NASA - John F. Kennedy Space Center

Environmental Justice Plan

Prepared by

KSC Biomedical Office
Environmental Program Office

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In keeping with the philosophy of commitment to community involvement, I present the Kennedy Space Center Environmental Justice Plan. The purposes of the Environmental Justice Plan are to ensure that:

(a) Kennedy Space Center identifies and addresses activities which have disproportionately high adverse human health or environmental effects on minority or low-income populations in the surrounding Kennedy community; and

(b) The community continues to significantly participate developing policies which seek to prevent disproportionately high adverse human health or environmental effects on minority or low-income populations in the surrounding Kennedy community.

If there are any questions or comments regarding the Kennedy Space Center Environmental Justice Plan, feel free to contact the Environmental Program Office at (407) 867-4205.

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Roy D. Bridges, Jr. Date
Director, Kennedy Space Center

EXECUTIVE SUMMARY

On February 11, 1994, the President of the United States signed Executive Order 12898, entitled, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations." The general purposes of the Executive Order are to: 1) focus the attention of Federal Agencies on the human health and environmental conditions in minority communities and low-income communities with the goal of achieving environmental justice; 2) foster non-discrimination in Federal programs that substantially affect human health or the environment; and 3) give minority communities and low-income communities greater opportunities for public participation in, and access to public information on, matters relating to human health and the environment.

Kennedy Space Center (KSC) has developed this plan to comply with the Executive Order and NASA's agency-wide strategy by: 1) defining the terms "low-income populations," "minority," "minority population," "disproportionately high adverse human health effects," and "disproportionately high adverse environmental effects;" 2) identifying low-income and minority populations in the surrounding KSC community; 3) identifying the possible off-site environmental impacts; 4) identifying KSC's continued commitment to environmental justice; and 5) identifying and implementing action items which ensure that the goals of the Executive Order and NASA's Environmental Justice Strategy are met.

Using the Evaluation Criteria, as defined in Section 2 of this plan, there are several potential health and environmental hazards which were found to present no significant environmental impact to surrounding minority or low-income communities.

KSC is committed to ensuring that the goals of the Executive Order and NASA's Environmental Justice Strategy are met by revisiting this analysis every 5 years to update information and data to this plan. KSC will also continue addressing environmental justice issues in its future planning and all future documents in accordance with the National Environmental Policy Act (NEPA).

I. INTRODUCTION

On February 11, 1994, the President of the United States signed Executive Order 12898, entitled, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations." The general purposes of the Executive Order are to: 1) focus the attention of Federal Agencies on the human health and environmental conditions in minority communities and low-income communities with the goal of achieving environmental justice; 2) foster non-discrimination in Federal programs that substantially affect human health or the environment; and 3) give minority communities and low-income communities greater opportunities for public participation in and access to, public information on matters relating to human health and the environment.

The Executive Order directs Federal Agencies, including the National Aeronautics and Space Administration (NASA), to develop environmental justice strategies. Further, Executive Order 12898 requires NASA, to the greatest extent practicable and permitted by law, to make the achievement of environmental justice part of NASA's mission by identifying and addressing, as appropriate, disproportionately high adverse human health or environmental effects on minority or low-income populations in the United States and its territories and possessions, the District of Columbia, the Commonwealth of Puerto Rico, and the Commonwealth of the Mariana Islands.

In accordance with Executive Order 12898, NASA established an agency-wide strategy, which, in addition to the requirements set forth in the Executive Order, seeks to: 1) minimize administrative burdens; 2) focus on public outreach and involvement; 3) encourage implementation plans tailored to the specific situation at each center; 4) make each center responsible for developing its own Environmental Justice Plan; and, 5) consider both normal operations and accidents.

Kennedy Space Center (KSC) has developed this plan to comply with the Executive Order and NASA's agency-wide strategy by: 1) defining the terms "low-income populations," "minority," "minority population," "disproportionately high adverse human health effects," and "disproportionately high adverse environmental effects;" 2) identifying low-income and minority populations in the surrounding KSC community; 3) identifying the possible off-site environmental impacts; 4) identifying KSC's continued commitment to environmental justice; and 5) identifying and implementing action items which ensure that the goals of the Executive Order and NASA's Environmental Justice Strategy are met.

II. EVALUATION CRITERIA

The purpose of this section is to explain the criteria used to assess whether KSC's programs disproportionately impact low-income or minority communities. In establishing the terms of such criteria, KSC relies upon the definitions set forth in the guidance for the Executive Order.

1. Low-Income Population: Two of the tests available for identifying low-income populations in an affected area are:

a) the Department of Health and Human Services (HHS) poverty guidelines, or
b) the Department of Housing and Urban Development (HUD) statutory definition for very low-income for the purposes of housing benefits programs.

In identifying low-income populations, KSC may consider as a community either a group of individuals living in geographic proximity to one another, or a geographically dispersed/transient set of individuals (such as migrant workers or Native Americans), where either type of group experiences common conditions of environmental exposure or effects. The guidance for low-income population provides two ways to calculate low-income; in most circumstances KSC will apply the test that most accurately reflects the relative cost of living in the Brevard County area, taking into account the need to ensure full coverage of all low-income communities pursuant to the Executive Order.

KSC Viewpoint: For purposes of establishing "low-income populations" in the surrounding KSC community, this plan relies upon the above definition 1(a). The HHS poverty guidelines are more comprehensive than the statutory definitions relied upon by the HUD in defining low-income populations.

2. Minority: Individual(s) classified by the Office of Management and Budget Directive No. 15 as Black/African American, Hispanic, Asian and Pacific Islander, American Indian, Eskimo, Aleut, and other non-white persons.

3. Minority Population: Minority populations will be identified where either:

a) the minority population exceeds 50 percent, or
b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis.

In identifying minority communities, KSC may consider as a community either a group of individuals living in geographic proximity to one another, or a geographically dispersed/transient set of individuals (such as migrant workers or Native Americans), where either type of group experiences common conditions of environmental exposure or effects. The selection of the appropriate unit of geographic analysis may be the governing body's jurisdiction, a neighborhood, a census tract, or other similar unit that is to be chosen so as not to artificially dilute or inflate the affected minority population. A minority population also exists if there is more than one minority group present and the minority percentage, as calculated by aggregating all minority persons, meets one of the above-stated thresholds.

KSC Viewpoint: For purposes of this plan, KSC relies upon the above definition 3(b). This definition was selected because there was no location where the minority population exceeded 50% (percent). Consequently, definition 3(b), more than definition 3(a), allows KSC to more carefully scrutinize the effects that KSC activities could have on minority communities.

4. <u>Disproportionately High and Adverse Human Health Effects</u>: When determining whether human health effects are adverse and disproportionately high, KSC may consider the following three factors to the extent practicable:

a) whether the health effects, which may be measured in risks and rates, are significant, unacceptable or above generally accepted norms. Adverse health effects may include bodily impairment, infirmity, illness, or death; and,
b) whether the risk or rate of exposure by a minority population or low-income population to an environmental hazard is significant and appreciably exceeds or is likely to appreciably exceed the risk or rate to the general population or other appropriate group; and,
c) whether health effects occur in a minority population or low-income population affected by cumulative or multiple adverse exposures from environmental hazards.

<u>KSC Viewpoint</u>: For purposes of this plan, KSC relies upon all three factors, as set forth above, in determining whether KSC activities create disproportionately high adverse human effects on minority and low-income populations. KSC selected all three factors because all such factors combined more accurately reflect the potential adverse health effects that could be placed on minority or low-income populations, as a result of KSC activities.

5. <u>Disproportionately High Adverse Environmental Effects</u>: When determining whether there are disproportionately high adverse environmental effects, KSC may consider the following three factors to the extent practicable:

a) whether there is an impact on the natural or physical environment that significantly affects a minority community or low-income community. Such effect may include ecological, cultural, economic, or social impacts on minority communities or low-income communities that are interrelated to impacts on the natural or physical environment; and,
b) whether environmental effects are significant and are having an adverse impact on minority populations or low-income populations that appreciably exceeds or is likely to appreciably exceed those of the general population or other appropriate comparison group; and,
c) whether the environmental effects occur in a minority population or low-income population affected by the cumulative or multiple adverse exposures from environmental hazards.

<u>KSC Viewpoint</u>: For purposes of this plan, KSC relies upon all three factors, as set forth above, in determining whether KSC activities create disproportionately high adverse environmental effects on minority or low-income populations. KSC selected all three factors because all such factors combined more accurately reflect the potential adverse environmental effects that could be placed on minority or low-income populations, as a result of KSC activities.

III. INFORMATION ON KENNEDY SPACE CENTER

a) General: KSC is the principal site for launches of NASA space systems. Its location on the east coast of Florida is well suited to support this mission by allowing initial launch trajectories to be over open ocean away from populated land areas. The Center itself is situated approximately 242 km (150 miles) south of Jacksonville and 64 km (40 mi.) due east of Orlando on the north end of Merritt Island adjacent to Cape Canaveral (Figure 1). The geographic coordinates of the area are: Longitude 80° 42' West and Latitude 28° 38' North.

Early in 1962, NASA began acquiring property for a space center as a base for launch operations in support of the Manned Lunar Landing Program. Approximately 34,000 hectares (ha) (84,000 acres) were purchased on Merritt Island in the northern part of Brevard County extending into the southernmost tip of Volusia County. An additional 22,660 ha (56,000 acres) of state-owned submerged land (Mosquito Lagoon, etc.) was dedicated by the State of Florida to the exclusive use of the United States. This total area of nearly 56,660 ha (140,000 acres), together with the adjoining water bodies, was considered extensive enough to provide adequate safety for the surrounding communities from the planned vehicle launches.

KSC is relatively long and narrow, being approximately 56 km (35 miles) in length and varying from 8 to 16 km (5 to 10 miles) in width. It is bordered on the west by the Indian River (actually a brackish-water lagoon) and on the east by the Atlantic Ocean and the Cape Canaveral Air Station (CCAS). The northernmost end of the Banana River (another brackish-water lagoon) lies between Merritt Island and CCAS and is included as part of KSC submerged lands. The southern boundary of KSC runs east-west along the Merritt Island Barge Canal which connects the Indian River with the Banana River and Port Canaveral at the southern tip of Cape Canaveral. The northern border lies in Volusia County near Oak Hill across Mosquito Lagoon (Figure 2).

Only a very small part of the total area of KSC has been developed or designated for NASA operational and industrial use. Because Merritt Island was found to include prime habitat for unique and endangered wildlife, NASA entered into an agreement with the U.S. Fish and Wildlife Service (USFWS) to establish a wildlife preserve, known as the Merritt Island National Wildlife Refuge (MINWR), within the boundaries of KSC. In addition, an agreement with the Department of the Interior (USDI) caused most of the Canaveral National Seashore (CNS) to fall within KSC when the CNS was created by Public Law 93-626.

b) Facilities: All KSC facilities are located on Merritt Island and Cape Canaveral, both of which are barrier islands. Land use at KSC is carefully planned and managed to provide required support for missions and to maximize protection of the environment. Essential safety zones, clearance areas, lines-of-sight, and other such elements have been developed as guides to master planning and, where applicable, as mandatory operational requirements. For areas not directly utilized for NASA operations, land planning and management responsibilities have been delegated to the National Park Services (NPS) and the USFWS. These agencies exercise management control over agricultural, recreational, and some environmental programs at KSC.

KSC is the major NASA installation for launch operations and related programs in support of manned space missions. Present and near-future mission plans call for the launching of piloted vehicles into low earth orbit to support the initial leg of planetary probes, the secondary ejection of earth-orbiting communications and other scientific satellites, the conduct of scientific experiments, and the ultimate transportation of space station material and personnel. NASA maintains operational control over approximately 5,945 acres out of 139,490 acres of KSC (NPS controls 6,655 acres and USFWS controls 126,890 acres). Approximately 62% of the KSC

operational area is currently developed as facility sites, roads, lawns, and maintained right-of ways. The remaining undeveloped operational areas are dedicated as safety zones around existing facilities or held in reserve for planned and future expansion. Developed facilities within the KSC operational area are dominated by the Shuttle Landing Facility, the Industrial Area, the Vehicle Assembly Building (VAB) Area, and the Launch Complex 39 (LC-39) Pads A and B.

IV. INFORMATION ON SURROUNDING COMMUNITIES

KSC is located in Central Florida west of geographic Cape Canaveral on Merritt Island. The Center encompasses all northeast beach areas of Brevard County and northern Merritt Island. Federal property extends north along coastal Brevard county to include the southern edge of Volusia County (Figure1 and Figure 2).

KSC is Brevard County's largest single employer and a major source of revenue for local firms. KSC operations cause a chain of economic effects throughout the region. It is estimated that each job created within Brevard County's space industry generates an additional 1.93 jobs within this region. KSC's reciprocal relationship with Brevard County has far-reaching effects. KSC is directly and indirectly involved in many Florida industries who supply goods and services to the space program and various other NASA projects. Additionally, KSC supports two industries generated by KSC's own resources:

i) *Agriculture and Aquaculture*: NASA manages approximately 600 hectares (about 1500 acres) of citrus groves on the MINWR, an integral part of the Indian River fruit industry. Commercial fishing for oysters, shrimp, other river fish species is permitted within MINWR and CNS areas.

ii) *Tourism*: KSC's Visitor Center Complex is a popular tourist attraction drawing thousands of people every day, providing the public with a firsthand look at the latest technology. MINWR and CNS areas are additional attractions and popular parks for swimming, hunting, fishing, bird watching, and boating.

Brevard County: Brevard County was established in 1844 from a portion of Mosquito County and was originally named St. Lucie. In 1855 the name was changed in honor of Theodore Washington Brevard (1804-77) of North Carolina. Brevard came to Florida in 1847 and became the state comptroller. Brevard County is bordered by the Atlantic Ocean and by Volusia, Orange, Osceola, and Indian River counties. The county has 299 square miles of water. The average January temperature is 68.6 degrees F, and the average August temperature is 82.0 degrees F. The average annual rainfall is 65.19 inches.

Most of Brevard County's population resides along the Indian River and the Atlantic Ocean. In 1993 the most populous incorporated areas were Palm Bay (69,197 persons), followed by Melbourne (64,191 persons), and Titusville (40,679 persons). Cocoa, Rockledge, and Cocoa Beach all had populations in excess of 10,000 in 1993. The unincorporated area of Merritt Island, sparsely populated in 1960, had a population of 32,886 in 1990. During the 1980's, Port St. John, between Titusville and Cocoa, and Micco, south of Melbourne, developed rapidly. The U.S. Bureau of the Census has designated Brevard County as the Melbourne-Titusville-Palm Bay Metropolitan Statistical Area. In 1993, 90% of Brevard County's population was white and 10% was nonwhite. In 1990, 3.1% of the population was Hispanic. Of the population increase between 1980 and 1990, 87.7% was due to net migration. The 1992 birth rate for the county was 13.2 live births per 1,000 persons, and the 1992 death rate was 9.3 deaths per 1,000 persons. In 1992 the infant mortality rate was 6.9 per 1,000. The leading causes of death in 1993 were heart disease, cancer, and chronic obstructive lung disease.

The per capita income for 1993 was $19,321 (18th highest in the state). The median household income in 1989 was $30,534. In 1989, 6.3% of families had incomes below the poverty level. In 1990, 17.7% of personal income was derived from transfer payments.

Electrical equipment and supplies and transportation equipment firms account for the most employment in the manufacturing sector. In 1992 there were 496 farms in Brevard County, totaling 199,724 acres (31% of land in the county). Leading agricultural products include cattle and citrus. In 1991, 4,338,679 pounds of fish and 1,539,218 pounds of shellfish were landed in Brevard County.

a) ***City of Titusville*:** Situated on the Indian River, near the Atlantic Ocean, Titusville is the "Gateway" to the KSC. The greater Titusville area population, now over 56,000, is projected to reach 89,000 people by the year 2000. Titusville is the home for many of the employees and contractors of NASA. Because of the many highly trained professionals including, engineers and technicians, Titusville has one of the highest median incomes in Central Florida. The Space Center Executive Airport, with access for private and corporate aircraft is situated between the Space Center and Spaceport Florida Industrial Park. In addition to its industrial and technological centers, Titusville has numerous residential areas. Housing prices range from moderate to high. Titusville receives high marks for its educational and cultural offerings. Serving the area are Astronaut and Titusville High Schools, plus two middle schools and seven elementary schools.

b) ***City of Cocoa:*** Bordered by the Indian River to east, Cocoa extends west to undeveloped hammock areas. An old established city, Cocoa features large restored, southern homes along scenic river roads. Cocoa is an old city with a historic downtown area. The city, first settled in the 1860's, derived its name from a shipment of baker's cocoa to the local store in the 1880s, and has grown into a bustling community with a population over 17,000. Cocoa is home to some of Florida's major fruit shippers and the Brevard Community College (BCC) main campus. Courses are offered in academics, technical, vocational, continuing education and adult community education subject. The University of Central Florida, which maintains a branch at BCC, offers graduate and upper division courses as well. Students can earn baccalaureate and master's degrees in engineering, nursing, education and technical areas without leaving the county. Schools and housing are conveniently located near one another. Cambridge Elementary's "High Scope Preschool Program" was recognized by the U.S. Department of Education. Two causeways connect Cocoa with Merritt Island and the beaches. West Cocoa includes the St. John's River, a freshwater fisherman's delight. Commercial and private boaters launch their water vehicles from the waterway.

c) ***City of Cocoa Beach:*** An island community known for its attractive beaches, Cocoa Beach offers 12 miles of public beaches complete with hotels, boat rentals, deep-sea fishing opportunities and other water sports. The city's residential areas house many of the space program's engineers, astronauts and technicians. Single-family homes, condominiums and apartments are available on the ocean, river and in between. A Space Congress of scientists from the U.S. and Europe meets each spring in Cocoa Beach to review events and new technology.

d) ***Port St. John Community:*** Port St. John is a relatively new community situated midway between Titusville and Cocoa. The current population of 16,649 is projected to grow to 19,655 by the year 2010. New and existing home prices range from the mid $50,000 to the mid $100,000, making the area an affordable choice for both retirees on fixed incomes and young families working in nearby cities. The business district in Port St. John includes mortgage companies, a bank, several restaurants, family medical centers and convenience stores. Three elementary schools and a middle school serve residents.

e) ***City of Cape Canaveral:*** A tiny 1.9 square-mile town sandwiched between the Atlantic Ocean and the Banana River. Cape Canaveral has a population of 8,337. Rich with history, Cape Canaveral is reportedly the oldest named place in the country. Ample housing, shopping and other amenities complete the area. Cape Canaveral Elementary School serves the area's children. Port Canaveral, to the north of the city is the third largest cruise-passenger port in the country. Port Canaveral is a vital import/export shipping center. The port has the largest dockside refrigerated storage facility in the country. As Foreign Trade Zone #136, Port Canaveral encompasses 4,160 acres. The foreign trade zone status lowers U.S. production costs and offers savings to export companies. The port is a major deep-water port of entry with nine cargo berths, 500,000 square feet of warehouse and dry cargo storage, and commercial fishing fleets.

f) ***Merritt Island Community:*** Merritt Island is 40 miles long and varies from seven miles wide at the north to two miles wide at the south. Most of the island's population occupies a suburban area of middle-class homes between state roads 528 and 520, where prices range from the low $50,000 to the mid $100,000. Merritt Island is the home of hundreds of businesses, stores, restaurants, real estate and mortgage companies, banks and government offices. There is a light industrial section and an airport south of SR 520. To the south of SR 520, the island's width thins and the area is again residential. North of SR 528 is Kennedy Space Center. Merritt Island recreational areas are the 22-square mile MINWR, the 16-acre Kiwanis Park and the 38-acre Rotary Park. Merritt Island High School, Jefferson Junior High School and three elementary schools serve the area.

g) ***City of Rockledge:*** Rockledge was first settled in 1837, making it the oldest resort on Florida's east coast, and Brevard County's oldest city. In the late 1800s, Rockledge was a popular resort town, featuring three stores, two sawmills, several schools and a church. It is named for the coquina rock formations extending into the Indian River. Today, Rockledge is known for both its restored riverfront homes and new housing developments. A comprehensive Land Use Plan adopted in 1975 limits development in the city to five single-family or 14 multi-family units per acre. Growth in Rockledge was fairly slow until the space program in the 1950s. Since then, the economy has diversified into such areas as manufacturing and building supply industries.

V. CENSUS DATA ON SURROUNDING COMMUNITIES

The following data on the KSC surrounding communities are from *1994 County and City Data,12th Edition,* published by U.S. Department of Commerce, Bureau of The Census. The CDP means Census Designated Places.

Table 5.1 - 1990 Population Census Data of KSC Surrounding Communities

	1990 Population Census Data					
Place Name	**Total**	**Caucasian**	**African American**	**Native American**	**Asian Pacific Islanders**	**Hispanic**
United States of America	248,709,837	199,686,070	29,986,060	1,959,234	7,273,662	22,354,059
State of Florida	12,937,926	10,749,285	1,759,534	36,335	154,302	1,574,143
Brevard County	398,978	358,391	31,417	1,369	5,379	12,261
Cape Canaveral City	8,014	7,545	277	102	62	374
Cocoa City	17,722	12,298	5,079	74	182	405
Cocoa Beach City	12,123	11,904	87	41	91	261
Merritt Island CDP	32,886	30,345	1,711	198	453	1,067
Mims CDP	9,412	8,103	1,194	10	26	131
Oak Hill City	917	687	270	3	5	16
Port St. John CDP	8,933	8,467	291	8	120	234
Rockledge City	16,023	13,493	2,203	58	231	395
Titusville City	39,394	34,540	4,124	175	311	1,255

Table 5.2 - Household with Social Security or Public Assistance Income

	1989 Income Data				1989 Social Security Income (SSI) Households			1989 Public Assistance Income (PAI) Households		
Place Name	**Median Family Income**	**Median Household Income**	**Per Capita Income**	**Total Households**	**W/SSI**	**%W/SSI**	**W/O SSI**	**With PAI**	**% With PAI**	**W/O PAI**
United States of America	$35,225	$30,056	$14,420	N/A	N/A	N/A	N/A	N/A	N/A	N/A
State of Florida	$32,212	$27,483	$14,698	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Brevard County	$35,402	$30,534	$15,093	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cape Canaveral City	$28,038	$25,499	$16,397	4,325	1,078	24.9%	3,247	204	4.7%	4,121
Cocoa City	$26,544	$23,279	$11,347	7,168	1,956	27.3%	5,212	876	12.2%	6,292
Cocoa Beach City	$43,898	$35,862	$23,359	6,038	2,491	41.3%	3,547	200	3.3%	5,838
Merritt Island CDP	$41,914	$35,803	$17,400	13,381	3,947	29.5%	9,434	636	4.8%	12,745
Mims CDP	$30,248	$27,454	$11,590	3,392	1,145	33.8%	2,247	224	6.6%	3,168
Oak Hill City	$19,554	$19,250	$9,003	358	145	40.5%	213	34	9.5%	324
Port St. John CDP	$36,171	$34,775	$13,196	3,181	550	17.3%	2,631	49	1.5%	3,132
Rockledge City	$39,691	$34,934	$15,534	6,094	1,705	28.0%	4,389	167	2.7%	5,927
Titusville City	$34,632	$28,425	$14,274	16,218	5,206	32.1%	11,012	766	4.7%	15,452

Table 5.3 - Number of Citizens by Poverty Level and Age Bracket

	1989 Above Poverty Level (ABL) Income By Age				1989 Below Poverty Level (BPL) Income By Age			
Place Name	**Under 18 Years**	**18 to 64 Years**	**65 Years and Over**	**Total ABL**	**Under 18 Years**	**18 to 64 Years**	**65 Years and Over**	**Total BPL**
United States of America	N/A	N/A	N/A	N/A	N/A	N/A	N/A	31,742,864
State of Florida	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,604,186
Brevard County	N/A	N/A	N/A	N/A	N/A	N/A	N/A	35,815
Cape Canaveral City	699	4,792	1,219	6,710	385	823	74	1,282
Cocoa City	2,987	9,099	1,708	13,794	1,573	1,729	455	3,757
Cocoa Beach City	1,251	6,887	3,310	11,448	94	442	97	633
Merritt Island CDP	6,203	19,484	4,675	30,362	754	1,290	287	2,331
Mims CDP	1,805	4,934	1,199	7,938	415	623	193	1,231
Oak Hill City	174	421	141	736	64	121	39	224
Port St. John CDP	2,425	5,535	546	8,506	96	216	70	382
Rockledge City	3,328	9,431	2,071	14,830	282	446	176	904
Titusville City	7,534	21,934	5,591	35,059	1,406	2,123	608	4,137

Table 5.4 - Percentage of Citizens by Poverty Level and Age Bracket

	1989 Income Data						
Place Name	**Total Poverty Level**	**% Total BPL**	**Total Under 18 Years**	**% Total Under 18 Years BPL**	**Total 18 to 64 Years**	**Total 65 Years and Over**	**% Total 65 Yrs & Over BPL**
United States of America	N/A	13.1%	N/A	17.9%	N/A	N/A	12.8%
State of Florida	N/A	12.7%	N/A	18.3%	N/A	N/A	10.8%
Brevard County	N/A	9.1%	N/A	12.2%	N/A	N/A	7.8%
Cape Canaveral City	7,992	16.0%	1,084	35.5%	5,615	1,293	5.7%
Cocoa City	17,551	21.4%	4,560	34.5%	10,828	2,163	21.0%
Cocoa Beach City	12,081	5.2%	1,345	7.0%	7,329	3,407	2.8%
Merritt Island CDP	32,693	7.1%	6,957	10.8%	20,774	4,962	5.8%
Mims CDP	9,169	13.4%	2,220	18.7%	5,557	1,392	13.9%
Oak Hill City	960	23.3%	238	26.9%	542	180	21.7%
Port St. John CDP	8,888	4.3%	2,521	3.8%	5,751	616	11.4%
Rockledge City	15,734	5.7%	3,610	7.8%	9,877	2,247	7.8%
Titusville City	39,196	10.6%	8,940	15.7%	24,057	6,199	9.8%

Table 5.5 - Number of Families Below Poverty Level

	1989 Families Below Poverty Level (BPL)		
Place Name	**Total Families**	**# of Families BPL**	**% of Families BPL**
United States of America	N/A	6,487,515	10.0%
State of Florida	N/A	319,978	9.0%
Brevard County	N/A	7,209	6.3%
Cape Canaveral City	1,980	243	12.3%
Cocoa City	4,684	819	17.5%
Cocoa Beach City	3,640	118	3.2%
Merritt Island CDP	9,657	524	5.4%
Mims CDP	2,581	228	8.8%
Oak Hill City	289	70	24.2%
Port St. John CDP	2,522	90	3.6%
Rockledge City	4,566	173	3.8%
Titusville City	11,309	895	7.9%

VI. POSSIBLE ENVIRONMENTAL IMPACTS

KSC is the lead Center within NASA for development of launch procedures, technology, and facilities in support of its mission. Activities associated with the assigned mission may have a significant bearing on the overall environment of the general area. The purpose of this section is to identify and define the possible environmental impacts that could effect the health and environment of minority or low-income communities.

Using the Evaluation Criteria, as defined in Section 2, there are several potential health and environmental hazards which were found to present no significant environmental impact to surrounding minority or low-income communities.

1. **Potential Impact from Hazardous Substances or Chemicals Releases:** In 1986, KSC received a Hazardous Solid Waste Amendment (HSWA) Permit from the United States Environmental Protection Agency (EPA) Region IV and the Hazardous Waste Operation Permit from the Florida Department of Environmental Protection (FDEP); together both permits constitute a full Resource Conservation and Recovery Act (RCRA) permit. A portion of the EPA permit identified a number of sites that required investigation to determine if past KSC space operations had released contaminants into the environment. These sites are called Solid Waste Management Units (SWMU's). KSC is presently investigating these sites to determine the nature and extent of any contamination. The nearest site is approximately 3 miles from the nearest community, thus ensuring no adverse impact on human health or the environment, and no consequent impact on minority or low-income populations in the surrounding area. Information collected during this investigation stage will be used by KSC to aid in formulating and implementing appropriate corrective measures.

   On August 3, 1993, the President of the United States signed Executive Order 12856, entitled, "Federal Compliance With Right-to-Know Laws and Pollution Prevention Requirements." This Executive Order dictates that "the Federal Government should be a good neighbor to local communities by becoming a leader in providing information to the public concerning toxic and hazardous chemicals and extremely hazardous substances at Federal Facilities, and in planning for and preventing harm to the public through the planned or unplanned releases of chemicals." To accomplish this, Executive Order 12856 requires Federal Facilities to be in compliance with the Emergency Planning and Community Right-to-Know Act (EPCRA). EPCRA requires facilities of certain types to report annually their hazardous chemical inventory, known as the Tier 2 report, and their toxic chemical release inventory, known as the TRI report. KSC is in compliance with EPCRA. Table 6.1 and Table 6.2 are the KSC TRI Report and Tier 2 Report, respectively.

   The Executive Order 12856 also requires Federal Facilities to reduce their releases and transport of toxic chemicals by 50 percent by December 31, 1999, using the 1994 data as the baseline. KSC is exceeding this requirement.

Table 6.1 - Kennedy Space Center TRI Reportable Chemicals

CAS #	Chemical Description	Quantity Released* (pounds/year)		
		1994	1995	1996
106-89-8	Epichlorohydrin	< 500	< 500	< 500
108-88-3	Toluene	9,500	7,800	4,400
127-18-4	Tetrachloroethylene (Perchloroethylene)	27,300	30,800	24,000
1330-20-7	Xylene (mixed isomers)	19,300	13,700	10,100
302-01-2	Hydrazine	1,340	2,200	< 2,200
60-34-4	Methyl Hydrazine	940	< 500	< 500
71-55-6	1,1,1-Trichloroethane	25,300	18,000	6,300
75-09-2	Dichloromethane (Methylene chloride)	48,100	41,700	9,800
75-45-6	Chlorodifluoromethane (HCFC-22)	N/A	N/A	6,200
75-71-8	Dichlorodifluoromethane (CFC-12)	N/A	N/A	710
76-13-1	Freon 113	218,700	190,400	111,200
76-14-2	Dichlorotetrafluoroethane	6,500	9,600	<8,100
7646-85-7	Zinc (Fume or Dust)	4500	3000	< 3000
7664-38-2	Phosphoric acid	N/A	6,100	4,800
78-93-3	Methyl Ethyl Ketone	26,900	20,800	13,000
91-20-3	Naphthalene	<500	< 500	<500

* Pursuant to EPCRA Section 329(8) including "any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment."

Table 6.2 - Kennedy Space Center Tier 2 Reportable Chemicals

Chemical Description	1994 Inventory in Pounds		1995 Inventory in Pounds		1996 Inventory in Pounds	
	Max. Daily Amount	Avg. Daily Amount	Max. Daily Amount	Avg. Daily Amount	Max. Daily Amount	Avg. Daily Amount
Oxygen	16,336,998	9,944,668	16,338,756	9,945,786	16,309,450	9,907,060
Nitrogen	1,433,452	1,405,685	926,446	894,445	652,790	627,590
Trichloro-Trifluoroethane (Freon 113)	1,407,334	1,401,142	479,080	369,140	352,110	329,710
Hydrogen	1,134,323	736,499	1,137,590	738,948	1,013,940	615,300
Diesel Fuel	745,211	620,786	916,507	785,691	833,920	773,440
JP-5 Fuel	595,826	595,826	595,826	595,826	595,830	595,830
RP-1 Fuel	334,414	334,414	302,429	302,429	253,094	252,482
Gasoline	195,256	195,256	434,882	403,087	391,160	345,040
Nitrogen Dioxide (Nitrogen Tetroxide)	188,480	114,973	285,081	211,573	285,080	211,570
Sodium Hydroxide	183,921	179,916	198,328	182,404	198,330	182,400
Helium	181,009	136,201	244,317	167,073	99,550	94,960
Methyl Hydrazine (Monomethylhydrazine)	168,997	123,037	150,475	103,015	132,280	87,820
Citric Acid	59,924	53,916	73,200	66,667	73,840	67,830
Dichlorofluoromethane (R-21)	56,750	32,800	30,000	30,000	27,000	27,000
Propane	49,020	32,330	45,787	30,714	47,320	39,440
Isopropyl Alcohol (Isopropanol)	23,887	23,527	35,074	26,726	40,150	27,440
Dichlorotetrafluoroethane (R-114)	19,220	16,720	22,588	22,588	29,920	21,330
Dimethylhydrazine (Aerozine-50)	18,031	18,031	18,031	18,031	18,030	18,030
1,1,1-Trichloroethane	12,733	9,237	13,130	8,471	7,890	2,430
Petroleum Products (Oils, Grease)	12,201	12,000	65,068	53,959	38,800	26,690
Methyl Ethyl Ketone	12,005	10,180	---	---	7,340	3,840
Xylene	10,069	3,736	---	---	8,600	4,860
Sulfuric Acid	6,400	4,887	9,117	7,712	3,740	1,170
Hydrazine (Anhydrous)	22,354	12,232	52,826	42,716	26,040	23,350
Nitric Acid	4,266	4,206	8,304	8,151	8,640	8,170
Ammonia	1,806	1,411	2,406	2,011	3,600	2,200
Chlorine	660	611	4,650	3,450	5,250	5,250
Hydrogen Fluoride	114	114	131	131	130	130
Dichlorodifluoromethane (R-12)	---	---	55,372	55,372	56,480	56,220
Bromotrifluoromethane (Halon 1301)	---	---	53,552	53,552	55,300	55,300
Tetrachloroethylene (Perchloroethylene)	---	---	38,354	19,201	19,000	13,520
Trichlorofluoromethane (R-11)	---	---	37,578	37,578	5,880	3,150
Ethylene Glycol	---	---	10,201	7,017	8,390	4,750
Potassium Hydroxide	---	---	---	---	9,230	310
Chlorodifluoromethane (HCFC-22)	---	---	---	---	31,080	30,650

2. **<u>Potential Impact from Air Quality</u>:** The ambient air quality at KSC is influenced by NASA operations, land management practices, vehicle traffic, and emission sources outside of KSC.

Daily air quality conditions are most influenced by vehicle traffic, utilities fuel combustion, standard refurbishment and maintenance operations. Air quality at KSC is also influenced by emissions from two regional power plants which are located within a 10-mile radius of KSC. Space launches, training fires, and fuel load reduction burns influence air quality as episodic events.

The NASA operations influencing the ambient air quality include a wide range of emission points. During calendar year 1990, a survey was conducted in order to identify all air pollution emission points at KSC. The survey results identified approximately 600 unpermitted emission points operating at KSC. On November 22, 1991, a plan that would enable KSC to obtain operating permits for all unpermitted emission points was approved by the State of Florida Department of Environmental Protection (FDEP). The premise of the "area-wide" permit plan is the incremental submittal of air permit application information for five operational areas to cover all unpermitted emission points.

As of January 1997, KSC has obtained all the required permits and is in total compliance with all the permit condition requirements, thus ensuring no adverse impact on human health or the environment, and no consequent impact on minority or low-income populations in the surrounding area. KSC is currently awaiting the review and issuance of a Title V Operating Permit which will include 34 emission units and all exempted sources within the Center.

3. **Potential Impact from Hazardous Wastes:** In compliance with the provisions of the Resource Conservation and Recovery Act (RCRA) of 1976, and the implementing regulations adopted by the State of Florida (62-730, F.A.C.), NASA has developed a program for managing and handling hazardous and controlled wastes at KSC.

The organizational and procedural requirements of the KSC hazardous waste management program are contained in KHB 8800.7, "Hazardous Waste Management." This manual and supporting documents clearly delineate the procedures and methods to obtain/provide hazardous waste support, establish and approve operations and maintenance instructions, and provide instructions to maximize resource recovery and minimize costs. At KSC, the Waste Management Authority (WMA) directs and documents relevant actions for hazardous or controlled waste handling, sampling, storage, transportation, treatment, and disposal/recovery for compliance with all local, state, and federal regulations.

KSC has a Florida Department of Environmental Protection (FDEP) operating permit for the storage, treatment and disposal of hazardous waste. The facility operating under this permit is the Hazardous Waste Storage Facility K7-165, which handles both solid and liquid hazardous wastes. The facility is approximately 7½ miles from the nearest community, thus ensuring no adverse impact on human health or the environment, and no consequent impact on minority or low-income populations in the surrounding area.

KSC maintains a comprehensive inventory of all RCRA defined hazardous wastes, and controlled wastes not regulated by RCRA. This inventory is maintained by a manifest records system which tracks the generation, on-site storage, treatment, and reclamation of hazardous and controlled wastes. The manifest records system is integrated with an automated date processing system which provides the capability to generate current waste status reports as well as quarterly and annual summary reports. The WMA is responsible for the maintenance of the hazardous and controlled waste data base inventory at KSC, thus

ensuring no adverse impact on human health or the environment, and no consequent impact on minority or low-income populations in the surrounding area.

4. **Potential Impact from Non-Hazardous Wastes:** The Solid Waste Disposal Act, as amended by RCRA of 1976, provided for federal assistance to the states for the purpose of developing solid waste management plans. These plans were to provide for the environmentally sound management and disposal of solid waste, encourage resource conservation, and maximize the utilization of valuable resources. To ensure compliance with the appropriate federal and state regulatory programs and to further assure that solid waste disposal does not adversely impact public health or environmental quality at KSC, NASA has issued directives on the operation and maintenance of solid waste disposal facilities. The disposal, management, and recovery of non-hazardous wastes at KSC is accomplished by landfill and recycling facilities.

   The Schwartz Road Landfill is the primary land disposal site at KSC. The first Schwartz Road Landfill was placed in operation in 1968. In 1982, a Class III landfill operating permit was issued by the Florida Department of Environmental Protection (FDEP) for the operation of the Schwartz Road Landfill. Since that time, the landfill has accepted only Class III waste material which includes trash and paper products, plastic, glass, and debris from land clearing operations, construction, or demolition activities. The first landfill site encompasses approximately 64 acres, with about 51 acres being utilized for waste disposal. Renewal of the facility operations permit in March 1993, resulted in completion of a site specific hydrogeologic investigation, and in the construction of a new network of groundwater monitoring wells. The original Schwartz Road Landfill Closure report was submitted to FDEP in July 1997, with the final closure inspection taking place in November 1997. Disposal of debris in that site has been discontinued, effective December 31, 1995. This old landfill is approximately 5½ miles from the nearest community, thus ensuring no adverse impact on human health or the environment, and no consequent impact on minority or low-income populations in the surrounding area.

   A site adjacent to and east of the original Schwartz Road Landfill was chosen as the site for a new KSC Class III landfill. Construction began in August 1995, with completion prior to closure of the original Schwartz Road Landfill. The Class III landfill operating permit for the New KSC Schwartz Road Landfill was effective prior to the initial operating date of January 1, 1996. The facility is expected to handle the solid waste disposal needs of KSC for an estimated 13 to 49 years based on assumed disposal rate scenarios of 350 tons per week (13 years) and 90 tons per week (49 years). This new landfill is approximately 5½ miles from the nearest community, thus ensuring no adverse impact on human health or the environment, and no consequent impact on minority or low-income populations in the surrounding area.

   Since 1991, KSC has had several active recycling programs such as paper, metal, battery and tires. In November 1997, a pilot project is underway to recycle aluminum cans with KSC to receive 50% of the revenue generated. Garbage from the main kitchen as well as individual lunch eating areas is presently taken to the Brevard County Class I landfill.

5. **Potential Impact from Wastewater:** The federal regulatory authority over the treatment and discharge of wastewater was established by the Clean Water Act (CWA). The CWA, through Section 201 Facilities Planning, provides federal assistance to municipalities for the planning, design and construction of wastewater treatment facilities. The expressed goal of

the CWA was to restore and maintain the "chemical, physical and biological integrity of the Nation's waters."

a) Domestic Wastewater: KSC maintains operating permits for four (4) domestic wastewater treatment facilities. Two treatment plants, STP-1 and STP-4, located in the Industrial Area and VAB Area, respectively, provide service for approximately 90 percent of NASA and contractor personnel at KSC. The remaining permitted treatment facilities are small package plants which service each Launch Complex facility and operational areas. In addition to state permitted facilities there are a number of septic tank systems throughout KSC which typically support small office or temporary facilities in remote areas away from domestic wastewater treatment facility connections.

The Industrial Area is served by STP-1. The plant is a 0.375 MGD permitted flow extended aeration plant that provides secondary treatment. The effluent passes through sand filtration, is pumped to a percolation pond and applied to an overland flow zero-discharge system. The current daily flows are approximately 49 percent of the permitted capacity. STP-1 operates under FDEP operating permit and an National Pollutant Discharge Elimination System (NPDES) permit. The STP-1 is approximately 3¾ miles from the nearest community, thus ensuring no adverse impact on human health or the environment, and no consequent impact on minority or low-income populations in the surrounding area.

STP-4 services the VAB Area and is located approximately 6½ miles from the nearest community. The treatment plant is a 0.2 MGD capacity extended aeration design, with effluent discharge to an isolated 75 acre impoundment. The facility operates at approximately 50 percent of its rated capacity. Until December 1985, STP-4 discharged effluent directly to the surface waters of Banana Creek. Specific conditions contained in the FDEP operating permit required the elimination of the point source discharge, resulting in the current use of the isolated impoundment for effluent disposal. The facility is currently operated in compliance with an FDEP operating permit and an NPDES permit.

b) Industrial Wastewater: KSC currently operates several facilities which treat Industrial Wastewater (IWW).

The SRB Refurbishment facility is located in the Hangar AF area on Cape Canaveral Air Station (CCAS) which is approximately 4½ miles from the nearest community. The facility is used to disassemble and refurbish the Solid Rocket Boosters (SRB) on a "per launch" frequency. IWW is generated during this operation by two (2) contractors, USA and USBI. USA filters its waste stream and discharges to the CCAS main STP. USBI filters its IWW waste stream through a recycling system and reuses the water in their hydrolasing operations. No effluent from either of these operations is discharged to ground or surface waters, thus ensuring no adverse impact on human health or the environment, and no consequent impact on minority or low-income populations in the surrounding area.

The Parachute Refurbishment Facility also generates IWW during operations that wash/clean the SRB parachutes. The wash is required to remove salts from the parachutes after recovery from the Atlantic Ocean. The system operates on a “per launch” frequency and reuses and recycles approximately 30,000 gallons of wash water per launch. This facility is approximately 4½ miles from the nearest community and its remaining effluent at the end of wash operations is discharged to STP-1, thus ensuring no adverse impact on human health or the environment, and no consequent impact on minority or low-income populations in the surrounding area.

Launch Complex 39A and 39B utilize holding tanks (2 per complex) to capture and treat IWW waste streams generated by Sound Suppression Water, Firex Water, SRB exhaust and Post-Launch Washdown operations. The IWW generated is routed to the holding tanks by a set of flumes and diversion gates. The IWW is then neutralized with Sodium Hydroxide or Phosphoric Acid. Following analysis of the effluent and verification that the analytes are within permit requirements, the effluent is discharged to a percolation pond with supplementary spray field disposal optional (for Pad A only). The system is operated on a "per launch" basis. When not in use, in a non-launch configuration, the diversion gates direct stormwater runoff from the impervious pad surfaces to stormwater swales. These facilities are approximately 8½ miles from the nearest community, thus ensuring no adverse impact on human health or the environment, and no consequent impact on minority or low-income populations in the surrounding area.

The Bus Wash Recycle System is located at the Visitor Complex Center and treats effluent from the automatic tour bus washing operations. The facility is approximately 2¾ miles from the nearest community. The IWW is collected and treated through a set of filtration units and reused in the wash operation. A minor amount of make-up water is required to replace water loses mainly due to evaporation. No effluent is discharged to ground or surface waters thus ensuring no adverse impact on human health or the environment, and no consequent impact on minority or low-income populations in the surrounding area.

The Component Refurbishment and Chemical Analysis (CRCA) facility, building K6-1696, is supported by an Industrial Wastewater Treatment and Recycling system and located approximately 5½ miles from the nearest community. Waste streams consisting mostly of rinsates from component cleaning and analytical labs are collected and stored in two 10,000 gallon tanks. The effluent is then filtered prior to treatment in one of two evaporator units rated at 285 and 300 gallons per hour, respectively. During this treatment, a concentrate is generated which is tested for hazardous characteristics and disposed of off-site. Depending on the composition (water quality) of the recycled water, the recycled water is either pumped to a demineralization plant for final polishing prior to reuse in the CRCA operations or it is run through an Ultraviolet/Peroxidation treatment system in order to remove any organic compounds prior to pumping the water to the demineralizer plant. The system is permitted as a closed-loop treatment and recycling system by the Florida Department of Environmental Protection (FDEP) under permit number #FLA017160, thus ensuring no adverse impact on human health or the environment, and no consequent impact on minority or low-income populations in the surrounding area.

6. **<u>Potential Impact from Noises</u>:** Noise generated at KSC by day-to-day operations, space vehicle launches and Orbiter landings can be attributed to six general sources: a) Orbiter reentry sonic booms, b) launches, c) aircraft movements, d) industrial operations, e) construction, and f) traffic noise. The 24-hour average ambient noise level on KSC is appreciably lower than the EPA recommended upper level of 70 decibels (dBA). This is on a scale ranging from approximately 10 dBA for the rustling of grass or leaves to 115 dBA, the unprotected hearing upper limit for exposure on a missile or space launch. The areas of KSC/MINWR away from operational areas are exposed to relatively low ambient noise levels, in the range of 35 to 40 dBA.

a) <u>Orbiter reentry sonic booms</u>: Orbiter reentry through the atmosphere results in a sonic boom of varying intensities distributed along the ground track during the final descent and

landing phase of a Space Shuttle mission. The intensity and shape of the sonic boom pressure signature is a function of the vehicle shape, weight and volume, combined with the flight path and the prevailing atmospheric conditions. Sonic boom measurements for several Space Shuttle landings at KSC were recorded at various points in Florida along the descent and landing trajectory of these flights. A maximum measured over pressure of 2.2 psf was recorded in Titusville during the landing of the STS-51D flight. All sonic boom measurements recorded in Florida during Orbiter landings have been accurately predicted by computer model analyses.

b) Launch: The highest acoustic noise levels generated by the STS are recorded within the first two minutes of launch. In the launch vicinity, noise levels can exceed 160 dBA. Noise levels recorded at the Launch Impact Line (VAB Area) do not exceed the 115 dBA maximum level established for short exposure by the Department of Labor Standards. For maximum protection observer areas and security zones have been set at distances where the 115 dBA sound level is not exceeded, thus ensuring no adverse impact on human health or the environment, and no consequent impact on minority or low-income populations in the surrounding area.

Three sonic booms are generated during the launch of the STS. The first sonic boom is generated by the shuttle system upon ascent. This is the largest sonic boom of the mission with a maximum over pressure of 3.66 psf. The sonic boom focal zone is typically located approximately 64 km (40 miles) offshore of the launch site, in the Atlantic Ocean. Following separation of the SRB's from the orbiter and external tank, the SRB's re-enter the atmosphere. This re-entry generates a sonic boom with a focal zone approximately 242-320 km (150-200 miles) down range of the launch site and a projected maximum overpressure of 2 to 3 psf.

The third sonic boom is generated by the reentry of the jettisoned external tank. The sonic boom focal zone is located over the Indian Ocean with a maximum overpressure of 2 to 4 psf. All STS launches from KSC generate sonic booms with focal zones over uninhabited ocean waters. Clearance zones established by the launch trajectory and SRB retrieval areas essentially preclude significant adverse impacts to human populations.

c) Aircraft Movement: A number of aircraft are utilized at KSC for payload delivery, ferry support, NASA executives, security and astronaut training. Typically, noise levels are expected to be no greater than those experienced by a small commercial airport.

d) Industrial Operation: The loudest noise generated by industrial activities at KSC will be produced by hydraulic pumps operating within the confines of their enclosures. Operators are required by Occupational Safety and Health Administration (OSHA) regulations to be equipped with ear protection devices when exposed to these levels. Other intermittent raised levels of noise will occur during operation of lifting equipment, diesel-powered generators and locomotives, heavy-duty service vehicles, and the Crawler Transporter; by certain sheet metal forming and cutting processes; and by aqualaser removal of residual thermal protection materials from recovered SRB's. Even the highest levels of noise from industrial activities will have minor impact on the environment, and none will affect areas beyond the KSC boundaries.

e) Construction: Temporary generation of noise will result from construction machinery operations and added vehicular traffic. Such short-term and episodic increases in noise are insignificant relative to other noise levels produced on a daily basis at KSC.

f) Traffic Noise: The intermittent noise of arriving and departing vehicles (including visitors to the Space Center, the Merritt Island National Wildlife Refuge, and the Canaveral National Seashore) is expected to be no greater than that experienced in a major shopping center parking lot.

A number of permanent and/or temporary measures had been taken to reduce noise levels at KSC. Potential noise abatement measures for any facility or operation include: a) property acquisition for use as a buffer zone; b) landscaping with high, dense vegetation or earthen berm; c) noise insulation of buildings; d) erect permanent noise barriers and e) proper scheduling (day/night) of a specified activity might eliminate or alleviate noise impacts during critical periods. These measures to reduce noise levels at KSC will ensure that no adverse impact on human health or the environment, and no consequent impact on minority or low-income populations in the surrounding area.

In summary, KSC identifies no existing activities and programs that may have a substantial environmental effect beyond the Center's boundaries. KSC is currently working with the State of Florida Department of Environmental Protection and the U. S. Environmental Protection Agency in Region IV to determine the nature, level and geographic distribution of environmental impact caused by the past space operations. However, the nearest site is approximately 3 miles from the nearest community, thus ensuring no adverse impact on human health and no consequent impact on minority or low-income populations in the surrounding area. KSC has the RCRA Permit, the Hazardous Waste Storage Permit, the Class III Landfill Operating Permit, the Domestic and Industrial Wastewater Permits and is awaiting Title V Operating Permit. In order to obtain any of these permits, KSC had to make not only announcements in local radio stations, but also published the permit notices in the local newspaper. This allowed the surrounding communities 30 days to address any issues on these permits. In each of these permits, KSC is required to provide emergency or contingency plans for eliminating or mitigating contaminants. Furthermore, KSC has the KHB 8800.7 "Hazardous Waste Management" manual, as mentioned in Section 6 Subsection 3 of this plan, which addresses the emergency response plans and the adequacy of resources to protect all populations inside and outside of KSC boundaries.

VII. KSC COMMITMENT TO ENVIRONMENTAL JUSTICE

KSC is committed to ensuring that the goals of the Executive Order and NASA's Environmental Justice Strategy are met by revisiting this analysis every 5 years to update information and data to this plan. KSC will also continue addressing environmental justice issues in its future planning and all future documents in accordance with the National Environmental Policy Act (NEPA).

Moreover, KSC will continue to communicate with and seek the input of local communities through public meetings, material distributions, information repositories, community events, open house, press releases and public education campaigns. To ensure that members of the community are well informed of potential adverse environmental impacts from KSC activities, a mailing list with the names of local officials, community leaders, public interest groups, interested individuals, media, and community organizations was compiled. The mailing list is updated as changes are reported.

There are several outreach programs in which KSC is involved, thus furthering KSC's commitment to the community. These programs also involve outreach to KSC employees and contractors. Such programs include:

1) participating in Kennedy Multicultural Leadership Program (KMLP) - this is a mandatory two-day training in multicultural and diversity issues;
2) participating in the Summer High School Research Apprentice Program (SHARP)- this program is designed to encourage academically gifted and under-represented minority students to explore professions related to science, mathematics and engineering;
3) participating in the NASA's Unique Resident Tutoring for Up-and-Coming Replacement Engineers Program (NURTURE) - this program supports and encourages students with an aptitude for science, engineering and mathematics to explore and pursue careers in those disciplines;
4) participating in the Science Engineering And Research Career Help Program (SEARCH) - this program is designed to encourage, assist, and motivate minority and female students in grades 6-9 to pursue secondary and collegiate courses which will lead to careers in science, engineering, mathematics and technology;
5) participating in the Annual Day of Caring Program - this program allows KSC employees four hours off to help and provide assistance in the community work;
6) participating in the Combined Federal Campaign (CFC);
7) operating a teacher-resource center where local people can obtain material on science, math and related topics and providing extensive information about NASA and KSC on the Internet;
8) participating in the Annual EARTH day;
9) participating in Take-Your-Daughters To Work day;
10) participating in Take-Your-Sons To Work day;
11) participating in African-American Heritage Month;
12) participating in Hispanic Heritage Month;
13) participating in Asian Pacific Islanders Heritage Month;
14) participating in Native American Heritage Month; and,
15) participating in National Disability Employment Awareness Month.

REFERENCES

1. Executive Order 12898, "Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations," signed on, and effective as of, February 11, 1994.

2. National Aeronautics and Space Administration's Environmental Justice Strategy.

3. "Guidance For Federal Agencies On Key Terms In Executive Order 12898" (dated August 8, 1995).

4. Bureau of The Census, "County and City Data Book," 12th Edition (1994).

5. Brevard County Growth Management Department, Research Section.

6. NASA Kennedy Space Center, Environmental Resources Document, KSC-DF-3080, February 1997.

7. NASA Kennedy Space Center, Pollution Prevention Plan, September 1996.

8. Executive Order 12856, "Federal Compliance With Right-to-Know Laws and Pollution Prevention Requirements," signed on, and effective as of, August 3, 1993.

9. EPA, "Environmental Justice 1994 Annual report: Focusing on Environmental Protection For All People."

10. NASA Kennedy Space Center, Facilities Master Plan Volume 1, December 1992.

11. NASA Kennedy Space Center, KHB 8800.7 - Hazardous Waste Management.