2.0 DESCRIPTION AND COMPARISON OF ALTERNATIVES

2.1 DESCRIPTION OF THE ALTERNATIVES

Three alternatives (Alternative 1, Alternative 2, and No Action) were considered for the development of the ISRP (Figure 1-1). The potential ISRP alternative sites are located along the south portion of Kennedy Parkway (State Road 3), the major north-south transportation artery that allows public ingress and egress through KSC into Merritt Island and Titusville. Note that both Alternative 1 (Figure 2-1) and 2 (Figure 2-2) incorporate a common parcel of land (10 ha (24 ac)), shown as "Phase F", as part of the proposed development area for each (Figure 2-3).

Alternative 1: Preferred Action. Alternative 1 proposes the development of the ISRP on approximately 140 hectares (ha) (345 acres (ac)) of KSC property. This development and related construction activities would occur on land located immediately south of the KSC Visitors Complex along the recently constructed Space Commerce Way. About 130 ha (321 ac) of the development would occur on the west side of Space Commerce Way (Phases A-E). Phase F would occur on a 10 ha (24 ac) parcel east of Space Commerce Way, adjacent to and west of the SLSL (Figure 2-1). The Alternative 1 site (Phases A-F) is dominated by citrus groves and includes wetlands and disturbed habitat. Proposed development of the Alternative 1 site would consist of 25 parcels in six phases serviced by approximately 4.5 kilometers (km) (2.8 miles (mi)) of roads. The parcels range from 1.8 to 10.2 ha (4.5 to 25.3 ac) in size with developable acreage between 1.8 and 6.2 ha (4.5 and 15.4 ac). Some parcels have dedicated no-build zones due to existing wetlands and stormwater ponds. These stormwater ponds would become part of the master stormwater system for the ISRP. The proposed stormwater management system includes 10 connected treatment ponds for the collection and treatment of runoff generated from the developed parcels. Alternative 1 would include a central greenway, with sidewalks and pedestrian access, along wetlands and stormwater retention areas.

Alternative 2: Alternative Action. Alternative 2 proposes construction and development of the ISRP on approximately 140 ha (345 ac) of KSC property. The development and related construction activities would occur on 130 ha (321 ac) located northeast of the KSC south security gate (Gate #2) on Kennedy Parkway (State Road 3), near B Avenue SW (or Tel-4 Road) (Figure 2-2), and the 10 ha (24 ac) Phase F parcel, located east of Space Commerce Way, adjacent to and west of the SLSL (Figure 2-1). This undeveloped site is characterized by extensive scrub habitat and wetlands. The Alternative 2 (Phases A-E) site is bounded on the north by an unimproved sand road with an adjacent drainage ditch, west by Kennedy Parkway (State Road 3), and the south by an unimproved sand road with an adjacent drainage ditch. No existing land feature characterizes the property boundary on the east. Access to the proposed ISRP site for Phases A-E would occur from Kennedy Parkway at intersection of B Ave SW (Tel-4 Road) with a secondary entrance at 17th Street SW (Jerome Road). Development at this portion of the Alternative 2 site (Phases A-F), would also be accomplished in six phases, and involve 25 parcels (parcels 1-24 on Figure 2-2 and the Phase F parcel) serviced by approximately 4.2 kilometers (km) (2.6 mi) of roads. Those 25 parcels proposed for development range in size from 1.6 to 10.0 ha (4.0 to 24.0 ac with developable acreage between 1.5 and 5.6 ha (3.7 to 13.8 ac). One 34.7 ha (85.7 ac)

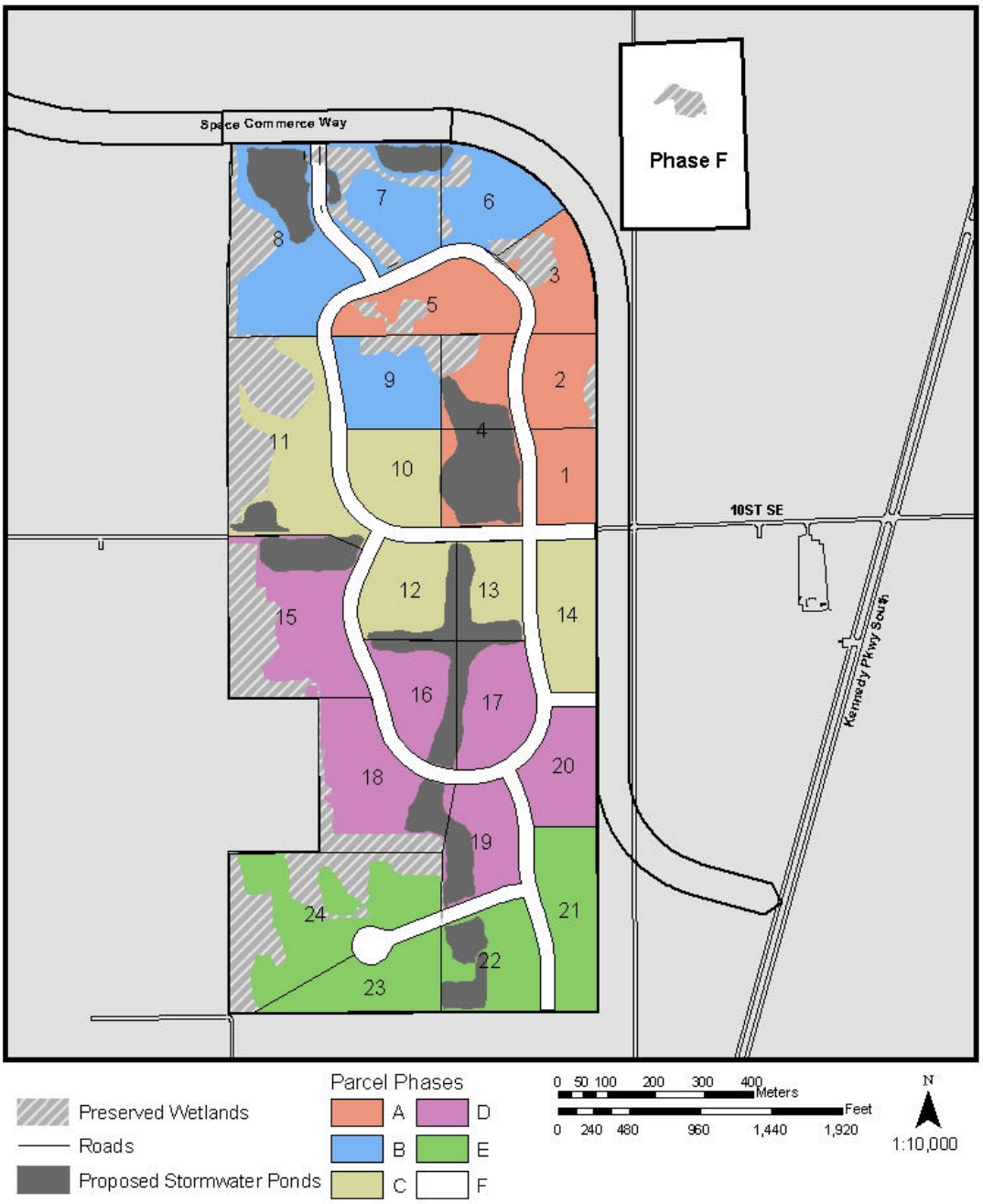

Figure 2-1. Proposed Land Use of Alternative 1 and Phase F.

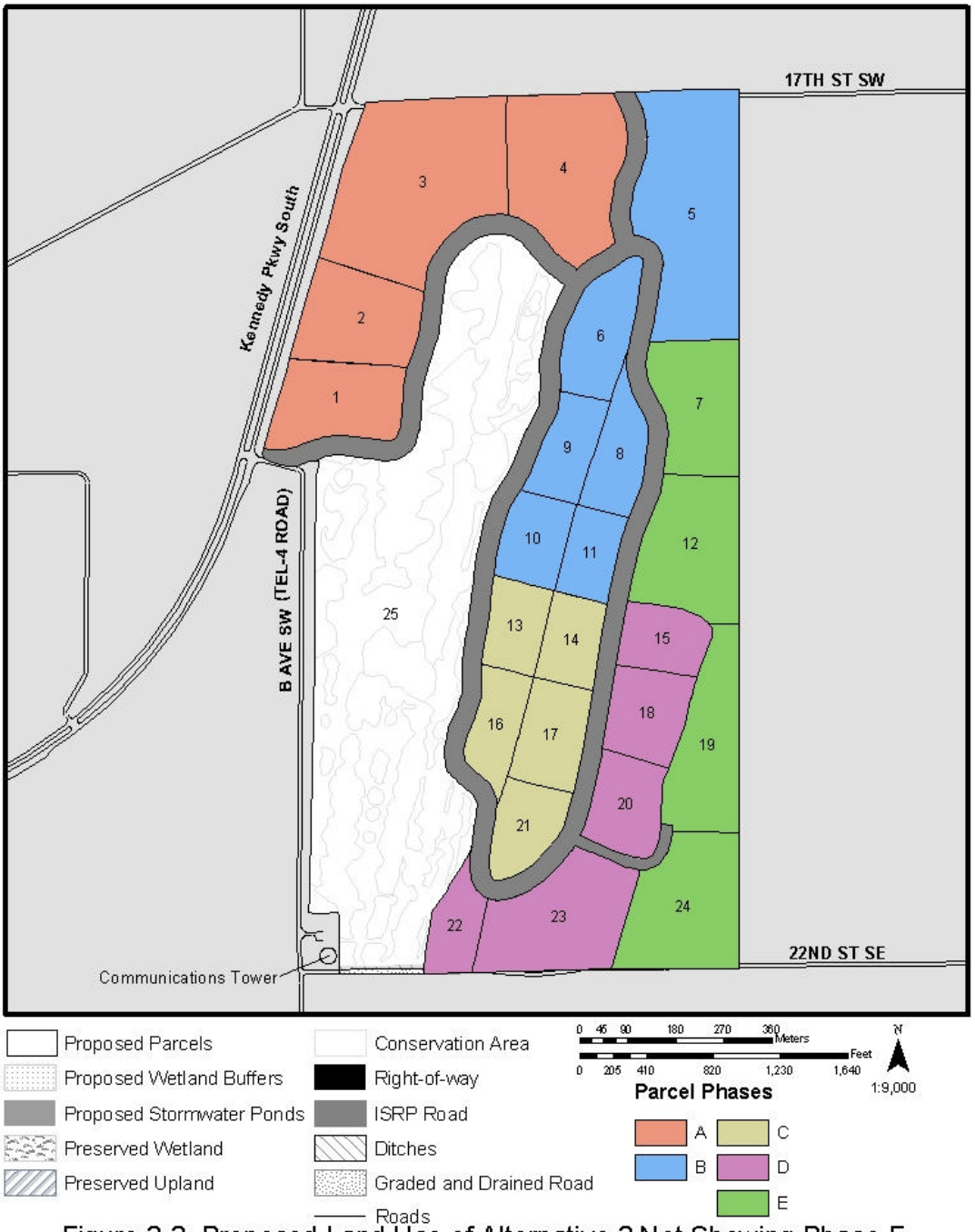

Figure 2-2. Proposed Land Use of Alternative 2 Not Showing Phase F. Parcels are numbered.

parcel (indicated as parcel 25 in Figure 2-2) is an extensive wetlands system that would be set aside for wetland conservation.

Four stormwater management ponds are proposed for the collection and treatment of runoff generated from the developed parcels. The proposed land use plan includes extensive greenways and sidewalks for pedestrian access along the wetland conservation area and between parcels.

Alternative 3. No Action Alternative. Under the No Action Alternative, the ISRP would not be developed on KSC. This No Action Alternative would result in continuing present management of the area by KSC. The citrus groves, abandoned or under contract through 2008, would eventually revert to natural vegetation as part of KSC's undeveloped buffer and be managed by USFWS. The No Action Alternative is required under NEPA (40 CFR 1502.14(d)) and serves as a baseline from which to compare the impacts of Alternative 1 and 2.

A comparison of the alternatives is presented in Section 2.3, Comparison of Alternatives, and an analysis of the potential impacts associated with each of the alternatives is detailed in Chapter 4: Environmental Consequences.

2.2 BASELINE CONDITIONS

In this EIS, the baseline is defined as a future condition that would occur at KSC if the ISRP is not adopted and implemented, as would be the case in the No Action alternative. The baseline level of development assumed at KSC in this EIS consists of existing conditions at KSC plus new development already approved as parts of other decisions or actions already made and considered in other environmental documents:

- Environmental Assessment for The Space Life Sciences Laboratory (NASA 2000)
- Environmental Assessment for Space Commerce Way Road Phase 2 (NASA 2002b)
- Cape Canaveral Spaceport Master Plan (NASA et al. 2002d) - (KSC's cooperative business effort was expanded with the formation of the Comprehensive Master Plan Integrated Project Team made up of the major stakeholders of the Florida space industry: NASA, FSA, and the USAF 45th Space Wing. This comprehensive document provides a concise 50-year vision to ensure that future operations at the Cape Canaveral Spaceport promote the future needs and goals, collectively and individually, of the cooperating partners.)
- KSC Land Use Development Plan (July 1999)
- Various documents describing other planned land use changes (see Figure 2-3) (various dates, on file with NASA Environmental Programs Office (EPO) including siting approval documents)

These documents and plans provide the overall context in which development may occur at KSC. The land use plans were developed to provide a guideline for future decisions regarding facility siting and development actions. The ISRP is included as part of both these plans, however, this is n only in the context of the conceptual land use of the park. None of the land use plans developed for KSC include specific proposals for development. That is, they do not propose specific facility or infrastructure construction nor do they provide a definitive timeline for the development of these areas. Moreover these plans were based on highly speculative forecasts of launch demands and vehicle types.

2.2.1 Other Planned Land Uses

Other planned land uses to be considered as a part of the projected baseline at KSC and the cumulative effects analysis are shown in Figure 2-3 and are listed below with a brief explanation. The KSC Master Planning Office has preliminarily approved these projects, but has not completed design plans or permitting for their construction.

Disposal Site for Green Waste (Site Plan 02-6334A) – This site is located within abandoned citrus groves and is planned to store green waste that is generated from clearing and cutting of line-of-sight, security clear zones, and firebreaks within KSC. The green waste would be burned by the USFWS once every year.

Training Facility (Phase 1) and Classrooms (Phase 2-5) (Site Plan M61310) - The proposed educational facility would consist of a training facility core (approximately 650 square meters (sq m) (7,000 square feet (sq ft)) and four classrooms (approximately 187 sq m (2,000 sq ft) each). The complex would provide new conference facilities and classrooms to meet KSC staff training requirements. The new facility would replace an existing trailer complex currently used for these purposes on KSC.

Visitor Information Center Parking Lot Addition/Modification (Site Plan 01-5848) – The proposed parking lot (139 m by 78 m (455 ft by 257 ft)) would provide approximately 260 new parking spaces, 18 recreational vehicle spaces, and a tram turnaround with waiting area and sidewalks. The new parking area would provide on-site parking during peak visiting seasons and eliminate off-site parking requirements.

Defense Reutilization Management Office Relocation (Site Plan 01-5927) – This facility would house government office equipment and furniture that are not currently in use. The existing facilities at Patrick Air Force Base, CCAFS, and KSC are incompatible with surrounding land uses; therefore, NASA and USAF have proposed relocation of the DRMO facilities.

Other related construction or development activities that have been approved for the ISRP alternatives sites at KSC consist of the following:

Space Life Sciences Laboratory (SLSL) (NASA 2000) - The development and current construction of the SLSL will serve as the primary gateway to ISS for NASA scientific experiments payload. The State of Florida committed $30 million in State funds to build the lab and lease the lab's capacity to NASA's experiment processing contractor to perform ISS payload work. An additional goal of SLSL, based on the availability of space, is to host Florida's university researchers and their colleagues. Set to open in August 2003, SLSL fulfills a KSC facility need and advances the common research and technology development goals of the CCS.

Space Commerce Way Road (NASA 2002b) – This roadway, currently under construction, would provide 4-lane access, outside the secure zone, through KSC between Kennedy Parkway (State Road 3) and NASA Causeway (State Road 405).

Wetland Mitigation Sites for Phase 2 of Space Commerce Way Road (NASA 2002b) – This project is partial mitigation for 2.7 ha (6.84 ac) of wetlands impacted by the construction of

Space Commerce Way Road. The wetland construction project is underway at a 1.6 ha (4.0 ac) site within an abandoned citrus grove on the west side of the KSC Visitors Information Complex.

2.2.2 Enhanced Use Leasing

Public Law (PL) 108-7, FY 2003 Omnibus Appropriations Bill, Title IV, General Provision, section 417 amended the Space Act by adding at the end of Title III a new section 315, "Enhanced-Use Lease of Real Property Demonstration." PL 108-7 authorizes NASA to conduct a demonstration program of Enhanced-Use Leasing (EUL). This limited demonstration program was to be undertaken at no more than two NASA Centers and KSC was selected to be one those Centers.

The purpose of this demonstration program is to provide NASA the opportunity to fully utilize any of its resources that may not be fully made use of. In accordance with the legislation, a person or entity entering into a EUL agreement with NASA shall provide consideration for the lease at fair market value. Consideration may take one or a combination of the following forms: (a) cash payment; (b) maintenance, construction, modification or improvements of NASA real property; (c) provision of services to NASA, including launch services and payload processing services; or (d) NASA use of facilities on the property. However, the legislation prohibits a NASA leaseback of the property or entering into other contracts with the lessee respecting the property. The ISRP was selected as a project for consideration under the EUL authority as it meets the criteria for this capability.

2.3 COMPONENTS OF ALTERNATIVES

The land use and management of the proposed ISRP are the same for Alternatives 1 and 2 and are based on several primary guiding documents (Appendix D1):

- Urban Land Institute Advisory Services Panel Report, *Kennedy Space Center, Florida: A Strategy for the International Space Research Park*, July 8-13, 2001(Urban Land Institute 2001),
- Futron Corporation, *International Space Research Park Development Study Business Case Analysis,* November 28, 2002 (Futron 2002a)
- Futron Corporation, *International Space Research Park Development Study Target Market Assessment and Forecast*, May 10, 2002 (Futron 2002b), and
- Futron Corporation Tatum CFO, and James Crouse Consultant, International Space Research Park Development Study, Final Report, May 28, 2002 (Futron et al. 2002).

2.3.1 Land Use

Conceptual land use plans were developed for the ISRP Alternatives 1 and 2 based on the guidance and criteria provided by the Urban Land Institute Advisory Services Panel (Urban Land Institute 2001) and the ISRP Development Study (Futron et al. 2002). The land use plan for the ISRP requires development flexibility, while minimizing environmental impacts. Recommendations for the ISRP land use plan included the following, which have been used in developing the proposed ISRP under Alternatives 1 and 2:

- A 162-ha (400-ac) campus-like research park;
- Parcel sizes of two to four ha (5 to 10 ac);
- Minimum of 30 percent open space and no more than 40 percent parking and hard surfaces;

- An environmentally friendly atmosphere with greenway and pedestrian paths;
- A 20-year phased development schedule.

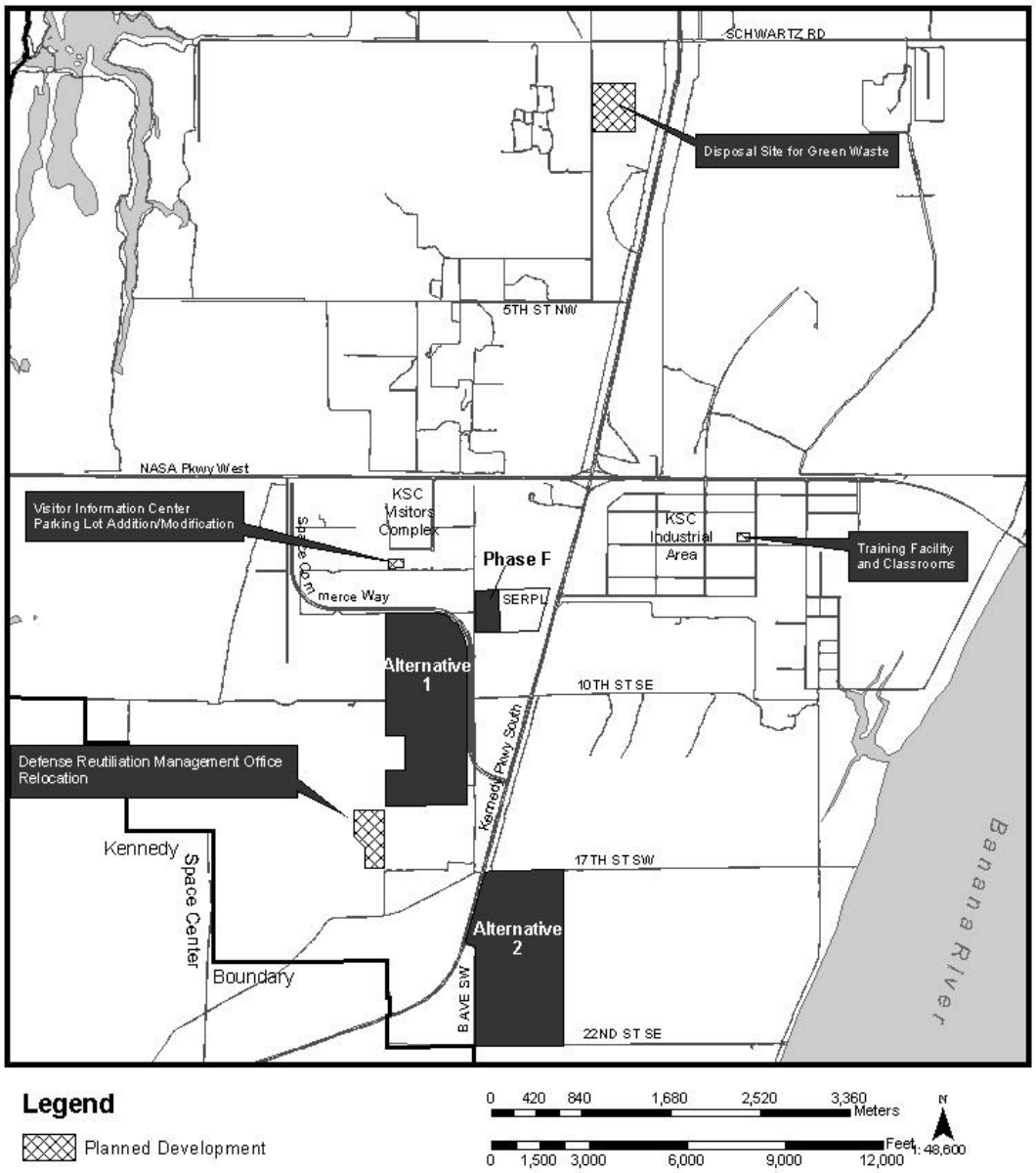

Figure 2-3. Planned Land Uses to be Considered Part of Baseline Development at Kennedy Space Center.

Several types of land uses were recommended and are intended within the proposed ISRP. These include, for example:

1. Research and development facilities that may include office space and laboratories for research and development to promote collaboration between KSC and non-profit organizations, private companies, and educational institutions on topics related to NASA's Space Act Mission and the ISS.
2. Space-related processing, assembly, light manufacturing, and associated technical support services.
3. Education facilities that may include classrooms or training centers for professional development;
4. Health and Wellness Facility; and
5. Retail Services to support ISRP tenants.

2.3.2 Management Concept

The proposed management concept for the ISRP blends the success models observed at other research parks with the unique interrelationships between the Federal and State stakeholders sponsoring the ISRP. Several key characteristics and principles drive the management approach and structure being proposed for the ISRP:

- The land of the ISRP would remain federally owned. NASA would lease the land to FSA under NASA's Enhanced Use Leasing (EUL) authority.

- The ISRP would be relieved to the maximum extent practical of historical KSC regulatory and management practices not designed or intended for application to commercial developments. The ISRP would still be subject to State requirements and Federal laws and regulations applicable to non-Federal entities.

- The State of Florida would own infrastructure improvements, including but not limited to roads, surface drainage structures, and utilities. Tenant site improvements (e.g., user facilities) would be owned by individual tenants or by developers who invest in the ISRP facilities with intent to lease labs and offices to user organizations, including other Federal agencies.

- The lease will direct FSA to create an independent entity called the ISRP Authority (ISRPA) that would plan, develop, market, and manage the ISRP on behalf of KSC and FSA. The ISRPA would hire expert professional staff to plan, develop, and operate the ISRP.

The proposed lease term is 50 years plus a 25-year extension. The 25-year extension would be implemented upon mutual agreement between NASA and the State of Florida. At the end of the lease and any extensions, the State of Florida through the FSA and ISRPA, would remove all improvements made upon the leased land except for permanent improvements to site drainage, landscaping, interior roadways and utility infrastructure. In accordance with the anticipated agreement between NASA and the State, NASA may at its sole discretion, waive the required removal of part or all of the above referenced improvements.

- NASA, as the land owner, would retain certain decision rights, notably the right to approve, disapprove, or approve with conditions each proposed tenant in the ISRP.

The management concept would allow developers and tenants to operate in a business environment that is predictable and familiar, and would empower the ISRPA to pursue best commercial practices in guiding the ISRP's development.

2.3.2.1 The ISRP Authority (ISRPA)

The ISRPA would be created under the existing statutory authority of the FSA. The FSA has created a sub-district for the ISRP under FSA Resolution 2002-04, and once the lease agreement is approved, FSA and NASA would create the ISRPA. NASA and FSA would create the ISRPA with an organizational charter to plan, develop, market and manage the ISRP on behalf of the two principal stakeholders. Accordingly, the agreement being developed between the partners envisions that each stakeholder would have an influence on the designation of the ISRPA's board members. The following information is from the draft agreement dated June 26, 2003.

The ISRPA Board of Directors (ISRPA Board) would serve without salary compensation and be selected from highly qualified individuals with special experience and skills deemed important to the development of a research ISRP. The members of the ISRPA Board and its Chair would be appointed by the FSA with input from NASA and with each appointment subject to the acceptance of the KSC Center Director. The only proposed constraint to membership identified thus far is that no active duty Civil Service employee of the government, or member or employee of the Florida legislature, judiciary, or governor's office may serve due to conflict-of-interest provisions. Beginning in 2005, at least one member of the ISRPA Board would be chosen from the tenant pool.

The ISRPA Board of Directors would set business and management policies, hire the ISRP's professional manager or management team, and approve contracts and leases with ISRP tenants. All practices would be in accordance with Florida Statutes. Acting in conjunction with the FSA, the ISRPA through its Board would use municipal-type powers as enabled by FSA and the Florida Statute to assess fees and enter into inter-local agreements with other jurisdictions for services such as building inspection and fire protection. The ISRPA would thus be established with sufficient flexibility and power to function similarly to the entities that oversee other successful research parks.

2.3.2.2 Proposed ISRP Management and Structure

The selection of an experienced research park executive director or management team would be critical. Proper administration and promotion of the ISRP must be consistent with best practices if the ISRP is to succeed. FSA and KSC do not have the level of expertise in-house to execute the proposed ISRP business plan. The ISRPA Board would hire an individual, or team of individuals, with the necessary backgrounds to fill this need.

The ISRP Manager (park manager) or Management Team would be responsible for:

- Assuring the integrity of ISRP design concept and architectural standards,
- Monitoring of site developers,
- Assuring compliance with environmental guidelines of the ISRP,
- Assuring compliance with respect to appropriate Federal, and NASA reporting requirements, including processes required for reporting new construction activities, as well as any State or local government reporting,

- Overseeing the real estate management firm or park manager, and its administration of affairs, and extension of authority with respect to entering into contracts and defending against lawsuits,
- Coordinating marketing programs existing for the benefit of ISRP (FSA, NASA, Enterprise Florida, Developers and Park Developer),
- Developing operating policies and procedures, particularly with respect to potential conflicts of interest between and among the stakeholders and private industry/developers,
- Submitting timely management and financial reporting to the Board and its Committees such as Audit, Finance or Marketing, and
- Recommending tenant selection or denial.

If a Management Team is hired, the team would include representatives who collectively would reflect all the necessary disciplines within the park development and maintenance structure. Certain activities required by the ISRP could be outsourced to better manage variable costs associated with maintaining or promoting the ISRP and insure quality service levels at the ISRP by encouraging competition for those services.

A management and financial control structure would be implemented by the management team to ensure ISRP objectives are met. Reporting to the ISRPA Board, and its standing committees, should occur with sufficient frequency and structure to facilitate effective communication with the stakeholders.

To implement effective management of the ISRP and the ISRPA, the following are the key points to the management structure:

a. The ISRPA Board would be a seven-member board, which would serve without compensation (i.e., salary). The members of the ISRPA Board and its Chair would be appointed by the FSA with input from NASA and with each appointment subject to the acceptance of the KSC Center Director.
b. No active duty Civil Servant, member or employee of the Florida legislature, judiciary, or executive office of the governor may serve on the ISRPA Board.
c. Beginning in 2005, at least one ISRPA Board appointment would be a tenant of the ISRP, provided that an appropriate tenant representative is available.
d. The ISRPA Board would oversee the ISRP including all common areas and infrastructure improvements, and would be empowered with all necessary authority to carry out that responsibility in accordance with this Agreement between the Parties.
e. The ISRPA Board would design, construct, and operate ISRP infrastructure and facilities; market, lease, and service ISRP sites to qualified tenants; establish pricing for leases and services, including any connection fees or maintenance assessments; contract for services on behalf of the ISRP; take action against tenants in default or other parties as required; obtain insurance; defend against suits; authorize and approve contracts; establish ISRP policies; employ the ISRP Manager and any required staff; and otherwise perform the business and management functions required for the ISRP to successfully develop and operate.
f. NASA KSC would have the right to review and approve the form and content of the legal instrument arranged by FSA to create the ISRPA Board. NASA KSC would also review and comment on facility construction designs.
g. The ISRPA Board would develop a Management Plan and provide copies to NASA-KSC.
h. ISRPA Board would notify NASA KSC in advance of each ISRPA Board meeting and any of its committee meetings, and NASA KSC would have the right to attend all meetings, except for meetings designated as an executive session.

i. The ISRPA Board would select and hire or contract with a professional manager.
j. The ISRP Manager would be a professional manager possessing qualifications equivalent to or exceeding those prevailing at other research parks. The ISRP Manager would be responsible for overall development and operation of the ISRP in accordance with the lease agreement, the ISRP Management Plan, and all applicable laws and regulations. The position would include specific responsibility for economic development activity, sales and marketing, public relations, evaluation and recommendations regarding proposed uses and tenant applications, financial controls, annual audit, annual report, legal issues, development approval process and construction permits, architectural review, environmental monitoring, tenant services, and code and standards enforcement. The ISRP Manager would also be responsible for promoting the growth of research and technology development activities supportive of the space missions of NASA and the FSA.

2.3.2.3 Land Development Regulations and Design Standards

FSA, under Florida Statute, has municipal powers that include building and utility regulation and health, safety and welfare regulation of ISRP construction and tenant activity. FSA and NASA are jointly developing the ISRP Land Development Regulations and Design Standards Manual (Manual) to serve as both the rulebook and design guide to govern facility design and construction within the ISRP. NASA and FSA would encourage sustainable design consistent with NASA's Sustainable Design Policy. FSA rulemaking authority, under the FSA Board of Supervisors, allows the adoption of municipal-type land development and building construction codes contained within the manual. The manual would have the force of law comparable to City or County local government ordnances

2.3.2.4 Policies and Procedures

In addition to issuing the ISRP Land Development Regulations and Design Standards Manual, FSA and NASA using their respective authorities would adopt and further identify and develop policies and procedures required to govern ISRP tenant activities. These policies and procedures would become a standard part of all tenant lease agreements.

2.3.2.5 Design Approval Committee

The Design Approval Committee (DAC) would consist of at least three members appointed by NASA and the ISRPA Board, and would as a minimum include the NASA ISRP Project Manager, the FSA ISRP Project Manager and the ISRP Manager. The DAC would be authorized to:

- Promulgate and amend from time-to-time a Design Standards Manual
- Preview and approve all plans for the construction or placement of improvements on the site in accordance with all applicable terms, conditions, restrictions, reservations and easements;
- Ensure appropriate records are maintained of submissions, reviews, approvals, and construction activities, and
- Undertake other responsibilities, conditions, restrictions, reservations and easements and the development of ISRP as may be authorized by the ISRPA Board.

The DAC will provide all submissions and designs to the NRB for review and comment. The DAC may also use the services of professional technical advisors, inspectors and contractors

with whom FSA has contracted in the fields of architecture, structural engineering, landscape architecture, civil engineering, construction or planning to evaluate a submission for both its completeness and its technical compliance with all applicable Federal, State and local building and construction codes, and requirements of the Design Standards manual. The technical consultants would make a report to DAC. No construction or alteration of buildings, utilities, signs, pavement, fencing, landscaping or other improvements may be initiated without the lease or sublease holder obtaining proper governmental permits in accordance with applicable regulations, and without plans and specifications having been approved by DAC.

This Design Standards Manual would allow the DAC to process each submittal fairly, consistently, and in a timely manner. The procedure for submission and the content of such plans would be in conformity with the planning and design criteria contained in the Design Standards Manual. Such criteria would not conflict with or be less restrictive than applicable building and design requirements, nor would any approval by DAC violate applicable governmental code or contractual restrictions. The ISRPA Board may, in its sole discretion, grant appropriate exceptions or variances from the Design Standards Manual and Utility Standards Manual, provided that the exception or variance is justified with a certified report by a licensed professional and does not violate applicable governmental code or contractual restrictions.

2.3.2.6 NASA Review Board

The NASA Review Board (NRB) was established by NASA at KSC. The NRB consists of persons who have been appointed by NASA to represent various KSC offices, such as Safety, Environmental, Security, Facilities Engineering, and Comprehensive Planning. The NRB is generally charged with reviewing submitted plans and designs with respect to potential impacts to, or concerns about, KSC areas outside the ISRP or with respect to defined NASA responsibilities within the ISRP. The NRB would collect comments, identify concerns, make recommendations, and provide advice to DAC. The NRB would make its recommendations in writing to DAC.

2.3.2.7 Inter-local Agreements

FSA has the authority and responsibility to establish a municipal service unit and has passed Resolution 2002-04 establishing such a unit. The ISRPA, using these FSA powers, can enter into contracts and agreements with qualified jurisdictions, contractors, inspectors and professional consultants to provide services and ensure that the development of the ISRP complies with all applicable codes, regulations and standards. Examples include:

a. Emergency Services (such as law enforcement and fire protection) would be provided by interlocal agreement with Brevard County, a neighboring municipality, or by contract with the NASA KSC provider.
b. Utility providers are expected to be a mix of governmental or commercial suppliers, or by the ISRPA itself. For example the City of Cocoa could provide water, power might be provided by Florida Power and Light, and the ISRPA could develop reuse water or other utility system for the ISRP.
c. Code compliance would be provided by an ISRPA contracted architectural and engineering consultant or by intergovernmental agreement with Brevard County.

Due to its statutory powers, the FSA, not the ISRPA, would have the authority to approve all such agreements and contracts for all Code compliance and Fire Authority Having Jurisdiction (FAHJ) responsibilities.

2.3.2.8 Transfer of Occupancy and Management Responsibility

The proposed lease agreement with NASA addresses the potential to place up to 130 ha (321 ac) under ISRPA management. Initially the ISRPA would plan development of the entire ISRP but would only manage Phase A. Prior to conveyance of each additional phase the following criteria would be met or exceeded:

1. At least 75 percent of planned build-out would have been attained on each phase previously transferred.
2. At least 75 percent occupancy by tenants on all phases previously transferred would be achieved.
3. All prior land use and land management arrangements with others must have ended or have been taken into account.

The withdrawal of land from USFWS responsibility and lease to FSA would be accomplished in accordance with standard KSC processes.

2.4 ALTERNATIVES CONSIDERED BUT NOT EVALUATED FURTHER

One alternative site, located along the South Kennedy Parkway (SR3) corridor, was initially considered for the proposed ISRP; however, several factors precluded it from further consideration. The site was approximately 40% smaller in total area than recommended, which would significantly limit the size of the ISRP. The site was also immediately adjacent to the agricultural-residential zoning and land use of north Merritt Island. In addition, the Cape Canaveral Air Force Station (CCAFS) was initially considered but later discarded due to the requirement that the ISRP have unrestricted 24-hour access for all ISRP tenants. This would not be possible due to the security requirements associated with the CCAFS.

Two existing research and industrial parks, Central Florida Research Park (CFRP) and Vector Space, were also considered but discarded as options for the facilities proposed as a part of the ISRP. The May 2002 Development Study (Futron 2002a) determined that existing commercial properties do not offer the same amenities or benefits associated with the planned ISRP and therefore would not directly compete for tenants. The Vector Space Park in Titusville is the closest comparable R&D or industrial park to the ISRP. Plans for a major, high-quality hotel project in Vector Space Park have been discussed with the ISRP project team. A first-class hotel facility on the water at the gate of KSC would be viewed very positively as an amenity supporting both the Vector Space Park and ISRP. The CFRP and Vector Space Park are not sufficiently close to the KSC Industrial Area and other NASA facilities to meet the purpose and need of the ISRP.

2.5 COMPARISON OF ALTERNATIVES

The following section compares the alternatives for the proposed development of the ISRP. Specific information on development requirements and resources of each of the alternatives is provided.

2.5.1 No Action Alternative

The No Action Alternative proposes that no development of the ISRP would occur, which would mean that the impacts on the environment associated with development of the ISRP would be avoided. The No Action Alternative would potentially preclude some of the positive fiscal and employment impacts associated with the socio-economics of KSC, the community, and the larger five county region of impact.

Under the No Action Alternative the citrus groves within Preferred Alternative 1 would remain through 2008 under lease to Kerr Foundation. After 2008, the land would revert to undeveloped KSC buffer under management by the USFWS as part of the Merritt Island National Wildlife Refuge (MINWR). The USFWS has a long-term plan to restore the citrus groves to natural vegetation.

2.5.2 Alternative 1

Alternative 1 (Phases A-F) has experienced disturbance to the natural resources by conversion of 76 percent of the site to citrus production approximately 100 years ago. Agricultural irrigation altered surface water flows within the low-lying region of KSC. The conceptual Land Use Plan for this alternative (JEA 2002) would conserve most of the remaining forested wetlands on site (18.1 ha (44.7 ac)), resulting in very low wetland impacts.

Table 2-1 shows a comparison of development requirements and biological resources related to Alternative 1 and Alternative 2. No comparisons, related to the socioeconomic environment (including transportation), are included in Table 2-1 because no difference between the two action alternatives is apparent. Roadway access requirements for the Alternative 1 (Phases A-E) site are less than what would be required for Alternative 2 (Phases A-E) site (Table 2-1). Space Commerce Way provides direct roadway access to the proposed ISRP at the Alternative 1 (Phases A-E) site. The biological resources at Alternative 1 (Phases A-E) are disturbed and contain many fewer State and Federal listed plant and animal species than occur at Alternative 2 (Phases A-E). For the reasons demonstrated in the comparison (Table 2-1), Alternative 1 was selected as the Preferred Alternative.

2.5.3 Alternative 2 and Phase F

The Alternative 2 (Phases A-E) site consists of several high quality natural communities, many associated wildlife and plant species, and other important environmental characteristics. Phase F is comprised mostly of citrus groves and a disturbed wetland. Two east-west drainage ditches along the perimeter of the Alternative 2 (Phases A-E) site and a small borrow pond (< 4 ha (10 ac) in size), which were probably used historically as a water source for ranging cattle, have minimally impacted the surface water within Alternative 2. To minimize wetland impacts, the Alternative 2 Land Use Plan (Dynamac 2003) allows development on 91.5 percent of the land. The proposed site plan for Phases A-E would conserve a total of 25.7 ha (63.5 ac), which would include a large wetland conservation parcel. Infrastructure improvement requirements, especially internal access roadways, would be greater for Alternative 2 (Phases A-E). In contrast, Space Commerce Way near Alternative 1 (Phases A-E) would provide direct access to the proposed ISRP. Sixteen Federal and State listed animals are known or believed to be located on the Alternative 2 (Phases A-E) site. Potentially, 7 of these species would be significantly impacted from the ISRP development action on Alternative 2.

Table 2-1. Comparison of Development Requirements and Environmental Considerations between Alternative 1 and Alternative 2 for the proposed International Space Research Park (ISRP).

Variable for Comparison	***Alternative 1***	***Alternative 2***	***No Action Alternative***
ISRP Development Area and Phase F	138 ha (316 ac)	140 ha (346 ac)	0 ha (0 ac)
Number of Parcels	25	26	0
Percent Developable	76%	57.50%	0%
Percent Open Space	25%	30%	0%
Site Access Modifications	none	required	none
Roadways	4.5 km (2.8 mi)	4.2 km (2.6 mi)	none
Access Roadway	Space Commerce Way	B Ave SW (restricted)	none
Infrastructure Improvements			
Water (consumption estimated at 3,026 kiloliters (kl) per day[1] (800,000 gallons per day)	24" potable main on east side of Kennedy Pkwy; 12" potable main at SLSL, Within existing permit consumption levels	24" potable main on east side of Kennedy Pkwy; feeds to line near proposed entrance on west side of property. Within existing permit consumption levels	n/a
Reclaimed water	not available	not available	n/a
Option 1 Sanitary Sewer / Wastewater (estimated at 606 kl per day[2] (160,000 gallons per day))	pumping to KSC Industrial Area via connection to 8" force main at Range Road to NASA Causeway	pumping to KSC Industrial Area	n/a
Option 2 Sanitary Sewer / Wastewater (estimated at 606 kl per day[2] (160,000 gallons per day))	pumping to Sykes Creek Wastewater Treatment Plant, Brevard County	pumping to Sykes Creek Wastewater Treatment Plant, Brevard County	n/a
Option 1 Solid Waste (estimated at 16,692 kilogram (kg) per day[3] (36,800 lbs per day))	Landfill on KSC	Landfill on KSC	n/a
Option 2 Solid Waste (estimated at 16,692 kg per day[3] (36,800 lbs per day))	contract through Brevard County Solid Waste Management Office	contract through Brevard County Solid Waste Management Office	n/a
Stormwater Management Systems	15 ha (38 ac)	8.5 ha (21 ac)	n/a
Electrical service (115 kilovolt)	available on Kennedy Pkwy and NASA Causeway; substation needed	available on east side of Kennedy Pkwy and at 17th St.; substation needed	n/a
Electrical service (13.2 kilovolt)	routed from SLSL	underground along B Ave SW	n/a

Table 2-1. Continued.

Variable for Comparison	***Alternative 1***	***Alternative 2***	***No Action Alternative***
Natural gas service	nearest KSC Industrial Area; new pipeline required	nearest KSC Industrial Area; new pipeline required	n/a
Transportation demand	demand the same for both sites	demand the same for both sites	n/a
Biological Resources			
Jurisdictional Wetlands	23.8 ha (58.8 ac)	27.6 ha (68.2 ac)	n/a
Jurisdictional Wetland Impacts	5.1 ha (12.5 ac)	1.9 ha (4.7 ac)	n/a
Jurisdictional Surface Water Impacts	3.0 ha (7.3 ac)	1.5 ha (3.7 ac)	n/a
Habitat Impacts	117.8 ha (291.0 ac)	86.8 ha (214.4 ac)	n/a
Federally and State Listed Wildlife Species - Potential Significant Impacts	1	7	0
Federally and State Listed Plant Species - Potential Significant Impacts	0	10	0
Cultural Resources			
Archeological	very low potential adverse impacts	potential adverse impacts	n/a
Historical	potential adverse impacts	very low potential adverse impacts	n/a
Socioeconomics	potential impacts the same for both sites	potential impacts the same for both sites	n/a

n/a = not applicable

[1] estimated at 0.38 kl/person/day (100 gallons/person/day) (www.epa.gov/safewater/wot/howmuch.html)

[2] estimated at 0.077 kl/person/day (20 gallons/person/day) (www.ci.tucson.az.us/dsd.sewagecollectionpage_1.pdf)

[3] estimted at 2.09 kg/person/day (4.6 lbs/person/day) (www.epa.gov/epaoswer/non-hw/muncpl/facts.htm)