Section 1

History of the Bannister Federal Complex

Contents

1.0 Introduction

This Description of Current Conditions Report (DCCR) is written in accordance with the requirements of the Missouri Hazardous Waste Management Facility Permit (MO9890010924) (the Permit) between the Missouri Department of Natural Resources (DNR), the United States Environmental Protection Agency (EPA), the United States Department of Energy (DOE), the United States General Services Administration (GSA) and Honeywell Federal Manufacturing &Technologies (FM&T) for the Bannister Federal Complex (BFC) in Kansas City, Missouri. It provides a historical review of operations at the BFC, currently owned by GSA or DOE, a summary of environmental conditions and activities at the site and results of sampling of environmental media (soil, groundwater, etc.) used to characterize and define the extent of releases of hazardous waste and /or hazardous waste constituents to the environment.

Also included is a risk screening document addressing all environmental media, biota and contaminants of concern and potential current and future human and ecological exposures across the range of possible BFC future reuse scenarios. It also includes potential human and ecological exposures in portions of Boone Creek Indian Creek and the Blue River that border the BFC.

Finally, through evaluation of the data presented in this DCCR, areas of the BFC are identified where additional data and/or investigation are needed to close gaps that exist in the understanding of environmental conditions.

This DCCR is divided into twelve different sections. They are as follows:

Section 1 provides a history of the BFC, including use and ownership of the site over the years along with summaries of the organization and mission of both DOE and GSA.

Section 2 discusses the environmental regulations applicable to the site and the type of monitoring that occurs. The site's floodplain and wetland status is also discussed.

Section 3 provides a background of the environmental conditions at the site. A discussion of the geology and hydrogeology, contaminants present in the environment, expected behavior and a review of the site conceptual model of where these contaminants reside in the subsurface and how they move within the BFC subsurface.

Section 4 describes how the site ultimately became regulated under federal and state hazardous waste laws, regulations and corresponding clean-up authorities. It also summarizes environmental assessment and remediation activities that occurred prior to an October 1989 Administrative Order on Consent between DOE and EPA. A review of environmental surveys and historical records of spill events prior to the onset of federal reporting requirements are also provided.

Section 5 provides a review and summary of how the areas of environmental concern at the BFC were identified, where they are located and how they were/are addressed under federal and/or state clean-up authorities. A review and summary of the studies that have been performed in these areas to date is provided. Also included are data from the closure of long term (>90 day) hazardous waste storage lots at the facility.

Section 6 describes the stormwater (rainwater) conveyance system at the BFC. This section reviews, how these conveyance systems have been impacted by historical releases of contaminants, and the remedial actions that have been conducted to assure that the storm water conveyance system does not impact off site water bodies.

Section 7 addresses the historical use of depleted uranium, methods of transport in the environment, whether releases from the site could have occurred and impacts they may have. It also describes the historical use of beryllium alloys at the facility and whether beryllium from these alloys could have been released to the environment in sufficient quantities to create environmental harm.

Section 8 provides a review of all Bioaccumulation Studies that have been performed in and around the BFC.

Section 9 provides a risk screening addressing all environmental media, biota and contaminants of concern and potential current and future human and ecological exposures across a range of possible BFC future reuse scenarios. Also included are potential human and ecological exposures in portions of Boone Creek Indian Creek and the Blue River that border the BFC.

Section 10 includes is a discussion on the changes in the nature and duration of groundwater pumping that may occur from removal of various remaining source areas of contamination. A detailed modeling study is provided discussing this issue.

Section 11 provides conclusions including data gaps and areas that require additional investigation based on review of historical data collected and results from the risk screening.

Section 12 provides references.

1.1 HISTORY OF THE BANNISTER FEDERAL COMPLEX

The Bannister Federal Complex (BFC) is located 12 miles south of downtown KCMO within the incorporated city limits (Figure 1.1). To the west of the complex is Troost Avenue, a major north-south traffic artery; to the north is former federal land donated to the City of Kansas City, Missouri called Legacy Park; to the east is the Blue River and Blue River Parkway; and to the south is Bannister Road (Missouri Highway W) and Indian Creek.

The site occupied by the BFC was originally a boggy river bottom amidst a suburban countryside. Its only commercial usage was as an automobile race track. Built in 1922, the 1.25 mile wood oval track had high banked turns, two grandstands and parking for 20,000 automobiles including 5,000 in the infield (Fig. 1.2). The last race at the track was held in July of 1924. The speedway was sold in March of 1925. It was reported that repeated flooding from the nearby Blue River caused the wooden track to warp excessively prohibiting its use as a race track.

In the fall of 1933 several natural gas wells were drilled in and around the area of the current complex (Figure 1.3). However, the gas was of poor quality, and the wells consequently were capped. Their exact locations are unknown, however historical maps and information regarding the gas wells were provided to DOE by Department of Natural Resources (DNR). A report on these wells, provided in Section 4, discusses this issue in more detail.

On April 22, 1942, U.S. Navy Rear Admiral E. M. Pace began looking for a location for the site of a new manufacturing plant that could expand the production of the powerful Pratt & Whitney R-2800, 2000 horsepower, Double Wasp Radial Aircraft Engine. (Smith, 2002). Chicago, St. Paul and Kansas City were chosen as possible sites. The Kansas City site was, at the time, located just outside the city limits of Kansas City, Missouri. On April 29 it was agreed that the site of the old racetrack in the unincorporated town known as Dodson, Missouri, would be the location for the new Pratt & Whitney Aircraft Corporation of Missouri. It had all the necessary facilities: water, electricity, transportation, manpower and housing. In addition, the site featured 300 acres of flat land in close proximity to a trolley line, adjacent to the right-of-way of the Missouri Pacific Railroad, and good road facilities (KC Star, 24 May 1942).

The construction contract for the Pratt & Whitney Plant was let on July 2, 1942, to Turner Construction, New York, and Long Construction Company, Kansas City, Missouri. The Turner firm, who had built several Pratt & Whitney plants in the east, was hired to oversee the work of Long Construction Company. The two firms merged for this project and became known as the Long-Turner Construction Company (KC Star, 2 July 1942).

The firm of Albert Kahn Associated Architects and Engineers, Detroit, Michigan, was named as architect. At the time they were awarded the contract for Pratt & Whitney, the firm was actively designing military industrial plants as part of the World War II war effort. Kahn's firm designed all of the Pratt & Whitney plants, including the site in Kansas City (Architectural Record, Jan 1943).

Pratt & Whitney (a division of the United Aircraft Corporation, Hartford, Connecticut), held a groundbreaking ceremony for the new plant on July 4, 1942. Excavation work commenced immediately. On August 15, 1942, Long-Turner Construction Company poured the first footings. By February 1943 the plant was operational. At full capacity, there were 21,000 employees(Smith, 2002). The magnitude of the project, from the beginning of construction until the first engine rolled off the production line, was a monumental feat that was accomplished in less than seven months.

In the interests of wartime urgency, the approximately 2.6 million square foot Main Manufacturing Building (MMB) was constructed by a new assembly line technique that permitted the re-use of mobile forms for pouring concrete. The building, constructed as "reinforced concrete frame" or "concrete moment frame", was specifically designed to minimize the use of steel which was in short supply during the war (Fig. 1.4). This structure represented one of the largest integrated projects in the war construction program, being virtually under one roof. Albert Kahn Associated Architects and Engineers along with Mahony-Troast Company, contractors, utilized their famous "warspeed" construction system for construction of the Kansas City Plant (KCP).

Another of Kahn's designs at the BFC, the West Boiler House (WBH) included the steam generating equipment, air compressors, refrigerating machinery and the necessary auxiliaries to run the Pratt & Whitney Aircraft Plant and associated buildings (Figure 1.5).

A series of 32 production test cells, constructed of concrete, and attached to the MMB, was also the work of Kahn. Completed aircraft engines were handled by a monorail system in the test cells; leaving the test cell building by a chain conveyor which circled around the sides of the tear-down and re-assembly building. These cells, which tested the Double-Wasp engines, were constructed placing 1,200 to 2,700 cubic yards of concrete in units consisting of two test cells and one control room observation gallery per unit (Figure 1.6).

The engines produced in Kansas City promptly went into battle action, both in Europe and in the Pacific. These Missouri-built, water-cooled Double-Wasp engines powered the Republic P-47 Thunderbolt, the Vought F4U-4 Corsair and the Navy's F6F Hellcat. Thus, Pratt & Whitney's Double-Wasp engines powered three of the nation's five key fighter aircraft in the decisive years of WWII. Additionally, Pratt & Whitney engines powered ninety-eight percent of all the transports flying for the service during WWII.

At the end of WWII, after producing 7,934 R-2800 Series C engines, all 21,000 employees were laid off. The plant formally closed on September 2, 1945 (Smith, 2002).

1.1.1 The Pratt & Whitney Plant, Post WWII: October 1945 through June 1948

The Pratt & Whitney Aircraft Plant of Missouri became known as Plancor 1213 in the War Asset Administration logs. The Defense Plant Corporation owned the complex. On December 20, 1945, a memorandum was sent from the War Assets Administration authorizing the sale of surplus equipment from the plant. Beginning March 26, 1946, equipment was offered to the public. The sale consisted of machine tools, hoists, drills, milling machines and planers amongst a list of over 5,000 various types of tools.

Between 1945 and 1948 the complex remained all but vacant. On August 12, 1946, a memorandum of the Reconstruction Finance Corporation, a division of the Office of Defense Plants, outlined the plant asset as owned by the government.

A small portion of the facility was used as storage for war surplus tires, sugar and other commodities. Some of the office space was leased to small Kansas City businesses such as Lingle Refrigeration that manufactured walk-in coolers for restaurants. The Internal Revenue Service (IRS) also leased space for its regional offices.

In December 1947, the War Assets Administration held a meeting with the Department of the Navy to determine the ownership of Plancor 1213. As a result, the plant was turned over to the Department of the Navy. A Quit Claim Deed was filed between the War Department and the United States Navy resulting in the transfer of the mothballed Pratt & Whitney plant to the Navy Department on December 31, 1947. Thereafter, the plant was known as the Naval Industrial Reserve Plant of Kansas City, Missouri (NARA, HM1995).

1.1.2 The Westinghouse Years: June 1948-December 1960

In August 1948, the Navy decided that Westinghouse Aircraft, Philadelphia, should increase the production of their J34 Gas Turbine engine. In January 1949, Westinghouse Aircraft Gas Turbine (AGT) plant leased the Kansas City Plant and hired new employees. Over the next year, Westinghouse AGT tooled up and by January 1, 1950, had hired 5,000 employees. The number of J34's produced in a month averaged 150. In September 1951, just eighteen months after the plant began production, Westinghouse completed its 3000th J34 and tooled up to manufacture the J40 engine. (Smith, 2002)

Between 1951 and 1959 there was a slow reduction of orders for the J34 and the J40 engines causing a steady decline in business for the Kansas City plant. (Smith, 2002). On March 22, 1960, Westinghouse AGT announced their plan to discontinue the Aircraft Gas Turbine engine division. By December 1960, Westinghouse closed their entire operation at the Kansas City Plant. (Smith, 2002)

1.1.3 Nuclear Weapons Manufacturing Plant in Kansas City (1948-2010)

On November 29, 1948, the Atomic Energy Commission (AEC) formally announced its selection of the Kansas City Plant as the site for a new facility to manufacture non-nuclear components of nuclear weapons, to be operated under a prime contract by the Bendix Corporation. Bendix subleased a large portion of the facility from Westinghouse Corporation, and operations at the plant began on April 21, 1949. By the end of 1949, employment had reached 1,240 persons. AEC operations began expanding into a greater portion of the MMB, into outlying buildings, and into new buildings which had to be constructed. By 1964, more than 8,000 people were employed at the plant.

On April 30**,** 1961, the Westinghouse lease on the BFC was cancelled and that portion of the facility occupied by Westinghouse was transferred to the GSA. On July 1**,** 1962, the entire complex, exclusive of a 24-acre tract, was transferred to GSA with the agreement that the AEC would continue to use portions of the tract for its operation.

In February 1975 the plant came under control of the Energy Research and Development Administration (ERDA) as a result of government reorganization. On October 1, 1976, the entire ERDA-occupied portion of the Bannister Federal Complex was transferred to the custody and control of ERDA through a memorandum of understanding with the GSA. The Department of Energy was created on October 1, 1977, and the Kansas City Plant, as part of the ERDA Complex, was included in the new Department.

In 1983 Bendix merged with Allied Corporation. At this time the original wood flooring that once provided the base for the manufacturing of airplane engines was replaced with new flooring. The heavy furniture of the war years was replaced by modular furniture and sound-absorbing carpeting.

For over sixty years, Bendix Aviation Corporation and its successors have managed the Kansas City Plant in the production of the non-nuclear components. Bendix became Allied Corporation in 1983. Allied later merged with the Signal Companies and changed its name to AlliedSignal. In

1999 AlliedSignal merged with the Honeywell Corporation, and adopted the Honeywell name for its superior brand name recognition. Today the plant is operated by Honeywell Federal Manufacturing & Technologies, LLC (FM&T).

The plant is a multi-disciplinary engineering and manufacturing organization serving the National Security Enterprise, Homeland Security and the Department of Defense. The plant is under the direction of the National Nuclear Security Administration (NNSA), which was created in 2000.

In 2006, the NNSA envisioned the transformation of the Kansas City Plant, from “a cold war vintage infrastructure to a more cost effective and correctly sized 21st century responsive infrastructure that exemplifies good stewardship of taxpayer resources while maintaining the nuclear deterrent.” (Morris&Snyder,2009). A new Kansas City Pplant has been built at Botts Road and Hwy 150 approximately eight miles south of the BFC. Operations are currently being moved to the new location with the move expected to be complete in 2014.

Table 1.1 provides a timeline of important events in the history of the KCP.

Table 1.1: Timeline: Kansas City Plant 1943-2013

April 22, 1942	The Navy planned for a new site for a new Pratt and Whitney Aircraft Corporation factory.
April 29, 1942	A 397-acre site outside of Kansas City, Missouri, chosen at Bannister and Holmes Road for the new Pratt & Whitney Aircraft Plant
May 24, 1942	The new Pratt & Whitney Aircraft Plant announced to the Kansas City public in *The Kansas City Star*
June 22, 1942	Formation of the United Aircraft Corporation of Missouri. First Board Meeting held.
July 1, 1942	The Defense Plant Corporation took possession of the construction site at a total cost of $139,798.58. Fourteen parcels of land were purchased.
July 2, 1942	Contract let to Turner Construction, New York and Long Construction, Kansas City, Missouri. Work completed as the Long-Turner Construction Company while building the Pratt & Whitney Plant
July 4, 1942	Groundbreaking ceremony held at the construction site; approximately 3000 people in attendance
July 6, 1942	Excavation work commenced.
August 13, 1942	Top-ranking officials for Missouri Pratt & Whitney named: H. Mansfield Horner, Vice-president of United Aircraft of Missouri; Frederick G. Dawson, General Manager; Leonard O. Mallet, Asst. General Manager. All three men held similar positions in East Hartford, CT.
August 1942	Two hundred Kansas City men chosen to train in Hartford as management for the new plant. Training to last approximately seven months.
December 1942	Former motorcar agency location at 2735 Main, Kansas City, MO served as a training center to prepare new employees in the necessary skills needed to build the R-2800-C Double Wasp radial engine. It is the largest training center of its type in the United States.
February 18, 1943	Production in Kansas City plant stated. In addition to the R-2800 Double Wasp engine, it was decided that the Kansas City plant would also build parts to be shipped to East Hartford. Construction continued on the Administration buildings.
March 1, 1943	Gas rationing became a serious issue and employees were ordered to form group rides to and from work.
March 31, 1943	KC Production foremen training in Hartford returned to Kansas City for their new jobs.
April 1, 1943	The training center on Main completed the training of 1,500 employees
May 1, 1943	Assembly and test house foremen training in Hartford returned to Kansas City for their new jobs
September 2, 1945	"V-J Day" Government closed the Navy's Kansas City Plant which had delivered 7,934 R-2800 Series "C" Double Wasp engines totaling 21,506,167 hp to the U.S. Navy. 21,000 employees were sent home.
December 31, 1947	Department of the Navy received deed for the Kansas City Plant.
June 1948	Westinghouse leased a portion of Kansas City plant for J34 airplane engine production.
February 1949	Bendix contracted under Atomic Energy Commission to build non-nuclear components.
1975	The Atomic Energy Commission became the Energy Research and Development Agency (ERDA).

1977	ERDA became the Department of Energy (DOE).
1983	Bendix merged with Allied
1994	Allied Corp. changed name to AlliedSignal
1999	AlliedSignal acquired Honeywell and changed name to Honeywell Manufacturing and Technologies, LLC.
2000	National Nuclear Security Administration (NNSA) was established.
2008	NNSA announced plans to move to Botts Road and Highway 150, eight miles south of current location.
2013	Move of the Kansas City Plant from the Bannister Federal Complex to a new facility on Botts Road in south Kansas City begins.

1.1.4 Current Buildings and Ownership

The BFC consists of four primary buildings; the Main Manufacturing Building (MMB) (Building 1), the Manufacturing Support Building (Building 13) the former Technology Transfer Center (Building 92) and the West Boilerhouse (Figure 1.7). The DOE and GSA share the 2.6 million square foot MMB. Of that, NNSA has control or permit to approximately two million square feet of that space. There are approximately 1.1 million square feet of space within the additional buildings under DOE control for an approximate total of 3.1 million square feet of space. The MMB consists of one story with a mezzanine or partial second floor and a partial basement. The building is of reinforced concrete construction with exterior walls of brick with cinder block backing. The roof is reinforced concrete of arch and shell design, except the mezzanine roof, which is beam and slab design. The second floor and the first floor over the basement are of reinforced concrete flat slab construction. Column spacing is 40 feet by 40 feet on the first floor and the mezzanine, and 20 feet by 20 feet in the basement and under the mezzanine.

The BFC utilizes a number of local utility companies. Kansas City Power and Light provides electricity through two 161 kilovolt transmission lines. Water is supplied by the City of Kansas City, Missouri water department through three mains, any one of which could supply the main building if service were interrupted in the other two. Natural gas is provided by the local gas company from their main distribution lines on the west and south access easements into the complex. The complex is currently zoned M3-5 which allows a wide variety of uses including commercial, public/civic, industrial and agricultural uses.

1.2 DOE Organization and Mission

The Kansas City Plant, the designated name of the DOE/NNSA operation at the BFC, manufactures or procures nonnuclear components for nuclear weapons. This work involves machining, polymer production, coating, plastics fabrication, plating, and electrical and mechanical assembly. Many different items are/were manufactured or fabricated at the Kansas City Plant over the years.

Mechanical products manufactured include an array of components and assemblies involving several distinct types of operations. Products requiring machining operations include cases, rings, housings, plates and covers. Associated processes include normal metal removing operations using stainless steel, aluminum, and titanium.

Polymer production consists of reactors used to make products in batches, no continuous processes are used. Some benchtop mixtures are also made.

Plastic products include housings, precision miniature parts, desiccants, structural supports, fillers, and filled plastics. Polystyrenes, polyurethanes, silicones, syntactics, and other materials are processed, mixed, blended, molded, tested, impregnated, filament wound, and machined.

Precision assembly work includes high-pressure valves and air motors. Associated processes include pressing, hydroforming, welding, bending, joining, and secondary machining. Numerous products require vapor degreasing, chemical and electromechanical cleaning, electroplating, etching, polishing, sandblasting, painting, and plastic coating.

The miniature electronic components manufactured at the Kansas City Plant have stringent quality requirements that necessitated special facilities, special air cleanliness controls, and special handling techniques. Associated processes included soldering, welding, molding, and assembly. Printed wiring board fabrication involves photo processing, plating, and etching.

Support operations required to successfully accomplish the manufacturing mission of the Kansas City Plant include quality assurance, data processing, materials testing, developmental fabrication, and environmental support services.

The KCP has always been a non-nuclear facility in that products produced were limited to non-radioactive components. The only exception to this was that the Kansas City Plant machined and inspected depleted uranium in the late 1950s and early 1960s in a section of the manufacturing area. This area has since been decontaminated and is currently being used for nonradiological clean work. The activities conducted here and the clean-up work in the department are discussed later in this document further in Section 4.

Current processes at the KCP that use radioactive materials and radiation generating devices (industrial X-ray machines) are comparable to those used in commercial manufacturing and laboratories. These processes do not generate removable contamination, which could be inadvertently inhaled, ingested, or absorbed. The KCP inventory of radioactive material consists of confined (sealed, plated, or encapsulated) sources, small pieces of depleted uranium, and consumer products such as smoke detectors and emergency exit signs. One operation involves the electrochemical etching of small pieces of depleted uranium in a 10-gallon acid bath. The parts are rinsed and inserted into product.

Table 1.2 below denotes buildings currently under the control of DOE. It includes the building number, date of construction and building name. A figure showing the locations of these buildings on the complex is provided as Figure 1.7

Table 1.2 Buildings Owned by DOE

Building No.	Date of Construction	Building Name
1	1943	Manufacturing Bldg.
5	1943	West Boiler House
9	1943	East Entrance
15	1943	Polymer Bldg.
47	1943	North Employee Entrance
86	1943	North Wing Laboratory
87	1943	Test Cells
88	1943	Forge and Casting Bldg.
16	1943	Kinematics
54	1944	High Power Laboratory
14	1945	4 Experimental Test Cells
77	1948	Oil Storage
46	1949	4 Unfinished Test Cells
59	1952	Storage and Waste Management Building
76	1953	Explosives Storage Bunker
68	1957	Storage Shed
13	1957	Manufacturing & Support
48	1961	East Power House
73	1972	Solid Waste Handling
74	1973	Production Storage
75	1973	Supervisory Control Bldg.
32	1974	Central Guard Post
78	1974	East Guard Post
79	1974	West Guard Post
80	1974	North Guard Post
89	1979	Fire Protection Pump Bldg.
90	1984	Mold, Heating and Cooling
91	1985	Plating
92	1985	Manufacturing
93	1985	Northeast Guard Post
94	1987	Northwest Guard Post
96	1987	Special Process
98	1988	Industrial Wastewater Pretreatment
31	1994	Air Monitoring Bldg.
99	2004	Receiving and Shipping Security Post Bldg.

1.3 GSA Organization and Mission

On June 30, 1949, Congress passed the Federal Property and Administrative Services Act of 1949 also known as Public Law 152. The act provided for: Establishment of the General Services Administration and the transfer to the Administration of the existing functions of five agencies: the Federal Works Agency, the Bureau of Federal Supply, and the Office of Contract Settlement, the National Archives Establishment, and the War Assets Administration. It also gave the Administration certain new functions and responsibilities not previously assigned to its constituent agencies, and provided for the integration of all functions in the new organization. The General Services Administration began its operation as an executive agency of the Federal Government.

As initially described, GSA's mission was to dispose of war surplus goods, manage and store government records, handle emergency preparedness, and stockpile strategic supplies for wartime. GSA also regulated the sale of various office supplies to federal agencies. In the agency's first five years of operation it was directly responsible for an excess of $8 billion in assets.

When first established GSA operated as five separate but integrated Services: Federal Supply, Public Buildings, National Archives and Records, Transportation and Communication, and Property Management and Disposal. The ten Regional Offices, that were also established, follow the same divisions of services to Government agencies throughout the fifty states in acting as a unified organization. In addition, each of the Regional Directors of Management was responsible to the Regional Administrators, who in turn, reported to the Administrator of GSA's Central Office.

Reorganization of GSA, as in many government agencies, also occurred over the past six decades. Examples include the Defense Materials Procurement Agency which was absorbed into GSA in 1953 with the most recent change when National Archives and Records Service (NARS), initially under GSA, became an independent agency in 1985 changing its name to National Archives and Record Administration (NARA). In 2005, GSA merged the Federal Supply Service (FSS) and the Federal Technology Service (FTS) to form the Federal Acquisition Service (FAS).

Today, the largest offices under GSA management are the Public Buildings Service (PBS) and the Federal Acquisition Service (FAS). Along with a variety of staff offices, GSA provides workspace to more than one million federal civilian workers, oversees the preservation of 425 historic buildings, facilitates the purchase of high-quality, low cost goods and services from commercial vendors, and influences the management of $500 billion in federal assets.

The main office for GSA Region 6 was originally located in downtown Kansas City, Missouri. In December 1954, GSA Region 6 decided to consolidate their office and warehouse space at the former Pratt and Whitney site. As a result, they constructed a one story, 528,000 square foot (12.5 acres) warehouse and office space under one roof in which to store a vast and diverse amount of supplies and equipment that GSA managed and distributed to federal agencies located within GSA's Region 6 seven state region. The new building was sited at the former Pratt and Whitney Plant, east of the Missouri Pacific Railroad Tracks (Figure 1.8).

The GSA was responsible for warehousing and distributing numerous items that were used in the daily operation of any given federal agency. Customers, as the agencies were called, numbered over 2,600. There were over 9,000 different supply items that were stored in Kansas City at the Bannister Federal Complex. The diverse list of equipment and supplies that filled the warehouse included: lead pencils and pens, school books, automotive parts, supply cabinets, every imaginable paper product from stationary and envelopes to order pads and requisition slips, furniture, food for Native American agencies and tribes on reservations, and provisions for the Veteran Hospitals. As the administrative office over the Public Building Division, all matters of blue prints relating to the various federal and private buildings managed by GSA were also warehoused in Kansas City. In addition, yet separate from GSA, space was utilized by the postal facility center, warehousing supplies for 1,100 Post Offices within the region.
In order for the 363 employees of GSA to operate the facility efficiently, the warehouse originally contained a perpetually operating conveyor system. Carts (350 total), about the size of a kitchen table, continuously moved along the conveyor system at a rate of sixty feet per minute. Due to the vast amount of floor space to cover, electric golf-cart like vehicles were implemented for employee use, to cut travel time across the

complex. Electric cars are still in use today. GSA managed buildings on the BFC are provided in Table 1.3.

Table 1.3: GSA Managed Buildings

Building No.	Date of Construction	Building Name
3	1942-43	Personnel Building
4	1943	Truck Garage
6	1991	Federal Service Acquisition Building
7	1942-43	West Employee Entrance
23	1943	Water Storage Reservoir
28	1970	Electrical Switch Building
41	1943	Original to Manufacturing Plant
42	1950	Material Handling Building
44	1943	Gas Meter House (at West Employee Entrance)
50	1950	Fuels Components Laboratory Building
52	1989	Childcare Center
60	1964	Support Structure
83	unknown	Air Monitoring
2306/2312	1953	Federal Supply and Records Center
	1954	Water Tower

2.0 Wastes

The KCP has always manufactured non-nuclear components for nuclear weapons. This work involves machining, plastic fabrication, plating and electrical and mechanical assembly. Wastes are routinely generated by metal fabrication, cleaning finishing, plating, coating and encapsulation/potting operations. Then cleaning of metal parts in acid and alkaline solutions generates acid and alkaline waste. The waste rubber foam and resin components are generated by encapsulation/potting operations. Waste solvents are generated by degreasing/cleaning and circuit board printing operations. The fabrication and machining of metal parts generates waste metal grindings. Waste paints and thinners are generated by product and facility painting

operations. Miscellaneous waste chemicals are generated in laboratory processes. In addition maintenance and construction projects produce building wastes.

Utilization of the facility in the production of radial and subsequently jet engines would have produced waste similar to that of the KCP. Specifically those waste derived from metal fabrication, cleaning, finishing and coating. Acid and alkaline waste along with chlorinated solvents would have been common. Additional waste types more directly related to historical engine manufacturing and testing operations would include the use of oils and fuels for engine operation. Waste from machining and metal cleaning would have been prominent including the use of chlorinated solvents such as trichloroethylene (TCE). Plating waste from metal plating would have also been generated.

GSA operations are significantly different than those of the DOE or that of aircraft engine manufacture and testing. Waste would be limited to office waste: sorted office paper, mixed paper, OCC, plastic bottles, aluminum cans, printer cartridges, and compostable food and yard/landscaping waste. GSA does control areas of the Bannister Federal Complex that were operated by other tenants on the Bannister property that historically performed activities that have impacted the environment. These include but are not limited to the Former Landfill and Building 50.