

1. Purpose and Need for the Proposed Action

This Draft Programmatic Environmental Assessment (EA) has been prepared by the National Aeronautics and Space Administration (NASA) to assist in the decision-making process as required by the National Environmental Policy Act (NEPA) of 1969, as amended (42 United States Code [U.S.C.] 4321 et seq.), Council on Environmental Quality (CEQ) regulations. [Note: A list of acronyms and abbreviations, and a metric and English conversion table, are provided in Appendix A.] This Programmatic EA implements the provisions of NEPA (40 *Code of Federal Regulations* [CFR] Parts 1500 to 1508), Executive Order (EO) 12114 (“Environmental Effects Abroad of Major Federal Actions”), and NASA policies and procedures at 14 CFR Subpart 1216.3.

This Programmatic EA provides information associated with the potential environmental impacts of the transition and retirement (T&R) of NASA’s Space Shuttle Program (SSP). The T&R of the SSP would consist of the disposition of both real property (land, buildings and other structures and their associated built-in systems that cannot readily be moved without changing the essential character of the real property) and personal property (all assets not classified as real property owned by, leased to, or acquired by the government). Property disposition activities are the primary focus of this EA because this is the T&R activity with the greatest potential for environmental impacts. The Programmatic EA approach allows NASA to assess the overall T&R activities, although some specific options are not yet sufficiently developed to assess in detail.

1.1 Background

The SSP T&R includes both the transition of SSP important assets to new and current NASA Programs and the cost-effective retirement of assets and capabilities that will not be needed when the SSP retires. The capabilities held by the SSP include human capital, real property, and personal property.

1.1.1 Previous U.S. Human Space Exploration Programs

Beginning in the late 1950s, the United States (U.S.) embarked upon the ongoing effort of human exploration of space. The first human spaceflight initiative was Project Mercury, established in October 1958, with crewed spacecraft first launched from the Cape Canaveral Air Force Station (CCAFS) in the early 1960s. NASA’s Launch Operations Center and the portions of CCAFS that were used by NASA were renamed the John F. Kennedy Space Center (KSC) in late 1963. Project Mercury was followed by Project Gemini and the Apollo Program. Project Gemini was announced in January 1962 and served to perfect maneuvers in Earth orbit. The

Apollo Program, initiated in 1961, successfully landed U.S. astronauts on the Moon and returned them safely to Earth.

1.1.2 Space Shuttle

Approved as a National program in 1972, the Space Transportation System (STS)–commonly known as the Space Shuttle–is a unique design because, except for the External Tank (ET), all parts are reusable. The Space Shuttle’s purpose is to deliver payloads into lower Earth orbit and to dock with satellites and the International Space Station (ISS). Designed solely for missions to Earth orbit, the Space Shuttle was the first and is still the only winged U.S. spacecraft capable of launching crew vertically into orbit and landing horizontally upon returning to Earth. Over the past 25 years, the Space Shuttle fleet has supported more than 100 missions to Earth orbit.

1.1.3 The Vision for Space Exploration

On January 14, 2004, President George W. Bush presented his Vision for U.S. Space Exploration to the nation. The fundamental goal of this Vision is to advance U.S. scientific, security, and economic interests through a robust space exploration program. In support of this goal, the following steps will be taken:

- Implement a sustained and affordable human and robotic program to explore the solar system and beyond.
- Extend human presence across the solar system, starting with a human return to the moon by the year 2020, in preparation for human exploration of Mars and other destinations.
- Develop the innovative technologies, knowledge, and infrastructures to both explore and support decisions about the destinations for human exploration.
- Promote international and commercial participation in exploration to further the U.S. scientific, security, and economic interests (NASA, 2004f).

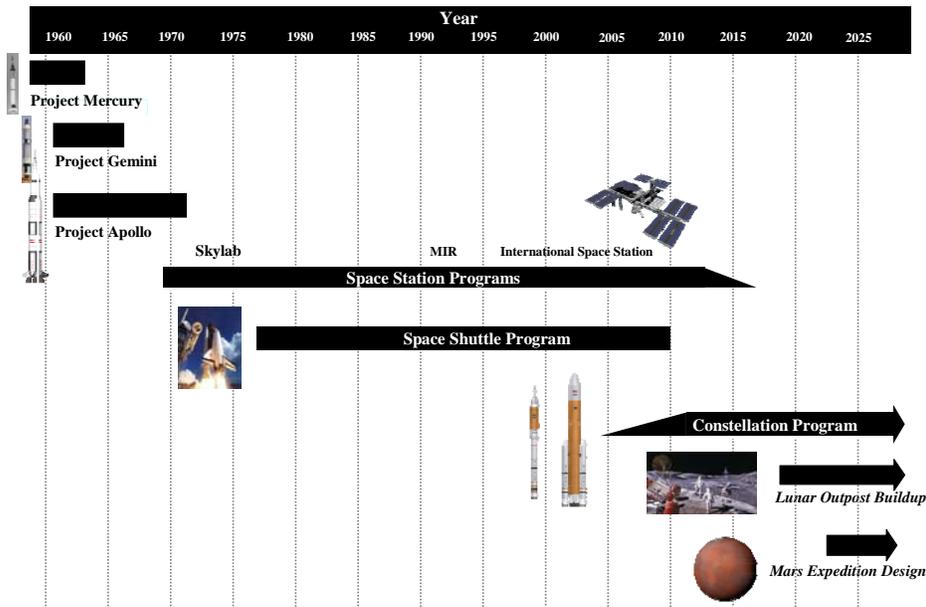
In announcing the Vision for Space Exploration, the President directed NASA to use the Space Shuttle to fulfill its obligation to complete assembly of the ISS and then to retire the Shuttle in 2010. Congress expressly endorsed the President's space exploration initiative and provided additional direction for the initiative in the NASA Authorization Act of 2005 (Public Law [P.L.] 109-155). Both Congress and the President have directed NASA to develop a "crew exploration vehicle" and associated systems to support the exploration initiative and to provide U.S. human spaceflight capability after the retirement of the Shuttle. NASA is in the planning stages of T&R activities for the SSP that will efficiently address the reuse of critical skills, human capital, and property. NASA initiated and is in the early planning stages of the "Constellation Program," which is intended to develop and operate the human space exploration systems necessary to implement the vision. NASA has evaluated the potential environmental impacts of its proposed Constellation Program and its various components under a separate *Final Constellation*

Programmatic Environmental Impact Statement (Cx PEIS) and tiered NEPA documentation, as appropriate (NASA, 2007t).

1.1.4 NASA 2008 Budget Request

Implementing the President’s Vision requires the retirement of the Space Shuttle in 2010, while bringing new human spaceflight capabilities online shortly thereafter. NASA’s Fiscal Year (FY) 2008 budget request reflects these two goals. Exhibit 1-1 is a timeline for the U.S. human exploration of space.

EXHIBIT 1-1
Timeline of the United States’ Human Exploration of Space



Over the budget period covering FY 2006 through FY 2012, as SSP annual budgets decrease, investment in other areas of NASA’s Exploration Systems and Space Operations will increase steadily. This portion of NASA’s budget covers the SSP, ISS, and Constellation Programs, as well as the ongoing activities supporting human space flight and advanced capabilities development (see Section 4.1.2 for more information). As the SSP T&R is carried out, the Constellation Program will increase the pace of development and testing of the nation’s new space vehicles (NASA, 2007t).

The Constellation Program consists of new spacecraft, launchers, and associated hardware that would facilitate manned and unmanned missions. The new crew transportation system includes three elements: the Orion Crew and Service Modules, the Lunar Lander, and the Earth Departure Stage (EDS). The rockets to be

used for launching the different components consist of the Ares V (for the EDS and either the Lunar Lander or cargo), and the Ares I for the Orion spacecraft. Several elements of the Constellation Program's hardware are derived from those originally developed for the SSP. The Orion Spacecraft is influenced by the Apollo spacecrafts, consisting of a two-part crew and service module system (NASA, 2007t).

The Cx PEIS (NASA, 2007t) provides additional information about that proposed program.

1.1.5 Planning for SSP Transition and Retirement

The goals and objectives of the SSP T&R were developed to implement the President's directive to retire the Shuttle in 2010 in a manner that also provides optimum support for all aspects of the Vision for space exploration. Specifically, the SSP T&R goals are as follows:

- Take no action that will impede the ability to safely and effectively complete the fly-out of the Shuttle Program.
- Perform T&R cost-effectively and as soon as possible.
- Provide an interface to other programs and institutional elements for capability transition.

The organizational structure begins at NASA Headquarters (HQ) with the Associate Administrator (AA) and the Space Operations Mission Directorate (SOMD) Transition Manager. At the program level, an SSP Transition Manager is assigned responsibility for the SSP T&R activities.

To accomplish the T&R functions, processes and tools have been developed to assess the capabilities of the SSP; to develop plans to retain, transfer, or excess these capabilities; and then to implement those plans.

1.1.5.1 Strategic Capabilities

The SSP is identifying strategic capabilities across the Program, which will allow decisions to be made relative to a capability—the human capital, real property, and personal property.

1.1.5.2 Human Capital Management

NASA's Number 1 priority is safe and successful mission execution through Space Shuttle fly-out and retirement no later than 2010. At the same time, the agency must plan for the smooth transition of much of the same workforce to other exploration programs during the timeframe between SSP retirement and the beginning of future space flight programs.

1.1.5.3 Property Management

The primary objective of SSP property management during the T&R is to maintain Program integrity while simultaneously implementing the divestiture of Program

property no longer needed to meet the Program mission requirements. Prompt disposition of SSP property will make valuable assets available for follow-on programs and will minimize agency costs for storage and sustainment. The SSP has identified more than 900,000 line items that must be dispositioned.

1.1.5.4 Historical Properties

The SSP strives to identify historic properties and artifacts as early as possible in the T&R process to ensure that adequate time is available to resolve technical and funding issues and to minimize implementation delays. Historical preservation is an integral part of property management.

1.1.5.5 Environmental Management

The environmental objectives of the SSP T&R include the following:

- To enable mission success by managing environmental responsibilities, identifying and mitigating environmental risks, providing adequate resources and technical support, and working with the mission stakeholders.
- To comply with all applicable federal, state, and local laws and regulations, as well as all applicable NASA requirements.
- To honor all agreements with other agencies, industries, organizations, and entities that are relevant to NASA's ongoing environmental responsibilities.
- To include environmental considerations in the program and project management processes with emphasis on prevention, conservation, compliance, and restoration.

1.2 Need for the Proposed Action

To accomplish the Vision for U.S. Space Exploration, one of the steps mandated by the President is to retire the Space Shuttle in 2010 (NASA, 2007f). Under presidential direction, NASA will cease operations of its SSP activities at all locations, including those addressed in this EA:

- KSC
- Johnson Space Center (JSC)
- Ellington Field (EF)
- El Paso Forward Operating Location (EPFOL)
- Stennis Space Center (SSC)
- Michoud Assembly Facility (MAF)
- Marshall Space Flight Center (MSFC)
- White Sands Test Facility (WSTF)
- Dryden Flight Research Center (DFRC)
- Palmdale

The T&R of the Program necessitates the disposition of all SSP assets (NASA, 2004g).

DFRC is a tenant of Edwards Air Force Base (EAFB). EPFOL is located on El Paso International Airport (EPIA), which is owned and operated by the City of El Paso, and NASA leases land from the City. Palmdale (also known as Air Force Plant 42 Site 1 [AFP 42]), is located at EAFB, California. Palmdale is owned by the U.S. Air Force (USAF), leased by NASA, and operated by Boeing Company. The White Sands Missile Range (WSMR) is a U.S. Department of Defense (DoD)-owned facility operated by the Department of the Army (DA), located at WSTF. All other facilities are owned and operated by NASA.

The following NASA Centers and prime contractor facilities were considered for inclusion in this EA:

- Ames Research Center
- ATK Launch Systems (ATK) (Promontory, Utah)
- Boeing (Huntington Beach, California)
- DFRC
- EF
- EPFOL
- Glenn Research Center
- Goddard Space Flight Center (GSFC)
- Jet Propulsion Laboratory
- JSC
- KSC
- Langley Research Center
- Lockheed Martin (at MAF)
- MSFC
- MAF
- Palmdale (AFP 42, operated by Boeing)
- Pratt Whitney Rocketdyne (West Palm Beach, Florida; and Canoga Park, California)
- Santa Susana Field Laboratory (SSFL)
- Sonny Carter Training Facility (SCTF)
- SSC
- United Space Alliance (USA) (primarily KSC and JSC locations)
- Wallops Flight Facility
- WSTF

A screening process was used to eliminate sites from the analysis based on the following criteria:

- If SSP activities occur or occurred at the Center
- If so, the scale and timeframe of the SSP operations that took or take place were considered
- Centers with limited SSP operations or those that did conduct SSP operations at one time but are no longer used for SSP support were eliminated from this evaluation because there is limited to no SSP property disposal.
- Contractor-owned properties were not included because they are responsible for the disposition of their own properties.

It was determined that SCTF would not be included in this EA because the operations there support multiple NASA programs and there is minimal SSP-unique property to be disposed.

SSFL is not included in the EA because SSP activities and property usage have been minimal for many years. The infrastructure in place has supported numerous NASA program activities. NASA environmental compliance and restoration activities are ongoing and being conducted by NASA Infrastructure and Administration Office. Consequently, the disposition of assets at SSFL will be addressed outside of the SSP T&R activities. NASA currently is assessing the future needs for SSFL. If NASA decides to excess the property at SSFL, the U.S. General Services Administration (GSA) would be responsible for disposal activities and would prepare the required NEPA documentation. Four other NASA facilities also are not included in this EA because of their limited involvement in the SSP.

However, some of these Centers have property that is eligible for listing on the National Register of Historic Places (NRHP). The Ames Research Center has two resources, Buildings N-238 and N-243, that were found eligible for the NRHP for their support of the SSP. These resources, which provided limited support to the SSP, retain their historic integrity. At the Glenn Facilities, the Supersonic Wind Tunnel and the Abe Silverstein Supersonic Wind Tunnel meet the NHRP Criteria A, B, C and exhibit excellent integrity. Wallops Flight Facility is a component of GSFC; it does not have any dedicated Shuttle assets. One structure at Langley Research Center, the Aircraft Landing Dynamics, meets the NRHP criteria for eligibility of the SSP.

Rocketdyne's operations at Canoga Park include the use of the government-owned Pacific Scientific Furnace, which is considered eligible for listing in the NHRP for this association with the SSP (Archaeological Consultants, Inc., 2007a). Every Space Shuttle Main Engine (SSME) flown on the Shuttle was brazed in this furnace. The contractor-owned sites manage the environmental requirements related to their facilities, but coordinate with government property officers to dispose of government-owned property that is operated by the contractor.

1.3 Purpose of the Proposed Action

The purpose of the proposed action is to methodically assess the SSP assets and to provide for their disposition in a manner that fully realizes any remaining value of those assets, and that is compliant with applicable federal, state, and local laws and regulations.

1.3.1 Decisions to be Made

The primary decision to be made by NASA, supported in part by the information contained in this Programmatic EA, is the manner of disposition of the SSP assets.

1.3.2 Public Involvement

The Notice of Availability of the Programmatic EA was announced in the *Federal Register* (FR) on 25 or 26 February 2008. Comments on the Programmatic EA were solicited through notices of availability published in newspapers in Alabama, California, Florida, Louisiana, Mississippi, New Mexico, Texas, and Washington, D.C., as well as in the FR. Appendix B provides a complete list of where these advertisements were published. Public comments were encouraged by offering a variety of means by which to submit comments, including written comments sent through the postal system, electronic mail, and facsimile.

1.3.3 Issues Considered but Not Carried Forward

NASA applied a systematic and interdisciplinary approach to ensure that the environmental resources at each site were analyzed and potential issues identified for the disposition of Shuttle-related real and personal property. The analyses for the disposition of real property are presented in this Programmatic EA.

Shuttle-related personal property includes hundreds of thousands of items ranging from common parts to complex tooling and flight hardware. The disposition of common parts has no potential for significant impacts to the environment. Consequently, personal properties such as complex tooling and flight hardware may have the potential to adversely affect the environment are analyzed in this Programmatic EA.

Exhibit 1-2 identifies the concerns at each Center that were evaluated and subsequently determined to have no potential for environmental impacts; thus, they were eliminated from further discussion in this document.

1.4 Executive Order 12114

EO 12114 represents the U.S. government's exclusive and complete determination of the procedural and other actions to be taken by federal agencies to further the purpose of the NEPA, with respect to the environment outside the U.S. and its territories and possessions. Although it is based on independent authority, this EO

further the purpose of NEPA consistent with the foreign policy and national security policy of the U.S. Specifically, EO 12114 defines the environment to mean only the natural and physical environment, but not the social, economic, or other environments.

NASA has various Transoceanic Abort Landing (TAL) sites and Emergency Landing Sites (ELSs) that could be used in an emergency during the Space Shuttle's ascent into orbit. The TAL sites are located in Eastern Europe at Moron Air Force Base (AFB); Spain, Zaragoza AFB, Spain; and Istres-le-Tube AFB, France. The primary role of the personnel at the TAL sites is to remove the astronauts from the Orbiter in the event of an emergency landing. Therefore, the TAL sites are equipped with Shuttle-specific navigational aides, Orbiter grounding equipment, safety equipment, hatch tools, and a crew access vehicle to remove the astronauts from the Orbiter. NASA has a Memorandum of Agreement (MOA) with the respective TAL sites to use these facilities during a launch and contingency landing.

Because of the MOA between NASA and the governments of France and Spain, of the four categories of major federal actions abroad addressed under Section 2-3 of EO 12114, only (c), "Actions significantly affecting the environment of a foreign nation," potentially could apply. However, this category does not apply because the buildings at the TAL sites are not NASA real property and because there would not be any SSP T&R-related activities that potentially could involve radioactive materials. Consequently, neither the Proposed Action nor the No Action Alternative would have potential actions for which EO 12114 would be applicable. Therefore, no further evaluation of the TAL sites under EO 12114 is required.

EXHIBIT 1-2

Issues Considered but Eliminated from Further Analysis

Resource Eliminated from Further Analysis	Rationale
Kennedy Space Center	
Biological Resources – Wetlands	No wetlands will be affected by the disposition of SSP property (NASA, 2003a).
Biological Resources – Floodplains	No floodplains will be affected by the disposition of SSP property, because there are no SSP buildings located in floodplains, according to the KSC 100-year floodplain map.
Cultural Resources – Traditional Cultural Resources	There are no known traditional cultural resources or ethnographic sites at KSC (NASA, 2003a). If any traditional cultural resources are found in the future, KSC must follow all applicable federal regulations.
Cultural Resources – Archaeological Resources	Currently, none of the real property assets owned by the SSP are known to be over archeological sites. Therefore, there would be no impact on known archaeological sites (NASA, 2003a).
Site Infrastructure – Potable Water	Water is supplied to KSC by the City of Cocoa, the Taylor Creek Reservoir, and groundwater wells located in east Orange County. KSC does not provide its own potable water (NASA, 2007u).
Site Infrastructure – Electrical Power	No change to electrical power is anticipated.
Johnson Space Center	
Biological Resources – Wildlife	JSC does not provide high-quality habitat for wildlife because of the high levels of human activity. The small amount of cover and food available, NASA activities, traffic, and a 2.5-m- (8-foot)-high perimeter fence discourage wildlife from inhabiting JSC; therefore, no impacts to wildlife are anticipated as a result of the disposition of SSP real and personal property (NASA, 2004a).
Biological Resources – Protected Species and Habitats	No federal- or state-listed threatened or endangered species are known to inhabit JSC. No critical habitat for protected species exists at JSC (NASA, 2004a).
Cultural Resources – Traditional Cultural Resources	There are no known traditional cultural resources or ethnographic sites at JSC (2004a). If any traditional cultural resources are found in the future, JSC must follow all applicable federal regulations.
Ellington Field	
Biological Resources – Vegetation	No natural plant communities exist at EF because the land at EF is completely developed due to airport operations (NASA, 2005b).
Biological Resource – Wetlands	No wetlands exist at EF (NASA, 2005b).
Biological Resources – Floodplains	No floodplains exist at EF (NASA, 2005b).

EXHIBIT 1-2

Issues Considered but Eliminated from Further Analysis

Resource Eliminated from Further Analysis	Rationale
Biological Resources – Wildlife	EF is located at an airport on completely developed land. Only wildlife associated with human development may be found onsite, including rock dove (<i>Columba livia</i>), starling (<i>Sturnus vulgaris</i>), sparrows, mockingbird (<i>Mimus polyglottos</i>), cardinal (<i>Cardinalis cardinalis</i>), and blue jay (<i>Cyanocitta cristata</i>). Small mammals such as raccoons (<i>Procyon lotor</i>), opossums (<i>Didelphis virginiana</i>), and rodents also are found at the airport. A fence at the airport perimeter excludes large wildlife (NASA, 2005b).
Biological Resources – Protected Species and Habitats	No threatened or endangered species exist at EF (NASA, 2005b).
Cultural Resources – Archaeological Resources	No soil disturbance is anticipated to occur due to SSP T&R activities because there are no planned demolition and construction activities (NASA, 2007s).
Cultural Resources – Traditional Cultural Resources	There are no known traditional cultural resources or ethnographic sites at EF (NASA, 2005b). If any traditional cultural resources are found in the future, EF must follow all applicable federal regulations.
Cultural Resources – Historic Resources	There are no known NRHP-eligible historic resources at EF (NASA, 2005b).
Socioeconomics – Population Socioeconomics – Regional Employment and Economic Activity Socioeconomics – Community Services	EF is a satellite facility supporting JSC, located in Houston, only 8 miles northwest of JSC; both facilities are located in Harris County (NASA, 2005b). Therefore, socioeconomic activity associated with EF occurs in the same ROI as JSC, the Houston metropolitan area. NASA expenditures and employment data for EF are included in JSC data. The socioeconomic factors associated with EF are included in the JSC socioeconomic section.
EI Paso Forward Operation Location	
Biological Resources – Vegetation	No natural plant communities exist at EPFOL because the land at EPFOL is completely developed due to airport operations (NASA, 2004c).
Biological Resources – Wetlands	No wetlands exist at EPFOL (NASA, 2004c).
Biological Resources – Floodplains	A 100-year floodplain is located in the northwestern portion of the EPIA. NASA facilities are not within the floodplain and the proposed action and alternatives would not affect this area (NASA, 2004c).
Biological Resources – Wildlife	EPFOL is located at an airport and does not provide quality habitat to wildlife. Only wildlife associated with human development may be found onsite (NASA, 2004c).
Biological Resources – Protected Species and Habitats	Transient protected bird species may occur at areas near the EPFOL, including the bald eagle and arctic peregrine falcon, but these species range widely in the region and are not affected by NASA operations. USFWS consultation indicated that a species of concern, the western burrowing owl, was found in the vicinity of EPIA, but not on the site, due to airport operations (NASA, 2004c).

EXHIBIT 1-2

Issues Considered but Eliminated from Further Analysis

Resource Eliminated from Further Analysis	Rationale
Cultural Resources – Archaeological Resources	There are no known NRHP-eligible archaeological resources at EPFOL (NASA, 2007s). If any archeological resources are found in the future, EPFOL must follow all applicable federal regulations.
Cultural Resources – Traditional Cultural Resources	There are no known NRHP-eligible traditional cultural resources or ethnographic sites at EPFOL (NASA, 2004c). If any traditional cultural resources are found in the future, EPFOL must follow all applicable federal regulations.
Cultural Resources – Historic Resources	There are no known NRHP-eligible historic resources at EPFOL (NASA, 2007s).
Hazardous/Toxic Materials and Waste-contaminated Areas	No RCRA-contaminated sites are located at EPFOL (NASA, 2007s).
Hydrology and Water Quality – Water Quality	There are no jurisdictional surface waters at EPFOL (NASA, 2004c).
Land Use	Land use planning at EPFOL is performed by the Planning Office of the Center Operations Directorate of JSC (NASA, 2004c). EPFOL does not control any property. Real property occupied by EPFOL is leased from EPIA.
Socioeconomics – Population	EPFOL is a satellite facility supporting JSC, located at the EPIA, with only a small workforce. In 2004, the EPFOL employed fewer than 30 NASA and contractor personnel (NASA, 2004c). EPFOL is located within the socioeconomic ROI for WSTF; information about the regional economy is provided in the WSTF socioeconomics section. Effects on the population and the regional economy associated with SSP support activities at EPFOL would be minimal or undetectable, especially in comparison to ongoing economic activity associated with EPIA, WSTF, WSMR, Holoman AFB, and Fort Bliss.
Socioeconomics – Regional Employment and Economic Activity	
Socioeconomics – Community Services	
Stennis Space Center	
Cultural Resources – Traditional Cultural Resources	There are no known traditional cultural resources or ethnographic sites at SSC (NASA, 2005a). If any traditional cultural resources were to be found in the future, SSC would have to follow all applicable federal regulations.
Socioeconomics – Population	The current SSP workforce at SSC represents only approximately 5 percent of the total NASA and non-NASA workforce at SSC (NASA, 2007a). The effects on regional population resulting from SSP economic contributions would be minimal or undetectable, in comparison to all of the other workers and their families associated with SSC. Information about the population of the surrounding region is included in the MAF socioeconomics section.
Socioeconomics – Regional Employment and Economic Activity	For the reasons stated above, regional economic contributions from the SSP at SSC alone are unlikely. Therefore, a detailed analysis of SSC is not necessary. However, because SSC is located within the ROI for MAF, and because that region is still in recovery from the 2005 hurricanes, the combined economic contribution of the SSP at both centers is addressed in the MAF section.

EXHIBIT 1-2

Issues Considered but Eliminated from Further Analysis

Resource Eliminated from Further Analysis	Rationale
Socioeconomics – Community Services	For the reasons stated above, any population-driven effects from the SSP transition on the demand for community services in the communities close to SSC would be minimal or non-existent. Therefore, details about these resources are not required.
Michoud Assembly Facility	
Cultural Resources – Traditional Cultural Resources	There are no known traditional cultural resources or ethnographic sites at MAF (NASA, 2001b). If any traditional cultural resources were to be found in the future, MAF would have to follow all applicable federal regulations.
Marshall Space Flight Center	
Cultural Resources – Traditional Cultural Resources	There are no known traditional cultural resources or ethnographic sites at MSFC (NASA, 2002a). If any traditional cultural resources were to be found in the future, MSFC would have to follow all applicable federal regulations.
White Sands Test Facility	
Biological Resources – Wetlands	No wetlands exist at WSTF (NASA, 2001a).
Biological Resources – Floodplains	No floodplains exist at WSTF (NASA, 2001a).
Cultural Resources – Traditional Cultural Resources	There are no known traditional cultural resources or ethnographic sites at WSTF (NASA, 2001a). If any traditional cultural resources were to be found in the future, WSTF would have to follow all applicable federal regulations.
Hydrology and Water Quality – Groundwater	There are no jurisdictional surface waters at WSTF (NASA, 2001a).
Dryden Flight Research Center	
Biological Resources – Vegetation	There are no biological resources at the Shuttle area (NASA, 2003c).
Biological Resources – Floodplains	Development of floodplains on EAFB has been limited because there are no major stream courses and few courses that are large enough to have developed valleys with floodplains. Floodplains on DFRC are limited to a small portion of the Rogers Dry Lakebed, which is the regional drainage basin (NASA, 2003c). No facilities on DFRC are located in floodplains.
Biological Resources – Wetlands	No wetlands exist at DFRC (NASA, 2003c).
Biological Resources – Wildlife	There are no biological resources at the Shuttle area (NASA, 2003c).
Biological Resources – Protected Species	There are no biological resources at the Shuttle area (NASA, 2003c).
Cultural Resources – Traditional Cultural Resources	There are no known traditional cultural resources or ethnographic sites at DFRC (NASA, 2003c). If any traditional cultural resources were to be found in the future, DFRC would have to follow all applicable federal regulations.

EXHIBIT 1-2

Issues Considered but Eliminated from Further Analysis

Resource Eliminated from Further Analysis	Rationale
Hydrology and Water Quality – Groundwater	There are no jurisdictional surface waters at DFRC (NASA, 2003c).
Socioeconomics – Population	DFRC has a small SSP-direct workforce of about 25 workers, primarily contractors, located in leased space at EAFB in California (NASA, 2003c). Effects on the population and the regional economy associated with the SSP support activities at DFRC would be minimal or undetectable in comparison to the ongoing economic activity associated with EAFB. In addition, SSP is only a small portion of overall funding at DFRC (like other NASA research laboratories), so the SSP transition is unlikely to affect DFRC’s expenditures and employment substantially (NASA, 2007a).
Socioeconomics – Regional Employment and Economic Activity	
Socioeconomics – Community Services	
Palmdale	
Biological Resources – All	Minimal to no biological resources exist at Palmdale. There is minimal to no natural vegetation onsite. Only human-associated wildlife is found onsite; therefore, no unique habitat exists at Palmdale (NASA, 2007s).
Cultural Resources – Traditional Cultural Resources	There are no known traditional cultural resources or ethnographic sites at Palmdale (NASA, 2002e; California Office of Historic Preservation, February 2007. If any traditional cultural resources were to be found in the future, Palmdale would have to follow all applicable federal regulations.
Hydrology and Water Quality – All	<p>Palmdale is located on property owned by the USAF and operated by the Boeing Company, and is used for other military aircraft operations. It will continue to operate following the cessation of the Shuttle program. A current groundwater remediation effort at Palmdale AFP 42 is being managed and funded by Wright-Patterson AFB (NASA, 2007s) because Palmdale is Wright Patterson’s tenant.</p> <p>No water resources would be affected by the proposed action. No changes in permitted water use or in storm water or wastewater discharges would be expected (NASA, 2007s).</p>
Land Use	NASA is a tenant of Wright-Patterson AFB at AFP 42 and does not control real property or land use designations (NASA, 2007s).

EXHIBIT 1-2

Issues Considered but Eliminated from Further Analysis

Resource Eliminated from Further Analysis	Rationale
Socioeconomics – Population	Palmdale is a GO/CO activity with a small SSP-direct workforce, and is a tenant of Wright-Patterson AFB at AFP 42 (NASA, 2007s). The effects on the regional population, regional economy, or community services would be minimal or undetectable in comparison to the workers and their families associated with the southern California aerospace industry.
Socioeconomics – Regional Employment and Economic Activity	
Socioeconomics – Community Services	

Notes:

- AFB = Air Force Base
- AFP = Air Force Plant
- DFRC = Dryden Flight Research Center
- EAFB = Edwards Air Force Base
- EF = Ellington Field
- EPFOL = El Paso Forward Operation Location
- EPIA = El Paso International Airport
- GO/CO = Government owned/contractor operated
- JSC = Johnson Space Center
- KSC = Kennedy Space Center
- m = Meter
- MAF = Michoud Assembly Facility
- MSFC = Marshall Space Flight Center
- NASA = National Aeronautics and Space Administration
- NRHP = National Register of Historic Places
- RCRA = Resource Conservation and Recovery Act
- ROI = Region of influence
- SSC = Stennis Space Center
- SSP = Space Shuttle Program
- T&R = Transition and retirement
- USFWS = U.S. Fish and Wildlife Service
- WSMR = White Sands Missile Range
- WSTF = White Sands Test Facility

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