of the eight alternatives. Similarly, with the exception of the No Action Alternative, impacts associated with the facility infrastructure, such as reduced boiler emissions from heating a smaller facility, would be anticipated to be comparable for the action alternatives. As described in Section 5.1 the No Action Alternative would not result in a smaller facility and emissions from heating the facility would not be reduced.

5.1 Environmental Consequences of No Action Alternative (Alternative 1)

Under the No Action Alternative, activities at KCP, SNL/NM, LLNL, and LANL would continue as required to support current missions. There would be no additional impacts at these sites to land use or geologic or soil resources beyond activities that are independent of the proposed action. There would be no additional impacts to terrestrial resources, wetlands, aquatic resources, and threatened and endangered species beyond activities that are independent of this proposed action. Similarly, there would be no additional impacts to cultural or archaeological resources beyond activities that are independent of this proposal.

Unlike other resource areas, it is anticipated that due to pollution prevention programs and a conscientious program of waste reduction, waste volumes will continue to decline. The KCP has a major program for the recycling of batteries, paper, wood, computers, metals, plastic, oils and solvents, and industrial wastewater treatment sludge.

Under this alternative, air emissions would continue at current levels with the exception of those emissions resulting from plating operations. The KCP has begun an effort to outsource all of its chrome plating operations and the majority of the other plating processes by the end of calendar year (CY) 2008. Although some plating operations will continue, the emissions from the outsourced operations, consisting primarily of VOCs with minor amounts of metals (e.g., nickel, chrome and cadmium) will be eliminated

from KCP's emissions profile under all alternatives including the No Action Alternative. This will represent a reduction of less than 0.1 tons of VOCs and metals.

A workforce reduction of approximately 120 employees (fiscal year (FY) 2007 baseline) engaged in activities supporting the stockpile stewardship mission would be expected under this alternative as a result of the implementation of business process improvements that NNSA has already decided to pursue. However, a projected increase in work for others business is expected to entirely offset this reduction.

There would be no additional impacts to health and safety beyond current and planned activities that are independent of this action. Continued operations at KCP could impact worker and public health due primarily to non-routine chemical exposures.

5.2 Environmental Consequences of the Bannister Federal Complex Alternatives (Alternatives 2, 3, & 4)

5.2.1 Land Use, Geology, and Soils

Depending on the alternative analyzed, up to 50 acres would be required during construction activities for the three options at the Bannister Federal Complex. The land required for construction of a new facility would require the most land of the alternatives. Aggregate and other geologic resources (e.g., sand) would be needed for construction activities. The potential exists for contaminated soils to be encountered during excavation and other activities, although most contaminated sites are less than one acre in size. Prior to commencing ground disturbance, the federal agencies would survey potentially affected areas to determine the extent and nature of any contaminated media and required remediation. Construction of new facilities would require a stormwater permit that would include erosion control measures to minimize the impacts of erosion. There would be no change in land use beyond the Bannister Federal Complex, and no impacts to KCP land use plans are expected.

Approximately 45 acres of land would be needed to relocate NNSA operations to new or renovated facilities. Operation activities would be consistent with current land use at the KCP. Alternatives 2, 3, and 4 include the demolition of existing buildings which may disturb areas of soil contaminated by volatile organic compounds (e.g., trichloroethylene), polychlorinated biphenyls (PCBs) and petroleum hydrocarbons (TPH). Three solid waste management units (SWMUs) addressed by DOE as a part of environmental restoration activities performed under the Resource Conservation and Recovery Act (RCRA) are located within areas where ground would be disturbed during the demolition and reconstruction activities proposed under Alternatives 2, 3 and 4. In addition, Building 50, currently being investigated by the GSA for contaminant releases, is also located in an area that would be disturbed under Alternatives 2, 3 and 4.

Limited environmental consequences for Alternatives 2, 3 and 4 are anticipated as contaminated soils are likely to be encountered during redevelopment activities. Formal institutional controls, approved by MDNR, are in place to manage impacted soils that

may be encountered during excavation activities at NNSA controlled areas (SWMUs 16 and 40). Similar controls are expected to be implemented upon final completion of GSA-led environmental investigatory activities at Building 50.

5.2.2 Groundwater Hydrology

Alternatives 2, 3, and 4 include the demolition and renovation and reuse of existing buildings. Construction activities for these alternatives could disturb known or suspected areas of groundwater contaminated with VOCs at SWMUs 16 and 40 as well as Building 50. SWMUs 16 and 40 are located within the footprint of the proposed construction areas. The depth to groundwater at SWMUs 16 and 40 ranges from approximately 8 to 15 feet below ground surface (bgs) but may be shallower during times of high precipitation. Residual groundwater contamination is present at these SWMU locations. Therefore, if an excavation extends to groundwater (approximately 8 to 15 feet bgs), the atmosphere and on-site workers may become exposed to residual groundwater contamination and appropriate protective measures would need to be implemented.

Excavations encountering impacted groundwater in areas of SWMUs 16 and 40 are addressed through institutional controls implemented as a part of the NNSA's Hazardous Waste Management Facility Part I Permit. To ensure that excavations that may contact contaminated groundwater at these SWMUs are performed safely, MDNR requires the submission of a notification or a work plan (depending on the specific SWMU or area of contamination) before work may occur. The document describes the work to be performed, the size of the excavation, the nature and level of contamination in the excavation area based on actual sampling, how long the excavation would remain open and how the excavated material would be managed. Information regarding contaminants present in the groundwater also is conveyed to those persons performing the work so that they are aware of potential hazards posed by the contaminants and appropriate personal protective equipment may be worn.

Environmental releases from Building 50 are being addressed by GSA pursuant to a Memorandum of Agreement signed by GSA, DOE and the U.S. Army Corps of Engineers. A number of voluntary environmental investigations have been conducted at Building 50 over the past 10 years. Groundwater contamination comprised consisting of volatile organic compounds is present at the site. Upon completion of all investigations at Building 50, it is anticipated that MDNR would need to approve the adequacy of work performed. It is expected that institutional controls similar to those already in place for NNSA controlled areas would be implemented for groundwater contamination documented at Building 50.

In summary, limited environmental consequences for Alternatives 2, 3 and 4 are anticipated as impacted groundwater may be encountered during site redevelopment activities. Formal institutional controls are in place to manage impacted groundwater that may be encountered during excavation activities at NNSA controlled sites (SWMUs 16 and 40). Similar controls are expected to be implemented upon completion of GSA led environmental investigatory activities at Building 50.

5.2.3 Surface Water Hydrology

The Bannister Federal Complex is located in the alluvial flood plain of the Blue River and Indian Creek. The Blue River and Indian Creek are subject to frequent flooding due to intense urban development, especially in the lower basin of the river. This has caused even moderate flood flows to become a serious problem. The Blue River and Indian Creek leave their banks several times a year; however, the water generally flows onto undeveloped land, including currently vacant portions of Bannister Federal Complex (i.e., primarily the northeast portion of the property along the Blue River). A flood-protection system completed in 1994 is designed to prevent 500-year floods from reaching any of the structures on the Bannister Federal Complex.

Site construction activities would require Missouri State Operating Permit, Land Disturbance General Permit # MO-R10A000. This permit requires development of a Stormwater Pollution Prevention Plan (SWPPP) to control runoff and erosion associated with site construction activities. Construction of a new facility would not increase surface water runoff at the site.

Once operational, fire protection system test flows would generate approximately 1000 gallons/day and HVAC condensate and infiltration would generate approximately 14,400 to 43,200 gallons/day of surface water runoff. In addition, the impermeable surfaces of the proposed buildings and parking lots would contribute to storm water runoff. The proposed facility would have a site-specific stormwater operating permit.

The existing KCP uses approximately 414,000 gallons of potable water per day from Kansas City's water system. Of this volume, approximately 30% is used for domestic purposes and miscellaneous processes, 6% is used to operate the boilers, 46% is used in the cooling towers, 13% in unregulated processes (e.g., steam condensate and sprinkler drains), and 5% in regulated industrial processes (e.g., laboratory drains, plating rinse water, and other manufacturing process rinse water).

Most of the water that is not used in the cooling towers is ultimately discharged to the Blue River Wastewater Treatment Facility, a POTW. In addition, approximately 24,000 gallons of water from the on-site groundwater treatment facility is also discharged to the POTW on a daily basis. The total amount of wastewater by the existing KCP that is discharged to the POTW is approximately 236,000 gallons per day. However, for all the alternatives at this site (2, 3, and 4) the volume of wastewater generated by the plant is expected to decrease, primarily due to the outsourcing of some production processes and the consolidation of processes within the plant. Since wastewater would be discharged to the same POTW as is currently used, and since the volume of wastewater would be reduced for all three alternatives, the wastewater generated by Alternatives 2, 3, and 4 should not adversely affect the POTW or hinder the POTW's ability to meet its operating permit. Therefore, no environmental consequences to surface water hydrology are expected for Alternatives 2, 3, and 4.

5.2.4 Flora and Fauna

The majority of the Bannister Federal Complex is currently developed with buildings, roads, lawns and parking lots. There are several small vegetated areas around the site and a larger vegetated area on the northwest corner of the complex. There are no records of species or habitats of federal or state conservation concern within one mile of the site (MDC 2007a). No threatened or endangered species are known to occupy the site. Alternatives 2, 3, and 4 propose building or renovating on already improved areas of the complex. There should be minimal if any impact to existing flora and fauna, as the redevelopment would occur on already developed areas. During site clearing activities, highly mobile species such as mammals and birds would be able to relocate to adjacent areas. However, successful relocation may not occur due to competition for resources to support the increased population. Less mobile species (reptiles and some mammals) could be killed by construction activities. Acreage used for construction activities would be lost as potential hunting habitat for raptors and other predatory species. No significant adverse impacts to threatened or endangered species or other biological resources are expected.

5.2.5 Solid and Hazardous Waste

The renovation, demolition, and construction process for each of these alternatives would generate differing amounts of non-hazardous solid waste. Alternative 2, which includes the renovation of two exiting GSA buildings adjacent to the existing KCP facility and the construction of a small manufacturing facility, would be expected to generate the least amount at approximately 12,900 cubic yards. Alternative 3, which renovates an existing office building, demolishes a warehouse and constructs a new manufacturing facility, is expected to generate about 16,000 cubic feet of non-hazardous solid waste. Alternative 4, which demolishes an existing office building and warehouse and constructs a new office building and manufacturing facility would generate the most non-hazardous solid waste, 33,500 cubic yards.

Prior to any renovation or demolition, existing facilities would be inspected and tested for the presence of asbestos, lead-based paint or other hazardous wastes that are not allowed to be disposed of at municipal landfills. Should these materials be identified, a licensed hazardous materials removal contractor would be used to remove and dispose of these materials. Due to the subsurface contamination that may be encountered with construction operations in the vicinity of solid waste management units at the site, some of the construction and demolition debris may be classified and shipped off-site as hazardous waste. All demolition and construction waste would first be inspected for the presence of hazardous materials and then sorted and recyclable materials removed. The resulting materials would then be trucked to a municipal landfill in accordance with the requirements of MDNR and all other applicable requirements.

Waste shipments from the new facilities on the west end of the Bannister Federal Complex would replace the waste shipments from the existing KCP. There would be no change in the waste hauler transport routes. One outcome of the relocation would be a

slight reduction in hazardous waste shipments from an average of six to fewer than five per month. Non-hazardous shipments would also be reduced from an average of 25 per month to approximately 15 per month.

5.2.6 Air Quality and Permitting

The current annual air emissions from the KCP are 17.8 tons. The emissions are from the boilers, emergency generators and process heaters (13.8 tons of NOx, SOx, and CO), electronic solvent spray cleaning operations (3.5 tons of VOC), painting operations (0.4 tons of VOC), and chrome plating operations (0.1 tons of VOC, cadmium, nickel, and chromium).[9] Alternatives 2, 3, and 4 would result in reductions of the annual air emissions due to the reduction in size of the facility and improvements to processes. Additionally, Alternatives 2, 3, and 4 assume that the current boilers would continue operation. The estimated annual air emissions for these three alternatives are 14.4 tons total emissions, with 12.0 tons of NOx, SOx, and CO from the boilers and process heaters, 2.0 tons of VOCs from the electronic solvent spray cleaning, and 0.4 tons of VOCs from the painting operations. Under all alternatives (including the No Action Alternative), chrome plating would be outsourced to a commercial facility permitted for chrome plating and the associated air emissions would not be part of NNSA's manufacturing operations.

The overall reduction in air emissions and elimination or reduction in emissions of hazardous air pollutants (HAP) would result in less stringent air emissions permitting requirements. For example, the air emissions reductions may allow the new facility to be classified as an area source for HAPs instead of a major source (as defined by the National Emission Standards for Hazardous Air Pollutants (NESHAP)). Due to the expected reductions in emission from operation of a new facility and the engineering and administrative controls that would be in place, a significant impact on air quality is not expected for these alternatives.

During site demolition, preparation, and construction, the use of heavy equipment would generate combustion engine exhaust containing air pollutants associated with diesel combustion (NOx, CO, SOx, PM10 and volatile organic compounds). Similar air emissions would be generated from delivery vehicles bringing supplies and equipment to the construction site and from construction workers commuting in their personal vehicles. Emissions from site preparation and construction would be short-term, sporadic, and localized (except for emissions associated with the personal vehicles of construction workers and vehicles transporting construction materials and equipment). There would be a relatively limited amount of construction equipment and a small number of construction workers.

[9] These chromium emissions will cease at the KCP when chrome plating operations are outsourced to a commercial firm.

The quantities of air pollutants produced by vehicles and equipment associated with construction would not be a substantial contribution to the total emissions from mobile sources already operating in the area and would not be expected to adversely affect local air quality. The Kansas City metropolitan area contains a workforce of approximately 750,000 people. The quantities of air pollutants produced by vehicles and equipment associated with any new construction would be less than 1% of the existing vehicles and equipment in the area. As such, they would not be a substantial contribution to the total emissions from mobile sources already operating in the area and would not be expected to adversely affect local air quality.

In addition, construction activities could increase the potential for fugitive dust from earthwork and other construction vehicle movement. Not all of the area available for construction would be under construction at any one time. Control measures for lowering fugitive dust emissions (i.e. water or chemical dust suppressants) would prevent or significantly reduce offsite emissions.

Asbestos-containing materials may be encountered during site renovation or building demolition. The alternatives involving building renovation or demolition would include provisions for identification of asbestos-containing materials by properly trained and state certified asbestos inspector(s). Identified asbestos-containing materials would then be abated in accordance with applicable local, state and federal notification, work practice, and worker protection regulations prior to other renovation or demolition activities.

Due to the engineering and administrative controls in place during construction of a new facility and the temporary nature of the work, environmental consequences related to air quality for Alternatives 2, 3, and 4 are not considered significant.

5.2.7 Historical or Cultural Resources

The KCP may be eligible for listing on the National Register of Historic Places under Criteria A, Events, for Pratt & Whitney's engines used during World War II and for its role in the development of the U.S. nuclear program; and also under Criteria C, Architecture, for its facility design. The GSA would continue to consult with the Missouri SHPO as necessary to determine whether the Bannister Federal Complex is eligible for inclusion in the Register (Appendix A). If the facility is deemed eligible, SHPO would determine the level of recordation necessary.

5.2.8 Socioeconomic Environment

Environmental Justice

Executive Order No. 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations*, directs federal agencies to identify disproportionately high and adverse human health or environmental effects of their actions on minority or low-income populations. Based upon 2000 census data, 66,148 people live within a three mile radius of the Bannister Federal Complex. Within the three

mile radius, 32.8% of the population was self-designated as minority and 8.3% of people live below the poverty level. For comparison, 441,545 people live in Kansas City, with minorities constituting 39% of the population, and 14% of the population living below the poverty level (KC, MO 2007a).

Based on the analysis of impacts for resource areas, no significant adverse impacts from construction and operation activities at the Bannister Federal Complex would be expected; to the extent that any adverse impacts occur, the federal agencies expect the impacts to affect all populations in the area equally. There are no large adverse impacts to any population.

Income and Employment

The Bannister Federal Complex is located in Jackson County, Missouri. The KCP contributes substantially to the socioeconomics of the region by employing approximately 2,400 people. The Kansas City 6th Council District lists the KCP as one of the major employers in the district. Based upon postal codes of current employees, the majority (47.6%) of employees live in Jackson County or adjacent Johnson (23.6%), Cass (17.3), and Clay (3.4%) counties. The average age of the workforce is 49.6 and the average years of service are 20.9.

Construction activities at the KCP would require 1,800 worker-years of labor. During peak construction, up to 800 workers would be employed at the site. In addition to the direct jobs created by the construction/renovation and relocation of the facility, additional jobs would be created in other supporting industries. It is estimated that 692 indirect jobs would be created, for a total of 1,492 jobs. This represents less than 1% of the total ROI labor force. Based on the ROI average earnings of $41,264 for the construction industry, direct income would increase by $33 million annually. This would also result in an increase of additional indirect income in supporting industries. The total impact to the ROI income would be $56.2 million ($33 million direct and $23.2 million indirect).

Under Alternatives 2 and 3 a workforce reduction of approximately 230 employees (FY07 baseline) would be expected due to the implementation of business process improvements, relocation to a renovated facility, and the reduced facility footprint. A workforce reduction of approximately 280 employees (FY07 baseline) would be expected under Alternative 4 (a newly constructed facility at the Bannister Federal Complex) due to business process improvements, relocation to a new facility, and a further reduction of 135,000 square feet in the facility footprint to be maintained. These estimated reductions include a projected growth of 220 employees associated with increases in work for others.

Noise

Construction of new buildings would involve the movement of workers and construction equipment and would result in some temporary increase in noise levels near the area. Although noise levels would be highest during construction, these noise levels would not

be expected to extend far beyond the boundaries of the construction site. At 400 feet from the construction site, construction noises would range from approximately 55-85 dBA. Given the distance to the site boundary, there would be no change in noise impacts on the public as a result of construction activities, except for a small increase in traffic noise levels from construction employees and material shipments.

The location of facilities relative to the site boundary and sensitive receptors was examined to evaluate the potential for onsite and offsite noise impacts. Noise impacts from operations of new buildings would be expected to be similar to those from existing operations. There would be an increase in equipment noise (e.g., heating and cooling systems, generators, vents, motors, material-handling equipment). However, given the distance to the site boundary, noise from equipment would not likely disturb the public. These noise sources would be far enough away from offsite areas that their contribution to offsite noise levels would be small. Some noise sources (e.g., public address systems and testing of fire alarms) could have onsite impacts. Traffic noise associated with the operation of new facilities would occur onsite and along offsite local and regional transportation routes used to bring materials and workers to the site. Noise from traffic associated with the operation of new facilities would likely produce increases in traffic noise levels along roads used to access the site.

Workers could be exposed to noise levels higher than the acceptable limits specified by OSHA in its noise regulations (29 CFR 1926.52). However, DOE has implemented appropriate hearing protection programs to minimize noise impacts on workers. These include the use of administrative controls, engineering controls, and personal hearing protection equipment.

Health and Safety

Non-radiological impacts to workers were evaluated using occupational injury, illness, and fatality rates obtained from Bureau of Labor Statistics (BLS), U.S. Department of Labor data. DOE values are historically lower than BLS values owing to the increased focus on decreasing radiation exposures. The potential risk of occupational injuries and fatalities to workers constructing the new facility would be expected to be bounded by injury and fatality rates for general industrial construction.

No chemicals have been identified that would be a risk to members of the public from construction activities associated with the new facility. Construction workers would be protected from overexposure to hazardous chemicals by adherence to OSHA and EPA occupational standards that limit concentrations of potentially hazardous chemicals. Implementation of worker protection programs to construction activities would also decrease the potential for worker exposures by providing hazards identification and control measures for construction activities.

For each of these alternatives, the chemical-related health impacts to workers at a new facility would not change compared to the No Action Alternative. Because operations in

renovated facilities at the Bannister Federal Complex would not change the distance to the site boundary, impacts to the public would also not change.

Transportation

For Alternatives 2, 3, and 4, renovation and construction would take place at KCP in order to update the existing sixty-five year-old facilities and allow for increased efficiency of operations. Each of these alternatives would add an additional 800 construction workers, and about 600 additional vehicles to existing highways and parking lots during the peak of the three year renovation/construction period. In addition, a substantial amount of deliveries of construction material, concrete, equipment, and office furniture would also add to the existing traffic patterns.

Alternatives 2 and 3 both entail renovation and construction which would be expected to generate an estimated 12,912 and 15,872 cubic yards of construction and demolition debris, respectively. This waste would be trucked off-site and would entail from 1,100 to 1,300 truckloads, for Alternative 2 and from 1,300 to 1,600 truckloads for Alternative 3. Alternative 4 would generate an estimated 33,550 cubic yards of solid hazardous waste. This would require from 2,800 to 3,350 truckloads. These trips could be substantially reduced if tractor trailers were used to haul the waste. The majority of this waste hauling would occur over an eight to ten month period. Following the construction activities, traffic would be expected to return to normal volumes.

In summary, no significant socioeconomic impacts are expected to result from Alternatives 2, 3, and 4. Renovation or construction of facilities at the Bannister Federal Complex would not adversely affect or target low income or minority populations. The proposed reductions in workforce would mainly be achieved through employee attrition.

5.2.9 Hazard Analysis

Hazard assessments, which evaluate a range of potential accidents and the nature of them, have been completed and are reviewed annually for the existing plant. The KCP is considered a low-hazard industrial facility and operations at the plant involve hazards of the type and magnitude routinely encountered in industry and generally accepted by the public. Emergency plans are in place to respond to emergencies such as accidents, security incidents, events or natural phenomena. Extensive security measures are in place to protect the public, workers and facilities. Cooperating arrangements exist with the local police, fire and FBI for emergency response. The likelihood of detrimental exposure because of an operational accident, intentional destructive act or natural phenomena is extremely unlikely because of mitigating factors used in normal operations combined with the benefits of site engineered controls and facility construction.

Accident Analysis

The non-nuclear operations at KCP are common industrial processes with typical industrial risks, including potential chemical hazards and physical hazards (e.g. high

pressure machinery). In August 2005, NNSA prepared an *Emergency Preparedness Hazards Survey and Hazards Assessment* for the KCP [hereafter, "Hazards Assessment"] (NNSA 2005). That assessment documents the potential hazards associated with the use of hazardous materials at the KCP and includes quantitative analyses of potential hazardous material releases that could cause harm on and offsite.

The screening process used in the Hazards Assessment identified no radioactive materials in use at the KCP that warranted analysis for emergency planning. Onsite industrial chemicals were identified that exceeded the specified screening criteria for quantities and potential toxicity. A range of release scenarios was postulated and the consequences to workers and the public were estimated for each chemical retained for analysis.

Based on the analysis of these materials, the Hazards Assessment concluded that the consequences of the most severe analyzed event (75 gallon hydrochloric acid release) would not exceed the threshold for early lethality beyond about 210 meters, a distance that is within the federal property boundary. The distance at which the Protective Action Criteria (PAC) is exceeded for that release is about 350 meters. The results of event consequence calculations show that an Emergency Response Planning Guidelines (ERPG) level 2 does not reach offsite (NNSA 2005). Thus, the largest emergency planning zone (EPZ) radius to be considered, as specified by the Emergency Management Guide, is within the Bannister Federal Complex boundary. The results of this hazard analysis clearly support the adequacy of the previous defined EPZ boundary. This analysis is based on hydrochloric acid (33-38%) in 15 gallon kegs that are used in current plating operations. As mentioned earlier, NNSA has decided to outsource some plating operations. After these operations are outsourced, NNSA will update the hazard analysis. In addition, should the federal agencies select any of these alternatives, NNSA would also update the hazard assessment in light of changes to its facilities.

The alternatives discussed in Sections 3.2 – 3.4 differ only in the degree of renovation of facilities already located on the Bannister Federal Complex. No increased impacts are expected as all of the alternatives would fall within the scope of existing hazard assessments and emergency plans currently in place for the KCP.

Intentional Destructive Acts

A fundamental principal of DOE's safeguards and security program is a graded approach to the protection of its employees and assets. This approach is embodied in the relevant threat considerations and designations of facilities. DOE intends that the highest level of protection be given to security interests where loss, theft, compromise, or unauthorized use would adversely affect national security, the health and safety of employees and the public, or the environment.

This graded approach categorizes all DOE assets into one of four "Threat Levels" based on the general consequence of loss, destruction, or impact to public health and safety at a facility or the program, project, or activity conducted. Per DOE's Design Basis Threat Policy (DOE Order 470.3A), the KCP is designated a Threat Level 4 (TL4) facility. This

is the level assigned to a facility which has the lowest risk based on the general consequence of loss destruction or impact to security, public health and safety. In assigning the TL4 designation, DOE has evaluated the security, health and safety impact of the facility and has determined the impact to be low. A design basis threat (DBT) analysis for new or renovated facilities would be conducted in conjunction with the design process. It is expected to result in assignment of the TL4 designation to these facilities.

Intentional destructive acts at the proposed new facility (e.g. terrorism, internal sabotage) have been evaluated and determined to have a low potential to impact security, public health and safety. The impact of an intentional destructive act would have no greater environmental, public health or safety consequence than the worst-case industrial accident scenario hazard discussed above.

5.2.10 Cumulative Impacts

This section describes present actions as well as reasonably foreseeable future actions that are considered pertinent to the analysis of cumulative impacts for relocation of the KCP to the western end of the Bannister Federal Complex, currently occupied by GSA operations. In 40 CFR 1508.7, the Council on Environmental Quality (CEQ) defines cumulative impact as: "the impact on the environment from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time." There are no reasonably foreseeable future actions that would be expected to contribute to the impacts of Alternatives 2, 3, or 4.

5.3 Environmental Consequences of the Botts Road Alternative (Alternative 5, Preferred Alternative)

5.3.1 Land Use, Geology, and Soils

If the Botts Road alternative is selected, KCP's operations would relocate to a newly constructed facility at that site. Construction of the new facility would occur on land currently zoned for agricultural use. An estimated 50 acres would be required during construction activities. As the site is currently undeveloped, additional acreage would be temporarily impacted for infrastructure construction activities, such as the installation of buried utilities and implementation of water resource mitigation and stormwater management activities. Construction of the proposed facility at Missouri Highway 150 and Botts Road would change the land use to industrial and require re-zoning of the property from agricultural to light industrial. Currently, the master plan for Kansas City, Missouri proposes light industrial zoning for this property. In order to obtain the necessary re-zoning, a pre-application meeting with the city zoning department would be required, followed by approval of the proposed zoning reclassification by the City Planning Commission and the City Council.

The proposed facility would cover approximately 1.4 million rentable square feet and provide up to 2,900 surface parking spaces. During construction, soils and topography would be disturbed by construction activity, grading, and possibly placement of fill materials. These impacts would be mitigated by conforming to local building codes and land disturbance permits which include erosion and sediment control provisions.

About 45 acres would be required for operations. Although not disturbed, the remaining 140 acres at the Botts Road site would be used as a buffer zone for the new facility and may be used for mitigation of impacts to aquatic resources. Once re-zoning has been obtained by the successful bidder on this lease-construction project, operation of the new facility at Botts Road would be consistent with the land use classification for the parcel.

Constraints on developing portions of the parcel include the presence of potentially jurisdictional water resources (see Section 5.3.3) and a Magellan Midstream Partners, L.P. (Magellan) subsurface pipeline which is located on an easement that transects the northern half of the site from east to west. The pipeline was used to transport petroleum products, but has been inactive for several years. It currently holds nitrogen, and the federal agencies are not aware of any plans to reactivate the pipeline. The pipeline would be relocated as far to the north as is practicable based upon site conditions. The portion of the pipeline that currently transects the site would be removed. Due to its former use for petroleum transport, the potential for contamination in the soil surrounding the pipeline was considered.

In June 2007, ten soil borings were installed along the pipeline and the soil was tested for the presence of petroleum parameters. No petroleum was detected in these samples. If during construction, soils appearing to be impacted by petroleum were identified by visual or olfactory evidence, the contractor would be directed to immediately notify the GSA Contracting Officer and affected soils would be managed in accordance with applicable local, state, and federal regulations. Magellan would be responsible for any petroleum contamination that may be present around the pipeline. In addition, Magellan would be responsible for maintenance and any contamination resulting from future use of the pipeline at an alternate location. Direct impacts to NNSA operations from accidental pipeline releases are not anticipated as the proposed facility would be located outside the area of the pipeline easement.

The Sharpsburg silt loam soil identified in Section 4.3.6 is generally considered to be prime farmland soil according to the U.S. Department of Agriculture. Prime farmland soils are protected under the Farmlands Protection Policy Act (FPPA) to minimize the impact federal programs contribute to the conversion of farmland to non-agricultural purposes. However, land already in or committed to urban development or water storage is excluded from the FPPA. The land in this alternative is identified as part of an 'urbanized area' on Census Bureau maps and therefore would not be considered prime farmland. The removal of the approximately 185 acres of farmland from agricultural production would not have a significant impact on the Kansas City metropolitan area agricultural economy. Adequate farmland remains in the Kansas City area to support agricultural needs.

5.3.2 Groundwater Hydrology

Previous site assessment indicated the sporadic presence of shallow groundwater at depths ranging from approximately 5 to 11 feet below ground surface at the site. Groundwater would not be used for either construction or operation of a new facility at the site. Groundwater samples collected onsite did not indicate the presence of hydrocarbon, pesticide, or herbicide contamination. Building design would be in accordance to code with inspection by Kansas City. Footing tile drains may be necessary and would be routed to the stormwater collection system.

The proposed facility design does not include the use of underground storage tanks and all proposed above ground storage tanks would be constructed with secondary containment. Industrial facilities would be constructed and managed to ensure materials (raw, intermediate and final product, and wastes) and activities are completely sheltered from stormwater. Facility operations would follow local, state, and federal guidelines. Therefore, adverse impacts to groundwater from proposed site operations are not anticipated.

5.3.3 Surface Water Hydrology

Wetlands and Tributaries

A study was conducted by Adaptive Ecosystems, Inc. to comply with 10 CFR Part 1022 to identify potential wetlands that may be impacted. If a new facility is constructed at this location, its construction would impact some aquatic resources on the site.[10] The total aquatic resources identified on the site include approximately 8,541 l.f. (0.26 acre) of tributaries and 1.37 acres of wetlands (See Table 4-1 and Figure 4-2) (AEI 2007). Approximately 0.39 acres of the wetlands onsite are considered jurisdictional wetlands (AEI 2007). Based upon preliminary site design plans and the widespread nature of the tributaries and wetland areas onsite, impacts to the tributaries and wetlands would be anticipated.

The State of Missouri Stream Mitigation Method Adverse Impact Factors for Riverine Systems worksheet was used to calculate the total stream mitigation credits required for impacts resulting from the project (USACE 2007). Tributaries on the project site were considered functionally impaired because of channelization (I-2) and the loss of stream stability and function. For tributaries on the project site there is a very high loss of system stability, resilience and the loss of one or more integrity functions. Recovery is unlikely to occur naturally, and further damage is likely, unless restoration is undertaken (USACE, 2007).

[10] Aquatic resources are defined as all jurisdictional and non-jurisdictional tributaries, wetlands, and open waters in the project area.

Wetlands on the site are a combination of stream-side and farmed wetlands. Stream-side wetlands have developed in the channelized tributaries I-2 and I-1 and serve limited habitat and water quality functions. One small stream-side wetland is located adjacent to E-3 and provides minor habitat function within an established riparian corridor as well as limited water quality function. The remaining wetlands are small seasonally inundated depressions in an agricultural setting, are farmed annually, and serve limited water quality and habitat functions.

If a new facility is constructed at this site, the Kansas City District of the U.S. Army Corps of Engineers (USACE) would have the responsibility for making jurisdictional determinations for the tributaries and wetlands. Upon completion of the jurisdictional determination, mitigation under the Clean Water Act Section 404 permitting process would begin. The permit process requires that the applicant:

- Take steps to avoid wetlands impacts;
- Minimize potential impacts on wetlands; and
- Provide compensation for any remaining unavoidable impacts.

Obtaining a Section 404 permit would be the responsibility of the GSA. Upon receipt, the permit would be transferred to the successful bidder for implementation of actions required to mitigate any impacts and perform any required monitoring to ensure the effectiveness of the mitigation measures. Such a permit typically requires four to six months of processing time. The USACE would send out a public notice to all surrounding landowners, as well as state and federal agencies. The public interest review period is 21 days. Other public agencies would also review the permit. Reviewing agencies would likely include the MDNR, the Missouri Department of Conservation, the USFWS, and the EPA.

A Notice of Proposed Wetland Action was included in the draft EA Notice of Availability posted in the Federal Register on December 10, 2007. Since this alternative would involve a design-build contract, it is not possible at this time to identify building locations and their impacts to wetlands. However, in accordance with 10 CFR Part 1022, the agencies have completed an assessment of the impacts to wetlands at this site should this alternative be selected. The assessment is based on the Adaptive Ecosystems, Inc. study findings regarding water resources on the site and a conservative estimate of the impacts to those resources. The wetland assessment also considered specific constraints and provisions for mitigation that would be placed on the developer of the site through both the Section 404 permit and the contract with GSA. Although the actual impacts can not be known until a site plan is finalized, impacts to the site are expected to be less than assessed in this analysis of the conservative scenario

The contract with GSA would require the developer to address the management of any wetlands (jurisdictional and non-jurisdictional) on the site in accordance with Executive Order 11990 and Section 404 permitting. The Botts Road site is not within the 100- or 500-year floodplains.

The GSA submitted a Section 404 permit application to the USACE on April 1, 2008 (AEI 2008), based on a conservative impact scenario. Under this scenario, the proposed action would impact, permanently, 0.099 acres (3,655 l.f.) of intermittent tributaries, and 0.097 acres (3,440 l.f.) of ephemeral tributaries. A total of 1.24 acres of wetlands would be impacted (See Table 5-1). In the permit application, a conceptual Mitigation Plan was proposed for the permanently impacted intermittent and ephemeral tributaries (7,095 l.f., 0.2 acres) and the 1.24 acres of permanently impacted wetlands (See Figure 5-1). Following are features of that plan:

On-site Stream Mitigation

The credits required to offset impacts would be generated by on-site riparian buffer enhancement of 952 l.f. of intermittent tributary and 494 l.f. of ephemeral tributary. The corridor would be 50-feet wide on each side of the tributaries. Enhancement activities would include nuisance species control, deed restrictions, 10% to 50% plantings, native grass seeding, timber thinning, maintenance, and monitoring. The remaining credits would, in part, be done through relocation and restoration of some tributaries and would include in-stream features and minimum 50-foot-wide riparian buffer.

Table 5-1: Stream and Wetland Mitigation Required

Stream Mitigation Credits Required			
Stream Type Impacted	**Length (l.f.)**	**Duration of Impact**	**Mitigation Credits Required**
Intermittent	3,655	Permanent	13,993
Ephemeral	3,440	Permanent	11,522
Total	**7,095**		**25,515**

Wetland Mitigation Acres Required	
Impact	**Acres**
Wetlands	1.24
Total	**1.24**

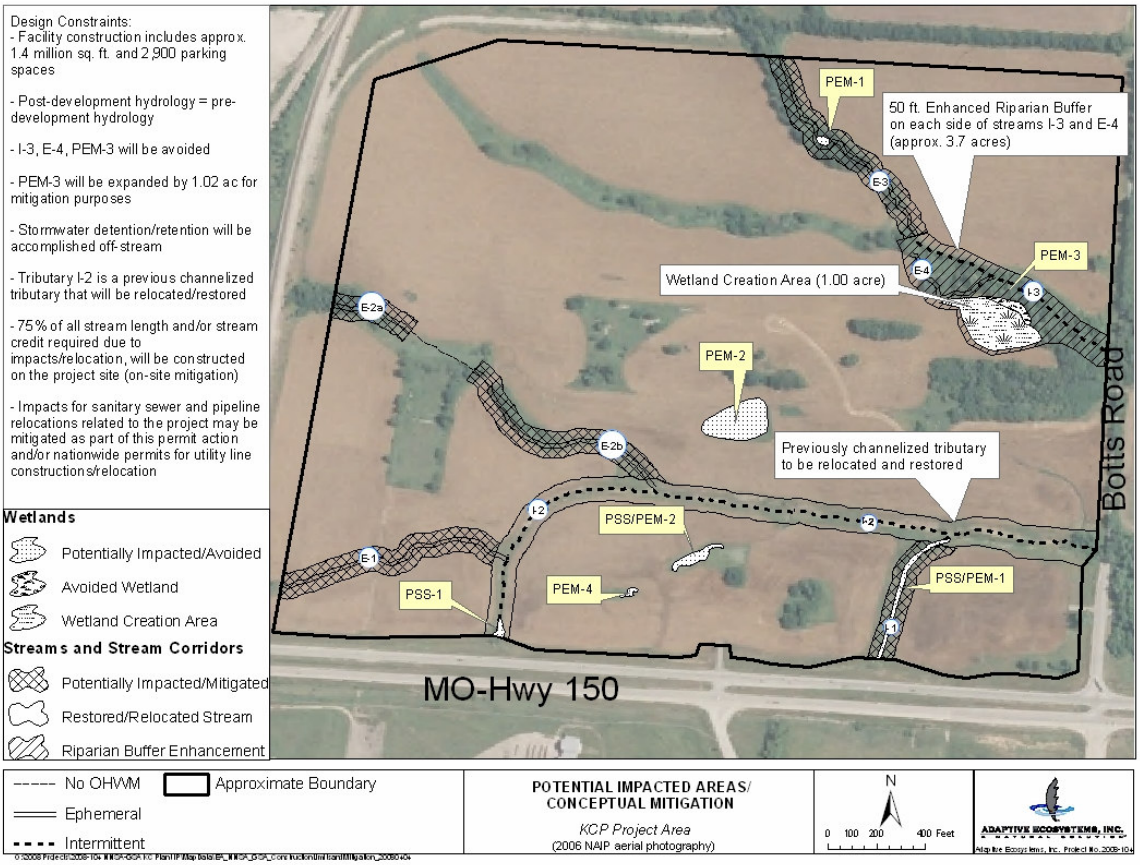


Figure 5-1 – Potential Impacted Areas Conceptual Mitigation at Botts Road Site

Off-Site Stream Mitigation

Any remaining stream credits would be mitigated for by identifying an off-site mitigation project and/or enrollment into a USACE-approved in-lieu fee program.

Wetland Mitigation

Wetland impacts would be mitigated for on-site by 1.24 acres of in-kind wetland creation or restoration. On-site created wetlands would be deed restricted.

Stormwater Management

Surface water would not be used for either facility construction or operations. Site construction activities would require Missouri State Operating Permit, Land Disturbance General Permit # MO-R10A000. This permit requires development of a Storm Water Pollution Prevention Plan (SWPPP) to control runoff and erosion associated with site construction activities. If it is determined that more than one acre of land disturbed would be defined as a wetland, proof of approval by the U.S. Army Corps of Engineers would be submitted with the permit application.

Operation of a new facility would increase surface water runoff. Fire protection system test flows would generate on average approximately 1000 gallons/day and HVAC would generate approximately 14,400 to 43,200 gallons/day of surface water runoff. In addition, the impermeable surfaces of the proposed buildings and parking lots would increase the quantity of stormwater runoff, as there would be less area for infiltration. Site design plans to mitigate and control stormwater at the site might include detention basins, extended detention basins, and constructed wetlands.

The proposed facility is required to comply with Section 438 of the Energy Independence and Security Act of 2007, Pub. L. No. 110-140, which was enacted on December 19, 2007. Section 438 of the Act requires that the developer of the proposed facility shall use site planning, design, construction, and maintenance strategies for the property to maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of the property with regard to the temperature, rate, volume, and duration of flow. Site design plans to mitigate and control stormwater onsite may include such features as detention basins, extended detention basins, and constructed wetlands.

The facility would have a site-specific stormwater permit, although a "No Exposure" certification might be pursued. The facility would be designed to qualify for "No Exposure" certification. However, for boilerhouse operations a general permit may still be required to address backup fuel oil storage.

The new facility would use natural gas-fired boilers to heat the facility. The boilers may be designed to fire #2 diesel fuel as a backup fuel source in case there is a disruption of natural gas. The diesel fuel would be stored in two 25,000-gallon above-ground storage tanks (ASTs). Since this volume of above ground storage of diesel fuel would likely be greater than 1,320 gallons, the new ASTs would have to be equipped with a secondary containment system designed to contain the entire contents of the storage container plus sufficient freeboard to allow for precipitation. If a developer were to install ASTs onsite for fuel storage, a general stormwater permit would be required. In addition, the new facility would have to comply with the Oil Pollution Prevention Regulations of the Clean Water Act (40 CFR 112) by developing a site-specific Spill Prevention, Control, and Countermeasure plan in accordance with 40 CFR 112.

Sanitary and Industrial Wastewater

The volume of wastewater discharged to the sanitary sewer system from a new facility would be about 86,500 gallons per day. This would be a reduction of nearly 150,000 gallons per day (63%) compared to the current discharge from the existing facility. However, 24,000 gallons per day of extracted groundwater will continue to be treated at the Bannister Federal Complex even if the NNSA operations are relocated, and a reduction of 8,500 gallons per day at the existing facility will be realized before any relocation as part of the process improvements NNSA is making (this reduction is reflected in the No Action Alternative). Therefore, discounting these flows in the current KCP discharge, the volume discharged from the Botts Road facility would be reduced by 117,000 gallons per day (42%) compared to what NNSA anticipates would be the

discharge from its operations at the Bannister Federal Complex under the No Action Alternative. The projected reduction would be due to several factors:

- The new facility's boilers would use a closed-loop system instead of a pass-through system;
- There would be a reduction in the cooling tower capacity and a relative reduction in cooling tower blow-down; and
- Domestic water usage would be reduced by approximately 40%.

Regulated industrial and process wastewater would be routed to an onsite skid-mounted microfiltration–based treatment unit. Prior to treatment, process wastewater would be stored in onsite tanks with secondary containment to prevent accidental release to stormwater systems. The treated water would be discharged to the sanitary sewer system. All sanitary and treated industrial wastewater from the facility would be discharged to a POTW owned and operated by the Little Blue Valley Sewer District. The POTW, the Little Blue Valley Sewer District Atherton Plant, has adequate capacity to accept the additional flows from the Botts Road facility. The POTW operates and monitors its discharge in accordance with Missouri State Operating Permit No. MO-0101087, issued by the Missouri Department of Natural Resources (MDNR) on March 21, 2003. The discharge from a new facility at Botts Road would not adversely affect the POTW's ability to meet its operating permit due to the following reasons:

- Industrial wastewater regulated under the metal finishing pretreatment category would be treated onsite prior to discharge to the sanitary sewer system;
- The industrial wastewater generated at the Botts Road site, although treated at a different POTW than the current KCP, would be regulated under the same permitting authority (Kansas City, Missouri) as the wastewater currently generated at the KCP;
- Unregulated industrial wastewater flows currently generated at the KCP and treated at the industrial wastewater pretreatment facility would be routed to the sanitary sewer or otherwise reduced through process consolidation or other wastewater source reduction initiatives; and
- The amount of industrial wastewater discharged at the Botts Road site (19,000 gallons per day maximum) would be 20% less than the 23,800 gallons per day discharged under the No Action Alternative (this assumes that the future outsourcing and process improvement actions planned for the existing KCP under the No Action Alternative will have been implemented and does not take credit for those reductions.)

5.3.4 Flora and Fauna

The majority of the site at Botts Road is currently used for agriculture. There are several small clusters of scrub trees and vegetated areas along the onsite tributaries. Construction of the facility could impair growth, damage, or eliminate portions of the existing onsite flora. There are no records of species or habitats of federal or state conservation concern

within one mile of the site (MDC 2007b). During site clearing activities, highly mobile wildlife species such as small mammals and birds would be able to relocate to adjacent areas. Less mobile species (reptiles and some mammals) could be killed by construction activities. Acreage used for construction activities would be lost as potential hunting habitat for raptors and other predatory species. No significant adverse impacts to threatened or endangered species or other biological resources are expected.

5.3.5 Solid and Hazardous Waste

The construction of a facility at the Botts Road site would be expected to generate 6,890 cubic yards of non-hazardous solid waste. This amount is substantially less than Alternatives 2, 3, and 4, since there is no renovation or demolition involved. Although not expected, all construction waste would first be inspected for the presence of hazardous materials and then sorted, with the recyclable materials removed. The resulting materials would then be trucked to a municipal land fill in accordance with the requirements of the Missouri Department of Natural Resources and all other applicable requirements.

Unlike the existing facility, which generates hazardous waste from remediation projects that address legacy contamination and from refurbishments in areas impacted by legacy contamination, there would be no hazardous waste generated at the new facility other than wastes generated through normal industrial activities. Recognizing that some remediation waste would continue to be generated at the existing site, the hazardous waste disposal rate is anticipated to be approximately 26,000 pounds/year. This represents a 30% reduction from current operations at the Bannister Federal Complex due largely to process improvements and outsourcing already planned and included in all alternatives, including the No Action Alternative. Non-hazardous waste is also expected to experience a similar reduction (to approximately 1.6 million pounds) due to the smaller operations and reduced facility refurbishments. Recycling of many waste materials would continue, although the generation rates of recycled waste streams such as asphalt and concrete would be significantly reduced in the near-term from existing operations. Some of the waste streams planned for recycling include batteries, paper, wood, computers, precious metals, plastic, oils, solvents, and industrial wastewater treatment sludge. Low level radioactive waste generation would be consistent with current generation rates of approximately 40 pounds per year. All waste materials would be disposed of off-site in accordance with federal, state and local requirements. The number of shipments may be reduced due to the reduction in waste generation.

5.3.6 Air Quality and Permitting

As stated above, natural gas-fired hot water boilers would provide heating for the facility. The preliminary peak heating load is estimated at 80 million BTU/hour. The new boilers would be required to be permitted and operated in accordance with Title 10, Division 10, Chapters 2 and 6 of the Missouri Code of State Regulations (10 CSR 10-2 and 10 CSR 10-6). Air pollution control regulations for the state of Missouri are found in 10 CSR 10-

6; 10 CSR 10-2 contains air pollution control rules specific to the Kansas City metropolitan area.

The total estimated annual air emissions from a new facility would be 12.8 tons. The emissions would consist of 10.4 tons of NOx, SOx, and CO from the boilers and process heaters, 2.0 tons of VOCs from electronic component solvent spray cleaning operations, and 0.4 tons of VOCs from painting operations. These estimated total annual air emissions would be approximately 28% less than the annual emissions from the KCP. The reduction of air emissions would be the result of the reduction of the size of the facility and improvements to the manufacturing processes.

The increased traffic load resulting from a relocation to this site would require upgrades to Botts Road from north of Missouri Highway 150 to the city limit of Grandview. Traffic studies conducted by TranSystems project an increase of approximately 800 vehicles during the morning peak hour and approximately 912 vehicles during the evening rush peak hour (TranSystems 2007). The daily increase in vehicles at Botts Road would be 5,900 vehicle trips. The impact on air emissions due to employee traffic is minimal when compared to the No Action Alternative.

During site preparation, construction, and road improvements the use of heavy equipment would generate combustion engine exhaust containing air pollutants associated with diesel combustion (NOx, CO, SOx, PM10 and volatile organic compounds). Similar air emissions would be generated from delivery vehicles bringing supplies and equipment to for construction and from construction workers commuting in their personal vehicles. Emissions from site preparation and construction would be short-term, sporadic, and localized (except for emissions associated with the personal vehicles of construction workers and vehicles transporting construction materials and equipment). The number of personnel and vehicles onsite during the construction phase would be less than the number of employees and employee vehicle onsite during the operation of the proposed facility. The quantities of air pollutants produced by vehicles and equipment associated with construction would not be a substantial contribution to the total emissions from mobile sources already operating in the area and would not be expected to adversely affect local air quality.

In addition, construction activities could generate an increase in the potential for fugitive dust (i.e. airborne particulate matter that escapes from a construction site) from earthwork and other construction vehicle movement. Not all of the area available for construction would be under construction at any one time. Control measures for lowering dust generation (i.e. water or chemical dust suppressants) would prevent offsite emissions. Construction activities would be in accordance with permits from local, state and federal jurisdictions.

5.3.7 Historical or Cultural Resources

The Missouri State Historic Preservation Office (SHPO) reviewed the Cultural Resource Assessment and determined that a Phase One Archeological Survey is not required and

no historic properties would be affected at the Botts Road site. In the event that items of archeological significance were found during site excavation for any new construction, the developer would be directed to stop the excavation in the vicinity of the find and notify the GSA Contracting Officer immediately so that the government can coordinate with the appropriate SHPO officer and other appropriate organizations. In addition, the developer would be required to comply with applicable local, state, and federal laws with regard to archeological findings. No adverse impacts to historical or cultural resources would be expected at the Botts Road site. The SHPO determination letter is provided in Appendix A.

5.3.8 Socioeconomic Environment

Environmental Justice

Executive Order No. 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations*, directs federal agencies to identify disproportionately high and adverse human health or environmental effects of their actions on minority or low-income populations. Pursuant to this Order, the federal agencies conducted an evaluation of the effects of this alternative on the socioeconomic environment and environmental justice. Based upon 2000 census data, 33,406 people live within a three mile radius of the Botts Road site. Within the three mile radius 21.3% of the population identified itself as minority and 9.7% of people live below the poverty level. For comparison, 441,545 people live in the City of Kansas City, with a minority population of 39%, and 14% of the population live below the poverty level (KC, MO 2007a & 2007b). The KCP workforce currently consists of more than 2,400 employees. The average age is 49.6 and the average years of service are 20.9.

Based on the analysis of impacts for resource areas, no significant adverse impacts from construction and operation activities at the Botts Road site are expected; to the extent that any adverse impacts occur, NNSA expects the impacts to affect all populations in the area equally. There are no large adverse impacts to any population.

Income and Employment

If the Botts Road alternative is selected, construction activities would require 1,600 worker-years of labor. During peak construction, 800 workers would be employed at the site. In addition to the direct jobs created by the relocation of the facility, additional jobs would be created in other supporting industries. It is estimated that 692 indirect jobs would be created, for a total of 1,492 jobs. This represents less than 1% of the total ROI labor force. Based on the ROI average earnings of $41,264 for the construction industry, direct income would increase by $33 million annually. This would also result in an increase of additional indirect income in supporting industries. The total impact to the ROI income would be $56.2 million ($33 million direct and $23.2 million indirect).

A workforce reduction of approximately 445 employees would be expected under this alternative due to implementation of business process improvements NNSA has already

decided to pursue, reductions in facility footprint, and the transfer of facility maintenance from NNSA's contractor to the building's owner. This estimated reduction reflects a projected growth of 220 employees associated with increases in work for others. The transfer of maintenance to the building owner could result in the creation of 70 – 80 positions, potentially offsetting some of the expected reduction.

Although an 18% reduction in the plant's workforce (compared to the FY07 baseline) is expected under this alternative (representing a loss of approximately 445 jobs), it is not anticipated that involuntary reductions in force would be required to any significant extent. The KCP experienced an annual attrition rate of over 10% during the past two years, which if sustained would exceed the planned reduction. To ensure the proper skills mix for the workforce that would relocate to the new facility, some involuntary reductions may be required. A workforce transformation plan would be developed to, in part, identify those workers who are at risk of displacement and identify transfer opportunities within the plant for those individuals. For any workers that were displaced if this alternative were selected, job placement and educational assistance programs would be provided as part of the workforce restructuring plan.

In order to evaluate the impact of a relocation to this site on employee commuting, an estimate of employees' commuting distance was calculated. For purposes of the analysis the number of employees residing in each postal zip code was determined. Using the latitude and longitude for the geographic center of each postal zip code, the total commute distance in miles was estimated to the Botts Road site and the Bannister Federal Complex. The calculated commute distance for each postal zip code was then multiplied by the total number of employees residing in that zip code. Approximately 31% of the workforce resides within 10 miles of the Bannister Federal Complex, with the plant population center located approximately four miles to the south and east of the plant. The cumulative estimate for all employees indicate a total one-way, per day commute of 42,481 miles to the Bannister Federal Complex and 42,375 miles to the proposed Botts Road site. It is unlikely, therefore, that implementing the preferred alternative would significantly increase or decrease the cumulative impacts from employees' commuting to work and, one would not anticipate that relocation to the Botts Road site would cause employees to move their residences.

Noise

Construction of new buildings would involve the movement of workers and construction equipment and would result in some temporary increase in noise levels near the area. Although noise would be highest during construction, noise would not be expected to extend far beyond the boundaries of the construction site. At 400 feet from the construction site, construction noises would range from approximately 55-85 dBA. Given that the distance from the site boundary to the nearest business or residence is greater than 400 feet, there would be no change in noise impacts on the public as a result of construction activities, except for a small increase in traffic noise levels from construction employees and material shipments and short-term increases in noise levels at

or near the site boundary from site preparation and infrastructure construction activities such as driveway construction and site grading.

The location of facilities relative to the site boundary and sensitive receptors was examined to evaluate the potential for onsite and offsite noise impacts. Noise impacts from operations of new buildings would be expected to be similar to those from existing operations. There would be an increase in equipment noise (e.g., heating and cooling systems, generators, vents, motors, material-handling equipment). However, given the distance to the site boundary, noise from equipment would not likely disturb the public. These noise sources would be far enough from offsite areas that their contribution to offsite noise would be small. Some noise sources (e.g., public address systems and testing of fire alarms) could have onsite impacts. Traffic noise associated with the operation of new facilities would occur onsite and along offsite local and regional transportation routes used to bring materials and workers to the site. Noise from traffic associated with the operation of new facilities would likely produce increases in traffic noise levels along roads used to access the site.

Workers could be exposed to noise levels higher than the acceptable limits specified by OSHA in its noise regulations (29 CFR §1926.52). However, DOE has implemented appropriate hearing protection programs to minimize noise impacts on workers. These include the use of administrative controls, engineering controls, and personal hearing protection equipment.

Safety and Health

Non-radiological impacts to workers were evaluated using occupational injury, illness, and fatality rates obtained from BLS, U.S. Department of Labor data. DOE values are historically lower than BLS values owing to the increased focus on decreasing radiation exposures. The potential risk of occupational injuries and fatalities to workers constructing the new facility would be expected to be bounded by injury and fatality rates for general industrial construction.

No chemicals have been identified that would be a risk to members of the public from construction activities associated with the new facility. Construction workers would be protected from overexposure to hazardous chemicals by adherence to OSHA and EPA occupational standards that limit concentrations of potentially hazardous chemicals. Implementation of worker protection programs to construction activities would also decrease the potential for worker exposures by providing hazards identification and control measures for construction activities.

For the Botts Road alternative, the chemical-related health impacts to workers at a non-nuclear facility would not differ from the No Action Alternative or the other action alternatives. The site boundary at Botts Road would be no closer than the Bannister Federal Complex, which would not change potential impacts to the public.

Transportation

For Alternative 5, KCP operations would relocate to a new facility to be constructed at the Botts Road site, about eight miles south of the existing Bannister Federal Complex. The construction would add an additional 800 construction workers, and an estimated 600 vehicles to existing highways and parking lots during the peak of the two year construction period. In addition, a substantial amount of deliveries of construction material, concrete, equipment, and office furniture would also add to the existing traffic patterns. An estimated 6,890 cubic yards of debris would be generated by the construction process. This waste would be trucked off-site and would entail from 575 to 700 truckloads. These trips could be substantially reduced if tractor trailers were to be used to haul the waste. The majority of this waste hauling would occur over an eight to ten month period.

The transportation infrastructure servicing the Botts Road site is not as developed as that of the Bannister Federal Complex, and existing industrial facilities use the existing highways of the region. The increased traffic load placed on the area surrounding the proposed Botts Road site would require significant upgrades to Botts Road from north of Missouri Highway 150 to the city limit of Grandview. Traffic studies conducted by TranSystems project an increase of approximately 800 vehicles during the morning peak hour and approximately 912 vehicles during the evening rush peak hour (TranSystems 2007). The daily increase in vehicles for the proposed facility at Botts Road is 5,900 vehicle trips.

In addition, construction activities associated with transportation could generate an increase in fugitive dust (i.e. airborne particulate matter that escapes from a construction site) from earthwork and other construction vehicle movement. Control measures for lowering fugitive dust emissions (i.e. water or chemical dust suppressants) would minimize these emissions. Construction activities would be in accordance with permits from local, state and federal jurisdictions. Because the Botts Road site has not been previously developed, it is not expected that hazardous wastes, lead paint, asbestos, VOCs, PCBs, or other controlled materials would be present in fugitive dust emissions generated as a result of transportation.

In summary, no significant socioeconomic impacts are expected to result from the preferred alternative. Construction of a new facility at the Botts Road site would not adversely affect or target low income or minority populations. The average commuting distance for the KCP workforce would not significantly change or require household relocation and the anticipated reduction in workforce would mainly be achieved through employee attrition.

5.3.9 Hazard Analysis

Hazard assessments, which evaluate a range of potential accidents and the nature of them, have been completed and are reviewed annually for the existing plant. The KCP is considered a low-hazard industrial facility and operations at the plant involve hazards of

the type and magnitude routinely encountered in industry and generally accepted by the public. Emergency plans at the new facility would be developed along the lines of those currently in place to respond to emergencies such as accidents, security incidents, events or natural phenomena. Similar security measures would be in place to protect the public, workers and facilities. Existing cooperating arrangements with the local police, fire and FBI for emergency response would be modified to reflect relocation to this site. The likelihood of detrimental exposure because of an operational accident, intentional destructive act or natural phenomena is extremely unlikely because of mitigating factors used in normal operations combined with the benefits of site engineered controls and facility construction equivalent to or better than those at the current KCP.

Accident Analysis

The operations that would be relocated to a new facility are common industrial processes that are the same as those currently being performed at the existing KCP so the current accident profile would not change as a result of a relocation (see Section 5.2.9). The existing hazard assessment and emergency response plans would be updated for the new facility, however, it is anticipated that reduced hazard levels associated with changes in operational and design requirements would reduce any potential impact at the new facility as compared to current operations. Facility size would afford approximately the same property boundary distances that exist at the current plant.

Intentional Destructive Acts

A fundamental principal of DOE's safeguards and security program is a graded approach to the protection of its employees and assets. This approach is embodied in the relevant threat considerations and designations of facilities. DOE intends that the highest level of protection be given to security interests where loss, theft, compromise, or unauthorized use would adversely affect national security, the health and safety of employees and the public, and the environment.

This graded approach categorizes all DOE assets into one of four "Threat Levels" based on the general consequence of loss, destruction, or impact to public health and safety at a facility or the program, project, or activity conducted. Per the DOE's Design Basis Threat Policy (DOE Order 470.3A), the current KCP is designated a Threat Level 4 (TL4) facility – this is the level assigned to a facility which has the lowest risk based on the general consequence of loss, destruction or impact to security, public health and safety. In assigning the TL4 designation, the DOE has evaluated the security, health and safety impact of the facility and has determined the impact to be low. A DBT analysis for a new facility would be conducted in conjunction with the design process. It is expected to result in assignment of the TL4 designation to this facility.

Intentional destructive acts at the proposed new facility (e.g. terrorism, internal sabotage) have been evaluated and determined to have a low potential to impact security, public health and safety. The impact of an intentional destructive act would have no greater

environmental, public health or safety consequence than the worst-case industrial accident scenario as discussed in Section 5.2.9.

5.3.10 Cumulative Impacts

This section describes present actions as well as reasonably foreseeable future actions that are considered pertinent to the analysis of cumulative impacts of this alternative. In 40 CFR 1508.7, the Council on Environmental Quality (CEQ) defines cumulative impact as: "the impact on the environment from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."

Redevelopment of Former Richards Gebaur Air Force Base

Kansas City and the Port Authority of Kansas City recently completed a series of redevelopment and sales agreements for the former Richards Gebaur Air Force Base (RGA), located adjacent and south of the Botts Road site across Missouri Highway 150. The current plan for RGA proposes redevelopment of land for industrial use. Development plans currently include construction of a Kansas City Southern Railroad intermodal facility featuring a rail facility and adjacent light manufacturing, distribution and warehousing facilities. When completed, the facility could attract industrial users and shippers within a 500-mile radius.

In addition, underground industrial development is planned for the eastern portion of the RGA site. The underground development would entail mining/quarry operations, with the eventual conversion of the mined space to storage and industrial usage. Currently there is an auto-load facility operating on the western portion of the RGA site. The auto-load facility transfers vehicles to and from railcars for transport.

Because the development plans for the RGA site are in the formative stages, it is not possible to quantify the potential cumulative impacts. Instead, this section discusses the types of cumulative impacts that could result and qualitatively discusses those impacts.

Sanitary Wastewater

Wastewater from the proposed facility would be routed to the Little Blue Valley Sewer Districts Atherton Plant. At this time the site is not served by sanitary sewer. The wastewater discharges from plant operations and sanitary discharges from human occupation would decrease flows to the Blue River Wastewater Treatment Facility and increase flows to the Atherton plant by approximately 86,500 gallons per day. There is adequate capacity at the Atherton plant to treat this additional flow as the plant currently processes approximately 35 to 40 million gallons per day and current capacity is 52 million gallons per day. Because the proposed facility would contribute less than 1% to

the existing POTW capacity, any cumulative impacts would likely be dominated by the RGA.

Stormwater

Construction of a facility at the Botts Road site would increase stormwater runoff in the Little Blue River Watershed. The Little Blue River is located approximately 1 mile east of the Botts Road site. Proposed development activities at the RGA could further increase the quantity of stormwater flow in the Little Blue River Watershed. The design plans for this redevelopment have not been finalized, but could involve hundreds of acres. The development of 185 acres under this alternative is likely to be significantly smaller than the total size of the proposed RGA redevelopment. Kansas City is responsible for stormwater management planning and permitting and the City would require all developers in the area of the preferred alternative to consider impacts of stormwater runoff. The City adopted the American Public Works Association (APWA) Division V, Section 5600, criteria for storm drainage systems and facilities in 1990. According to APWA 5600 a storm drainage system must be installed that is capable of conveying the peak discharge generated by a 1% storm (1% probability such a storm would be equaled or exceeded in one year).

Air Quality

Relocation of KCP operations to a new facility at Botts Road would result in new emissions for this location. Air emissions from the proposed RGA development are not known. However, the facility for the preferred alternative would produce approximately 28% lower emissions than the existing KCP due primarily to the reduced facility footprint and natural gas usage.

Impacts from constructing a new facility, such as additional traffic and construction emissions, would be temporary and similar to those associated with any other commercial building of comparable size. While particulate emissions from on-site construction would contribute to total particulate emissions from the proposed construction on RGA, these emissions can be controlled using standard construction dust control techniques.

Solid and Hazardous Waste

Although no waste would be disposed of onsite, operation of a new facility at the Botts Road site would result in the transport of solid and hazardous waste from the site. Waste shipments from the new site would replace those being transported from the existing plant at Bannister Road. The same highways would be used by the waste haulers with the exception of the short distance on Missouri Highway 150 from the new site to Highway 71. The increase in truck traffic would be minimal, as fewer than four shipments of hazardous waste and 12 shipments of non-hazardous waste are projected per month. Any solid and hazardous waste generated by RGA would contribute to the cumulative waste shipments.

Traffic/Transportation

Preliminary traffic studies of the preferred alternative, conducted by TranSystems, estimate an increase of approximately 800 vehicle trips during the morning peak hour, approximately 912 vehicle trips during the evening rush peak hour, and a total daily traffic increase of 5,900 vehicle trips. Preliminary design plans would include construction of two site entrances on Botts Road. According to information provided by TranSystems, traffic flow at the intersection would suggest that the first entrance (South Drive) be located approximately 1,500 feet north of Missouri Highway 150 and the second entrance (North Drive) 1,000 feet north of the first entrance. In addition, a minor entrance and exit with limited access may be constructed off Missouri Highway 150, which would allow only right turns into and out of the proposed site.

The proposed development of the Missouri Highway 150 corridor is projected to increase the daily traffic flows on the highway and the adjacent roadways. Currently, Highway 150 has a daily traffic load of approximately 28,230 vehicle trips. The TranSystems study evaluated projected traffic increases through the year 2025 and considered anticipated development of Botts Road, RGA, and other development along Missouri Highway 150. The cumulative planned development along the Highway 150 corridor is projected to increase the traffic load on the highway by approximately 67,055 vehicle trips per day. In order to evaluate the impact of a relocation to this site on employee commuting, an estimate of employees' commuting distance was calculated. For purposes of the analysis the number of employees residing in each postal zip code was determined. Using the latitude and longitude for the geographic center of each postal zip code, the total commute distance in miles was estimated to the Botts Road site and the Bannister Federal Complex. The calculated commute distance for each postal zip code was then multiplied by the total number of employees residing in that zip code. Approximately 31% of the workforce resides within 10 miles of the Bannister Federal Complex, with the plant population center located approximately four miles to the south and east of the plant. The cumulative estimate for all employees indicate a total one-way, per day commute of 42,481 miles to the Bannister Federal Complex and 42,375 miles to the proposed Botts Road site. It is unlikely, therefore, that implementing the preferred alternative would significantly increase or decrease the cumulative impacts from employees' commuting to work and, one would not anticipate that relocation to the Botts Road site would cause employees to move their residences (TranSystems 2007).

The Missouri Department of Transportation (MODOT) is working with local entities to upgrade roads in anticipation of the development of Missouri Highway 150. Currently a three-phase approach is proposed for these improvements. Phase 1 involves the improvement of the existing intersections at Botts Road and Thunderbird Road. The existing intersections would be upgraded through addition of turn lanes and temporary traffic signals to address immediate traffic increases. Phase 1 would be a MODOT project funded by local sources.

Phase 2 includes construction of new interchanges between Missouri Highway 150 and Botts Road and Thunderbird Road. The proposed interchanges would be constructed

with minimal traffic interruptions to the temporary intersections implemented in Phase 1. Phase 2 also includes the reconstruction of Botts Road from north of Missouri Highway 150 to the Grandview city limits. In addition, Phase 2 would include connections for Thunderbird and Botts Road south of Missouri Highway 150.

Phase 3 includes proposals for the completion of a Thunderbird Road bridge over Missouri Highway 150. Phase 3 is proposed for implementation as the traffic demands increase. These roadway improvements are not within the scope of the proposed action, but would contribute to mitigation of cumulative traffic impacts resulting from development of the Missouri 150 corridor.

Socioeconomic Environment

The facility at the Botts Road site would be within eight miles of the existing facility; therefore, most of the workforce probably would not relocate and the total employee commuting distance would not change significantly. In addition, the facility at the Botts Road site would not appear to adversely affect or target low income or minority populations.

Growth in the area of the Botts Road site would be expected to change the character of the surrounding area from generally open/agricultural space with sporadic industrial, to more industrial uses. This growth is anticipated and desired by local and state governments. As part of the anticipated growth, significant infrastructure improvements, such as sewers and roads, would be required to support development of the area.

5.4 Environmental Consequences of SNL/NM Alternatives

5.4.1 Land Use, Geology, and Soils

An estimated 50 acres would be required during construction activities for the new construction option. Aggregate and other geologic resources (e.g., sand) would be required to support construction activities. The potential exists for contaminated soils to be encountered during excavation and other site activities, although most contaminated sites are less than one acre in size. Prior to commencing ground disturbance NNSA would survey potentially affected areas to determine the extent and nature of any contaminated media and required remediation. Construction of new facilities would require a stormwater permit that would address erosion control measures to minimize the impacts of erosion.

For the reuse/new construction option, an estimated 30 acres would be required during construction activities. There would be no change in land use beyond current/planned activities at SNL/NM, and no impacts to SNL/NM land use plans are expected.

For either option, an estimated 45 acres would be required for operations. The operation of non-nuclear facilities at SNL/NM would not be expected to result in impacts to geologic or soil resources. Operation activities would remain consistent with the current

land uses at SNL/NM and would have no impacts on established land use patterns or requirements.

5.4.2 Groundwater Hydrology

Environmental impacts associated with the new facility under either option could affect water resources at SNL/NM. Potable water to SNL/NM facilities is supplied by on-site production from 10 wells. In 2005, approximately 1.13 billion gallons of groundwater were pumped from on-site wells (DOE 2006). Of this, SNL/NM used approximately 555.3 million gallons (Kirtland Air Force Base accounted for the other water use). Discharges were in compliance with permits.

Groundwater would be used to support the construction of a new facility at SNL/NM. Water would be required during construction for such uses as dust control and soil compaction, washing and flushing activities, and meeting the potable and sanitary needs of construction employees. It is estimated that construction activities for a newly constructed facility would require a total of approximately 650,000 gallons of groundwater. The percent change from the No Action Alternative would be less than 1%.

There would be no onsite discharge of wastewater to the subsurface, and appropriate spill prevention controls and countermeasure plans would be employed to minimize the chance of petroleum, oils, lubricants, and other materials used during construction being released to the surface or subsurface and to ensure that waste materials are properly disposed. In general, no impact on groundwater availability or quality is anticipated.

It is estimated that operations would require a total of approximately 36.5 million gallons of groundwater. The percent change from the No Action Alternative would be 6.6%.

5.4.3 Surface Water Hydrology

No surface water would be used to support the construction of a new facility under either SNL/NM option. Sanitary wastewater would be generated by construction personnel. As plans include use of portable toilets, onsite discharge of sanitary wastewater would be minimized. The potential for stormwater runoff from construction areas to impact surface water quality is small. Standard construction practices implemented to minimize site runoff and erosion along with implementation of a stormwater pollution prevention plan would avoid the indirect degradation of any adjacent wetlands or aquatic resources. Appropriate soil erosion and sediment control measures (e.g., sediment fences, stacked hay bales, mulching disturbed areas, etc.) would be employed during construction to minimize suspended sediment and material transport, as well as potential water quality impacts. The locations for a new facility under either the new construction or reuse/new construction options at SNL/NM are not within the 100- or 500-year floodplains. Therefore, no impacts to floodplains are anticipated.

No surface water would be used to support the operation of a new facility. There would be no discharge of sanitary or industrial effluent to surface waters. Sanitary and industrial wastewater discharges are projected to be 86,500 gallons per day.

5.4.4 Flora and Fauna

For the new construction option an estimated 50 acres would be required during construction activities. The reuse/new construction option would require an estimated 30 acres during construction. Construction activities may impair growth, damage, or eliminate portions of the existing onsite flora. During site clearing activities, highly mobile wildlife species such as small mammals and birds would be able to relocate to adjacent areas. However, successful relocation may not occur due to competition for resources to support the increased population. Less mobile species (reptiles and small mammals) could be killed by construction activities. Acreage used for construction activities would be lost as potential hunting habitat for raptors and other predatory species.

Four threatened, endangered and other species of concern have been documented at SNL/NM. Only the gray vireo is known to breed on the site. Prior to construction activities, NNSA would consult with the U.S. Fish and Wildlife Service, as appropriate to discuss the potential impacts of construction activities associated with a new facility on any threatened or endangered species.

NNSA's operations would relocate to the new facility at SNL/NM where an estimated 45 acres would be required under either option for operations. There would be a permanent loss of habitat and relocation of species from construction; however impacts would be to highly developed areas on SNL/NM. There would be no direct untreated effluent discharges to the environment and air emissions would be controlled to levels that would not be expected to adversely affect special interest species. With implementation an adherence to administrative procedures, along with facility design and engineering controls operations should have no significant adverse impacts to threatened or endangered species or other biological resources.

5.4.5 Solid and Hazardous Waste

The construction of a new facility at SNL/NM would be expected to generate 6,890 cubic yards of non-hazardous solid waste. The construction of a smaller new facility in conjunction with the utilization of existing buildings at SNL/NM, under the reuse/new construction option, would be expected to generate a slightly higher 7,200 cubic yards of non-hazardous solid waste. Although not expected, construction waste generated as a result of the selection of either option would be first inspected for the presence of hazardous materials and then sorted, with the recyclable materials removed. This waste would then be taken to the existing hazardous waste management facility at SNL/NM, processed, and managed along with other similar waste generated by other, ongoing operations at SNL/NM, which are disposed of at the Albuquerque Landfill.

Under either option, once operational, a non-nuclear facility at SNL/NM would be expected to generate 26,000 pounds per year of hazardous waste, 1.6 million pounds of non-hazardous waste per year, and 40 pounds of LLW per year. The hazardous waste would be transported off-site to a commercial facility for treatment and disposal. Although the hazardous waste is less than 4% of the amount currently managed at SNL/NM, the amount of non-hazardous solid waste which would be generated by the new facility would be a substantial increase in the amount normally generated by current operations at SNL/NM. Since this waste is readily accepted at numerous municipal waste and RCRA Subtitle D facilities, management of this increased volume for SNL/NM should pose no issues, as long as thorough and numerous inspections can assure that this waste does not contain hazardous constituents.

5.4.6 Air Quality and Permitting

Bernalillo County has been designated as a maintenance area under the Clean Air Act for CO emissions and is in attainment for other federally regulated pollutants. The SNL/NM examined approximately 465 chemicals used at 12 major SNL/NM facilities as potential components of routine emissions.

Trucks and construction equipment would generate carbon monoxide emissions. Impacts to air quality from planned construction may increase the carbon monoxide and particulate matter concentrations during construction. Fugitive dust generated during construction would be mitigated using dust control procedures. Compared to the approximately 4,000 tons of CO generated annually by mobile and stationary sources in the SNL/NM area (DOE 2006), the construction activities would be inconsequential.

Asbestos-containing materials may be encountered during site renovation or building demolition. The alternatives involving building renovation or demolition would include provisions for identification of asbestos-containing materials by properly trained and state certified asbestos inspector(s). Identified asbestos-containing materials would then be abated in accordance with applicable local, state and federal notification, work practice, and worker protection regulations prior to other renovation or demolition activities.

As required by the permits, SNL/NM-wide HAPs usage (NESHAPS) may not exceed ten tons per year (TPY) for any single HAP or 25 TPY for any combination of HAPs. Based on the screening analyses for selected facilities, environmental impacts of non-radiological air contaminants would be within the expected envelope of air quality standards.

The ROI for air quality impacts at SNL/NM is defined as the maximum extent of a source's "significant" impact. The maximum extent of impact of the primary major stationary source at SNL/NM is approximately a 15 mile radius about the Steam Plant. The criteria pollutant monitoring station located in the northeast corner of TA-I measures the concentrations of criteria pollutants emitted in and around the ROI. Criteria pollutants that emit the highest percentage of the New Mexico Ambient Air Quality Standards and NAAQS standards average over the longer period (8 to 24 hours) are

carbon monoxide (~25%), nitrogen dioxide (~25%), and ozone (~85%). Increased vehicular traffic associated with an increased workforce of 1,750 would have an insignificant impact on ambient air quality standards when compared to the approximate 800,000 people in the ROI.

5.4.7 Historical or Cultural Resources

There are no known archaeological sites within DOE-owned technical areas. A small number of buildings were determined to be eligible per the National Register of Historic Places. It is not anticipated that these facilities would be impacted during construction activities associated with either option.

Prior to any ground-disturbing activity, NNSA would identify and evaluate any cultural or archaeological resources that could potentially be impacted by construction activities. In the event that items of cultural or archaeological significance are found during site excavation, excavation of the site would stop in order to coordinate with the appropriate State Historic Preservation Office. All applicable local, state, and federal laws with regard to archaeological findings would be followed. No adverse impacts to cultural or archaeological resources are anticipated during construction activities.

5.4.8 Socioeconomic Environment

Environmental Justice

Few high and adverse impacts from construction and operation activities at SNL/NM are expected under any of the alternatives; to the extent that any impacts may be high and adverse, NNSA expects the impacts to affect all populations in the area equally. There are no large adverse impacts to any populations. There were no discernable adverse impacts to land uses, visual resources, noise, water, geology and soils, biological resources, socioeconomic resources, cultural and archaeological resources.

Income and Employment

Construction activities associated with the new construction option at SNL/NM would require 1,600 worker-years of labor. During peak construction, 800 workers would be employed at the site. In addition to the direct jobs created by the relocation of the facility, additional jobs would be created in other supporting industries. It is estimated that 743 indirect jobs would be created, for a total of 1,543 jobs. This represents less than 1% of the total ROI labor force.

Based on the ROI average earnings of $31,800 for the construction industry, direct income would increase by $25.4 million annually. This would also result in an increase of additional indirect income in supporting industries. The total impact to the ROI income would be $45 million ($25.4 million direct and $19.6 million indirect).

Construction activities associated with the reuse/new construction option at SNL/NM would require 1,400 worker-years of labor. During peak construction, 800 workers would be employed at the site. In addition to the direct jobs created by the relocation of the facility, additional jobs would be created in other supporting industries. It is estimated that 743 indirect jobs would be created, for a total of 1,543 jobs. This represents less than 1% of the total ROI labor force.

Based on the ROI average earnings of $31,800 for the government services industry, under either option direct income would increase by $25.4 million annually. This would also result in an increase of additional indirect income in supporting industries. The total impact to the ROI income would be $45 million ($25.4 million direct and $19.6 million indirect).

The influx of new construction workers for either option would increase the ROI population and create new housing demand. This analysis assumes that one-half of the construction jobs would be filled by incoming workers and that each worker would bring an average of two family members to the ROI. Consequently, for the peak year of construction (800 workers), a total of 1,200 new residents would be expected in the ROI. This is an increase of approximately less than 1% over the current population. The current housing market would likely be sufficient to absorb this increase in the ROI population. The small increase in the population would not put increased demand on community services. Comparable levels of service could be maintained with current staffing levels.

Operation of a new facility or renovated facility at SNL/NM would require approximately 1,750 workers, approximately 255 of which will be existing support service jobs from SNL/NM operations. In addition to the direct jobs created by the relocation of the facility, additional jobs would be created in other supporting industries. It is estimated that 1,713 indirect jobs would be created, for a total of 3,213 jobs. This represents less than 1% of the total ROI labor force.

During operations for either option, based on the ROI average earnings of $44,462 for the government services industry, direct income would increase by $67.6 million annually. This would also result in an increase of additional indirect income in supporting industries. The total impact to the ROI income would be $112.8 million ($67.6 million direct and $45.2 million indirect).

For operations approximately 1,525 new workers would be expected in the ROI, not including their families. This is an increase of less than 1% over the current population. The current housing market would likely be sufficient to absorb this increase in the ROI population. The small increase in the population would not put increased demand on community services. Comparable levels of service could be maintained with current staffing levels.

Noise

Impacts from noise generated from demolition, construction, and operation of new facilities would contribute to the ambient background noise levels. In general, sound levels would increase during demolition and construction of a facility and, upon completion, return to noise levels characteristic of a light industrial setting within the range of 50 to 70 dBA. No noise-related cumulative impacts are anticipated.

Construction of new buildings would involve the movement of workers and construction equipment and would result in some temporary increase in noise levels near the area. Although noise levels would be highest during construction, these noise levels would not be expected to extend far beyond the boundaries of the construction site. At 400 feet from the construction site, construction noises would range from approximately 55-85 dBA. Given the distance to the site boundary, there would be no change in noise impacts on the public as a result of construction activities, except for a small increase in traffic noise levels from construction employees and material shipments.

Construction workers could be exposed to noise levels higher than the acceptable limits specified by Occupational Safety and Health Administration (OSHA) in its noise regulations (29 CFR 1926.52). However, DOE has implemented appropriate hearing protection programs to minimize noise impacts on workers. These include the use of administrative controls, engineering controls, and personal hearing protection equipment.

The location of facilities relative to the site boundary and sensitive receptors was examined to evaluate the potential for onsite and offsite noise impacts. Noise impacts from operations of new buildings would be expected to be similar to those from existing operations. There would be an increase in equipment noise (e.g., heating and cooling systems, generators, vents, motors, material-handling equipment). However, given the distance to the site boundary, noise from equipment would not likely disturb the public. These noise sources would be far enough away from offsite areas that their contribution to offsite noise levels would be small. Some noise sources (e.g., public address systems and testing of fire alarms) could have onsite impacts, such as the disturbance of wildlife. But these noise sources would be intermittent and would not be expected to disturb wildlife outside of facility boundaries. Traffic noise associated with the operation of new facilities would occur onsite and along offsite local and regional transportation routes used to bring materials and workers to the site. Noise from traffic associated with the operation of new facilities would likely produce increases in traffic noise levels along roads used to access the site.

Operations workers could be exposed to noise levels higher than the acceptable limits specified by OSHA in its noise regulations (29 CFR 1926.52). However, DOE has implemented appropriate hearing protection programs to minimize noise impacts on workers. These include the use of administrative controls, engineering controls, and personal hearing protection equipment.

Health and Safety

Non-radiological impacts to workers were evaluated using occupational injury, illness, and fatality rates obtained from Bureau of Labor Statistics (BLS), U.S. Department of Labor data. DOE values are historically lower than BLS values owing to the increased focus on safety. The potential risk of occupational injuries and fatalities to workers constructing a new facility would be expected to be bounded by injury and fatality rates for general industrial construction. Using BLS data for 1997-2001, Total Recordable Cases, Lost Workday Cases, and Fatalities were estimated for both the peak workforce loading and for the duration of construction activities

No chemicals have been identified that would be a risk to members of the public from construction activities associated with a new facility. Construction workers would be protected from overexposure to hazardous chemicals by adherence to OSHA and EPA occupational standards that limit concentrations of potentially hazardous chemicals. Implementation of worker protection programs to construction activities would also decrease the potential for worker exposures by providing hazards identification and control measures for construction activities.

For the SNL/NM action alternatives, the chemical-related health impacts to workers at a non-nuclear facility would not change compared to the No Action Alternative. Because operations in new or renovated facilities at the SNL/NM would not reduce the distance to the site boundary compared to current operations at the KCP, impacts to the public would also not change.

Transportation

SNL/NM activities are conducted within the boundaries of Kirtland Air Force Base (KAFB). Traffic in the KAFB vicinity is predominantly associated with U.S. Air Force operations. In addition to Air Force and SNL/NM activities, other federal agencies conduct operations at KAFB including the Department of Homeland Security, the Defense Threat Reduction Agency, and the U.S. Geological Survey. Traffic volumes for SNL/NM-affiliated activities are based on estimates derived from various traffic studies.

The construction for Alternative 6 would add an additional 800 construction workers or an estimated 600 vehicles to existing highways on and around SNL/NM at the peak of the two year construction period. In addition, a substantial amount of deliveries of construction material, concrete, equipment, and office furniture would also add to the existing traffic patterns. An estimated 6,890 cubic yards of solid hazardous waste would be generated by the new construction option (575 to 700 truckloads), and 7,200 cubic yards of solid hazardous waste generated by the reuse/new construction option (600 to 750 truckloads). This waste would be trucked off-site and the number of trips could be substantially reduced if tractor trailers were to be used to haul the waste. The majority of this waste hauling would occur over an eight to ten month period.

5.4.9 Hazard Analysis

Under this alternative KCP's low-hazard industrial processes and operations would be moved to an NNSA laboratory with a well developed emergency response and security programs. SNL/NM has an emergency management program established under DOE Order 151.1C, Comprehensive Emergency Management System which provides a general structure and framework for responding to any emergency at an NNSA facility and specific requirements to address protection of workers, the public, and the environment from the release of hazardous materials. Under this program, NNSA has established emergency plans, trained response organizations, coordinated with local response agencies, conducted hazard analysis, and established emergency communication protocols. The addition of a new facility at SNL/NM would not have an impact on this well-established emergency management program.

Accident Analysis

An accident analysis was conducted for the operations that could be relocated to SNL/NM. Based on a review of the potential hazards associated with the non-nuclear operations, it was concluded that the consequences of the most severe analyzed event (75 gallon hydrochloric acid release) would not exceed the threshold for early lethality beyond about 130 meters, a distance that would be well within the federal property boundary. The distance at which the Protective Action Criteria (PAC) is exceeded for that release would be no further than 450 meters. The results of event consequence calculations show that an Emergency Response Planning Guidelines (ERPG) level 2 does not reach offsite (Janke 2008). This analysis is based on hydrochloric acid (33-38%) in 15 gallon kegs that are used in current plating operations. NNSA is considering outsourcing much of the other plating operations, which would reduce the potential impacts associated with non-nuclear operations beyond the results presented in this EA.

Intentional Destructive Acts

A fundamental principal of DOE's safeguards and security program is a graded approach to the protection of national security assets. This approach is embodied in the relevant threat considerations and designations of facilities. DOE intends that the highest level of protection be given to security interests where loss, theft, compromise, or unauthorized use would adversely affect national security, the health and safety of employees and the public, or the environment.

This graded approach categorizes all DOE assets into one of four "Threat Levels" based on the general consequence of loss, destruction, or impact to public health and safety at a facility or the program, project, or activity conducted. Per the DOE's Design Basis Threat Policy (DOE Order 470.3A), the current Kansas City Plant is designated a Threat Level 4 (TL4) facility – this is the level assigned to a facility which has the lowest risk based on the general consequence of loss destruction or impact to security, public health and safety. In assigning the TL4 designation, DOE has evaluated the security, health and safety impact of the facility and has determined the impact to be low. A DBT analysis

for a new facility would be conducted in conjunction with the design process. It is expected to result in assignment of the TL4 designation to this facility.

Intentional destructive acts at the proposed new facility (e.g. terrorism, internal sabotage) have been evaluated and determined to have a low potential to impact security, public health and safety. The impact of an intentional destructive act would have no greater environmental, public health or safety consequence than the worst-case industrial accident scenario as discussed in Section 5.2.9.

Relocation of KCP activities to SNL/NM under either option would not impact the affect of an intentional destructive act on SNL as they already have protection mechanisms in place (considering the impact of intentional destructive acts) for a TL4 (or above) facility. A new facility at one of the laboratories would be evaluated under their existing hazard assessments.

5.4.10 Cumulative Impacts

This section presents the impacts of reasonably foreseeable future actions that are considered pertinent to the analysis of cumulative impacts for transferring KCP's operations to SNL/NM.

Complex Transformation

NNSA is currently assessing reasonable alternatives for transforming the nuclear portion of the nuclear weapons complex to be smaller, more efficient, and more responsive. The Draft Complex Transformation Supplemental PEIS (SPEIS) was published in January 2007. Although SNL/NM is not being considered for any major new facilities in the SPEIS, SNL/NM could be affected by decisions regarding alternatives for research and development (R&D) and testing activities. As a result of those decisions, SNL/NM could: (1) continue current activities related to R&D and testing; (2) downsize R&D facilities in place; (3) transfer some of those activities to other NNSA sites; or (4) receive some of those activities from other NNSA sites. The alternative most pertinent to cumulative impacts would be if SNL/NM received R&D activities and testing from other NNSA sites. The cumulative impacts would be as follows:

Land Use

If SNL/NM received R&D and testing activities from other NNSA sites, approximately 13.5 acres would be disturbed in TA-II. The land disturbance associated with KCP's operations would be approximately 50 acres. The cumulative land disturbance (63 acres) would represent less than 3% of the land at SNL/NM.

Air Quality

Short-term impacts to air quality could result from construction activities associated with the KCP operations, R&D and testing consolidation at SNL/NM, but are not expected to

exceed National Ambient Air Quality Standards. Operational increases in air pollutants would be less than 1% of site emissions, and there would be no radiological emissions.

Water Resources

With respect to water resources, the R&D consolidation at SNL/NM would use approximately 4.7 million gallons of water per year, which would be less than 1% of the current usage at SNL/NM. Water use from KCP operations would be approximately 36.5 million gallons/year, which would be approximately 6.6% of the current usage at SNL/NM. Cumulatively, the increase in water use would be less than 7.6%. There are no floodplains or wetlands within the potential construction areas.

Socioeconomics

During construction, a peak workforce of 1,020 (800 for the new facility and 220 associated with R&D and testing consolidation) would be required. This would represent an increase of less than 1% compared to employment in the ROI. Operations would cause similarly small cumulative impacts. Cumulative impacts associated with transportation would also be minimal. Neither the R&D and testing consolidation nor the non-nuclear facility would introduce new hazards to SNL/NM.

5.4.11 Consequences of KCP Non-Nuclear Facility Phase-Out

If the federal agencies decide to move KCP's non-nuclear operations to a site outside of the Kansas City metropolitan area, NNSA would phase-out operations at the plant. The environmental impacts of phasing out the operations from KCP are discussed in this section. Because the ultimate disposition of the facilities at the Bannister Federal Complex is unknown, the analysis only considers the direct impacts associated with not producing non-nuclear components in the Kansas City metropolitan area.

Land Use, Geology, and Soils

If operations at KCP are phased-out, NNSA would no longer occupy the facilities at the Bannister Federal Complex. The facilities could be used for other industrial purposes, sold, and/or undergo redevelopment.

Water Resources

If operations at KCP were phased-out, water usage would be reduced from the current 414,000 gallons of potable water per day. The total amount of wastewater discharged to the POTW (approximately 236,000 gallons per day) would also decrease.

Air Quality

Phasing-out KCP operations would reduce NNSA's contribution to air emissions from the Bannister Federal Complex (currently approximately 17.8 tons per year). This phase-

out would not be expected to have any major impact on the AQCR 94, which is currently in attainment status for all criteria pollutants (MDNR 2007).

Socioeconomics

Phasing-out KCP operations could reduce the workforce at the Bannister Federal Complex by up to approximately 2,400 jobs. The loss of 2,400 jobs would result in the loss of approximately 120 indirect jobs. Thus, the total loss of jobs in the ROI would be 2,520, which would represent less than a 1% decrease in the ROI workforce of 789,417. Based on the ROI average earnings of $56,370 for the government services industry, direct income could decrease by $135 million annually. This could also result in a decrease in indirect income in supporting industries. Based on the ROI average earnings of $33,000 for the KCP metropolitan area, indirect income could decrease by $4 million annually. The total impact to the ROI income could be $139 million ($135 million direct and $4 million indirect). A 1% loss in ROI jobs and ROI income would have no major effect on unemployment, housing, or community services.

Wastes

Phasing-out KCP operations would reduce non-hazardous waste generation by approximately 4.4 million pounds of waste per year, hazardous waste generation by approximately 37,000 pounds per year, and approximately 40 pounds of LLW per year for the Bannister Federal Complex.

5.5 Environmental Consequences of LLNL Alternative

5.5.1 Land Use, Geology, and Soils

An estimated 50 acres would be required during construction activities of a new facility. There would be no change in land use beyond current and already planned activities at LLNL, and no impacts to LLNL land use plans are expected.

An estimated 45 acres would be required for operations. Operation activities would remain consistent with the current multi-program laboratory uses at LLNL and would have no impacts on established land use patterns or requirements.

Aggregate and other geologic resources (e.g., sand) would be required to support construction activities. Prior to commencing ground disturbance NNSA would survey potentially affected areas to determine the extent and nature of any contaminated media and required remediation. Construction of new facilities would require a stormwater permit that would address erosion control measures to minimize the impacts of erosion.

The operation of new facilities at LLNL would not be expected to result in impacts to geologic or soil resources. Adverse impacts to structures, infrastructures, and surrounding communities could occur from hazardous materials release and/or structural failure of buildings and facilities following a major seismic event. New facilities would

be evaluated, designed, and constructed in accordance with DOE Order 420.1B, which requires that nuclear and non-nuclear facilities be designed, constructed, and operated so that workers, the public, and the environment are protected from the adverse impacts of natural phenomena hazards, including earthquakes.

5.5.2 Groundwater Hydrology

Groundwater in the vicinity of Livermore would not be used in the construction of a new facility. Water would be required during construction for such uses as dust control and soil compaction, washing and flushing activities, and meeting the potable and sanitary needs of construction employees.

There would be no onsite discharge of wastewater to the subsurface, and appropriate spill prevention controls and countermeasure plans would be employed to minimize the chance of petroleum, oils, lubricants, and other materials used during construction being released to the surface or subsurface and to ensure that waste materials are properly disposed. Groundwater in the vicinity of Livermore would not be used to support the operation of a new facility. In general, no impact on groundwater availability or quality is anticipated.

5.5.3 Surface Water Hydrology

Environmental impacts associated with a new facility could affect water resources at LLNL. The primary source of water for this site is San Francisco's Hetch Hetchy Water system. Water use at LLNL is approximately 273 million gallons per year (DOE 2005). Discharges have been in compliance with permits (LLNL 2007). Surface water in the vicinity of Livermore would not be used to support the construction of a new facility. It is estimated that construction activities would require a total of approximately 650,000 gallons of water from the Hetch Hetchy Water system. The percent change from the No Action Alternative would be less than 1%.

Sanitary wastewater would be generated by construction personnel. As plans include use of portable toilets, onsite discharge of sanitary wastewater would be minimized. The potential for stormwater runoff from construction areas to impact surface water quality is small. Standard construction practices implemented to minimize site runoff and erosion along with implementation of a stormwater pollution prevention plan would avoid the indirect degradation of any adjacent wetlands or aquatic resources. Appropriate soil erosion and sediment control measures (e.g., sediment fences, stacked hay bales, mulching disturbed areas, etc.) would be employed during construction to minimize suspended sediment and material transport, as well as potential water quality impacts. The location of a new facility at LLNL is not within the 100- or 500-year floodplains. Therefore, no impacts to floodplains are anticipated.

Surface water in the vicinity of Livermore would not be used to support the operation of a newly constructed facility. It is estimated that operations would require a total of approximately 36.5 million gallons of water from the Hetch Hetchy Water system. The

percent change from the No Action Alternative would be 13%, and would be within the capacity of the LLNL water system. There would be no discharge of sanitary or industrial effluent to surface waters.

5.5.4 Flora and Fauna

An estimated 50 acres would be required during construction activities. Construction activities may impair growth, damage, or eliminate portions of the existing onsite flora. During site clearing activities, highly mobile wildlife species such as small mammals and birds would be able to relocate to adjacent areas. However, successful relocation may not occur due to competition for resources to support the increased population. Less mobile species (reptiles and small mammals) could experience direct mortality during construction activities. Acreage used for construction activities would be lost as potential hunting habitat for raptors and other predatory species.

Thirteen threatened, endangered and other species of concern have been documented at or near LLNL. The California red-legged frog (*Rana aurora draytonii*) is the only federally threatened or endangered species that has been found at LLNL. Prior to construction activities, NNSA would consult with the U.S. Fish and Wildlife Service as appropriate to discuss the potential impacts of construction activities associated with a new facility on any threatened or endangered species.

NNSA's operations would relocate to the new facility at LLNL where an estimated 45 acres would be required for operations. There would be a permanent loss of habitat and relocation of species; however impacts would be to highly developed areas on LLNL. There would be no direct untreated effluent discharges to the environment and air emissions would be controlled to levels that would not be expected to adversely affect special interest species. With implementation and adherence to administrative procedures, along with facility design and engineering controls operations should have no significant adverse impacts to threatened or endangered species or other biological resources.

5.5.5 Solid and Hazardous Waste

LLNL is a large multi-program laboratory with many existing activities that generate all classes of waste. The construction of a new facility would be expected to generate 6,890 cubic yards of non-hazardous solid waste. This waste would be generated over the two year construction period and would be a 20% increase in the annual amount of non-hazardous solid waste generation. Construction waste would first be inspected for the presence of hazardous materials and then sorted, with the recyclable materials removed. This waste would then be taken to the Vasco Road Landfill in Livermore, California. The construction process is not expected to generate any hazardous waste or LLW.

Once operational, a new facility would be expected to generate, on an annual basis, 26,000 pounds of hazardous waste, 1.6 million pounds of non-hazardous waste, and 40 pounds of LLW. The amounts of hazardous waste and LLW are small in relation to the

amount of hazardous waste and LLW currently being managed at LLNL. The hazardous waste generated by a new facility would be treated and disposed of off-site at a commercial RCRA-permitted treatment and disposal facility. LLW would be processed and packaged at the existing Decontamination and Waste Treatment Facility. The amount of non-hazardous solid waste generated by the new facility would be a substantial increase in the amount normally generated by current operations at LLNL. Since this waste is readily accepted at numerous municipal waste and RCRA Subtitle D facilities, management of this increased volume for LLNL should pose no issues, as long as thorough and numerous inspections can assure that this waste does not contain hazardous constituents.

5.5.6 Air Quality and Permitting

Construction of new structures would result in temporary increases in air quality impacts from construction equipment, trucks, and employee vehicles. Exhaust emissions from these sources would result in releases of criteria pollutants. Construction activities would increase the potential for fugitive dust generated during clearing, grading, and other earth moving operations and depend on a number of factors including silt and moisture content of the soil, wind speed and area disturbed. The potential for fugitive dust generation would be mitigated by watering of the disturbed areas and other engineering controls. Construction activities would be expected to produce only temporary and localized air emissions and the effects on air quality would also be temporary and localized. There would be no long-term degradation of regional air quality.

No radiological releases to the environment are expected in association with construction activities. However, the potential exists for contaminated soils and possibly other media to be disturbed during excavation and other site preparation activities. Prior to commencing ground disturbance, NNSA would survey potentially affected areas to determine the nature and extent of any contamination and would be required to remediate any contamination in accordance with established site procedures.

For 2006, criteria pollutant emission levels from LLNL activities were 23% of the standard for carbon monoxide, 5% of the standard for sulfur dioxide, and 57% of the standard for particulate matter (LLNL 2007).

A new NNSA facility would use natural gas-fired boilers to heat the facility. The preliminary peak heating load is estimated at 80 million BTU/hour. The total estimated annual air emissions from the new facility are 12.8 tons. The emissions consist of 10.4 tons of NOx, SOx, and CO from the boilers and process heaters, 2.0 tons of VOCs from electronic component solvent spray cleaning operations, and 0.4 tons of VOCs from painting operations.

With the goal of expeditiously attaining conformance with NAAQS, the *California Clean Air Act* requires air districts to reduce emissions of nonattainment pollutants or precursors by 5% per year, and requirements are adopted within each air district's clean air plan. The stringency of requirements within each local clean air plan and subsequent

implementing regulations are based on the severity of the problem and projected timeframe when the area is expected to achieve attainment. As part of this process, the Bay Area Air Quality Management District (BAAQMD) has adopted "no net increase" provisions within its clean air plans. The "no net increase" programs require that, as a precondition to the issuance of an air permit for a significant new or modified emission source, any increases in emissions of nonattainment pollutants or precursors be offset by mandatory reductions in emissions of other sources onsite or potentially at other facilities. In the BAAQMD, the offset requirement is triggered for mid-size facilities (emissions of 15 tons per year or more of nonattainment pollutants), and a greater burden is placed on large facilities (emissions of 50 tons per year or more). These large facilities must offset any proposed emission increases by a slightly greater decrease, at a ratio of 1.15 to 1.0. The added 15% in part satisfies the 5% annual emission reduction requirement of nonattainment areas (DOE 2005). The emissions from the new facility would not trigger the offset requirement.

5.5.7 Historical or Cultural Resources

An estimated 50 acres would be required during construction activities. Because most of the Livermore Site is developed, the likelihood of finding unrecorded and undisturbed historic sites, Native American traditional cultural resources, or paleontological resources is low. None of the buildings and objects at the Livermore Site that are eligible for listing in the NRHP would be affected by the non-nuclear facility.

NNSA's operations would relocate to the new facility at LLNL. An estimated 45 acres would be required for operations. There would be no adverse impacts to cultural, archaeological and paleontological resources.

5.5.8 Socioeconomic Environment

Environmental Justice

Based on the analysis of impacts for resource areas, few high and adverse impacts from construction and operation activities at LLNL are expected under any of the alternatives; to the extent that any impacts may be large and adverse, NNSA expects the impacts to affect all populations in the area equally. There are no large adverse impacts to any populations. There were no discernable adverse impacts to land uses, visual resources, noise, water, geology and soils, biological resources, socioeconomic resources, cultural and archaeological resources.

Income and Employment

Construction activities at LLNL would require 1,600 worker-years of labor. During peak construction, 800 workers would be employed at the site. In addition to the direct jobs created by the relocation of the facility, additional jobs would be created in other supporting industries. It is estimated that 845 indirect jobs would be created, for a total of 1,645 jobs. This represents less than 1% of the total ROI labor force.

Based on the ROI average earnings of $53,144 for the construction industry, direct income would increase by $42.5 million annually. This would also result in an increase of additional indirect income in supporting industries. The total impact to the ROI income would be $80.1 million ($42.5 million direct and $37.6 million indirect).

The influx of new construction workers could increase the ROI population and create new housing demand. This analysis assumes that one-half of the construction jobs would be filled by incoming workers and that each worker would bring an average of two family members to the ROI. Consequently, for the peak year of construction (800 workers), a total of 1,200 new residents would be expected in the ROI. This is an increase of less than 1% over the current population. The current housing market would likely be sufficient to absorb this increase in the ROI population.

The small increase in the population would not put increased demand on community services. Comparable levels of service could be maintained with current staffing levels.

Operation of a new facility at LLNL would require approximately 1,750 workers, approximately 255 of which would be existing employees from LLNL operations. In addition to the direct jobs created by the relocation of KCP's operations, additional jobs would be created in supporting industries. It is estimated that 1,713 indirect jobs would be created, for a total of 3,213 jobs. This represents less than 1% of the total ROI labor force.

During operations, based on the ROI average earnings of $78,918 for the government services industry, direct income would increase by $120.4 million annually. This would also result in an increase of additional indirect income in supporting industries. The total impact to the ROI income would be $196.6 million ($120.4 million direct and $76.2 million indirect).

For operations approximately 1,525 new residents would be expected in the ROI, not including their families. This is an increase of less than 1% over the current population. The current housing market would likely be sufficient to absorb this increase in the ROI population. The small increase in the population would not put increased demand on community services. Comparable levels of service could be maintained with current staffing levels.

Noise

Impacts from noise generated from demolition, construction, and operation of new and planned facilities would contribute to the ambient background noise levels. In general, sound levels would increase during demolition and construction of a facility and, upon completion, return to noise levels characteristic of a light industrial setting within the range of 50 to 70 dBA. No noise-related cumulative impacts are anticipated.

Construction of new buildings would involve the movement of workers and construction equipment and would result in some temporary increase in noise levels near the area.

Although noise levels would be highest during construction, these noise levels would not be expected to extend far beyond the boundaries of the construction site. At 400 feet from the construction site, construction noises would range from approximately 55-85 dBA. There would be little potential for disturbing wildlife outside a 400-foot radius of the construction site. Given the distance to the site boundary, there would be no change in noise impacts on the public as a result of construction activities, except for a small increase in traffic noise levels from construction employees and material shipments.

Construction workers could be exposed to noise levels higher than the acceptable limits specified by Occupational Safety and Health Administration (OSHA) in its noise regulations (29 CFR 1926.52). However, DOE has implemented appropriate hearing protection programs to minimize noise impacts on workers. These include the use of administrative controls, engineering controls, and personal hearing protection equipment.

The location of facilities relative to the site boundary and sensitive receptors was examined to evaluate the potential for onsite and offsite noise impacts. Noise impacts from operations of new buildings would be expected to be similar to those from existing operations. There would be an increase in equipment noise (e.g., heating and cooling systems, generators, vents, motors, material-handling equipment). However, given the distance to the site boundary, noise from equipment would not likely disturb the public. These noise sources would be far enough away from offsite areas that their contribution to offsite noise levels would be small. Some noise sources (e.g., public address systems and testing of fire alarms) could have onsite impacts, such as the disturbance of wildlife. But these noise sources would be intermittent and would not be expected to disturb wildlife outside of facility boundaries. Traffic noise associated with the operation of new facilities would occur onsite and along offsite local and regional transportation routes used to bring materials and workers to the site. Noise from traffic associated with the operation of new facilities would likely produce increases in traffic noise levels along roads used to access the site.

Operations workers could be exposed to noise levels higher than the acceptable limits specified by OSHA in its noise regulations (29 CFR 1926.52). However, DOE has implemented appropriate hearing protection programs to minimize noise impacts on workers. These include the use of administrative controls, engineering controls, and personal hearing protection equipment

Health and Safety

Non-radiological impacts to workers were evaluated using occupational injury, illness, and fatality rates obtained from Bureau of Labor Statistics (BLS), U.S. Department of Labor data. DOE values are historically lower than BLS values owing to the increased focus on safety. The potential risk of occupational injuries and fatalities to workers constructing the new facility would be expected to be bounded by injury and fatality rates for general industrial construction. Using BLS data for 1997-2001, Total Recordable Cases, Lost Workday Cases, and Fatalities were estimated for both the peak workforce loading and for the duration of construction activities.

No chemicals have been identified that would be a risk to members of the public from construction activities associated with the new facility. Construction workers would be protected from overexposure to hazardous chemicals by adherence to OSHA and EPA occupational standards that limit concentrations of potentially hazardous chemicals. Implementation of worker protection programs to construction activities would also decrease the potential for worker exposures by providing hazards identification and control measures for construction activities.

For the LLNL action alternative, the chemical-related health impacts to workers at a non-nuclear facility would not change compared to the No Action Alternative. Because operations in new facilities at the LLNL would not reduce the distance to the site boundary compared to current operations at the KCP, impacts to the public would also not change.

Transportation

Approximately 35% of the LLNL employees live within 12 miles of the Laboratory (DOE 2005). The remaining employees come to work from greater distances, mostly from the counties of Alameda, San Joaquin, Contra Costa, and Stanislaus. Many of these commuters travel in personal vehicles and arrive either on local roads or on I-580. Trucks carrying radioactive or hazardous material shipments almost exclusively arrive from or depart to the east on I-580 and I-5, except for local deliveries from the Bay Area.

Overall, the accident history near LLNL is good, with eight of the ten sections analyzed having accident rates considerably below statewide averages, while two of the ten sections had rates up to 14% higher than the statewide averages. The rates that are above the averages are either expected to be improved or are not considered to be significant (DOE 2005).

The construction of a new facility at LLNL would add an additional 800 construction workers or an estimated 600 vehicles to existing highways on and around LLNL at the peak of the two year construction period. In addition, a substantial amount of deliveries of construction material, concrete, equipment, and office furniture would also add to the existing traffic patterns. An estimated 6,890 cubic yards of solid non-hazardous waste would be generated by the construction process. This waste would be trucked off-site to the Vasco Road Landfill in Livermore, California and would entail from 575 to 700 truckloads. The majority of this waste hauling would occur over an eight to ten month period.

5.5.9 Hazard Analysis

Under this alternative KCP's low-hazard industrial processes and operations would be moved to an NNSA laboratory with a well developed emergency response and security programs. LLNL has an emergency management program established under DOE Order 151.1C, Comprehensive Emergency Management System which provides a general structure and framework for responding to any emergency at an NNSA facility and

specific requirements to address protection of workers, the public, and the environment from the release of hazardous materials. Under this program, NNSA has established emergency plans, trained response organizations, coordinated with local response agencies, conducted hazard analysis, and established emergency communication protocols. The addition of a new facility at LLNL would not have an impact on this well-established emergency management program.

Accident Analysis

An accident analysis was conducted for the operations that could be relocated to LLNL. Based on a review of the potential hazards associated with the non-nuclear operations, it was concluded that the consequences of the most severe analyzed event (75 gallon hydrochloric acid release) would not exceed the threshold for early lethality beyond about 135 meters, a distance that would be well within the site boundary. The distance at which the Protective Action Criteria (PAC) is exceeded for that release would be no further than 430 meters. The results of event consequence calculations show that an Emergency Response Planning Guidelines (ERPG) level 2 would be reached at approximately the site boundary (Janke 2008). Although this risk would not be significant, it supports the adequacy of the EPZ radius that has been established for LLNL. This analysis is based on hydrochloric acid (33-38%) in 15 gallon kegs that are used in current plating operations. NNSA is considering outsourcing much of the other plating operations, which would reduce the potential impacts associated with operations beyond the results presented in this EA.

Intentional Destructive Acts

A fundamental principal of DOE's safeguards and security program is a graded approach to the protection of national security assets. This approach is embodied in the relevant threat considerations and designations of facilities. DOE intends that the highest level of protection be given to security interests where loss, theft, compromise, or unauthorized use would adversely affect national security, the health and safety of employees and the public, or the environment.

This graded approach categorizes all DOE assets into one of four "Threat Levels" based on the general consequence of loss, destruction, or impact to public health and safety at a facility or the program, project, or activity conducted. Per the DOE's Design Basis Threat Policy (DOE Order 470.3A), the current Kansas City Plant is designated a Threat Level 4 (TL4) facility – this is the level assigned to a facility which has the lowest risk based on the general consequence of loss destruction or impact to security, public health and safety. In assigning the TL4 designation, DOE has evaluated the security, health and safety impact of the facility and has determined the impact to be low. A DBT analysis for a new facility would be conducted in conjunction with the design process. It is expected to result in assignment of the TL4 designation to this new facility.

Intentional destructive acts at the proposed new facility (e.g. terrorism, internal sabotage) have been evaluated and determined to have a low potential to impact security, public

health and safety. The impact of an intentional destructive act would have no greater environmental, public health or safety consequence than the worst-case industrial accident scenario as discussed in Section 5.2.9.

Relocation of KCP activities to LLNL would not impact the affect of an intentional destructive act on LLNL as they already have protection mechanisms in place (considering the impact of intentional destructive acts) for a TL4 (or above) facility. A new facility at one of the laboratories would be evaluated under their existing hazard assessments.

5.5.10 Cumulative Impacts

This section presents the impacts of reasonably foreseeable future actions that are considered pertinent to the analysis of cumulative impacts for transferring KCP's operations to LLNL.

Complex Transformation

As discussed in Section 5.4.10, NNSA is currently preparing a SPEIS to assess reasonable alternatives for transforming the nuclear portion of the nuclear weapons complex to be smaller, more efficient, and more responsive. Although LLNL is not being considered for any major new facilities in the SPEIS, LLNL could be affected by decisions related to research and development (R&D) and testing activities. As a result of those decisions, LLNL could: (1) continue current activities related to R&D and testing; (2) downsize the R&D and testing facilities at the laboratory; (3) transfer some of these activities to other sites; or (4) receive some of the activities from other sites. The alternative most pertinent to cumulative impacts would be if LLNL received R&D and testing activities from other sites. The cumulative impacts would be as follows:

Land Use

If LLNL received R&D and testing activities from other sites, approximately 8-10 acres would be disturbed in the northwest portion of LLNL, near the area being considered for the new facility. The land disturbance associated with the new facility would be approximately 50 acres. The cumulative land disturbance (58-60 acres) would represent less than 7.4% of the land at LLNL.

Air Quality

Short-term impacts to air quality could result from construction activities associated with the KCP operations and R&D consolidation at LLNL, but are not expected to exceed NAAQS. Operational increases in air pollutants would be less than 1% of site emissions.

Water Resources

With respect to water resources, the R&D consolidation at LLNL would utilize approximately 4.7 million gallons of water per year, which would be approximately 1% of the current usage at LLNL. Water use from KCP operations would be approximately 36.5 million gallons/year, which would be approximately 13% of the current usage at LLNL. Cumulatively, the increase in water use would be approximately 14%. There are no floodplains or wetlands within the potential construction areas.

Socioeconomics

During construction, a peak workforce of 950 (800 for the new facility and 150 associated with R&D and testing consolidation) would be required. This would represent an increase of approximately 10% of the workforce at LLNL, and less than 1% of employment in the ROI. Operations would cause similarly small cumulative impacts. Cumulative impacts associated with transportation would also be minimal. Neither the R&D consolidation nor the non-nuclear facility would introduce new hazards to LLNL.

5.5.11 Consequences of KCP Non-Nuclear Facility Phase-Out

The impacts to the Kansas City metropolitan area of relocating KCP's non-nuclear operations to LLNL would be the same as for the SNL/NM alternatives described in Section 5.4.11.

5.6 Environmental Consequences of LANL Alternatives

5.6.1 Land Use, Geology, and Soils

An estimated 50 acres would be required during construction activities for either the new construction or reuse/new construction options. There would be no change in land use beyond current/planned activities at LANL, and no impacts to LANL land use plans are expected.

NNSA's operations would relocate to a new facility at LANL. An estimated 45 acres would be required for operations. Operation activities would remain consistent with the current land uses at LANL and would have no impacts on established land use patterns or requirements.

Aggregate and other geologic resources (e.g., sand) would be required to support construction activities for either option. The potential exists for contaminated soils and possibly other media to be encountered during excavation and other site activities. Prior to commencing ground disturbance NNSA would survey potentially affected areas to determine the extent and nature of any contaminated media and required remediation. Construction of new facilities would require a stormwater permit that would address erosion control measures to minimize the impacts of erosion.

LANL is located in a high seismic hazard area. All new facilities and building expansions would be designed to withstand the maximum expected earthquake generated ground acceleration in accordance with DOE Order 420.1B, *Facility Safety*, and accompanying safety guidelines. Therefore, site geologic conditions would not likely affect the facilities.

The operation of new facilities at LANL would not be expected to result in impacts to geologic or soil resources. Adverse impacts to structures, infrastructures, and surrounding communities could occur from hazardous materials release and/or structural failure of buildings and facilities following a major seismic event. New facilities would be evaluated, designed, and constructed in accordance with DOE Order 4201.B, which requires that nuclear and non-nuclear facilities be designed, constructed, and operated so that workers, the public, and the environment are protected from the adverse impacts of natural phenomena hazards, including earthquakes.

5.6.2 Groundwater Hydrology

Environmental impacts associated with a new facility could affect groundwater resources at LANL. No impacts to surface water are expected. In 2005, LANL used approximately 359 million gallons of groundwater (LANL 2006a). Discharges were in compliance with permits. Water would be required during construction for such uses as dust control and soil compaction, washing and flushing activities, and meeting the potable and sanitary needs of construction employees. It is estimated that construction activities associated with either the new construction or reuse/new construction options would require a total of approximately 650,000 gallons of groundwater. Site water requirements are not expected to exceed LANL's maximum water allotment. The percent change from the No Action Alternative would be less than 1%.

There would be no onsite discharge of wastewater to the subsurface, and appropriate spill prevention controls and countermeasure plans would be employed to minimize the chance of petroleum, oils, lubricants, and other materials used during construction being released to the surface or subsurface and to ensure that waste materials are properly disposed. In general, no impact on groundwater availability or quality is anticipated.

Activities at LANL would use groundwater primarily to meet the potable and sanitary needs of facility support personnel. Site water requirements for the operation of the newly constructed facility would increase LANL's annual use by approximately 10%, but would remain within existing water rights.

5.6.3 Surface Water Hydrology

Surface water would not be used to support construction of a new facility at LANL under either option as groundwater is the source of water at LANL. Therefore, there would be no impact to surface water availability from construction. Sanitary wastewater would be generated by construction personnel. As plans include use of portable toilets, onsite discharge of sanitary wastewater would be minimized.

The potential for stormwater runoff from construction areas to impact surface water quality is small. Although runoff from the vicinity of the site drains toward the Rio Grande, surface drainages in general are ephemeral, and infiltration is rapid on alluvium. Standard construction practices implemented to minimize site runoff and erosion along with implementation of a stormwater pollution prevention plan would avoid the indirect degradation of any adjacent wetlands or aquatic resources. Appropriate soil erosion and sediment control measures (e.g., sediment fences, stacked hay bales, mulching disturbed areas, etc.) would be employed during construction to minimize suspended sediment and material transport, as well as potential water quality impacts. The location for the newly constructed facility at TA-16 is not within the 100- or 500-year floodplains. The reuse/new construction of facilities at TA-3 for a new facility is also not within the 100- or 500-year floodplains. Therefore, no impacts to floodplains are anticipated. No impacts on surface water resources are expected as a result of new facility operations at LANL. No surface water would be used to support facility activities and there would be no discharge of sanitary or industrial effluent to surface waters. It is estimated that operations would require a total of approximately 36.5 million gallons of water annually. Sanitary and industrial wastewater discharges are projected to be approximately 86,500 gallons per day.

5.6.4 Flora and Fauna

For either option, an estimated 50 acres would be required during construction activities. Construction activities may impair growth, damage, or eliminate portions of the existing onsite flora. During site clearing activities, highly mobile wildlife species such as small mammals and birds would be able to relocate to adjacent areas. However, successful relocation may not occur due to competition for resources to support the increased population. Less mobile species (reptiles and small mammals) could experience direct mortality during construction activities. Acreage used for construction activities would be lost as potential hunting habitat for raptors and other predatory species.

NNSA's operations would relocate to the new facility at LANL where an estimated 45 acres would be required for new operations. There would be a permanent loss of habitat and relocation of species from operations; however impacts would be to highly developed areas on LANL. There would be no direct untreated effluent discharges to the environment and air emissions would be controlled to levels that would not be expected to adversely affect special interest species. With implementation an adherence to administrative procedures, along with facility design and engineering controls operations should have no significant adverse impacts to threatened or endangered species or other biological resources.

5.6.5 Solid and Hazardous Waste

The construction of a new facility at LANL would be expected to generate 6,890 cubic yards of non-hazardous solid waste. The utilization of existing buildings and the construction of a smaller manufacturing facility would be expected to generate 1,800

cubic yards of non-hazardous solid waste. This waste would first be inspected for the presence of hazardous materials and then sorted, with the recyclable materials removed. This waste would then be taken off-site for disposal at a municipal landfill.

Once operational a non-nuclear facility at LANL (either option) would be expected to generate 26,000 pounds per year of hazardous waste, 1.6 million pounds of non-hazardous waste per year, and 40 pounds of LLW. This amount of hazardous waste is insignificant in relation to the amount of hazardous waste managed on a regular basis at LLNL. The amount of non-hazardous solid waste is more significant but since this waste is readily accepted at numerous municipal waste and RCRA Subtitle D facilities, management of this increased volume with an already large existing volume already generated by other activities at LANL should pose no issues. This waste would be tested on a regular basis to assure that it does not contain hazardous constituents.

5.6.6 Air Quality and Permitting

Construction of new structures would result in temporary increases in air quality impacts from construction equipment, trucks, and employee vehicles. Exhaust emissions from these sources would result in releases of criteria pollutants. Fugitive dust generated during clearing, grading, and other earth moving operations depends on a number of factors including silt and moisture content of the soil, wind speed and area disturbed. Also, it is assumed that water would be applied to disturbed areas.

Asbestos-containing materials may be encountered during site renovation or building demolition. The alternatives involving building renovation or demolition would include provisions for identification of asbestos-containing materials by properly trained and state certified asbestos inspector(s). Identified asbestos-containing materials would then be abated in accordance with applicable local, state and federal notification, work practice, and worker protection regulations prior to other renovation or demolition activities.

No radiological releases to the environment are expected from construction activities. However, the potential exists for contaminated soils and possibly other media to be disturbed during excavation and other site preparation activities. Prior to commencing ground disturbance, NNSA would survey potentially affected areas to determine the nature and extent of any contamination and would be required to remediate any contamination in accordance with established site procedures.

A new facility would use natural gas-fired boilers to heat the facility. The preliminary peak heating load is estimated at 80 million BTU/hour. The total estimated annual air emissions from the new NNSA facility are 12.8 tons. The emissions consist of 10.4 tons of NOx, SOx, and CO from the boilers and process heaters, 2.0 tons of VOCs from electronic component solvent spray cleaning operations, and 0.4 tons of VOCs from painting operations. The emissions would represent an insignificant increase to the current emissions at LANL.

5.6.7 Historical or Cultural Resources

An estimated 50 acres would be required during construction activities. There is a high density of cultural resources at LANL; therefore there is a high probability that resources would be impacted during construction activities. Prior to any ground-disturbing activity, NNSA would identify and evaluate any cultural or archaeological resources that could potentially be impacted by construction activities. In the event that items of cultural or archaeological significance are found during site excavation, excavation of the site would stop in order to coordinate with the appropriate State Historic Preservation Office. All applicable local, state, and federal laws with regard to archaeological findings would be followed.

NNSA's operations would relocate to the new facility at LANL. An estimated 45 acres would be required for new operations. There would be no adverse impacts to cultural or archaeological resources.

5.6.8 Socioeconomic Environment

Environmental Justice

Few high and adverse impacts from construction and operation activities at LANL are expected under any of the alternatives; to the extent that any impacts may be high and adverse, NNSA expects the impacts to affect all populations in the area equally. There are no large adverse impacts to any populations. There were no discernable adverse impacts to land uses, visual resources, noise, water, geology and soils, biological resources, socioeconomic resources, cultural and archaeological resources.

Income and Employment

Because of the internal modification that would be required for the reuse/new construction option, it was estimated that construction employment would not change significantly compared to the new construction option. As such, construction of the new facility at LANL under either option would require 1,600 worker-years of labor. During peak construction, 800 workers would be employed at the site. In addition to the direct jobs created by the relocation of the facility, additional jobs would be created in other supporting industries. It is estimated that 848 indirect jobs would be created, for a total of 1,648 jobs. This represents approximately 1.5% of the total ROI labor force.

Based on the ROI average earnings of $30,900 for the construction industry, direct income would increase by $24.7 million annually. This would also result in an increase of additional indirect income in supporting industries. The total impact to the ROI income would be $46.8 million ($24.7 million direct and $22.1 million indirect).

The influx of new construction workers under either option would increase the ROI population and create new housing demand. This analysis assumes that one-half of the construction jobs would be filled by incoming workers and that each worker would bring

an average of two family members to the ROI. Consequently, for the peak year of construction (800 workers), a total of 1,200 new residents would be expected in the ROI. This is an increase of approximately 1% over the current population. The current housing market would likely be sufficient to absorb this increase in the ROI population. The small increase in the population would not put increased demand on community services. Comparable levels of service could be maintained with current staffing levels.

Operation activities at LANL would require approximately 1,750 workers, 255 of which will be existing support service jobs from LANL operations. In addition to the direct jobs created by the relocation of the facility, additional jobs would be created in other supporting industries. It is estimated that 1,590 indirect jobs would be created, for a total of 3,090 jobs. This represents less than 3% of the total ROI labor force.

During operations of either option, based on the ROI average earnings of $47,200 for the government services industry, direct income would increase by $72.0 million annually. This would also result in an increase of additional indirect income in supporting industries. The total impact to the ROI income would be $113.4 million ($72.0 million direct and $41.4 million indirect).

The influx of new workers from plant operations would increase the ROI population and create new housing demand. This analysis assumes that one-third of the operational jobs would be filled by incoming workers and that each worker would bring an average of two family members to the ROI. Consequently, for operations approximately 1,525 new residents would be expected in the ROI, not including their families. This is an increase of approximately 1% over the current population. The current housing market would likely be sufficient to absorb this increase in the ROI population. The small increase in the population would not put increased demand on community services. Comparable levels of service could be maintained with current staffing levels.

Noise

Impacts from noise generated from demolition, construction, and operation of new and planned facilities would contribute to the ambient background noise levels. In general, sound levels would increase during demolition and construction of a facility and, upon completion, return to noise levels characteristic of a light industrial setting within the range of 50 to 70 dBA. No noise-related cumulative impacts are anticipated.

Construction of new buildings would involve the movement of workers and construction equipment and would result in some temporary increase in noise levels near the area. Although noise levels would be highest during construction, these noise levels would not be expected to extend far beyond the boundaries of the construction site. At 400 feet from the construction site, construction noises would range from approximately 55-85 dBA. There would be little potential for disturbing wildlife outside a 400-foot radius of the construction site. Given the distance to the site boundary, there would be no change in noise impacts on the public as a result of construction activities, except for a small increase in traffic noise levels from construction employees and material shipments.

Construction workers could be exposed to noise levels higher than the acceptable limits specified by Occupational Safety and Health Administration (OSHA) in its noise regulations (29 CFR 1926.52). However, DOE has implemented appropriate hearing protection programs to minimize noise impacts on workers. These include the use of administrative controls, engineering controls, and personal hearing protection equipment.

The location of facilities relative to the site boundary and sensitive receptors was examined to evaluate the potential for onsite and offsite noise impacts. Noise impacts from operations of new buildings would be expected to be similar to those from existing operations. There would be an increase in equipment noise (e.g., heating and cooling systems, generators, vents, motors, material-handling equipment). However, given the distance to the site boundary, noise from equipment would not likely disturb the public. These noise sources would be far enough away from offsite areas that their contribution to offsite noise levels would be small. Some noise sources (e.g., public address systems and testing of fire alarms) could have onsite impacts, such as the disturbance of wildlife. But these noise sources would be intermittent and would not be expected to disturb wildlife outside of facility boundaries. Traffic noise associated with the operation of new facilities would occur onsite and along offsite local and regional transportation routes used to bring materials and workers to the site. Noise from traffic associated with the operation of new facilities would likely produce increases in traffic noise levels along roads used to access the site.

Operations workers could be exposed to noise levels higher than the acceptable limits specified by OSHA in its noise regulations (29 CFR 1926.52). However, DOE has implemented appropriate hearing protection programs to minimize noise impacts on workers. These include the use of administrative controls, engineering controls, and personal hearing protection equipment.

Health and Safety

Non-radiological impacts to workers were evaluated using occupational injury, illness, and fatality rates obtained from Bureau of Labor Statistics (BLS), U.S. Department of Labor data. DOE values are historically lower than BLS values owing to the increased focus on safety. The potential risk of occupational injuries and fatalities to workers constructing a new facility would be expected to be bounded by injury and fatality rates for general industrial construction. Using BLS data for 1997-2001, Total Recordable Cases, Lost Workday Cases, and Fatalities were estimated for both the peak workforce loading and for the duration of construction activities.

No chemicals have been identified that would be a risk to members of the public from construction activities associated with a new facility. Construction workers would be protected from overexposure to hazardous chemicals by adherence to OSHA and EPA occupational standards that limit concentrations of potentially hazardous chemicals. Implementation of worker protection programs to construction activities would also decrease the potential for worker exposures by providing hazards identification and control measures for construction activities.

For the LANL alternatives, the chemical-related health impacts to workers at a non-nuclear facility would not change compared to the No Action Alternative. Because operations in new or renovated facilities at LANL would not reduce the distance to the site boundary compared to current operations at the KCP, impacts to the public would also not change.

Transportation

Motor vehicles provide the predominant mode of transportation utilized at LANL. Only two major roads, NM 502 and NM 4, access Los Alamos County. Traffic volume on the Los Alamos County segments of these roads is primarily associated with LANL activities. Most commuter traffic originates from Los Alamos County or east of the county. Less than 5% of commuters commute to LANL from the west along NM 4. Most commuter traffic originates from Los Alamos County or east of Los Alamos County (Rio Grande Valley and Santa Fe) as a result of the large number of LANL employees that live in these areas. In 2005, there were over 5,100 motor vehicle accidents in Los Alamos, Rio Arriba, and Santa Fe Counties resulting in 53 fatalities.

The construction would add an additional 800 construction workers or an estimated 600 vehicles to existing highways on and around LANL at the peak of the two year construction period. In addition, a substantial amount of deliveries of construction material, concrete, equipment, and office furniture would also add to the existing traffic patterns. For the new construction option, an estimated 6,890 cubic yards of solid hazardous waste would be generated (575 to 700 truckloads). For the reuse/new construction option, an estimated 1,800 cubic yards of non-hazardous solid waste would be generated (150 to 180 truckloads). The majority of this waste hauling would occur over an eight to ten month period. This waste would be trucked off-site and these trips could be substantially reduced if tractor trailers were to be used to haul the waste.

5.6.9 Hazard Analysis

Under this alternative KCP's low-hazard industrial processes and operations would be moved to an NNSA laboratory with a well developed emergency response and security programs. LANL has an emergency management program established under DOE Order 151.1C, Comprehensive Emergency Management System which provides a general structure and framework for responding to any emergency at an NNSA facility and specific requirements to address protection of workers, the public, and the environment from the release of hazardous materials. Under this program, NNSA has established emergency plans, trained response organizations, coordinated with local response agencies, conducted hazard analysis, and established emergency communication protocols. The addition of a new facility at LANL would not have an impact on this well-established emergency management program.

Accident Analysis

An accident analysis was conducted for the operations that could be relocated to LANL. Based on a review of the potential hazards associated with the non-nuclear operations, it was concluded that the consequences of the most severe analyzed event (75 gallon hydrochloric acid release) would not exceed the threshold for early lethality beyond about 91 meters, a distance that would be well within the federal property boundary. The distance at which the Protective Action Criteria (PAC) is exceeded for that release would be no further than 350 meters. The results of event consequence calculations show that an Emergency Response Planning Guidelines (ERPG) level 2 does not reach offsite (Janke 2008). This analysis is based on hydrochloric acid (33-38%) in 15 gallon kegs that are used in current plating operations. NNSA is considering outsourcing much of the other plating operations, which would reduce the potential impacts associated with non-nuclear operations beyond the results presented in this EA.

Intentional Destructive Acts

A fundamental principal of DOE's safeguards and security program is a graded approach to the protection of national security assets. This approach is embodied in the relevant threat considerations and designations of facilities. DOE intends that the highest level of protection be given to security interests where loss, theft, compromise, or unauthorized use would adversely affect national security, or the health and safety of employees and the public, or the environment.

This graded approach categorizes all DOE assets into one of four "Threat Levels" based on the general consequence of loss, destruction, or impact to public health and safety at a facility or the program, project, or activity conducted. Per the Department of Energy's Design Basis Threat Policy (DOE Order 470.3A), the current Kansas City Plant is designated a Threat Level 4 (TL4) facility – this is the level assigned to a facility which has the lowest Departmental risk based on the general consequence of loss destruction or impact to security, public health and safety. In assigning the TL4 designation, the Department has evaluated the security, health and safety impact of the facility and has determined the impact to be low. A DBT analysis for a new facility would be conducted in conjunction with the design process. It is expected to result in assignment of the TL4 designation to this facility.

Intentional destructive acts at the proposed new facility (e.g. terrorism, internal sabotage) have been evaluated and determined to have a low potential to impact security, public health and safety. The impact of an intentional destructive act would have no greater environmental, public health or safety consequence than the worst-case industrial accident scenario as discussed in Section 5.2.9.

Relocation of KCP activities to LANL under either option would not impact the affect of an intentional destructive act on LANL as they already have protection mechanisms in place (considering the impact of a intentional destructive acts) for a TL4 (or above)

facility. A new facility at one of the laboratories would be evaluated under their existing hazard assessments.

5.6.10 Cumulative Impacts

This section presents the impacts of reasonably foreseeable future actions that are considered pertinent to the analysis of cumulative impacts for transferring KCP operations to LANL.

Complex Transformation

As discussed in Section 5.4.10, NNSA is currently preparing a SPEIS to assess reasonable alternatives for transforming the nuclear portion of the nuclear weapons complex to be smaller, more efficient, and more responsive. LANL is being considered for several major new facilities in the SPEIS, including a Consolidated Plutonium Center, a Consolidated Uranium Center, and an Assembly/Disassembly/High Explosives Center. Together, these three facilities are referred to as a Consolidated Nuclear Production Center (CNPC).

Global Nuclear Energy Partnership

DOE is currently preparing a PEIS to assess reasonable alternatives to support expansion of nuclear energy production worldwide while advancing nonproliferation goals and reducing the impacts of associated with disposal of future spent nuclear fuel. The GNEP PEIS also includes an analysis of a project-specific proposal to select one or more sites for an Advanced Fuel Cycle Facility (AFCF). The AFCF would be an R&D and demonstration facility designed to support ongoing and future fuel cycle research. LANL is one of five potential locations for the AFCF.

The cumulative impacts would be as follows:

Land Use

A CNPC at LANL would require approximately 545 acres; an AFCF would require approximately 370 acres; and the new facility would require approximately 50 acres. The cumulative land requirements (965 acres) would represent approximately 4% of the land at LANL. As such, there is adequate land to support all potential projects.

Air Quality

Short-term impacts to air quality could result from construction activities associated with the non-nuclear operations, a CNPC, and an AFCF, but are not expected to exceed NAAQS. Because the new facility would complete construction before either a CNPC or an AFCF begin construction, any air quality impacts would not be additive. Operational increases in air pollutants would be less than 1% of site emissions.

Water Resources

LANL has water rights to 542 million gallons. In 2005, approximately 360 million gallons of water were used at LANL. If a CNPC, AFCF, and a non-nuclear facility were located at LANL, water use would increase to approximately 908 million gallons. This would mean the annual water used at LANL would exceed the current water rights by approximately 67%. Most of the additional water use would be associated with a CNPC, which would require approximately 395 million gallons annually. Water use from operations would be approximately 36.5 million gallons/year, which would be approximately 10% of the current usage at LANL. There are no floodplains or wetlands within the potential construction areas.

Socioeconomics

LANL currently employs approximately 13,500 people and there are approximately 150,000 people employed in the ROI. If LANL's employment rate were to continue increasing at the same level experienced from 1996 through 2005 (2.2% annually), approximately 15,400 individuals could be employed at LANL by the end of 2011. If the CNPC, an AFCF, and a non-nuclear facility were located at LANL, the total increase in LANL employees would be 7,350, an increase on approximately 50%. In the ROI, in addition to the direct jobs created, approximately 7,800 indirect jobs would be created, for a total of 15,150 new jobs, an increase of approximately 10% in the ROI. Cumulative impacts associated with transportation would be expected to increase proportionally. Because the primary hazards associated with a CNPC and AFCF are radiological, there would be no cumulative impacts associated with the non-radiological hazards associated with a non-nuclear facility.

5.6.11 Consequences of KCP Non-Nuclear Facility Phase-Out

The impacts to the Kansas City metropolitan area of relocating KCP's non-nuclear operations to LANL would be the same as for the SNL/NM alternatives described in Section 5.4.11.

APPENDIX A: MISSOURI SHPO DOCUMENTATION

AUG 0 9 2007

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

Matt Blunt, Governor • Doyle Childers, Director

www.dnr.mo.gov

August 3, 2007

Kathryn A. Warner
SCI Engineering, Inc.
130 Point West Boulevard
St. Charles, Missouri 63301

Re: GSA Kansas City Plant (GSA) Jackson County, Missouri

Dear Ms. Warner:

Thank you for submitting information on the above referenced project for our review pursuant to Section 106 of the National Historic Preservation Act (P.L. 89-665, as amended) and the Advisory Council on Historic Preservation's regulation 36 CFR Part 800, which requires identification and evaluation of cultural resources.

We have reviewed the revised June 2007 report entitled *Cultural Resource Assessment, GSA Kansas City Plant, Jackson County, Missouri.* Based on this review it is evident that a thorough and adequate cultural resources review has been conducted of the project area. While we concur that there will be **no historic properties affected** at the 183-Acre raw Land Project Area, and that the history presented in the report suggests that the Bannister Federal Complex may be eligible for inclusion in the National Register of Historic Places We cannot make a more definite determination without photographs, site plans, and other relevant information that demonstrates if the complex retains integrity.

Please be advised that, should project plans change, information documenting the revisions should be submitted to this office for further review. In the event that cultural materials are encountered during project activities, all construction should be halted, and this office notified as soon as possible in order to determine the appropriate course of action.

If you have any questions, please write Judith Deel at State Historic Preservation Office, P.O. Box 176, Jefferson City, Missouri 65102 or call 573/751-7862. Please be sure to include the SHPO Log Number **(140-JA-07)** on all future correspondence or inquiries relating to this project.

Sincerely,

STATE HISTORIC PRESERVATION OFFICE

Mark A. Miles
Director and Deputy
State Historic Preservation Officer

MAM:jd

c Brad Wolf, KC

Recycled Paper

APPENDIX B: RESOLUTION OF PUBLIC COMMENTS

Introduction

On December 10, 2007, the GSA and NNSA issued a Notice of Availability (NOA) of the draft Environmental Assessment (EA) in the Federal Register (Vol. 72, No. 236, page 69,690) informing the public and other stakeholders that the draft EA was available for review and comment. The NOA stated that public comments should be submitted by January 14, 2008. An electronic copy of the draft EA, a feature allowing individuals to request copies of the comments submitted by the public, and other supporting documents were posted at http://www.gsa.gov/kansascityplant.

On January 14, 2008, the GSA and NNSA notified the public through the website that they were extending the public comment period until January 30, 2008. On January 17, 2008, the federal agencies issued a Notice of Extension of Comment Period in the Federal Register (Vol. 73, No. 12, page 3,256) informing the public and other stakeholders of the extension. Approximately two-hundred fifty-six (256) public comments on the draft EA were submitted to GSA and NNSA.

Comment Disposition

All of the comments, even those that were received after the January 30 due date were considered during the preparation of the EA. Responses to the comments are provided in this appendix and, as appropriate, in the body of the EA text itself. In reviewing the comments 18 issue categories were identified and are provided in Table B-1. Comments were received via email, letter and preprinted postcards. An indexed list of all the documents received is provided in Table B-2. The index sorts the documents by type; email (E), letter (L), and postcard (P). The issue categories identified in each document are provided in Table B-3. An issue analysis document was prepared for each issue category which included a summary of comments within that category, the agency responses to the comments, and proposed changes to the EA stemming from the comments. A reference will be cited under proposed changes where modifications made to the EA can be located. This information is being provided as a convenience to the reader to facilitate review of public input to the NEPA process.

Out of Scope Comments

There were many comments received that were not within the scope of this EA. Comments focusing on such activities such as past business practices, mismanagement, fraud, waste, abuse, ethical responsibility, information technology, character faults, lies, and global destruction were noted but no responses were prepared as they are unrelated in the context of the EA. There were some comments which questioned the content of the EA which are discussed in the issue analysis documents for clarification and explanation, but are still considered out of scope.

Table B-1 - Comment Issue Categories	
Issue Number	**Issue Category**
1	Include KCP Alternatives in SPEIS
2	Disposition of KCP not in EA
3	EA versus EIS
4	Proposed Action & Alternatives
5	Public Involvement
6	Workforce Reductions
7	Congressional Oversight (Out of Scope)
8	GSA Lease (Out of Scope)
9	U.S. National Security Policy (Out of Scope)
10	NEPA Process
11	Water Quality
12	Air Quality
13	Safety & Health
14	Business Case
15	Transportation
16	Hazard Analysis
17	Cumulative Impacts
18	Miscellaneous

Table B-2 - Document Number Index			
Document Number	**Individual**	**Date**	**Subject**
E1	ronfaust2@netzero.net	12-22-07	Public comment about destructive moves
E2	Donald Crupper	01-03-08	KCP relocation
E3	Clarence Thomson	01-06-08	Non proliferation
E4	smgyelich@juno.com	01-08-08	Fw: Movement of Honeywell Plant
E5	Marie Combo	01-09-08	Kansas City Plant
E6	Penny Mcmullen	01-09-08	Comments on the Kansas City Plant Environmental Assessment
E7	Bill O'Neill	01-10-08	Comment on the Proposal To Build a new NNSA plant
E8	Jefferson Lewis	01-10-08	Comment on moving nuclear plant to airport from Jefferson E. Lewis
E9	William Hartung	01-10-08	Comments on Kansas City Plant Environmental Assessment
E10	Patricia Brown	01-10-08	Comments on the Kansas City Plant Environmental Assessment
E11	Donald Crupper	01-10-08	KCP public comment
E12	Patricia Brown	01-10-08	Fwd: Comments on the Kansas City Plant Environmental Assessment
E13	Amrita Burdick	01-12-08	Environmental, Economic and Ethical Issues of Honeywell Plant Relocation
E14	reginacom	01-13-08	Kansas City Nuclear Weapons Plant
E15	Bobbie Paul	01-14-08	Comments on draft EA for Kansas City Plant
E16	Henry Stoever	01-14-08	Fwd: National Nuclear Security Administration, KC Plant, Envir. Assess. Response, 1-14-08
E17	Christopher Paine	01-14-08	NRDC Comments on Draft KCP-EA
E18	Alfred Meyer	01-14-08	Public Comments on Draft Environmental Assessment for Kansas City Plant
E19	Claus Wawrzinek	01-14-08	Honeywell Plant move from the Bannister Federal Complex to Richard Gebaur site

Table B-2 (continued) - Document Number Index			
Document Number	**Individual**	**Date**	**Subject**
E20	Robert Stout	01-14-08	Missouri Department of Natural Resources Comments on Kansas City Plant EA
E21	Marylia Kelley	01-14-08	Comment on draft EA for KCP/Tri-Valley CAREs
E22	Mark Donham	01-14-08	Comments on Draft EA for NNSA Kansas City Plant
E23	John Witham	01-15-08	Nuclear Watch New Mexico Comments on the KCP draft EA
E24	Marylia Kelley	01-15-08	Re: Comment on draft EA for KCP/Tri-Valley CAREs
E25	Helen Park	01-18-08	nuclear plant in KC
E26	John Mueller	01-23-08	KC Plant Draft EA Comments
E27	Tad Coles	01-28-08	KC Plant - we need a hearing
E28	Katie Kaboom	01-31-08	No to Complex Transformation!
E29	Daniel Tucker	01-31-08	Re: a new Honeywell plant
E30	Jay Coghlan	01-31-08	Added KCP comments
E31	Lisa C. Driskill	01-31-08	Kansas City Project- Request for Information
E32	Robert E Rutkowski	02-03-08	Kansas City Project Comments
E33	Kim Johnson	02-04-08	Comments re: draft EA KCP relocation
L1	Beth Seberger	01-09-08	
L2	Charles Carney	01-14-08	
L3	Jane Stoever	01-14-08	
L4	Alice Kitchen	01-08-08	
L5	Elizabeth Smith	01-10-08	
L6	Wick Thomas		
L7	Rosanne Stoneking	01-09-08	
L8	David Pack		
L9	Ronald Faust	01-09-08	
L10	Donna Constantineau	01-09-08	
L11	Jonne Long	01-09-08	
L12	Rosanne Stoneking	01-09-08	
L13	Rosanne Stoneking	01-09-08	
L14	Pat Kenoyer	01-09-08	
L15	Thomas Fox	01-08-08	
L16	Ann Landers	01-03-08	
L17	Patricia Nelson		

Table B-2 (continued) - Document Number Index			
Document Number	**Individual**	**Date**	**Subject**
P1 - P192	Numerous Individuals		
P193	Janice Freis	01-10-08	
P194	Susan Johnson	01-18-08	
P195	Lorene Miller	01-09-08	
P196	Elizabeth Smith	01-09-08	
P197	Kathryn Donahoe	01-03-08	
P198	J. E. Hart	01-04-08	
P199	Rick Blumhorst	01-01-08	
P200	Katherine St. John	01-01-08	
P201	Margie Eucalpytus	12-31-07	
P202	Dr. Ronald Faust	12-31-07	
P203	Emily Siedlik		
P204	Jo A Witt	12-31-07	
P205	Catherine A Bylinowski	01-12-08	
P206	Alice Kitchen	01-21-08	

Note: In a few instances an individual would send their public comment via both mail and email. In these instances just the email was counted. Also, document P1-P192 were identical postcards received from numerous individuals.

E# = email, L# = letter, P# = postcard

Table B-3 – Issue Category Associated With Each Document									
Document Number	**Issue Category Number**								
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
E1		X							
E2		X							
E3									X
E4		X				X			X
E5	X	X			X				
E6	X	X	X		X		X		X
E7					X				
E8		X				X			
E9	X	X	X				X	X	X
E10	X	X			X	X		X	X
E11		X							
E12	X	X			X	X		X	X
E13		X							X
E14		X			X				
E15	X		X				X	X	X
E16		X			X	X			
E17	X	X	X	X	X	X	X	X	
E18	X	X		X	X		X		X
E19		X		X	X				X
E20		X				X			
E21	X	X	X	X	X			X	X
E22	X	X	X	X	X			X	X
E23	X	X	X	X			X		X
E24	X	X	X	X	X			X	X
E25					X				X
E26		X	X	X	X				X
E27					X				
E28		X				X			X
E29					X	X			X
E30	X			X	X		X		
E31								X	
E32								X	
E33		X			X				

Table B-3 (continued) - Issue Category Associated With Each Document									
Document Number	**Issue Category Number**								
	10	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**
E1									
E2					X				
E3									
E4									
E5									
E6									
E7									
E8									
E9				X	X				X
E10									
E11					X				
E12									
E13									
E14									
E15	X								X
E16	X	X	X	X	X				X
E17	X	X	X	X	X		X	X	X
E18		X							
E19	X					X	X		X
E20		X	X		X	X			X
E21	X	X	X	X	X	X		X	
E22	X	X	X	X	X	X		X	
E23	X	X			X		X		
E24	X	X	X	X	X	X		X	
E25				X					
E26		X			X	X		X	X
E27									
E28									
E29									
E30									X
E31									
E32									
E33									X

Table B-3 (continued) - Issue Category Associated With Each Document									
Document Number	Issue Category Number								
	1	2	3	4	5	6	7	8	9
L1					X				X
L2					X		X		X
L3		X							X
L4									X
L5		X			X				
L6	X	X							X
L7									X
L8									X
L9									
L10	X	X							X
L11		X			X				
L12	X	X	X	X				X	X
L13			X						
L14						X			X
L15		X		X					X
L16		X			X	X			
L17	X	X		X	X	X			X
P1-P192		X			X	X			X
P193		X			X	X			X
P194		X			X	X			X
P195		X			X	X			X
P196		X			X	X			X
P197		X			X	X			X
P198		X			X	X			X
P199		X			X	X			X
P200		X			X	X			X
P201		X			X	X			X
P202		X			X	X			X
P203		X							X
P204		X			X	X			X
P205		X			X	X			X
P206		X			X	X			X

Table B-3 (continued) - Issue Category Associated With Each Document									
Document Number	**Issue Category Number**								
	10	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**
L1									
L2				X					
L3									
L4									
L5									
L6									
L7				X					
L8	X								
L9				X					
L10									
L11				X					
L12									
L13				X			X		
L14				X					
L15		X	X						
L16									
L17				X					
P1-P192									
P193									
P194									
P195									
P196									
P197									
P198									
P199									
P200									
P201									
P202									
P203									
P204									
P205									
P206									

Issue Analysis of Public Comments

Issue #1 – Include KCP Alternatives in SPEIS

Summary of Comments:
Several comments stated that alternatives for the consolidation of the facilities and infrastructure NNSA uses for the non-nuclear production activities conducted at the Kansas City Plant (KCP) should be considered in the Complex Transformation Supplemental Programmatic Environmental Impact Statement (SPEIS).

Similar comments stated the EA does not evaluate the range of reasonable alternatives (see response to Issue #4), and that the KCP is an integral part of the nuclear weapons complex and therefore alternatives for its consolidation and modernization should be considered in the SPEIS rather than in a separate EA. These comments argue that analyzing alternatives for KCP's non-nuclear production activities separately from the SPEIS constitutes improper segmentation under NEPA, pointing out that the 1996 Programmatic Environmental Impact Statement for Stockpile Stewardship and Management (1996 PEIS), to which the SPEIS is a supplement, considered alternatives for KCP operations. Some of these comments also claim that decisions NNSA may make regarding other activities in the nuclear weapons complex (such as the production levels for plutonium pits) could have a direct effect on KCP's operations.

Comment Response:
NNSA issued a draft of the SPEIS in January 2008, and anticipates issuing the final SPEIS before October 2008. The SPEIS evaluates programmatic alternatives for restructuring facilities that use or store special nuclear materials as defined in Section 11aa of the Atomic Energy Act of 1954, e.g. plutonium or enriched uranium. It also analyzes project-specific alternatives for restructuring research, development and testing facilities (these facilities do not use or contain significant quantities of special nuclear materials; most do not contain any such materials). As the SPEIS states, the decisions NNSA will make regarding these project-specific alternatives are independent of those it will make regarding programmatic alternatives for restructuring nuclear facilities.

The Kansas City Plant (KCP) was not included in the SPEIS because NNSA concluded that decisions regarding the consolidation and modernization of KCP's activities (the production and procurement of electrical and mechanical non-nuclear components) would not affect or limit the programmatic alternatives analyzed in the SPEIS, or the decisions NNSA makes regarding these alternatives. Neither the EA nor the SPEIS evaluate programmatic alternatives for NNSA's non-nuclear production activities (which include, but are far broader than, the activities performed at the KCP) because NNSA is not proposing any such actions regarding these activities. In other words, NNSA is not considering programmatic alternatives for its broad array of non-nuclear production activities and the facilities it uses for them. The proposed action in this EA is limited to the activities currently conducted at the KCP, the production of electrical and mechanical non-nuclear components.

One reason NNSA is not proposing broad restructuring actions for non-nuclear activities is because the Department of Energy has been consolidating these activities for the past 15 years, and evaluated programmatic and project-specific alternatives for these activities in two separate NEPA analyses in 1993 and 1996. These prior NEPA analyses, an EA in 1993 and the programmatic environmental impact statement (PEIS) in 1996 that is the predecessor of the current SPEIS, are described in greater detail in the response to Issue # 4. Some of the confusion regarding the differences in the types of alternatives considered in this EA and the SPEIS may stem from the fact that the 1993 EA examined broad programmatic alternatives for consolidating non-nuclear activities (then performed at eight sites), while the 1996 PEIS only looked at alternatives regarding the activities performed at the KCP. That is, the scope of the 1996 PEIS *as to non-nuclear activities* was much narrower than the 1993 EA because the Department by that time had started to consolidate non-nuclear activities as a result of programmatic decisions based on the 1993 EA.

Because decisions regarding modernization and consolidation of KCP's activities will not have an impact on programmatic decisions regarding nuclear facilities that will be made on the basis of the SPEIS, and because NNSA needs to make decisions regarding the activities performed at the KCP before it expects to make any decisions based on the SPEIS, NNSA decided to perform a separate NEPA analysis for KCP's non-nuclear production activities. Under the Council of Environmental Quality's NEPA regulations, federal agencies are not required to analyze a project (such as the consolidation and modernization of KCP's activities) that bears some relationship to a larger undertaking (such as the transformation of NNSA's nuclear facilities) in the same NEPA document unless they are "connected actions" as defined in 40 C.F.R. § 1508.25(a)(1). Actions are considered connected only if they:

(i) Automatically trigger other actions which require environmental impact statements.
(ii) Cannot or will not proceed unless other actions are taken previously or simultaneously.
(iii) Are interdependent parts of a larger action and depend on the larger action for their justification.

The consolidation and modernization of KCP's activities meet none of these definitions when compared to the programmatic and project-specific alternatives analyzed in the SPEIS. Consolidation of KCP's non-nuclear production and procurement work does not automatically trigger changes in NNSA's nuclear facilities, or changes regarding any of the project-specific alternatives. NNSA can (and probably will) consolidate and modernize KCP's activities regardless of whether it implements any of the alternatives in the SPEIS. And, decisions NNSA may make regarding KCP's work do not depend on transformation of other aspects of the nuclear weapons complex for their justification. Accordingly, NNSA's determination to proceed with this EA does not constitute impermissible segmentation of a NEPA analysis because proceeding does not have a direct and substantial probability of influencing decisions on the consolidation of NNSA's nuclear activities or the weapons complex as a whole, or decisions regarding the

project-specific alternatives. That is, consolidating and modernizing activities now performed at the KCP have independent utility and significance in relationship to the alternatives in the SPEIS and decisions that NNSA may make regarding those programmatic and project-specific alternatives.

Changes to the EA:
Revised Sections:
1.0 - Introduction and Background
2.0 - Purpose and Need

Issue #2 – Disposition of the KCP

Summary of Comments:
Several comments were received regarding the decision to exclude the disposition of the existing Kansas City Plant facilities from the scope of the EA. Comments stated the construction of a new facility is linked to the disposal of the existing facility and that segregation of the two actions is inappropriate. In addition, it was suggested that the cost of disposing of the old facilities and the contamination present on the site would lead the agencies to perform an Environmental Impact Statement rather than an Environmental Assessment to ensure a thorough analysis of the proposed action would be conducted. Finally, it was suggested that adequate funding has not been identified to execute the disposal of the former KCP facilities (with reference to an SAIC estimate of $287 million), that it has not been identified who would do the cleanup, and that cleanup and proper closure of the site would not be completed in a timely manner.

Comment Response:
At the end of fiscal year 2006, the Department of Energy's Office of Environmental Management completed the legacy environmental remediation of the Kansas City Plant. At that time, the site entered into Long-Term Stewardship, which is a regulatory-driven set of activities to assure that contamination that is still onsite is not migrating off-site, and that all remedies are protective of human health and environment. These activities are funded by the National Nuclear Security Administration. The requirements for Long-Term Stewardship are codified in Missouri's Hazardous Waste Management Facility Part I Permit for the Kansas City Plant, which was signed by the Missouri Department of Natural Resources and NNSA. The requirements for Long-Term Stewardship were developed over a period of years, with extensive public involvement, and were defined through Corrective Measures Studies. Furthermore, the requirements for Long-Term Stewardship are informed by the "end-state" of the site, which assumes ongoing "light-industrial" activities. If the end state were changed by NNSA relocating, then the permit would have to be modified to reflect this. The permit also would be modified if state or federal regulations change affecting contaminants of concern identified in the permit; new technologies for clean-up become available; or an existing remedy proves ineffective.

If, in the future, the existing stewardship activities were no longer acceptable (e.g., the facilities were no longer used for light industrial activities), the Missouri Department of Natural Resources and NNSA would need to determine what, if any, additional actions would be needed to comply with state and federal regulations, and to protect human health and environment. The Department of Energy would be responsible for requesting any necessary funding for these activities once they are identified. If it were determined that disposal of any contaminated media and removal of the existing facilities were necessary, then the federal government would be responsible for requesting the funding for these activities.

As discussed in the May 1, 2007, Notice of Intent and Section 2.2 of the EA, the disposition of NNSA's existing facilities would be coordinated with the redevelopment of the GSA-owned parcels in the Bannister Federal Complex. The need for coordinating the disposition of the NNSA and GSA facilities is evidenced by the layout of the complex. NNSA cannot complete the disposition its portion of the complex without directly impacting GSA operations. The main manufacturing and office buildings are contiguous, occupied by both GSA and NNSA. These two structures constitute approximately 60% of the building space in the complex. All utility feeds service both agencies and are under NNSA control. The federal agencies are not proposing at this time to make decisions regarding the disposition of the NNSA facilities at the Bannister Federal Complex.

Proceeding with modernization of non-nuclear production facilities at this time has independent utility (i.e., saving money and improving production capabilities), does not foreclose consideration of any alternatives regarding disposition or redevelopment of the Bannister Federal Complex, and does not irretrievably commit federal funds to any particular disposition or redevelopment alternative. The $287 million estimate identified for disposal in the SAIC business case study assumes the total demolition of all structures of the KCP and was intended as a maximum estimate for use in planning and assessing options. The agencies believe it is more likely that, considering the value of the property and its potential for use as a manufacturing or warehousing facility, the KCP facilities would be redeveloped rather than demolished.

Changes to the EA:
Revised Section 2.2 – Disposition of the KCP Facility

Issue #3 – Environmental Assessment (EA) versus Environmental Impact Statement (EIS)

Summary of Comments:
Several comments were received suggesting that GSA and NNSA should have prepared an Environmental Impact Statement (EIS), rather than an Environmental Assessment (EA); or that the federal agencies should now conclude that an EIS is required, rather than issue a FONSI. Comments classified the proposed relocation of non-nuclear manufacturing and procurement activities as a major federal action that would have a significant effect on the quality of the human environment because of the cost and scope of the project, the nature of the work being done at the new facility, the generation of hazardous wastes, and the impact of new construction at an undeveloped site. There were also a number of specific comments directed at the potential impacts of the preferred alternative such as wetlands impacts, land use impacts, and air quality impacts.

Comment Response:
As discussed in Section 1.0, *Introduction and Background* of this EA, NEPA requires federal officials to consider the environmental consequences of proposed actions prior to making decisions. The purpose of an EA is to provide federal officials with information and analysis to determine whether to prepare an EIS or a Finding of No Significant Impact (FONSI). In this case, GSA and NNSA determined that an EA was appropriate because the proposed action is not of a type identified in either agency's regulations as normally requiring an EIS.

This EA analyzes the potential environmental impacts of a number of alternatives, including impacts associated with each of the resource areas addressed in public comments. Following completion of this EA, the GSA and NNSA will determine whether to prepare an EIS or issue a FONSI.

Note: Comments relating to the disposition of the current KCP facilities and the asserted linkage between the construction of a new facility and the disposition of the existing one are addressed in the response to Issue #2. Comments relating to public participation are addressed in the response to Issue #5. Other specific comments regarding affected resources of the preferred alternative are analyzed in Section 5.3 of the EA and clarified in responses to several issues discussed in Appendix B.

Changes to the EA:
None

Issue #4 – Proposed Action & Alternatives

Summary of Comments:
A number of comments asserted that the EA did not adequately consider relocating KCP's capabilities inside the security perimeter at SNL/NM. These comments also claimed the EA did not examine the potential for operational, contractual, facility and financial synergies and economies of scale because the agencies already had made a decision or are prejudiced in favor of the preferred alternative. Additional comments claimed the economic analysis and rationale for excluding the consolidation of KCP capabilities at a location adjacent to SNL/NM was biased or based on artificially inflated costs.

Some comments stated inadequate consideration was given to relocation of KCP's new production activities to other NNSA sites and relocation outside of the Kansas City metropolitan area should be considered a reasonable alternative and not arbitrarily dismissed. Other comments asserted the current KCP already has adequate facilities that preclude the need for action, or that the draft EA did not properly examine why NNSA could not continue to use the current facility if it were modified. One comment stated that commercial construction and lease-back on the existing property should be considered a reasonable alternative, as this approach has been successful at NNSA's Y-12 site.

Comment Response:
DOE has been consolidating and modernizing its non-nuclear production and procurement activities, particularly those now performed at the KCP, since 1993. As to those activities the KCP currently performs, the Department has analyzed many alternatives involving a number of DOE sites in two NEPA documents. The first of these was an environmental assessment that looked at non-nuclear activities and facilities only; the second, as some of the comments noted, was the 1996 PEIS that looked at both nuclear and non-nuclear production activities and facilities. As noted in the response to Issue #1, the 1996 PEIS's evaluation of alternatives for non-nuclear activities was limited to options for the non-nuclear work performed at the KCP.

Prior to 1993, there were eight DOE sites that conducted non-nuclear production activities: the Kansas City Plant (KCP) in Missouri, the Los Alamos National Laboratory (LANL) in New Mexico, the Mound Plant in Ohio, the Y-12 Plant in Tennessee, the Pinellas Plant in Florida, the Rocky Flats Plant in Colorado, the Sandia National Laboratories (SNL/NM) in New Mexico, and the Savannah River Site (SRS) in South Carolina. Based on the analyses in the *Nonnuclear Consolidation Environmental Assessment* (DOE/EA-0792 June 1993), the Department found there would be no significant environmental impacts from consolidating these non-nuclear operations at four sites – KCP, SNL, LANL, and SRS – by relocating operations from Y-12, Pinellas, Mound and Rocky Flats. *Finding of No Significant Impact; Consolidation of the*

Nonnuclear Component within the Nuclear Weapons Complex, 58 Fed. Reg. 48,043 (Sept. 14, 1993).

Production and procurement of some special products, electrical components, mechanical components, and lithium batteries were consolidated at the KCP.[11] In addition to consolidation at the KCP, the 1993 environmental assessment looked at three other sites for consolidation of fabrication capabilities for electrical and mechanical components – Rocky Flats, Mound and Pinellas. These facilities are now closed. Different production and research activities involving other types of non-nuclear components were consolidated at SRS, SNL/NM and LANL.

In the 1996 PEIS, the Department again looked at alternatives for consolidating the non-nuclear activities the KCP was conducting. The PEIS looked at two alternatives for further consolidation regarding electrical and mechanical components: (1) keeping the work at the KCP while reducing the facilities at the Bannister Federal Complex used for this work; or (2) closing the KCP and dispersing these fabrication activities among the three weapons laboratories (SNL/NM, LANL and Lawrence Livermore National Laboratory in California (LLNL)).[12] These laboratories perform research and development for non-nuclear components, and engage in some limited production as well. In December 1996, the Department selected the first alternative. *Record of Decision Programmatic Environmental Impact Statement for Stockpile Stewardship and Management,* 61 Fed. Reg. 68,014 (Dec. 26, 1996). This alternative cost less, avoided the technical risks posed by relocation and requalification of KCP's manufacturing capabilities, and had fewer adverse environmental impacts than the dispersal alternative. The Department based its decision on these factors.

Since 1996, KCP has rearranged and consolidated several product lines into a smaller process-based configuration. While this consolidation has been somewhat successful, KCP's workload (including its work for other agencies – i.e. its "work for others") grew beyond forecasts during this period, so the reduction in facility square footage was not as great as anticipated in 1996. Also, due to the layouts of KCP's existing buildings, other federal agencies have not been able to use the excess space.

In April 2006, NNSA directed the Kansas City Site Office (KCSO) to begin planning to achieve significant reductions in the cost for KCP's work, leverage commercial production processes, and create a smaller, more responsive facility for KCP's work.

[11] For the remainder of this response, the work that was consolidated at KCP is referred to as the production and procurement of "electrical and mechanical" components, which includes the items listed above and electronics, electromechanical parts, and engineered materials (e.g. plastics, ceramics, glass, polymers, and foam).

[12] The 1996 PEIS also looked at the No Action Alternative for KCP's manufacturing capabilities, which of course would not have resulted in further consolidation of electrical and mechanical component fabrication.

KCSO named its KCP plan the "Kansas City Responsive Infrastructure, Manufacturing, and Sourcing" (KCRIMS) project.

NNSA believed that alternatives for the KCRIMS project outside the Kansas City metropolitan area were not likely to be reasonable options based on the analyses in the two previous NEPA studies (the 1993 EA and 1996 PEIS), its past decisions to consolidate these activities at KCP, its progress in implementing those decisions, and its experience in relocating other non-nuclear production activities to SNL/NM.[13] NNSA commissioned SAIC to perform an independent business case study of the costs of moving KCP's activities to another NNSA site. The study indicated that SNL/NM appeared to be the location outside of Kansas City that had the best potential for cost savings, but concluded that it is highly improbable that moving to Albuquerque, New Mexico would result in any net savings. The study found it was much more likely that such a move would impose additional costs of somewhere between $147-432 million on NNSA.

As summarized above, a number of comments stated the cost study was flawed, and the federal agencies should evaluate alternatives at other NNSA sites outside of Kansas City. Many of these comments suggested that NNSA should again evaluate moving its KCP operations to SNL/NM. Although the federal agencies believe alternatives involving long-distance relocations of KCP's production and procurement activities remain unreasonable, they have decided to analyze several such alternatives in response to these comments. NNSA also directed SAIC to analyze the costs of these additional alternatives. The action alternatives analyzed in this EA include those analyzed in the draft EA, as well as alternatives that would require relocation beyond the Kansas City metropolitan area.

The alternative sites outside the Kansas City metropolitan area are the same as those analyzed in the 1996 PEIS: SNL/NM, LANL, and LLNL. Three of these new alternatives consist of constructing the modern facility contemplated in the proposed action at each laboratory. In addition, the federal agencies evaluated two more alternatives using existing space at LANL or SNL/NM for some KCP activities and constructing a smaller modern facility for the KCP activities that cannot be accommodated in existing space at LANL or SNL/NM. LLNL does not have sufficient

[13] While some savings have been realized by closing Pinellas, the transition of neutron generator production to SNL/NM did not meet the pre-transfer forecasts regarding potential benefits and savings. Specifically, the square footage requirement is 64% of the old operation while the capacity has been cut by two-thirds. Costs have risen to $140 million per year, even more than the inflation adjusted cost for the product line at Pinellas. Production ceased for more than five years. SNL/NM acknowledges that it underestimated the cultural challenges in collocating design and production, including the observation that attempting to fabricate development components in a production environment was very difficult. Finally, SNL/NM concluded that building an autonomous production facility near a design facility was not cost effective as the final cost was more than double the original estimate (Sandia 2005).

existing space to allow for such a "hybrid" alternative at its site, so the only alternative for this site consists of building a new facility that could accommodate all of KCP's activities. The federal agencies considered, but did not further analyze, an alternative that would have dispersed KCP's activities between existing facilities at both SNL/NM and LANL without constructing a new facility at either site.[14] The alternatives are described in Section 3 of the EA. The federal agencies believe these new alternatives continue to be unreasonable because of their high cost, risks of delay in resuming production, and (as to those that make use of existing space at LANL or SNL/NM) their failure to fully achieve the benefits of a modern manufacturing facility.

As to the comment suggesting the agencies should consider commercial construction and lease-back arrangements on an NNSA site as a reasonable alternative, this is similar to the financial arrangement of the preferred alternative. The preferred alternative relies on private third-party investment to provide the facility and lease it to the government for mission operation. It requires no government capital investment for constructing or renovating a facility, maximizes the operational cost savings, and frees the government from any legacy facility obligations at the end of the lease. For the preferred alternative, the cost of the real estate is estimated to be less than 1% of the capital investment cost of the project.

Both DOE and GSA have processes for approving and securing third-party financing through regulatory authorities and Congress. NNSA initially considered pursuing third-party financing through DOE's processes (e.g. the Y-12 approach) instead of through the GSA lease process. However, the DOE methodology is being significantly revised and is still in draft form, increasing the execution risks associated with the project. GSA has a mature, proven process for approving and securing alternative third-party financing through regulatory authorities and Congress. For these reasons, NNSA's preferred alternative relies on the GSA process.

While there is no NNSA land available at the Bannister Federal Complex for a land donation/leaseback arrangement (like the one used at Y-12) without demolition, Alternatives 2, 3 and 4 evaluate the use of existing government property at the Bannister Federal Complex for construction. Regardless of the financing arrangement, the environmental impacts would not be significantly different.

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[14] The agencies concluded this alternative is wholly unreasonable because it would not meet NNSA's need to modernize and consolidate KCP's activities: (1) dispersing KCP's production activities between the two weapons laboratories would require NNSA to replicate many capabilities at each laboratory; (2) dispersing these activities would prevent NNSA from improving utilization of capital assets; (3) over 50% of non-nuclear components are currently procured from more than 350 commercial suppliers under a procurement system managed by KCP, and dividing these responsibilities between the two laboratories would require that each lab manage a subset of these suppliers and the supply chain staffs at each lab would need to increase to handle these procurement responsibilities; and (4) as KCP currently manages the scheduling for nearly all major non-nuclear components and assemblies, dispersing its products to LANL and SNL/NM would result in a significant increase in scheduling complexity of procurements and deliveries.

Likewise, the environmental impacts of Alternatives 6, 7 and 8 as analyzed in Sections 5.4, 5.5 and 5.6 are no different regardless of how construction is funded.

Changes to the EA:
Revised Sections:

1.0 - Introduction and Background
2.0 - Purpose and Need
3.0 - Alternatives

Issue Analysis of Public Comments

Issue #5 – Public Involvement

Summary of Comments:
Several comments asked for increased public involvement. A majority of these comments called for an extension of the public comment period on the draft EA, while others called for a public hearing. One comment criticized the lack of public notice concerning the extension of the comment period and typographical errors on dates and state abbreviations.

Comment Response:
In order to involve the public in preparation of this EA, GSA and NNSA solicited comment on the scope of the EA and on a draft of the EA. Also, GSA made the draft EA and related documents available on the Internet to ensure easy access by the public, and both agencies met with interested organizations regarding the proposed action and its potential environmental impacts.

On May 1, 2007, GSA and NNSA issued a Notice of Intent (NOI) in the Federal Register (72 Fed. Reg. 23,822) informing the public of the proposed action. The NOI also stated that public comments were invited and that a public scoping meeting would be held in Kansas City, MO. The scoping meeting was held on May 23, 2007. A total of ninety-seven (97) people signed in at the meeting. Fourteen written comments were submitted and twenty-four (24) speakers provided oral comments that were transcribed for the record. Everyone who requested to speak was allowed to do so. The agencies requested that comments on the scope of the EA be submitted by May 30, 2007. Comments also were received by mail and email. Approximately 500 people responded with comments during the public scoping process. All comments were considered during the preparation of the draft EA. The comment period for the scoping process was not extended beyond 30 days because the public would have an opportunity to review the draft EA at which time they could submit additional comments prior to issuance of a final EA.

On October 17, 2007 NNSA hosted a joint site visit and presentation at the Bannister Federal Complex for the Alliance for Nuclear Accountability, and others they invited. Approximately 13 participants attended the two-hour presentation and site tour. After the site visit, four questions were submitted to NNSA regarding the current manufacturing facility. NNSA responded to each of these questions.

On December 10, 2007, GSA and NNSA issued a Notice of Availability (NOA) of the draft EA in the Federal Register (72 Fed. Reg. 69,690) informing the public that the draft EA was available for review and comment. The NOA stated that public comments should be submitted by January 14, 2008. An electronic copy of the draft EA and other

supporting NEPA documents were posted on a GSA website (www.gsa.gov/kansascityplant)[15] and the draft EA was posted on DOE's NEPA website (www.eh.doe.gov/nepa). The NOA also informed the public that it could request copies of the comments submitted on the draft EA through the GSA website and provided points of contact for such requests.[16]

GSA was asked to extend the public comment period and agreed to do so. On January 14, 2008, GSA and NNSA notified the public through the GSA website that they were extending the public comment period until January 30, 2008. On January 17, 2008, the federal agencies issued a Notice of Extension of Comment Period in the Federal Register (73 Fed. Reg. 3,256) informing the public of the extension. Because of the normal publication delay of the Federal Register, the public notification of the extension was not issued until just after the first comment period expired. Also, two typographical errors were made in the Federal Register announcement. These were not the responsibility of GSA and were not deemed significant enough to warrant republication. Approximately 260 public comments on the draft EA were submitted to GSA and NNSA. All of the comments, including those received after January 30, were considered during the preparation of this EA.

On April 4, 2008, the agencies provided a revised draft EA to the States of California, Missouri and New Mexico for comment pursuant to 10 CFR 1021.301.

Finally, the agencies have conducted a number of public briefings and have met with city, state and federal officials regarding the proposed action.

Changes to the EA:
Revised Section 1.2 - Public Comment

[15] GSA established and dedicated this website to the KCP project in May 2007. It has been used to post public handouts, slides, the draft EA and NNSA Kansas City Plant Facts.

[16] Approximately eight members of the public requested and were provided with the comments submitted on the draft EA.

Issue #6 - Workforce Reductions

Summary of Comments:
Several comments were received regarding the potential job losses under the action alternatives. Other comments indicated that the draft EA was unclear as to the differences in jobs lost among the alternatives. Some comments questioned the baseline used for calculating the workforce reduction.

Comment Response:
NNSA and GSA agree that the presentation of workforce reduction estimates in the draft EA lacked detail and may have led to some confusion regarding potential job losses. The EA was revised to include more information on the potential workforce impacts of each alternative.

Under the preferred alternative, NNSA's workforce in the Kansas City area would decrease due to reductions in maintenance that a new and smaller sized facility would need, streamlining of business and production processes, and outsourcing of some production operations. Using CY 2005 as the baseline, workforce reduction estimates presented in the draft EA were accurate for KCP's core operations for procurement and production of non-nuclear components but did not take into account the anticipated increase in work that KCP would perform for other entities at the new facility. This is referred to as "work for others," and consists of work for other DOE organizations and other federal agencies. These estimated reductions also did not take into account projected job creation as a result of the developer's need to provide maintenance and custodial services at the proposed facility. Nor did these reductions take into account changes in the workforce that have already occurred since 2005.

The baseline year in the final EA was changed from CY 2005 to CY 2007. Although a reduction of up to 665 employees from 2007 levels is estimated for KCP's core operations, work for others is expected to create at least 220 additional jobs. The net workforce reduction for the preferred alternative would therefore be about 445 jobs. This reduction would be further offset by the developer's employment of approximately 70-80 workers for custodial and building maintenance services.

Factoring in the growth of work for others and the change of the baseline year, Alternatives 2 and 3 would involve workforce reductions of 230 jobs; the job loss associated with Alternative 4 would be approximately 280. The difference in the size of the workforce among these alternatives is largely a result of the smaller size of a new or refurbished facility, and the number of maintenance employees required to care for such a facility. Existing and refurbished manufacturing space would require greater maintenance resources than new space.

Workforce reductions for the SNL/NM, LLNL, and LANL alternatives would range from 455 jobs for the alternatives that involve a combination of new and existing space to 670

jobs for the alternatives involving the construction of a new facility that would house virtually all of KCP's activities. These estimates include the projected increase in work for others jobs and an additional loss of 255 jobs due to planned use of existing personnel at those facilities for some support services.

Changes to the EA:
Revised Sections:

3.0 - Alternatives
5.1 - No Action Alternative
5.2.8 thru 5.6.8 - Socioeconomic Environment

Issue #7 – Congressional Oversight

Summary of Comments:
Comments were received regarding congressional oversight. In particular there was concern that GSA's leasing process was being used to avoid congressional authorization. Some comments stated that GSA's actions may have violated the Anti-Deficiency Act.

Comment Response:
GSA is a federal procurement and property management agency. Its mission is to improve government efficiency and help federal agencies procure leased and federally owned space. In Region 6, GSA serves federal agencies throughout Missouri, Kansas, Nebraska, and Iowa.

NNSA's decision to use GSA's leasing process does not avoid congressional authorization. The Public Buildings Act of 1959, as amended (40 U.S.C. §§ 3302-3314) requires GSA to transmit to Congress a prospectus of a proposed project that exceeds the prospectus threshold. The Public Buildings Amendments of FY 1988 (P.L. 100-678) allows annual adjustments to the prospectus threshold with the current limitation of $2,590,000 for FY 2008.

Before a prospectus is submitted to Congress, it requires the approval of the Office of Management and Budget (OMB). GSA submitted the prospectus for the preferred alternative to OMB and received OMB's approval in October 2007 as required prior to submitting it to the Congress.

The Public Buildings Act of 1959 also requires that an appropriation be made only if the Senate Committee on Environment and Public Works and the House of Representatives Committee on Transportation and Infrastructure adopt resolutions approving the purpose for which the appropriation is made. Subsequent to OMB approval of the prospectus, and pursuant to 40 U.S.C. § 3307, the Committee on Environment and Public Works approved the resolution in December 2007 and the Committee on Transportation and Infrastructure approved the resolution in January 2008.

GSA and NNSA will complete the NEPA process before GSA decides whether to sign or award a lease. It is not until lease award that the government would take an action that may cause environmental impacts at the preferred alternative site or limit the choice among alternatives. The assignable option to purchase the Botts Road site was obtained at no cost to the government. Since GSA has not signed a lease, nor committed any funds to obtain the site purchase option, GSA's actions comply with the Anti-Deficiency Act and with NEPA.

Changes to the EA:
None.

Issue #8 – GSA Lease

Summary of Comments:
Comments expressed concern on using a lease for the proposed action. Specific comments questioned whether the facility would be inherently governmental, and therefore, it would be more appropriate for the proposed facility to be government owned instead of leased. There was also concern the proposed lease would be a capital lease instead of an operating lease.

Comment Response:
The preferred alternative of constructing a new office and manufacturing facility at the Botts Road site would provide space designed for flexibility to enable rapid reconfiguration to meet NNSA's needs. It is expected that this flexibility also would allow adaptation to meet the needs of many types of tenants (such as a private manufacturing operation) if NNSA were to no longer need the facility. This flexibility would apply to any alternative involving complete new construction.

Several comments said that changes in the nation's national security policy could lead to a reduction in the need for the types of components that the Kansas City Plant produces and procures. In the event there was a substantial change in U.S. national security policy, a lease is more suitable than government ownership as it reduces the government's risk of loss from the construction.

The facility that would be built as part of the preferred alternative and some of the other action alternatives is not considered an inherently governmental asset. NNSA and GSA are committed to ensuring the appropriate amount of private involvement for the preferred alternative. Safeguards such as foreign ownership restrictions would be imposed to protect the interests of the federal government.

GSA used the scoring guidelines found in OMB Circular No. A–11, Appendix A and B, to determine the lease that would be used in the preferred alternative would be an operating lease rather than a capital lease. In addition, the prospectus was reviewed and approved by OMB before it was submitted to the Congress.

Changes to the EA:
None.

Issue # 9 – U.S. National Security Policy

Summary of Comments:
Multiple comments stated concerns that modernizing non-nuclear production and procurement would be contrary to the United States' nonproliferation policy, or that the U.S. should not modernize its nuclear weapons or the facilities that maintain them. Some comments stated that the U.S. is in violation of the Non-proliferation Treaty (NPT) by continuing to maintain nuclear weapons; others stated that the proposed action is intended to support production of a Reliable Replacement Warhead (RRW), and that an RRW would violate the NPT. Comments also stated that the proposed action should be put on hold until the next President reviews the nation's nuclear posture and policy, as he or she may determine that modernization of non-nuclear production is unnecessary, or that any new facility should be much smaller if the stockpile were further reduced. Finally, some comments recommended that nuclear weapons should be reduced or eliminated and that the NNSA workforce should transition to "green jobs" to benefit the environment.

Comment Response:
It is NNSA's responsibility under the *Atomic Energy Act* and the *National Nuclear Security Administration Act* to support existing and reasonably foreseeable national security requirements. The security policies of the U.S. require the maintenance of a safe, secure, and reliable nuclear weapons stockpile, and the maintenance of core competencies to design, manufacture, and maintain nuclear weapons. This EA does not analyze alternatives to the United States' national security policy, as any changes to that policy are within the purview of the President and the Congress, not the NNSA and GSA. It does examine the potential environmental effects of the proposed action (including several alternatives) and a No Action Alternative in the context of the nation's current nuclear weapons policy and foreseeable changes in this policy. The possibility that NNSA might be directed to develop a Reliable Replacement Warhead (RRW) does not affect the alternatives analyzed or their potential impacts. If NNSA were directed to develop an RRW, it is likely that production of RRW parts would occur in lieu of refurbishment and production activities for legacy weapons. NNSA and GSA realize that the existing KCP is far too large for its current and foreseeable missions. That realization motivated NNSA to examine the preferred alternative and other alternatives for achieving a smaller facility with the flexibility to meet changing future needs or potential stockpile changes while minimizing financial impacts.

Changes to the EA:
None

Issue #10 – NEPA Process

Summary of Comments:
Several comments were submitted regarding the procurement process with respect to NEPA decision making. Specific comments questioned whether it was appropriate for GSA, rather than NNSA, to be the lead agency responsible for preparing this EA. Other comments expressed concern that the outcome of the NEPA analysis had been predetermined since GSA had obtained an option to purchase the site of the preferred alternative and issued a solicitation for offers on October 29, 2007.

Comment Response:
GSA and NNSA agreed to designate GSA as the lead agency for this NEPA analysis. This decision was made primarily because GSA controls the lease process, has expertise in implementing NEPA for building construction, and would be involved throughout the life of the project. Even though NNSA is not the lead agency, it has been an active participant and will continue to collaborate in this NEPA analysis as a cooperating agency.

GSA and NNSA will complete the NEPA process before GSA decides whether to sign or award a lease. It is not until lease award that the government would take an action that may cause environmental impacts at the preferred alternative site or limit the choice among alternatives. The assignable option to purchase the Botts Road site was obtained at no cost to the government. Since GSA has not signed a lease, nor committed any funds to obtain the site purchase option, GSA's actions comply with NEPA.

Changes to the EA:
Revised Section 2.1 – Proposed Action

Issue #11 - Water Quality

11(a) Stormwater

Summary of Comments:
Comments were received requesting additional information on the Little Blue River watershed and the associated stormwater runoff resulting from the development of the preferred alternative and the development of the adjoining property (the site of the former Richards Gebaur Airport). In addition comments were received regarding stormwater at the Bannister Federal Complex. Comments asked, if the mitigating actions of the City of Kansas City relative to stormwater management, planning and permitting are so effective that cumulative stormwater impacts are not significant, why do Indian Creek and the Blue River frequently flood portions of KCP?

Comment Response:
Stormwater runoff from development of the 185 acre Botts Road site and from the surrounding area would be controlled through Kansas City's stormwater planning and permitting process. As stated in the EA, the City adopted the American Public Works Association (APWA) Division V, Section 5600, criteria for storm drainage systems and facilities. According to APWA, a storm drainage system must be installed that is capable of conveying the peak discharge generated by a 1% storm (1% probability such a storm would be equaled or exceeded in 1 year).

The EA has been revised to include additional stormwater runoff requirements mandated by the Energy Independence and Security Act, Pub. L. No. 110-140 (December 19, 2007). Stormwater associated with an NNSA development is regulated under Section 438 of the Act (Storm Water Runoff Requirements for Federal Development Projects), which states: "The sponsor of any development or redevelopment project involving a Federal facility with a footprint that exceeds 5,000 square feet shall use site planning, design, construction, and maintenance strategies for the property to maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of the property with regard to the temperature, rate, volume, and duration of flow."

The frequent flooding of Indian Creek and Blue River (discussed in Sections 4.2.8 and 5.2.3 of the EA) is a result of urban development in the area of the Bannister Federal Complex. Although Kansas City adopted APWA Division V, Section 5600 criteria for storm drainage systems and facilities in March 1990, most of the development in this area occurred before these criteria were applicable, and therefore this area is subject to more frequent flooding than would occur at the site of the preferred alternative.

Changes to the EA:
Revised Sections
- 5.2.3 and 5.3.3 – Surface Water Hydrology
- 5.3.10 – Cumulative Impacts – Stormwater

11(b) Chrome/Water Balance

Summary of Comments:
According to the draft EA, outsourcing of chrome plating operations would reduce facility water usage and regulated industrial process wastewater discharges would be reduced by approximately 12,800 gallons per day. Comments stated that, if chrome plating is being outsourced, the impacts are merely being displaced, not eliminated.

Comment Response:
In the near term and prior to any relocation to a new facility, NNSA plans to outsource certain production processes to the commercial sector. Specifically the chrome plating process and much of the other plating operations will be outsourced and will no longer contribute to wastewater discharges.

Outsourcing of production processes to commercial industry provides the best value to the government and to the taxpayers. Reduction of the agency's environmental footprint is not a factor in these decisions. The companies that perform this work for the government must comply with the same health, safety and environmental requirements applicable to NNSA. Regardless of who performs them, these activities are not likely to have a significant effect on the environment.

When the draft EA for this proposed action was developed, the agencies believed that the outsourcing of chrome plating operations would coincide with the decision to relocate to a new facility. The schedule for outsourcing these operations has been accelerated and by the end of 2008 they will no longer be conducted at the KCP. This EA has been revised accordingly – neither the No Action Alternative nor the action alternatives include chrome plating operations.

Changes to the EA:
Revised Sections

- 4.2.8 - Surface Water Hydrology
- 5.1 - No Action Alternative
- 5.2.3 - Surface Water Hydrology
- 5.3.3 - Surface Water Hydrology
- 5.3.10 - Cumulative Impacts, Sanitary Wastewater

Issue #12 – Air Quality

Summary of Comments:
Comments were received relating to air quality issues. Comments stated that chrome plating operations would not be eliminated, but instead would be outsourced. Therefore facility air emissions would be transferred to another location and the impact on air quality at the receiving site should be analyzed as a connected action. Comments requested that additional information be provided on how air quality regulations would be met during proposed facility construction. In addition, comments stated that for alternatives 2, 3, and 4, no information was provided on how asbestos-containing materials would be handled during building renovation or demolition.

Comment Response:
NNSA decided to outsource some plating operations independent of (and therefore prior to) making a decision regarding the proposed action. Prior to relocating to a new facility or renovating existing facilities, NNSA anticipates that responsibility for certain production processes will have already been assumed by the commercial sector. Accordingly, chrome plating process and many other plating operations would not contribute to emissions from any of the alternatives, including the No Action Alternative.

Outsourcing of production processes to commercial industry provides the best value to the government and to the taxpayers. Reduction of the agency's environmental footprint was not a factor in these decisions. The companies that perform this work for the government must comply with the same health, safety and environmental requirements applicable to the NNSA. Regardless of who performs them, these activities are not likely to have a significant effect on the environment.

When the draft EA for this proposed action was issued, the agencies believed that the outsourcing of chrome plating operations would coincide with the decision regarding the proposed action. The schedule for outsourcing these operations has been accelerated and by the end of 2008 they will no longer be conducted at the KCP. The final EA has been revised accordingly; neither the No Action Alternative nor the action alternatives include chrome plating operations or associated emissions. Air quality regulations during site construction and asbestos requirements are discussed in Sections 5.2.6, 5.3.6, 5.4.6, 5.5.6 and 5.6.6 of the final EA.

Changes to the EA:
Revised Sections 5.2.6 and 5.3.6 - Air Quality & Permitting

Issue # 13 – Health and Safety

Summary of Comments:
Several comments were received regarding the health and safety impacts of the proposed action. Specifically, there was concern expressed that the outsourcing of some production processes was done to reduce the environmental impacts of the proposed action. These outsourced processes, such as chrome plating, would present potential health, safety and environmental issues at the new locations due to both the emissions from the processes and the hazardous wastes they would generate. Others expressed concern that living near the plant would expose residents to harmful emissions and contaminated runoff from the plant's supposed use of solvents, acids, alkalines, PCBs, oils, coolants, beryllium, and low-level radioactive waste.

Comment Response:
The federal agencies and their contractors are committed to the protection of the environment, the health and safety of our workers and the public, and compliance with applicable health, safety and environmental laws. The manufacturing processes for electrical and mechanical components for nuclear weapons use hazardous materials and generate hazardous waste and low-level radioactive waste that must be disposed of. Both agencies are committed to managing the hazardous materials and wastes in accordance with regulatory requirements and controls to ensure adverse impacts to workers, the public or the environment are minimized or eliminated. These manufacturing processes no longer use PCBs, asbestos, or paints containing large amounts of organic solvents. These and other hazardous materials have been replaced with safer materials, and NNSA is continuing to reduce the hazards associated with these manufacturing operations.

NNSA decided to outsource some plating operations prior to and independent of the proposed action. In other words, under all of the alternatives – including the No Action Alternative – these plating operations will be transferred to the private sector. Outsourcing production processes to commercial entities can provide the best value to the government and to the taxpayers. The companies that perform this work for the government must comply with health, safety and environmental requirements imposed by state and federal regulators. Regardless of who performs them, these activities are not likely to have a significant effect on the environment.

When the draft EA was developed, the agencies believed that the outsourcing of chrome and the majority of other plating operations would coincide with a decision on whether to relocate to a new facility. The schedule for outsourcing these operations was accelerated, and by the end of 2008 they will no longer be conducted at the KCP. The final EA has been revised accordingly – neither the No Action Alternative nor the action alternatives include chrome plating operations.

Changes to the EA:
See changes to the EA for Issue #11 and Issue #12.

Issue #14 – Business Case

14(a) SAIC Study

Summary of Comments:
Comments state that the EA's justification for a new plant in the Kansas City Area is flawed, that the existing facilities are adequate, and that the assumptions and conclusions in the "Relocation of Non-nuclear Production to an Alternate Location Business Case" are not justified. They ask that the document be removed from the EA. Comments also state that SAIC, which prepared the report for NNSA, had a conflict of interest suggesting a lack of independence and objectivity.

Comment Response:
The "Relocation of Non-Nuclear Production to an Alternate Location Business Case" (Relocation Business Case) provided a cost analysis for relocating KCP's non-nuclear production capabilities to a location outside the Kansas City metropolitan area. SAIC prepared the Relocation Business Case for NNSA. SAIC has no vested interest as to where or how KCP's production activities are conducted, nor has it any vested interest in the outcome of decisions NNSA may make regarding the consolidation and modernization of these activities. The assertion that because SAIC is an NNSA contractor and therefore has some vested interest in the outcome of the cost analysis or the NEPA process is specious. Federal agencies use firms like SAIC to analyze business cases and to assist in the preparation of NEPA documents. The fact that they perform these and other services for federal agencies does not give them a vested interest in the outcome of these analyses. Such an argument would prevent federal agencies from using contractors to assist in the preparation of NEPA documents or cost studies if they have performed other work for an agency. SAIC does not have an interest as to any of the alternatives considered in the EA – for example, it would not obtain or lose work if the federal agencies chose to implement one or another of the alternatives analyzed in the business study or the EA.

Even using assumptions that were considered unrealistically optimistic (that is, assumptions that tended to underestimate the cost of moving to a site far from Kansas City), the Relocation Business Case did not identify sufficient savings to offset the costs and risks of moving and restarting production operations at a distant site. The cost analysis used a statistical program to vary cost assumptions from pessimistic to optimistic in order to estimate the range of costs for alternatives. In sum, the Relocation Business Case was a good faith effort to estimate a likely range of costs within the range of uncertainties for assumptions made and data available.

The criticisms about the assumptions and conclusions in the Relocation Business Case are: (1) there would be operational cost savings from relocating KCP's production activities to the Sandia National Laboratories (SNL/NM) that were not considered in the business study; (2) there would be savings from avoiding some construction and land

acquisition costs by moving KCP's activities to SNL/NM that were not modeled as an alternative; (3) the costs to NNSA that would accrue during the time that a production facility is completed are due to deferred maintenance at the current facility and the cost of money; and (4) SAIC failed to cite references for its assumptions.

1) The comment that could be synergies from moving KCP's production activities to SNL/NM is valid. The Relocation Business Case identified three general areas where economic benefits could be captured by moving the production to SNL/NM: regional economic benefits (wages and construction costs), infrastructure sharing (overhead and infrastructure reductions), and collocation synergies (efficiencies from management, security, and support services). To account for possible collocation efficiencies, the best case for the cost analysis reduced the labor cost for operations in Albuquerque by an amount equivalent to 255 employees compared to the labor cost for Kansas City alternatives, to account for reduced overhead costs. In addition, a 20% reduction in direct labor was assumed, based on the neutron generator experience at SNL/NM. This experience attributed a reduction in direct labor costs due to vertical integration of the design agent with the manufacturing facility. There is a countervailing risk that operations at SNL/NM could limit the amount of dual use and commercial access assumed for the preferred alternative. Similarly, integration of KCP's production activities within SNL/NM's management structure might require alteration of the preferred alternative's manufacturing model from process-based (in which manufacturing lines can be used for production of multiple parts), to product-based (in which each part has a dedicated manufacturing line). Both these factors contribute to the savings expected from operating a new production facility compared to today's KCP; however, the model did not attempt to estimate to what extent these savings might be reduced when moving to Albuquerque or Los Alamos.

   SAIC examined the sensitivity of the cost estimates to more than 40 variables affecting the business case outcome. The cost difference between moving far from the Kansas City metropolitan area and the preferred alternative is most sensitive to assumed production efficiencies at the distant site and assumptions about the time required to establish production in a new facility. Given the most optimistic assumptions of efficiency and time to begin operations in New Mexico and California, the savings generated from relocating to sites in these states were insufficient to offset the increased costs from delaying the relocation of production to a modern facility.

2) In response to comments that the cost study did not look at alternatives that might have taken advantage of existing space at other NNSA sites, NNSA asked SAIC in February 2008 to assess the business case for five additional relocation alternatives in revision three of its report. Three alternatives consist of constructing a new facility at Sandia National Laboratories in New Mexico (SNL/NM), Los Alamos National Laboratory (LANL) in New Mexico, or Lawrence Livermore National Laboratory (LLNL) in California, and moving the entire non-nuclear production and procurement activities currently performed at the KCP to this new facility. A fourth alternative consists of using existing space at LANL for some non-nuclear production activities

and building a smaller new facility for the non-nuclear production activities that cannot be accommodated in LANL's existing space. The fifth alternative looks at using existing space at SNL/NM and building a smaller new facility for the activities that can be accommodated in existing space.[17]

Table 1 presents optimistic estimates of the costs of moving KCP's operations to Albuquerque, SNL/NM, LANL or LLNL. The Business Study refers to these estimates as its "base cases" and they are optimistic in the sense that they assign values to more than 40 variables that favor relocating KCP's operations to Albuquerque, SNL/NM, LANL or LLNL. These estimates include the cost of new construction (and renovation of existing facilities for the alternatives that involve use of such facilities) and the cost of operations through FY 2030. Comparing the net present values of these base cases indicate that the preferred alternative (i.e. KCRIMS) is likely to save the government at least $80 million over this period compared to the relocation alternatives. As shown in Table 1, the cost of KCRIMS is estimated at $7.38 billion (adjusted for net present value). The next best alternative, constructing a new facility at SNL/NM for KCP's operations, would cost at least $7.46 billion (adjusted for net present value).

The estimates in Table 1 are based on optimistic assumptions regarding variable values that favor alternatives outside of the Kansas City area. SAIC estimated that there is only a 1% probability that the actual costs would be lower than these optimistic estimates if the federal agencies implemented one of the alternatives other than KCRIMS. To assess the impact of uncertainties surrounding assumptions made about these parameters' values in the base case estimates, SAIC performed a Monte Carlo simulation over the ranges of uncertainties for the major parameters that determine cost for all alternatives. This series of 10,000 simulations generated mean net present values for the alternatives. The differences between the mean for KCRIMS and the mean for each of the other alternatives are shown in Table 2.

Although the potential to reduce costs through increasing operational efficiencies may be greater at other NNSA sites than at sites near Kansas City, non-recurring costs associated with a distant relocation, incurred in the near term, would not be offset by FY 2030.

[17] NNSA did not ask SAIC to examine such an option for LLNL because it has almost no existing space that could house any significant portion of the existing KCP operations, so the only alternative at that laboratory would be to construct a new facility that could accommodate all of the KCP's current operations.

Table 1 - Estimated Cost of Alternatives (millions) -- Base Cases

GSA Build – NNSA Lease Alternatives	KCRIMS	Albuquerque		
Annualized FY06 Dollar Cost	$9,850	$9,920		
Escalated Dollar cost	$13,140	$13,000		
NPV	**$7,380**	**$7,580**		
New Construction Alternatives[18]		**SNL/NM**	**LANL**	**LLNL**
Annualized FY06 Dollar Cost		$9,680	$9,850	$11,300
Escalated Dollar cost		$12,580	$12,840	$14,910
NPV		**$7,460**	**$7,570**	**$8,570**
Existing Space/New Construction Alternatives		**SNL/NM**	**LANL**	
Annualized FY06 Dollar Cost		$9,680	$9,820	
Escalated Dollar cost		$12,590	$12,800	
NPV		**$7,470**	**$7,550**	

Table 2 - Differences in Mean Net Present Values between KCRIMS and Other Alternatives (millions)[19]

	Albuquerque	SNL/NM	LANL	LLNL
GSA Build – NNSA Lease	**$330**			
New Construction		**$316**	**$408**	**$1,415**
Existing Space and/New Construction		**$321**	**$380**	

3) The preferred alternative and other improvements would result in a potential savings of up to $100 million per year commencing upon resumption of qualified production at a new facility compared to continuing operations at the KCP. The alternatives of moving to Albuquerque, SNL/NM, LLNL or LANL involve two distinct delays that postpone the realization of many of these savings: (a) delays resulting from the

[18] The new construction costs in this table are more than those presented in earlier versions of the SAIC report. The original cost calculations did not take into account soft costs, such as design and site development. This was true for all sites. Further, the estimates have been sharpened by obtaining current land cost values at each site to replace a common price per acre assumed in the original estimates.

[19] These estimates are greater than in earlier versions of the SAIC Relocation Business Case due to a refinement of the model adding variability to assumptions on cost of KCRIMS construction and loss of savings due to delays in planning and building.

complex arrangements that would need to be made to construct a new facility in New Mexico or California (particularly at one of the weapons laboratories) during which the KCP would need to continue operations; and (b) extension of the production down time from 6 months to 24 months in order to complete a relocation to New Mexico or California. These delays account for most of the differences in costs among the alternatives.

Although NNSA estimates a backlog of approximately $200 million in deferred maintenance through FY 2014 at the KCP, these costs were not included in the SAIC analysis and thus do not contribute to the cost differences among the alternatives. NNSA did not defer maintenance at the KCP in order to skew the cost estimates or prejudice the outcome of the Relocation Business Case. This decision results from NNSA's need to allocate limited funding among its critical missions and priorities, and unfortunately, deferred maintenance is not limited to the KCP or non-nuclear production. NNSA believes that it has not deferred maintenance that is essential to health, safety or environmental compliance, but it cannot continue to maintain facilities built decades ago. That is one of the reasons NNSA concluded that relocating to a new facility in the Kansas City area is its preferred alternative.

4) The cost analysis is based on information derived from a number of sources, many of which are cited in the appendixes. A separate bibliography is included in Revision 3 of the Relocation Business Case (SAIC 2008).

Changes to the EA:
Revised Sections:

1.0 - Introduction and Background
2.0 - Purpose and Need
3.0 - Alternatives

14(b) Financial Calculations

Summary of Comments:
Comments question the calculations of the "Business Case Study" in determining cost savings, citing the lack of a proper cost-benefit analysis and asserting that the claimed savings are not credible. Other comments questioned the total sum of the lease payments compared to the initial construction cost of the facility. Cost issues related to maintenance of the new facility compared to current and deferred maintenance arrangements were also mentioned.

Comment Response:
NEPA does not require that an agency's preferred alternative be the least expensive one, nor does it require that an agency select the most financially advantageous alternative. However, in this case, the federal agencies believe that the preferred alternative is the most fiscally sound alternative.

The estimate of up to $100 million in annual cost savings was a conclusion of the original Kansas City Responsive Infrastructure, Manufacturing, and Sourcing business case study. The savings result from four significant changes: reductions in needed capabilities enabled by outsourcing processes to commercial entities; facility size reductions enabled by consolidation of remaining capabilities; business process improvements enabled by revised NNSA oversight requirements; and reduced overhead costs and maintenance costs with a much smaller and newer facility. Not all of these changes require construction of a new facility, NNSA continues to outsource production processes and improve its business practices. Taken together, these changes would allow a reduction in workforce and a reduction in procured materials and services, which are expected to total as much as $100 million annually by the project's completion.

The alternatives of moving to SNL/NM, LLNL or LANL involve two distinct delays that postpone the realization of much of these savings: (a) delay resulting from the need to obtain an option to purchase appropriate land and release a RFQ to developers for the alternatives that require new construction at the laboratories, during which time KCP continues to operate as normal, and (b) extension of the production down time from 6 months to 24 months in order to complete the distant relocation: to recruit, hire, clear, train, and qualify the workforce, and to commence production. These delays are the largest differential cost factors when comparing the preferred alternative to other relocation alternatives.

In anticipation of making a decision on whether to renovate its existing facilities or move to a new facility, NNSA postponed major upgrades to the current facility. This benefits taxpayers by not investing in facility upgrades that could be made unnecessary by a decision to move or renovate. If the No Action Alternative were selected, NNSA would need to address deferred maintenance at the existing facility. NNSA estimates a backlog of approximately $200 million in deferred maintenance through FY 2014 at KCP. These costs were not included in the cost analysis and thus do not contribute to the cost estimates of any of the alternatives. NNSA did not defer maintenance at the KCP in order to skew the cost estimates or prejudice the outcome of the Relocation Business Case. However, one of the reasons NNSA is proposing the action to relocate its KCP manufacturing and procurement activities to a modern, new facility is because of the large expense of continuing to maintain facilities built decades ago.

Over the life of a new facility, the sum of the lease payments is expected to be in excess of the total construction costs. This is because the bulk of the facility and site maintenance and operating costs would be included in the lease rather than paid separately, which is the case under a federal ownership model. The project was reviewed and scored by the OMB, which concluded the preferred alternative qualifies as an operating lease. In addition, the total life cycle lease costs of the project were fully disclosed to the congressional committees prior to their approval of the GSA prospectus. This type of project funding is very familiar to Congress and is used by many federal agencies to acquire the benefit of new facilities.

<u>Changes to the EA</u>:
None

Issue #15 – Transportation

Summary of Comments:
Several comments were received relating to the transportation impacts analysis in the draft EA. Some of these comments asserted that, as to the preferred alternative, the draft EA did not consider the additional driving distance of employees and any related impact on the environment; additional information on the evaluation of employee commuting distance was requested. It was also suggested that the additional traffic generated by the preferred alternative would be a significant impact and that additional detail on proposed road improvements was needed. Finally it was pointed out that the proposed facility at Botts Road is not currently serviced by public transit.

Comment Response:
An estimate of employees' commuting distance was calculated for the Botts Road site and the Bannister Federal Complex. For purposes of the analysis the number of employees residing in each postal zip code was determined. Using the latitude and longitude for the geographic center of each postal zip code, the total commuting distance in miles was estimated to the Botts Road site and the Bannister Federal Complex. The estimated commuting distance for each postal zip code was then multiplied by the total number of employees residing in that zip code. The cumulative estimates for all employees indicate a total one-way, per day commute of 42,481 miles to the Bannister Federal Complex and 42,375 miles to the Botts Road site. It is unlikely, therefore, that implementing the preferred alternative would significantly increase or decrease the cumulative impacts from employees' commuting to work.

The Missouri Department of Transportation (MODOT) is working with local entities to upgrade roads in anticipation of the development of Missouri Highway 150. Currently a three phase approach is proposed for these improvements. Phase 1 involves the improvement of the existing intersections at Botts Road and Thunderbird Road. The existing intersections would be upgraded through addition of turn lanes and temporary traffic signals to address immediate traffic increases. Phase 1 would be a MODOT project funded by local sources.

Phase 2 includes construction of new interchanges between Missouri Highway 150 and Botts Road and Thunderbird Road. The proposed interchanges would be constructed with minimal traffic interruptions to the temporary intersections implemented in Phase 1. Phase 2 also includes the reconstruction of Botts Road from north of Missouri Highway 150 to the Grandview city limits. In addition, Phase 2 would include connections for Thunderbird and Botts Road south of Missouri Highway 150.

Phase 3 includes proposals for the completion of a Thunderbird Road bridge over Missouri Highway 150. Phase 3 is proposed for implementation as the traffic demand increase. These roadway improvements are not within the scope of the proposed action,

but would contribute to mitigation of cumulative traffic impacts resulting from development of the Missouri Highway 150 corridor.

Based upon information provided by the Kansas City Area Transit Authority (KCATA), there is a daily average of 46 riders using the bus stop near the existing facility. The KCATA is unable to provide additional information to determine how many, if any, of those 46 riders are KCP employees.

Changes to the EA:
Revised Sections:

5.3.8 - Socioeconomic Environment, Environmental Justice
5.3.10 - Cumulative Impacts, Traffic/Transportation

Issue #16 – Hazard Analysis

Summary of Comments:
Four comments were submitted that expressed concern over the location of the proposed facility north of the former Richards-Gebaur Air Force Base. Future plans for the base include a light industrial and commercial business complex along with an inter-modal distribution facility for freight trains and tractor trailers. Specific comments questioned the physical security and strategic wisdom of locating the plant in the vicinity of the future distribution facility considering the volume of train and truck traffic bringing shipments from possible foreign ports; the threat of a massive truck bomb or tank car attack against the facility; the danger to the million or so people who live in the two state area; and the additional security measures and expense this threat could require. The need to complete a credible analysis of potential "Intentional Destructive Acts" which include both terrorism and internal sabotage was recommended.

Comment Response:
Per the Department of Energy's Design Basis Threat Policy (DOE Order 470.3A), the Kansas City Plant is designated a Threat Level 4 facility. Threat Level 4 is the lowest threat classification based on the general consequences of loss, destruction, or impact to public health and safety. The KCP has no critical assets or critical facilities. Hazard assessments, which evaluate a range of potential accidents and the nature of each hazard, have been completed and are reviewed annually for the existing plant. The KCP is considered a low-hazard industrial facility and operations at the KCP involve hazards of the type and magnitude routinely encountered in industry and generally accepted by the public. Emergency plans are in place to respond to such emergencies as accidents, incidents, events or natural phenomena. Extensive security measures are in place to protect identified assets. Cooperating arrangements exist with the local police, fire and FBI for emergency response. The likelihood of detrimental exposure because of an operational accident, intentional destructive act or natural phenomena is extremely unlikely because of mitigating factors used in normal operations combined with the benefits of site engineered controls and facility construction.

The alternatives discussed in Sections 3.2, 3.3 and 3.4 differ only in the degree of renovation of facilities already located on the Bannister Federal Complex. No increased impacts are expected as all of the alternatives would fall within the scope of existing hazard assessments and emergency plans currently in place for the KCP.

The functions to be relocated to a proposed new facility are common industrial processes that are the same as those currently being performed at the existing KCP so the current accident profile would not change as a result of the relocation. The existing hazard assessment and emergency response plans would be updated for the proposed new facility at Botts Road and a new facility at one of the laboratories would be evaluated under their existing hazard assessments. It is anticipated that reduced hazard levels associated with reduced operations and current design requirements would reduce any

potential impact at a new facility as compared to current operations. It is not anticipated that any intentional destructive act at or near a new facility would have a greater impact than that already evaluated under current hazard assessments.

This topic has been revised in the EA under a new heading called Hazard Analysis and includes a discussion on accident analysis and intentional destructive acts.

Changes to the EA:
Revised Sections 5.2.9 and 5.3.9 – Hazard Analysis
Added Sections 5.4.9, 5.5.9 and 5.6.9 – Hazard Analysis

Issue #17 – Cumulative Impacts

Summary of Comments:
The draft EA for the new KCP contains an inadequate analysis of the cumulative impacts of the proposed action.

The draft EA contains a number of internal contradictions all of which favored the conclusion that no significant adverse environmental impacts result from the implementation of the preferred alternative.

Comment Response:
The EA contains an adequate analysis of cumulative impacts. Where public comments have requested additional detail or analysis it has been provided either through issue analysis or inclusion of additional information in the EA document. Specifically, additional information has been provided in the EA for the cumulative effects of stormwater and transportation.

Changes to the EA:
Revised per Issue # 11(a) – Stormwater and Issue #15 - Transportation.
Revised Sections 5.2.10 and 5.3.10 - Cumulative Impacts
Added Sections 5.4.10, 5.5.10 and 5.6.10 – Cumulative Impacts

Issue #18 – Miscellaneous Comments

18(a) Size of KCP

Summary of Comments:
Comments were received concerning the size of the Kansas City Plant located at the Bannister Federal Complex. One stated that the 136 acres indicated in the EA differs from previously submitted reports. Another comment expressed confusion on the square footage of the existing KCP as compared to alternatives for the new facility. In addition, the square footage of the new facility as presented in the EA would not represent a 50% reduction if the reduction in square footage assumed in the 1996 PEIS had been attained.

Comment Response:
The size of the existing property under NNSA control is approximately 136 acres, of which NNSA owns 122 acres. The EA reflects the correct number of acres currently under NNSA control. Other site documents reflect a site acreage that was accurate prior to the transfer of control of some parking areas from NNSA to GSA. As appropriate, these documents, such as the Missouri Hazardous Waste Facility Part I Permit, will be updated to reflect the more current site acreage.

The 1996 PEIS assumed a reduction in square footage from 3.2 million to 1.8 million. As a result of the reconfiguration of operations, which vacated space, and the addition of new work for others mission, which occupied space planned for footprint reduction, the square footage reduction assumed in the PEIS was not realized. NNSA controls approximately 3 million square feet, including nearly 350,000 square feet of empty space that NNSA maintains. The 50% reduction referenced in the EA is accurate. There is no difference between the preferred alternative and remaining alternatives with regard to square footage required for production operations. However, due to the renovation of existing facilities described in Alternatives 2, 3, 6, 7, and 8, the actual square footage dedicated to non-nuclear production could vary slightly (less than 10,000 square feet) from the preferred alternative.

Changes to the EA:
None

18(b) Census Figures

Summary of Comments:
One comment was received regarding the census figures used in the EA, stating that the 2000 Census for people living within 3 miles of the Bannister Federal Complex differed from a 2004 Environmental Justice Assessment Screen Report by nearly 70,000 people.

Comment Response:
The discrepancy between the new estimate of 65,000 people and the referenced 2004 Screen Report estimate of 135,000 people is believed to be an error in the Screen Report. Both reports used the 2000 Census data for the development of the estimated population within 3 miles of the Bannister Federal Complex. The estimate used in the EA was provided by the City Planning and Development Department of Kansas City, Missouri. That office was informed of the discrepancy between the two reports and was asked to validate its first estimate. This was done using two methods of estimating the population. The "census tracks" method used originally validated the census at 65,857 people within a three mile radius of the plant. A more accurate "census blocks" method was also used yielding an estimate of 66,148 people. The EA will be revised to reflect this new and more accurate population estimate.

Changes to the EA:
Revised Section 4.2.3 – Socioeconomic Resources, Demographics

18(c) LEED Certification

Summary of Comments:
One comment suggested that the difference between LEED Gold and LEED Silver certifications should be described in the EA.

Comment Response:
The explanation of the difference between the two levels of certification can be readily obtained through other means, such as visiting the US Green Building Council website (www.usgbc.org). A description of how the requirements differ between the two certification levels is not appropriate for inclusion in the EA as the certification requirements are subject to change. In addition, there are multiple ways in which the certification requirements can be met. The specific attributes being pursued to achieve Gold certification for new facilities assumed under any of the alternatives cannot be identified until a facility design is completed.

Changes to the EA:
None

18(d) Building 50 Characterization

Summary of Comments:
One comment was received regarding the conclusions presented in the EA concerning releases of PCBs, petroleum hydrocarbons and chlorinated solvents in the vicinity of GSA building 50. The comment suggested that clarifying language be added to the EA indicating that the conclusions reached in the EA are conclusions made by the GSA and that regulatory agencies have not yet concurred in these conclusions. It was also suggested that a figure identifying GSA Building 50 be added to the EA for clarity.

Comment Response:
NNSA and GSA agree with the comment. Clarifying language and a new figure have been added to the EA identifying the location of Building 50 and the solid waste management units identified in Section 4.2.6.

Changes to the EA:
Revised Section 4.2.6 – Soils

18(e) Potential Groundwater Impacts with Onsite Alternatives

Summary of Comments:
One comment stated that demolition of the existing GSA facilities under Alternatives 3 and 4 could impact groundwater recharge and flow gradients beneath the KCP site to the extent that previously contained contamination could now have a mechanism to migrate beyond the current plume boundary and cause environmental concern.

Comment Response:
The agencies agree with the comment and have revised the EA to include a commitment to perform modeling in advance of site work on the up-gradient portions of the Bannister Federal Complex and to ensure existing groundwater control features are upgraded as necessary to ensure continued plume containment.

Changes to the EA**:**
Revised Section 5.2.2 - Groundwater Hydrology

18(f) NNSA Request for Information (RFI) on Contracting Options

Summary of Comments:
One comment stated that the NNSA was seeking information from potential contractors on how to potentially restructure Management and Operating contracts and suggested that NNSA must have other long-term plans for facility operations than those stated in the EA. Specifically, the comment stated that NNSA had not fully disclosed its intentions with the GSA, was attempting to avoid Congressional funding scrutiny, and should consider physical consolidation along with managerial consolidation.

Comment Response:
NNSA's request for information concerning potential contracting models is not related to its proposed action for the Kansas City Plant. The request for information states that any proposals for contracting options should assume that the proposed action in this EA is executed. It is important to note that the request for information is just that, a solicitation of others' views on possible changes to NNSA's contracting strategy. NNSA has not developed any proposed actions at this time regarding changes to its contracting strategy, and if it does, such actions may not require analysis under NEPA as they might not constitute a major federal action that could significantly affect the quality of the human environment.

If the agencies select the preferred alternative, NNSA would be required to sign an extended occupancy agreement with the GSA, which is subject to annual Congressional appropriations. Alternatives that consider and analyze physical consolidation of KCP operations at other sites have been addressed in other comment responses.

Changes to the EA:
None

18(g) Environmental Justice

Summary of Comments:
One comment suggested the environmental justice analysis should have included varying radiuses of influence to understand the potential impacts on minority and low income populations. The comment also suggested that mitigation of human health and/or environmental effects during the construction of the proposed facility should be taken into consideration.

Comment Response:
Since there are no significant health effects from construction or operation expected with any of the alternatives, altering the environmental justice radius of influence would not change the fundamental conclusion that there would be no significant disproportionate adverse impacts on minority or low income populations.

Should the agencies adopt any of the action alternatives, consideration will be given to mitigation actions for environmental impacts during both construction and operations, including a community involvement plan.

Changes to the EA:
None

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