GUIDELINES FOR COMPLIANCE WITH THE NATIONAL ENVIRONMENTAL POLICY ACT AND RELATED ENVIRONMENTAL REVIEW STATUTES FOR THE LICENSING OF COMMERCIAL LAUNCHES AND LAUNCH SITES

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Revised

Office of the Associate Administrator for Commercial Space Transportation
Federal Aviation Administration
U.S. Department of Transportation
Washington, DC 20591

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DISCLAIMER

These guidelines provide additional guidance to FAA commercial space launch site license applicants and others involved in commercial space launch site actions, on the format and content of FAA environmental assessments and impact statements.

These guidelines are not intended to replace or overrule FAA Order 1050.1D, NEPA or other environmental laws. License applicants and others involved in commercial space launch site actions are required to comply with FAA Order 1050.1D, NEPA and other applicable environmental laws.

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LIST OF ABBREVIATIONS AND ACRONYMS

ARPA	Archaeological Resources Protection Act
AST	Associate Administrator for Commercial Space Transportation
CAA	Clean Air Act
CATEX	Categorical Exclusion
CCD	Coastal Consistency Determination
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFC	Chlorofluorocarbons
CFR	United States Code of Federal Regulations
CSLA	Commercial Space Launch Act
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
DEIS	Draft Environmental Impact Statement
DOD	Department of Defense
DOT	Department of Transportation
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
EPA	Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FEIS	Final Environmental Impact Statement
FIA	Federal Insurance Administration
FONSI	Finding of No Significant Impact
FR	Federal Register
HAP	Hazardous Air Pollutant
HCFC	Hydrochlorofluorocarbons
HCl	Hydrogen Chloride
HMTA	Hazardous Materials Transportation Act
HMTUSA	Hazardous Materials Transportation Uniform Safety Act
ISTEA	Intermodal Surface Transportation Efficiency Act
MMH	Monomethyl Hydrazine
MMPA	Marine Mammal Protection Act
N_2O_4	Nitrogen Tetroxide
N/A	Not applicable
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Reparation Act
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NOA	Notice of Availability
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NMFS	United States National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
NWSRS	National Wild and Scenic Rivers System

ODS	Ozone Depleting Substance
OPA	Oil Pollution Act
PL	Public Law
PSD	Prevention of Significant Deterioration
RCRA	Resource Conservation and Recovery Act
ROD	Record of Decision
SARA	Superfund Amendment and Reauthorization Act
SHPO	State Historic Preservation Officer
THPO	Tribal Historic Preservation Officer
TSCA	Toxic Substances Control Act
TSD	Treatment, Storage and Disposal
UDMH	Unsymmetrical Dimethylhydrazine
UIC	Underground Injection Control
U.S.C.	United States Code
USFWS	United States Fish and Wildlife Service
UST	Underground Storage Tank
VOC	Volatile Organic Compounds

1.0 INTRODUCTION

49 U.S.C. Subtitle IX, ch. 701, the Commercial Space Launch Act of 1984, recodified at Commercial Space Launch Activities 49 U.S.C. § 70101 et seq., (referred to herein as the CSLA or the Act), [implemented by the Commercial Space Transportation Licensing Regulations, 14 C.F.R. Ch. III], authorizes the Secretary of Transportation to license, oversee and coordinate the operation of commercial launch sites in the United States or those operated by U.S. citizens abroad. The CSLA was enacted to encourage, facilitate and promote the establishment of a competitive United States commercial space transportation industry.

In 1984, by Executive Order 12465 (Commercial Expendable Launch Vehicle Activities), the U.S. Department of Transportation (DOT) was charged with ensuring the protection of public health and safety, the safety of property, national security interests, and foreign policy interests of the United States through its commercial launch licensing process. Under the Executive Order and the CSLA, DOT has dual responsibilities: to license and regulate all U.S. commercial launch activities to ensure that they are conducted safely and responsibly; and to promote, encourage, and facilitate growth of the U.S. commercial space transportation industry.

In November 1995, as part of a DOT reorganization, these responsibilities were transferred to the Federal Aviation Administration (FAA). Within FAA, the Associate Administrator for Commercial Space Transportation with the office designation of AST has primary responsibility for administering the CSLA and implementing regulations and requirements. In October 1998, Congress enlarged FAA's role in the scope of commercial space launch activities to include licensing of reentry vehicles and reentry sites.

The National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S.C. 4321 et seq.) requires all federal agencies to prepare detailed statements on major federal actions significantly affecting the quality of the human environment (42 U.S.C. 4332(C)). NEPA's implementing regulations are administered by the Council on Environmental Quality (CEQ) (40 CFR 1500 et seq.) The purpose of NEPA analysis is to ensure full disclosure and consideration of environmental information in federal agency decision making, and to inform the public of potential impacts and alternatives of a proposed federal action before decisions are made and actions are taken. The decision to license a commercial launch or the operation of a commercial launch site by FAA is considered a major federal action; consequently, FAA is responsible for analyzing the environmental impacts associated with licensing proposed commercial launches or proposed commercial launch sites.

Furthermore, pursuant to Executive Order 12114, Environmental Effects Abroad of Major Federal Actions, FAA is required to consider environmental impacts of certain overseas projects requiring licenses. Executive Order 12114 requires federal agencies to conduct environmental review for major federal actions significantly affecting the environment of the global commons outside the jurisdiction of any nation (e.g., the oceans or Antarctica); affecting a foreign nation not participating with the United States and not otherwise involved in the action; and affecting the environment of a foreign nation which the federal action provides to that foreign nation either

a.) a product or physical project producing a principal product or an emission or effluent which is prohibited or strictly regulated by federal law in the United States because its toxic effects on the environment creates a serious public health risk, or

b.) a physical project which in the United States is prohibited or strictly regulated by federal law to protect the environment against radioactive substances.

Executive Order 12114 also requires environmental documentation for major federal actions outside the United States that significantly affect natural or ecological resources of global importance designated for protection under the Executive Order by the President, or, in the case of such a resource protected by international agreements binding on the United States, by the Secretary of State.

As previously stated, **FAA is responsible for preparation of NEPA analysis for licensing commercial launches and launch sites.** FAA Order 1050.1D implements NEPA, DOT Order 5610.1C, "Procedures for Considering Environmental Impacts," and 27 other environmental statutes, directives and orders (FAA Order 1050.1E is in development). NEPA analysis can be accomplished through various forms of environmental documentation depending on the size and type of proposed action. Such documentation can be a Categorical Exclusion (CATEX), an Environmental Assessment (EA), or an Environmental Impact Statement (EIS). Each type of NEPA documentation is discussed in detail in Section 3.0 of these guidelines.

These guidelines are intended to provide useful information and non-regulatory guidance on the type of NEPA analysis used by FAA in the commercial launch licensing process. In addition, Appendix E provides brief descriptions of potentially relevant federal environmental statutes and regulations that may be applicable to, or run concurrently with, NEPA compliance.

2.0 PURPOSE

These guidelines are intended to aid applicants for launch operator licenses in understanding FAA's policies and procedures for compliance with NEPA requirements by providing information on the NEPA process, types of NEPA documentation, related environmental statutes that bear on the NEPA process, and the importance of coordinating the NEPA process with the development process for proposed commercial launch programs and projects.

CEQ regulations implementing NEPA establish government-wide procedures for federal agencies. DOT Order 5610.1C sets policies and procedures for DOT actions, and applies to FAA as part of DOT. Similarly, FAA Order 1050.lD establishes FAA policies and procedures for the preparation of NEPA documentation and applies to AST as part of the FAA (FAA Order 1050.1E is in development). This guidance is intended for use as a tool to assist in planning and achieving compliance with NEPA and other federal environmental requirements for development of commercial launch sites. This guidance is not intended to establish explicit procedures, but instead to summarize provisions of statutes, regulations and orders as generally applied in the licensing process for launch sites. Section 3.0 provides guidance on the NEPA process and associated documentation for proposed licensing actions to be considered by FAA. The appendices address preparation and review of EAs and EISs and coordination with related federal environmental compliance requirements.

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3.0 NEPA PROCESS AND DOCUMENTATION

To comply with the spirit as well as the letter of NEPA, the NEPA process should be incorporated early in an applicant's planning of a proposed action, before decisions are made and actions taken. NEPA regulations state that "Environmental impact statements shall serve as the means of assessing the environmental impact of proposed agency actions, rather than justifying decisions already made" (40 CFR 1502.2(g)). Selection of appropriate NEPA documentation, as well as selection of lead and cooperating agencies (see Section 3.1), are facilitated by initiating scoping early in a planning process to identify potentially significant environmental impacts. Additionally, both EAs and EISs should include an analysis of a reasonable range of alternatives to the proposed action (discussed in further detail in Section 3.5.1). With respect to commercial launch sites, various site locations and/or differing methodology to carry out certain technical components of the proposed action could be analyzed as alternatives.

The licensing of commercial launches serves as the trigger for NEPA analysis. The applicant, or action proponent, is required to provide baseline environmental data for the proposed site, impacts analysis of the proposed action on the environment, etc. for use by FAA in the NEPA process. Early in the process the action proponent should:

- Consult FAA regarding level and scope of environmental information required in support of application;
- Conduct necessary studies to determine impact of proposed action on human environment;
- Consult federal, regional, state, and local agencies and other interested parties including Tribal governments to identify environmental factors and permitting requirements;
- Submit applications for all required permits or approvals;
- Notify FAA of other federal, regional, state, local, and Indian tribe actions required for project completion; and
- Notify FAA of private persons and organizations interested in the proposed action.

3.1 Early Application of NEPA

CEQ regulations place limits on project actions taken before the NEPA process is complete. Until a federal agency issues a Record of Decision (ROD) for an EIS, or a Finding of No Significant Impact (FONSI) for an EA, no action concerning the proposal should be taken that would have an adverse environmental impact or would limit the choice of reasonable alternatives to the proposed action (40 CFR 1506.1(a)). Therefore, to facilitate compliance with NEPA, applicants for a launch operator license should consult with FAA at the beginning of their planning process, before committing to a specific launch site and prior to detailed design and engineering studies. This approach will prevent the applicant from **prematurely limiting the choice of reasonable alternatives** or potentially jeopardizing its chance of receiving a license from FAA.

It is FAA's policy that, to the maximum extent possible, the NEPA process should be used to document compliance with other statutory environmental review and coordination requirements, applicable international agreements, and other substantial environmental and analysis requirements. Once FAA has been contacted by an applicant with a conceptual or preliminary design for a proposed launch site, FAA can initiate preparation of an EA or an EIS. FAA can issue a Notice of Intent (NOI), (discussed in detail in Section 3.7), to officially initiate the NEPA process. Early coordination with FAA by the applicant will also allow FAA to assist

with determining the types of information, participation, and coordination required to execute the NEPA process.

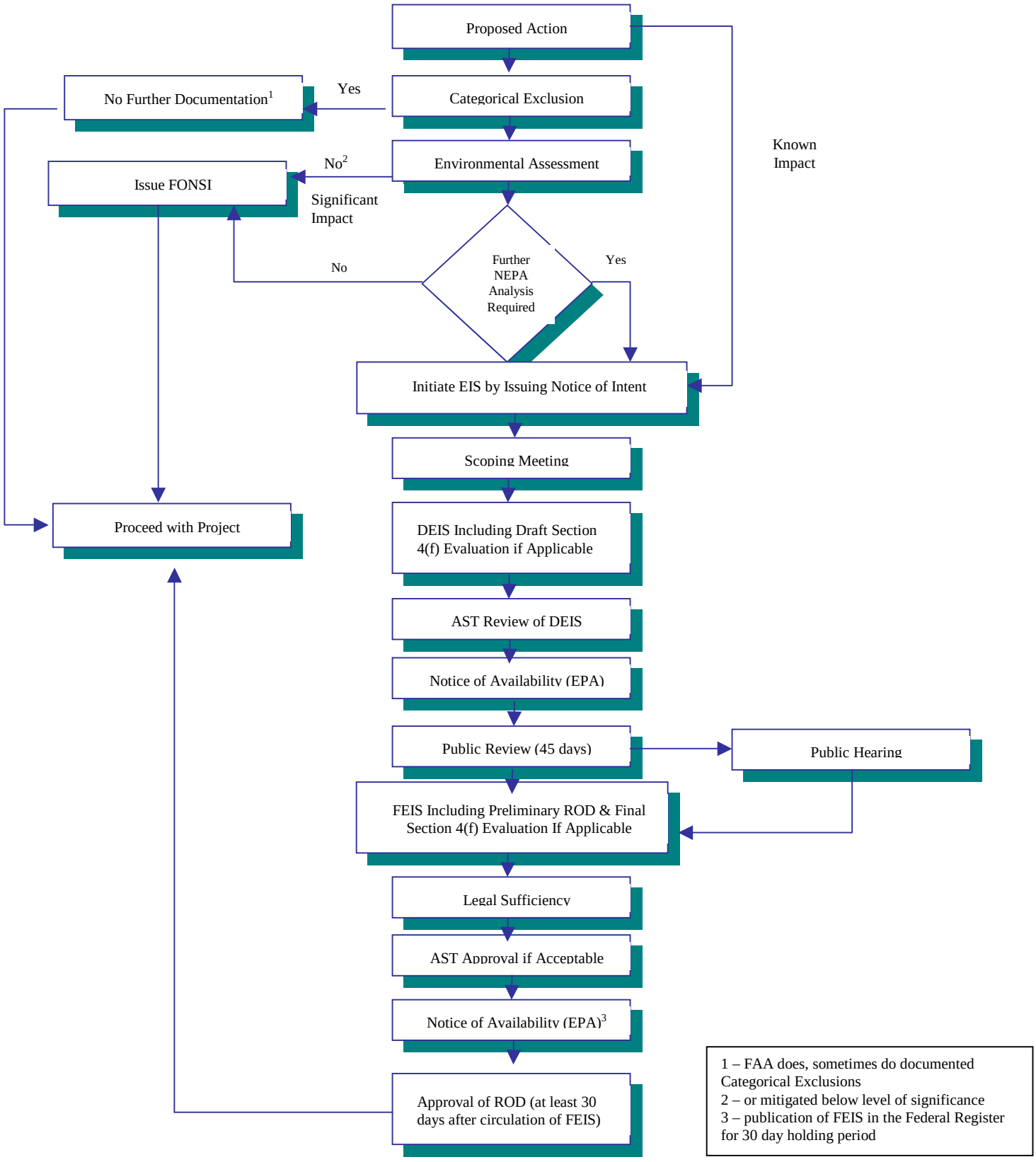
During the early stages of the NEPA planning process, FAA and the applicant should identify related federal international agreements, federal or state environmental statutes and regulations, i.e., those with review requirements that may affect the FAA licensing decision or applicant's implementation of a proposed action. FAA, in consultation with the applicant, determines if there are any other federal or state agencies, which may be cooperating agencies under NEPA, having jurisdiction by law or special expertise with respect to the proposed action. FAA may determine that the cooperating agencies can prepare portions of a NEPA document in areas where they possess special expertise (40 CFR 1501.6 and FAA Order 1050.1D, Paragraph 23). When an application is submitted for an environmental permit that requires review by an environmental permitting agency (e.g., Clean Water Act Section 404 permit from the U.S. Army Corps of Engineers to dredge or fill wetlands), input from the permitting agency should be actively sought throughout FAA's NEPA process. Moreover, the permitting agency may be invited to be a cooperating agency. This involvement may enable the environmental permitting agency to use or adopt the FAA NEPA document, thereby avoiding possible delay from its own separate review.

CEQ regulations state that agencies **shall integrate the requirements of NEPA and other planning and environmental review procedures required by law** or agency practice so that the procedures can run concurrently rather than consecutively (40 CFR 1500.2(c)). Otherwise, unnecessary delay may result when inadequate attention is given to environmental requirements early in the planning process. For example, because construction cannot begin until the NEPA process has been completed, the completion of an EA or EIS, as well as other environmental review processes, become critical path items. As a result, a ripple effect is generated if preparation of an EA or EIS is delayed until the detailed design phase. (In many instances the agency with authority for environmental permitting will not commence review of permit applications until a draft EIS, at a minimum, has been circulated.) Consequently, the permitting process may no longer be controlled by availability of detailed design information, but instead by availability of a draft EIS. In addition, an applicant's schedule may be further impacted if FAA, cooperating agencies, or the public have objections to information submitted for use when a draft EIS is submitted for review. Depending on the scope and magnitude of the objections, resolution could impact project schedules.

Even when an application will be submitted for an environmental permit that does not require NEPA review (e.g., permits under the Clean Air Act), early involvement of the environmental permitting agency in the FAA NEPA process could ensure that information needed for the permit is available when the application for the environmental permit is submitted.

The following sections describe NEPA procedures, including scope and content of each type of NEPA documentation. Figure 1 illustrates the overall NEPA process.

FIGURE 1
NEPA PROCESS FLOW CHART



1 – FAA does, sometimes do documented Categorical Exclusions
2 – or mitigated below level of significance
3 – publication of FEIS in the Federal Register for 30 day holding period

3.2 Scoping Process: Notice of Intent/Public Involvement

Once it is determined that an EIS is required for a proposed action scoping is conducted to:

- Solicit public opinion and other agency jurisdiction;
- Determine the scope and significant issues to be analyzed in depth;
- Identify and eliminate from detailed study issues that are not significant;
- Allocate assignments for preparation of the EIS among lead and cooperating agencies;
- Identify other environmental review and consultation requirements; and
- Indicate the schedule for preparation of the EIS and decision-making process (40 CFR §1501.7(a)).

In addition, although a lead agency is responsible for managing the scoping process, cooperating agencies also have a responsibility under the CEQ regulations to participate in scoping (40 CFR §1501.6(b)).

After making the decision to prepare an EIS, the lead agency must publish a notice of intent (NOI) in the *Federal Register*, as soon as practical (40 CFR §1501.7). Publication of an NOI initiates a public scoping period and the EIS process. The NOI invites comments and suggestions on the proposed scope of the EIS, including environmental issues and alternatives, and invites participation in the NEPA process. Although scoping meetings are often held, they are not required. The scope of issues to be addressed may also be determined from written comments and telephone calls. If scoping meetings are held, the date, time and location(s) are included in the NOI. In addition to the *Federal Register* NOI, agencies are required to make diligent efforts to notify and involve the public through, for instance, announcements in local newspapers, letters to interested or affected federal, state, and local government officials, and interested citizens and/or community groups (40 CFR §1506.6).

3.3 Lead Agency Responsibility

The lead agency is the federal agency preparing or taking primary responsibility for preparation of NEPA documentation (40 CFR §1508.16). Hence, although EA or EIS material submitted by an applicant for a launch operator license from FAA may be used in whole or in part to develop FAA's EA or EIS, FAA, as the lead agency, **is responsible for facts, opinions, and judgments upon which a final environmental determination is based**. This is true whether an applicant prepares the EA or EIS material directly or whether an applicant uses a contractor to prepare the material. When an applicant for a federal license or permit prepares an EA or submits information for use in an EIS; FAA, as the lead federal agency, furnishes guidance and independently evaluates the document prior to FAA approval and FAA takes responsibility for the scope and content of the document (40 CFR §1506.5). FAA will ensure that all documentation for which it is responsible presents a full, accurate, and fair assessment of all potential environmental consequences of the proposed action and fully complies with all applicable federal international agreements, statutes and regulations. In the event that a state agency sponsors an application for operation of a commercial launch site, FAA may invite the state agency to join with FAA as a "joint lead agency" for purposes of preparing environmental documentation, (40 CFR§1501.5(b) and FAA Order 1050.1D, paragraph 23).

If the applicant uses a contractor to prepare an EIS, **the contractor must be approved by the lead agency (FAA), who will be responsible for independently evaluating and approving the NEPA document, taking responsibility for its scope and content, (40 CFR §1506.5(c) and FAA Order 1050.1D, paragraph 52).**

Generally, FAA uses the third party contracting mechanism available pursuant to the CEQ regulations to generate commercial launch site NEPA documentation. Under this procedure, the license applicant may submit a list of proposed contractors to FAA to generate the NEPA documentation under the oversight of FAA. FAA will select the contractor. The contractor may be hired by the applicant to work for the benefit of and under the oversight of FAA (List of Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations, Question and Answer Number 16).

3.4 Categorical Exclusions

A categorical exclusion is defined in the CEQ regulations as a category of actions which, do not individually or cumulatively have a significant effect on the human environment and which require neither an environmental impact statement nor an environmental assessment (40 CFR §1508.4). Essentially, a Categorical Exclusion, or CATEX, is an action taken by a federal agency that is routine and does not have a significant effect on the environment. Each federal agency establishes a list of CATEXs, and must document its decision not to prepare an EA or an EIS on the basis of one or more CATEXs. CATEXs, however, are applicable only if the proposed action that is a listed exemption would not otherwise cause a significant impact on the environment. Actions which would normally be categorically excluded may be subject to more intensive environmental analysis if extraordinary circumstances, including a high degree of environmental controversy, apply to the project. FAA Order 1050.1D, Paragraph 31, sets forth the agency's categorical exclusions from the requirement for an EIS or FONSI. FAA Order 1050.1D, Paragraph 32, describes the extraordinary circumstances under which a proposed Federal action, normally categorically excluded, shall be the subject of an environmental assessment.

3.5 Environmental Assessments

An Environmental Assessment (EA) is generally prepared by a federal agency to:

- Determine whether there will be significant impacts from the proposed action; or
- When it is anticipated that there will be no significant environmental impacts but the proposed action does not fall into an established CATEX; or
- The proposed action has potential impacts that can be mitigated to less than significant levels.

An EA is designed to briefly provide sufficient evidence and analysis for determining whether to prepare an EIS or a FONSI. This evidence aids an agency's compliance with NEPA when preparation of an EIS is determined not to be necessary, or facilitates preparation of an EIS when necessary (40 CFR §1508.9(a) and FAA Order 1050.1D Paragraph 35). Although an EA is less detailed that an EIS, it must include a brief discussion of the purpose of and need for the proposed action, an analysis of alternatives to the proposed action (including the no action alternative), a description of the affected environment, the environmental impacts of the

proposed action and the alternatives, and a list of agencies and persons consulted and appendices (if any) (40 CFR §1508.9(b) and FAA Order 1050.1D Paragraph 36).

While the CEQ regulations discuss the scoping process in the context of EISs, in practice, FAA may determine that the preparation of an EA requires a similar scoping effort, in terms of identifying environmental impacts of the proposed action and in contacting and coordinating with appropriate agencies (e.g., the U.S. Fish and Wildlife Service [USFWS] for the potential presence of threatened and endangered species, the U.S. Army Corps of Engineers for wetlands, or the State Historic Preservation Officer for cultural resources).

An EA should contain, as appropriate, the following information:

- A clear and concise description of the proposed action, including drawings, maps, and charts, if directly pertinent to analyzing environmental consequences of the proposed action;
- A statement identifying the purpose and need for the proposed action;
- Alternatives to the proposed action, including the no action alternative;
- A description of the existing environment affected by the proposed action and alternatives to the proposed action, in sufficient detail to permit a meaningful evaluation of the potential environmental consequences of the proposed action;
- An assessment of potential impacts of the proposed action and alternatives to the proposed action, including direct, indirect, beneficial, adverse, significant and not significant;
- A discussion of potential cumulative and long-term environmental effects from the proposed action;
- A discussion of the degree of controversy on environmental grounds by impact category if controversy is an issue; and
- Mitigation measures when they are intended to reduce impacts to less than significant levels.

3.6 Finding of No Significant Impact

A FONSI issued by FAA is the decision document that briefly presents reasons why an action, not otherwise categorically excluded, will not have a significant effect on the human environment and for which an environmental impact statement will therefore not be prepared (40 CFR §1508.13 and FAA Order 1050.1D Paragraph 40). After completing the EA, the FAA shall evaluate the document to determine if an alternative which provides a good solution to the problem has no significant environmental impacts. Unless there is an overriding reason for not selecting such an alternative, the FAA shall then proceed with the preparation of a FONSI (FAA Order 1050.1D, Paragraph 40).

The FONSI may be attached to an EA, or can be issued independently by including a summary of the EA (FAA Order 1050.1D, Paragraph 41). The following are general guidelines for preparing a FONSI:

Proposed Action and Purpose - A summary of the proposed action and its purpose, along with an explanation as to why the proposed action would not have a significant impact on the environment and therefore would not require an EIS.

Alternatives Considered including the No Action Alternative – Briefly describe the alternatives to the proposed action, including no action, that were analyzed in the EA and include objective screening criteria used to eliminate alternatives from more detailed analysis.

Environmental Impacts – Briefly describe environmental impacts of the proposed action and alternatives, including no action, carried through the more detailed analysis.

Mitigation - If impacts from the proposed project are significant impacts that are planned to be mitigated to less-than-significant impacts, describe the mitigation plans.

Availability - Name, address, and telephone number to obtain copies of the EA.

Contact - Name, address, and telephone number to obtain additional information about the proposed action and the NEPA process.

Determination – along with documentation of the proposed action's consistency or inconsistency with community planning.

- If the FONSI includes a DOT Act, Section 4(f) determination, it shall also include the material called for in DOT Order 5610.1C and must reflect consultation with the Department of the Interior and, where appropriate, the Department of Agriculture or the Department of Housing and Urban Development.

- Where a federal action affects wetlands, document opportunities for early public review, the agency's conclusion that there is no practicable alternative to the proposed action, and a statement that the proposed action includes all practicable measures to minimize harm. Also document consultations with the USFWS and the pertinent State resources agency.

- Where affected properties are included in or eligible for inclusion in the National Register of Historic Places, document the outcome of consultation with the State Historic Preservation Office and evidence that the Advisory Council on Historic Preservation reviewed the determination of no adverse effect.

- Where federally assisted activities affect the coastal zone in a state with an approved coastal zone management program, the FAA's views on the relationship to the approved coastal zone management program and the state's determination of the proposal's consistency with the program should be reflected in the FONSI.

- Where an action affects prime or unique farmlands or farmlands of state or local importance, document coordination with the U.S. Department of Agriculture.

FONSIs are not automatically required to go through the same public review and comment process as a ROD for an EIS. However, for proposed actions with **effects of national concern**, a FONSI is subject to public review and comment and must be published in the *Federal Register (*40 CFR §1506.6(b)(2)) (see Section 3.7 below). Because commercial launches and launch sites are of national concern, FAA routinely publishes proposed FONSIs in the *Federal Register* and in other publications when appropriate. Additionally, if a proposed action is, or is

closely similar to, **one which normally requires the preparation of an EIS**, or the nature of the proposed action is **one without precedent**, then FAA may decide that the FONSI should be made available for **public review and comment for 30 days** before its final determination is made (40 CFR §1501.4(e)).

3.7 Environmental Impact Statements

An EIS is prepared when a proposed action may likely result in significant impacts to the environment. It should inform decision makers and the public of reasonable alternatives that would avoid or minimize adverse impacts or enhance the quality of the human environment.

An EIS should be analytical and concise, with only enough description of non-significant issues to show why more study is not warranted. Analysis of significant impacts requires consideration of context and intensity (40 CFR §1508.27). Context requires an analysis of the proposed action in several contexts, or settings, both short and long term. Intensity addresses the severity of the impact. The length of an EIS should reflect the complexity of potential environmental issues and project size.

CEQ regulations (40 CFR §1502.10) provide the following format:

a.) Cover Sheet
b.) Summary
c.) Table of Contents
d.) Purpose of and Need for Action
e.) Alternatives including Proposed Action
f.) Affected Environment
g.) Environmental Consequences
h.) List of Preparers
i.) List of Agencies, Organizations, and Persons to whom copies of the statement are sent
j.) Index
k.) Appendices (if any)

3.7.1 Cover Sheet, Summary, and Table of Contents

The cover sheet should not normally exceed one page. It includes basic information such as the lead agency (FAA) and any cooperating agencies; the title and location of the proposed action; the names, addresses and telephone numbers of agency contacts; a designation of the EIS as draft, final or supplemental; a one-paragraph abstract of the EIS; and a date by which comments must be received (40 CFR §1502.11). If an entity or organization other than FAA collaborated with FAA to prepare the document, the cover sheets should include information about the entity or organization.

The summary should adequately and accurately summarize the EIS and stress major conclusions, areas of controversy (including issues raised by agencies and the public), and the issues to be resolved (including the choice among alternatives). The summary will normally not exceed 15 pages.

The table of contents can include not only the standard listing of EIS section and subsection headings, but can also include a list of tables, a list of figures, and a list of acronyms used in the EIS.

3.7.2 Purpose of and Need for Action

The purpose and need section should briefly specify the underlying purpose and need to which FAA is responding in proposing the alternatives, including the proposed action (40 CFR §1502.13). It is crucial that this section be as succinct and concise as possible. The purpose and need section for a proposed action defines the parameters for a reasonable range of alternatives. An alternative is deemed not reasonable if it fails to meet the purpose and need for the proposed action. At the same time, the range of alternatives included in the document should not be inappropriately limited for the purpose of reducing environmental impacts associated with the proposed action.

3.7.3 Alternatives including Proposed Action

This section provides a description of the range of alternatives, including the proposed action and the no action alternative. The alternatives should be presented in a clear, concise and comparative format, so as to define the issues, inform the public, and provide a clear basis for choice among the options. Each alternative shall be rigorously explored and objectively evaluated. For alternatives eliminated from detailed study, this section should briefly discuss the reasons why they were eliminated.

Ultimately, the proposed action should be described in sufficient detail and accuracy to identify the potential impacts from commercial launch site development and operation. The description should include activities from the construction, operation, and post-operation stages. The construction phase should include information on site clearing, access road construction, parking lots, utility connections, other related construction and the amount of land required for such activities, the duration of the construction phase, and the size of the work force. The operational phase can be subdivided into pre-launch, launch, and post-launch. The description of the operational phase should include the project and related support operations or facilities on-site and off-site, including identification of maintenance and transportation and traffic activities. Overall launch facility operations information will also encompass launch vehicles, flight operations, launch operations, flight path, and size of launch site. Facilities anticipated to be associated with these functions should also be addressed as part of the proposed action.

In addition, the description of the proposed action and alternatives should identify procedures that limit environmental impacts from normal operations, safety systems, pollution prevention controls, and treatment and disposal methods for waste streams (including emissions). The post-operational description should include reasonably foreseeable future requirements such as site close-out and site restoration activities. When FAA has only limited information on decontamination, decommissioning, and other post-operational activities, depending on the amount of information, FAA may determine that the EIS should state that additional or supplemental NEPA documentation may be required for such activities.

The basic functional elements of a commercial launch site will generally be similar to those of existing government launch sites. The configuration is likely to consist of some combination of the following:

- Launch pad,
- Launch control center,
- Payload processing,
- Vehicle and other assembly,
- Processing facilities for vehicle and payload integration,
- Operation support center,
- Communications and control (e.g., range safety tracking and telemetry),
- Administration and technical support facilities,
- Maintenance facilities,
- Site utilities,
- Access roads,
- Parking, and
- Public/media areas.

Launch Pad. The launch vehicle type determines the launch pad configuration. Selection of the launch vehicles to be used for a given mission is a function of both payload size and orbit, i.e., a heavier payload taken to a higher orbit requires a larger launch vehicle. A launch facility developer planning to launch a variety of launch vehicle sizes must design for the largest vehicle likely to be used.

Launch Control Center. Telecommunications is a critical off-site function whose infrastructure supports overall launch facility operations as well as vehicle tracking and other in-flight control and monitoring activities. Both conventional and special communications facilities will be required for voice, data, and image transmissions in connection with these purposes.

Operations Support Facilities. Pre-launch space transportation activities include receipt of the launch vehicle stages, launch vehicle storage, inspection of launch vehicle components, and assembly of the launch vehicle. Other launch-related activities include general and technical maintenance, ground transportation, launch vehicle maintenance, fueling operations, and radar and other tracking. These activities are often housed in support buildings, as are emergency services that must be available during a launch in case of an accident or aborted mission at the launch site.

Site Utilities. Electrical power is used in the operation of range data acquisition systems such as tracking radars, telemetry, communications, antennas, and electro-optical facilities. Instrumentation support systems such as command transmission, surveillance radar, meteorological monitoring, and safety information computation and display will also require electricity. Water facilities are necessary to the operation of wash systems, for fire protection systems within the facilities safety, and for potable water needs. A water deluge system may not be required if launch vehicles are of the so-called “Dry Bucket” type. For some types of vehicles, it may be necessary to flush each pad after launch, as well as to have deluge water for thermal and acoustic energy suppression. Water for these purposes can be brackish. Requirements for potable water will be those normally associated with personnel in an industrial operation.

Wastewater treatment facilities will be necessary to collect, process, and dispose of sewage and other wastewater. Launch operations will not result in significant amounts of solid waste. Storm water management systems may also be required for the control and management

of storm water discharges from industrial areas. An EIS should address storm water management discharge impacts.

Hazardous wastes are generated at launch facilities. Among other activities, post-launch activities (i.e., pad refurbishment) will generate hazardous waste. These wastes may be contaminated with metals, solvents, and propellants. An EIS should discuss pollution prevention activities, how launch facility design and operation will minimize the generation of residual hazardous contamination, and how residual waste will be effectively managed.

CEQ regulations state that identification of an agency's preferred alternative must occur at the final EIS stage, but can be included in a draft EIS if a preference exists at that stage. Federal agencies cannot commit resources in a manner that would prejudice selection of alternatives before making a final decision (40 CFR §1502.2(g)).

Reasonable alternatives for a commercial launch site may include, but are not limited to:

- Alternative launch facility locations,
- Alternative scope of the launch facility (e.g., magnitude and complexity of perspective launch missions), and
- Alternative extent of launch facility operations.

3.7.4 Affected Environment

For the EIS process to culminate in an accurate determination of potential impacts from a proposed commercial launch facility, existing (also referred to as baseline) conditions at and in the immediate vicinity of a proposed site and site alternatives must be identified and described. Descriptions of affected environments should be limited to information that directly relates to the scope of the proposed action and alternatives. Effort and attention should be concentrated on important issues, including those issues that will result in significant impacts. CEQ regulations state that data and analyses in an EIS should be commensurate with the importance of the impact, with less important material summarized, consolidated, or simply referenced (40 CFR §1502.15). Overall, baseline data should include descriptions of air quality, water quality/resources, land use, noise receptors, biological resources, geology and soils, cultural resources, visual resources, health and safety issues, socioeconomic issues, environmental justice, and airspace issues.

3.7.5 Environmental Consequences

This section presents an analysis of potential environmental impacts that may result from the development and operation of commercial launch sites, including the impacts of commercial launches. The environmental consequences of operating commercial launch sites, and in particular the impacts of commercial launches themselves, should tier off FAA's Programmatic Environmental Impact Statement for Commercial Launches (Draft dated September 7, 1999). The potential impacts described below should be considered generic; each NEPA document covering proposed launch site alternatives will need to address specific characteristics of a proposed site and site alternatives. Generally, the resources and issues covered in the Affected Environment section should be correspondingly addressed in the Environmental Consequences section, including but not limited to air quality, water quality/resources, land use, noise receptors, biological resources, geology and soils, cultural resources, visual resources and light emissions, health and safety issues, socioeconomic issues, environmental justice, and airspace issues.

Environmental consequences analysis should address both direct and indirect impacts. Direct impacts are "caused by the action and occur at the same time and place" (40 CFR §1508.8(a))." Indirect impacts are reasonably foreseeable effects of the action that are likely to be manifest in the future or at some distance from the site (40 CFR §1508.8(b)). Possible conflicts between the proposed action and the objectives of federal, regional, state and local land use plans, policies and controls should be discussed (40 CFR §1506.2(d)).

Federal agencies can, and should, address beneficial impacts, in addition to adverse impacts, in NEPA documents (40 CFR §1508.8(b)). Analysis of adverse impacts should include and delineate between significant impacts (the threshold for preparation of an EIS as opposed to an EA) and non-significant impacts. The level of detail provided through data and analyses for each environmental impact should be commensurate with the degree of the impact (40 CFR §1502.15). For example, if a proposed action would not have any direct or indirect effect on ground water, the EIS need not address ground water in detail, but should simply state that the issue was considered and that the project would not impact the resource. Conflicts between the proposed action and federal, regional, state or local planning should be discussed. Connected, similar, and cumulative actions should also be discussed.

An EIS must identify cumulative impacts of a proposed action (40 CFR §1508.25(a)(2)). Cumulative impacts are those that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such actions (40 CFR §1508.7). Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR §1508.7).

In preparing an EIS for development and operation of a commercial space launch site, FAA may determine that maximum-case data should be used for both the number of launches from the site and launch vehicle size and attendant impacts. The use of maximum-case data will provide coverage of the largest reasonable and foreseeable envelope of impacts, even if initial plans are less extensive than the maximum case.

Air Quality. Air quality is regulated by the Clean Air Act (CAA) of 1970 and the Amendments of 1977 and 1990. Under the CAA, National Ambient Air Quality Standards (NAAQS) are established to protect public health and welfare from high pollution levels by defining minimum acceptable levels of air quality to be achieved through the nation for criteria pollutants. Criteria pollutants are: ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, particulate matter of 10 microns or less in diameter, and lead. The Environmental Protection Agency (EPA) specifies whether certain areas are in attainment or non-attainment for NAAQS. The EPA addresses mobile sources, such as aircraft, in its assessments of attainment status, but the EPA does not currently address launch vehicles. Although launch vehicle emissions are not covered under NAAQS, any large quantity of criteria pollutants should be considered in any NEPA documentation prepared by FAA. Construction of a commercial launch site may generate particulate emissions during site clearing and construction. Furthermore, launch site operations can affect air quality through launch exhausts, chemical releases, fuel manufacture or combustion at support facilities (e.g., power plants), employee vehicles, and other air emissions. An EIS should address each of these issues, where applicable, providing mitigation measures where appropriate.

Contaminants from launch emissions are determined variously by propellant type, propellant additives and/or impurities, or operational factors of the propulsion system itself. Present-day launches are commonly known to emit, for example, the following products of combustion: water, carbon dioxide, carbon monoxide, hydrogen chloride, nitrogen, hydrogen, and aluminum oxide. Of these, carbon monoxide and hydrogen chloride are generally recognized as air pollutants and may present a toxicity hazard, contribute to ground-level ozone (because volatile organic compounds are precursors to ground-level ozone) and deplete the stratospheric ozone layer. Aluminum oxide (emitted as a particulate), water, and carbon dioxide (upper atmosphere pollutants) may also be of concern, because they may affect chemical/physical properties of the atmosphere and result in undesirable impacts such as global climatic changes. Failure of a launch (i.e., launch abort) may result in the rupture of propellant tanks, which may in turn result in a release of propellants. These normally ignite and burn, potentially forming various oxides of nitrogen in the atmosphere. These can be of concern because nitrogen oxides are precursors to ground-level ozone.

Under Title V of the CAA Amendments of 1990, facilities must obtain permits to release regulated air pollutants, including criteria pollutants and hazardous air pollutants (HAPs). EPA regulates 188 HAPs, which are chemicals that pose potential health risks to exposed persons. Hydrazine, monomethyl hydrazine (MMH), unsymmetrical dimethylhydrazine (UDMH), nitrogen tetroxide (N_2O_4), and hydrogen chloride (HCl) are all EPA-listed HAPs. Owners and/or operators of licensed launch sites that emit any of these chemicals may be required to obtain a permit from EPA under Title V.

Air quality analysis should also cover secondary emission impacts. Construction of a commercial launch facility may impact land use near the proposed project site, resulting in development of residential and industrial areas and an increase in traffic. These activities could impact the existing air quality at and around the proposed facility.

Potential impacts to the atmosphere should be examined in the troposphere (atmospheric layer extending from the Earth's surface to 10 or 20 kilometers), stratosphere (atmospheric layer extending from the troposphere to 55 kilometers), mesosphere (atmospheric layer extending from 45 or 55 kilometers to 80 or 85 kilometers), and ionosphere (atmospheric layer extending upwards from 70 or 80 kilometers).

Water Quality/Resources. Water resources include ground water, surface water and affected marine environments and their physical, chemical, and biological qualities. The Clean Water Act as amended by the Clean Water Floodplains Floodways Act of 1977, regulates the control of water pollutants, including direct discharges of waste and indirect runoff from rain into waters of the U.S. Potential water quality impacts resulting from launch facility operations are likely to arise principally from wastewater treatment plant discharges, storm water runoff, impact of spent launch vehicle stages, dredging, construction, fallout, and releases into ground water. Water quality analysis should focus on impacts to both surface and ground water resulting from the proposed action. Where applicable, water quality should also address potential impacts to recreational aquatic resources. Mitigation measures should be presented where appropriate.

Wastewater treatment plant direct discharges must conform to limits set by a Clean Water Act (CWA) Section 402 National Pollutant Discharge Elimination System (NPDES) permit and applicable state regulations. Indirect storm water runoff/discharges may be subject to CWA Section 307 pretreatment standards and may require a storm water permit. Control of

runoff will prevent spilled propellants, pesticides, phosphorus, nitrogen and suspended solids from entering nearby waterways. Spent launch vehicle stages can contribute residual solid and liquid propellants from fallout or accidental release presenting a hazard to the environment, including the marine environment. Dredging and construction can result in an increase of turbidity and pollutant loads in nearby waterways. Dredging or filling of wetlands is subject to U.S. Army Corps of Engineer permitting pursuant to CWA Section 404. In certain states, state wetland permits may be required. Impacts from discharge of heated water should also be considered.

With respect to water quality, the Coastal Zone Management Act (CZMA) requires that federal activity in coastal areas that affects any land or water use or natural resource of the coastal zone must provide a Coastal Consistency Determination (CCD) indicating that a proposed action will be consistent to the maximum extent practicable with state coastal management programs. If a state program exists under the CZMA, standards developed under that program should be addressed. Where applicable, a federal agency must provide a CCD before final approval of a proposed action. In these cases, the CCD should be included in NEPA documentation. The Coastal Barriers Resources Act and the recent Executive Order 13089 covering coral reefs must be addressed if proposed actions could potentially affect these resources.

If the proposed federal action would impound, divert, drain, control, or otherwise modify the waters of any stream or other body of water, the Fish and Wildlife Coordination Act applies (unless the project is for the impoundment of water covering an area of less than ten acres). In such cases, FAA must consult with the USFWS and the applicable State agency to identify ways to prevent loss of damage to wildlife resources resulting from the proposed action.

Projects that are constructed in floodplains are subject to special requirements as specified in EO 11988. If the proposed action may affect a river covered by the Wild and Scenic Rivers Act, the Department of Interior should be contacted.

Land Use. Potential land use impacts from space launch facility operations would most likely arise in launch site construction, disposal or treatment of solid wastes, fallout, and material storage activities, as well as launch noise and visual effects. Potential issues include impacts to prime and unique farmland, wetlands, floodplains, barrier islands, and the coastal zone. Additionally, launch safety buffer zones and projected launch vehicle stage impact areas may affect land use and could require coordination with local, regional, and/or federal zoning officials to determine if there are any restrictions on possible uses of the land. Appropriate compatible land use controls should be encouraged early in the project planning stage.

Noise. The Noise Control Act establishes a policy to promote regulation of noise to achieve an environment free from harmful effects to the health and welfare of individuals and society as a whole. Noise can be defined as unwanted sound, occurring when a receptor has no appreciation for the sound received. Sensitive noise receptors can include both human beings as well as biological resources. Space launch facility construction could affect ambient noise levels in addition to impacts generated by launches and other operations. An EIS should consider acoustic compatibility of a site with surrounding land uses, providing mitigation where appropriate. Noise emission projections should be based on launch vehicle and engine design as well as trajectory. Particular attention must be given to potential impacts from sonic and sub-sonic noise generation. For launch facilities proposing to service reentry vehicles, sonic boom

effects must be considered for both launch and reentry and any potential noise impacts specifically occurring during land-locked launches/reentries (launches or reentries taking place from a land-locked launch or reentry facility).

Biological Resources. Biological resources are plants, animals, and their habitats that are native to an area, including internationally threatened or endangered species. Section 7 of the Endangered Species Act as amended requires each federal agency in consultation with the USFWS and the National Marine Fisheries Service (NMFS) to ensure that any action authorized by such agency is not likely to jeopardize the continued existence of any federally-listed endangered or threatened species or result in the destruction or adverse modification of habitat of such species which is determined by the Department of Interior to be critical. Marine mammals and threatened and endangered species are protected by the Marine Mammal Protection Act (MMPA) and the Endangered Species Act (ESA). Early consultation with and/or permits from the USFWS and the NMFS and state authorities, as appropriate, are required for potential impacts to endangered or threatened species. Consultation with these agencies, including written concurrence, should be included in FAA's NEPA documentation.

One of the most immediate potential impacts on flora, fauna, and associated ecosystems attributable to various launch facility operations will occur during facility construction, in the vicinity of the launch complex at the time of an actual launch and in the vicinity of a landing/recovery area for reusable vehicles. Impacts to biological resources may also occur in areas where expended stages are jettisoned during normal launch operations for expendable launch vehicles.

Environmental Justice. Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations and DOT Order 5610.2, Environmental Justice in Minority Populations and Low-Income Populations, require federal agencies to address, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies and activities on minority populations and low-income populations. Accordingly, NEPA documentation should analyze whether the proposed action will occur in or near an area with minority and low-income populations, focusing on the potential for disproportionate environmental impacts on these communities.

Socioeconomic Impacts. Community impacts resulting from launch facility operations may include the economy, demographic patterns, community services, and energy consumption. Local economies, infrastructure, demographic patterns, community services, and energy consumption have the potential to be altered due to an influx of workers and visitors to a launch site. Any relocation, evacuation or other community disruption that may be caused by the proposed action should be discussed. Alteration of surface transportation patterns, disruption of established communities, changes in employment or substantial loss in community tax revenue should be addressed.

Cultural Resources. Cultural resources include prehistoric, historic, and Native American resources. The first step in the analysis of this impact category is to define the area of potential effect. Next, the resources that are listed or are eligible for listing on the National Register of Historic Places, pursuant to the National Historic Preservation Act (NHPA) of 1966, or are considered cultural items pursuant to the Native American Graves Protection and Reparation Act (NAGPRA) of 1990 are identified. Then the potential effects of the proposed action and its alternatives are considered. Construction of commercial launch facilities as well as

launch trajectories and stage ejection may impact cultural resources. Potential effects to cultural resources may require early consultation with the State Historic Preservation Officer, Tribal Historic Preservation Officer and/or the Advisory Council on Historic Preservation (a federal agency), pursuant to NHPS Section 106. Depending on the type of cultural resource, consultation with Native American tribal representatives may also be required under NAGPRA. The Advisory Council on Historic Preservation's regulations 36 CFR 800, were published in the *Federal Register* on May 18, 1999.

FAA Order. FAA Order 1050.1D implements NEPA, DOT Order 5610.1C, "Procedures for Considering Environmental Impacts," and 27 other environmental statutes, directives, and orders (FAA Order 1050.1E is in development).

Department of Transportation Act Section 4(f). Additionally, Section 4(f) of the Department of Transportation Act 49 U.S.C. 303, states that it is national policy to preserve the natural beauty of the countryside, parklands, refuges, and historic sites. The Secretary of Transportation may approve a transportation program or project requiring the use of publicly owned land of a public park, recreation area, or wildlife or waterfowl refuge, or land of an historic site of national, state or local significance only if there is no feasible or prudent alternative to using that land and the program or project includes all possible planning to minimize harm. Section 4(f) resources are protected from both direct impacts and constructive uses which substantially impair the use or integrity of Section 4(f) resources. If it is determined that section 4(f) is applicable and there are no feasible or prudent alternatives, project effects must be mitigated to minimize harm. Such mitigation measures may include replacement of land and facilities and design measures to mitigate adverse effects.

3.7.6 Mitigation Measures

CEQ encourages mitigation plans for significant impacts resulting from a proposed action. Mitigation measures are those means by which adverse project-related impacts can be diminished or eliminated. CEQ regulations state that mitigation includes avoiding the impact altogether by not taking certain actions or parts of an action; minimizing impacts by limiting the degree or magnitude of the action and its implementation; rectifying or eliminating impacts over time by preservation and maintenance operations during the life of the action; or compensating for the impact by replacing or providing substitute resources or environments (40 CFR §1508.20). The initial step in mitigation planning is identification of the impacts from a proposed action and determining which impacts can be reduced or eliminated in some way. The second step is deciding on mitigation measures based on consultation with appropriate agencies and affected parties. The third step is actual implementation of mitigation measures, and the fourth step is monitoring and reporting on their effectiveness.

3.8 Draft EISs

Federal agencies are required to circulate an entire draft EIS, furnishing copies to cooperating agencies and any federal state or local agency authorized to enforce environmental standards; and to any person, organization or agency requesting a draft (40 CFR §1502.19). After preparation of a draft EIS, a federal agency must request and obtain comments from the aforementioned agencies or individuals (40 CFR §1503.1(a)). Comments on the draft EIS must be assessed, considered, and included or summarized in the final EIS where appropriate or

applicable (40 CFR §1503.4(a)). Furthermore, agencies must respond to comments, either individually or collectively, with the following possible responses:

- Modify alternatives including the proposed action;
- Develop and evaluate alternatives not previously given serious consideration by the agency;
- Supplement, improve, or modify its analyses;
- Make factual corrections; and
- Explain why the comments do not warrant further agency response (40 CFR §1503.4(a)(1)-(5).

3.9 Notice of Availability (and Public Review)

CEQ regulations require that agencies file Draft and Final EISs at the EPA Office of Federal Activities (40 CFR §1506.9). EPA publishes a weekly notice of availability (NOA) in the *Federal Register* of EISs filed during the preceding week. This EPA filing notice starts the public review period for the Draft EIS and the waiting period for the Final EISs. No decision on the proposed action can be made or recorded until 90 days after publication of the EPA's NOA for a draft EIS and after the 30-day waiting period following EPA's NOA for a final EIS (40 CFR §1506.10(b)).

3.10 Public Hearing Procedures

CEQ regulations require agencies to hold or sponsor public meetings or hearings whenever appropriate or required by statute (40 CFR §1506.6(c)). Public hearings are not required for scoping an EIS or for obtaining comments on a draft EIS. Criteria for holding or sponsoring public meetings or hearings include:

- Substantial environmental controversy concerning the proposed action or substantial interest in holding a hearing.
- A request for a hearing by another agency with jurisdiction over the action, supported by reasons why a hearing would be helpful (40 CFR §1506.6(c)(1) and (2)).

If FAA determines that a hearing should be held, notice of the hearing can be published in the NOA. A hearing on a draft EIS should not be held sooner than 15 days after the draft EIS is made available to the public (40 CFR §1506.6(c)(2)). Guidance on distribution of notices for NEPA documents and related hearings can be found in 40 CFR §1506.6(b). FAA establishes procedures for the conduct of hearings and publishes these procedures in the notice announcing the hearing. An FAA official or representative should preside over the hearing. To ensure that everyone who wishes to speak has a chance to do so, time limits can be established. FAA may allow longer times for representatives of organizations.

3.11 NEPA Document Distribution

Distribution requirements for NOIs, EAs, FONSIs, and other NEPA documents are less defined than those for EISs. FAA officials prepare and sign letters, which distribute or announce the availability of NEPA documents. FAA will coordinate, or direct coordination of, letters to

Members of Congress or Governors, as well as all levels of the federal government. Generally, where time for public involvement is limited, NEPA documents should be forwarded with letters announcing their availability for review. Letters concerning preparation of an EA, FONSI, or issuance of a ROD need not include the document, but rather can announce its availability, including where and how to obtain it.

Specific distribution procedures for any NEPA document must be decided by FAA on a case-by-case basis, taking into consideration such factors as the nature of the action and extent of public interest. Issues such as whether the proposed action is one with effects of national concern, or is merely of local concern can affect the extent of an agency's notification responsibilities (40 CFR §1506.6(b)). CEQ requirements for NEPA notification and document distribution are as follows:

- Provide notice of the availability of environmental documents so as to inform those persons and agencies who may be interested or affected.
- In all cases, mail notice of availability to those who have requested it on an individual action.
- In the case of an action with effects of national concern, the notice of availability shall be published in the *Federal Register* and mailed to national organizations reasonably expected to be interested in the proposed action.
- In the case of an action with effects primarily of local concern, the notice of availability actions might include:

  Following the affected state's public notice procedures for comparable actions;
  Publication in local newspapers;
  Notice through other local media;
  Notice to potentially interested community organizations including small business associations;
  Publication in newsletters that may be expected to reach potentially interested persons;
  Direct mailing to owners and occupants of nearby or affected property; and
  Posting notice on and off site in the area where the action is to be located (40 CFR §1506.6(b)).

3.12 Record of Decision

A ROD is a public record of a decision indicating final approval of a proposed action analyzed in an EIS. FAA requires a ROD to document its decisions following finalization of environmental impact statements. A ROD:

- Identifies all alternatives considered by FAA in reaching its decision, specifying the alternative or alternatives, which were considered to be environmentally preferable.
- States whether all practicable means to avoid or minimize environmental harm from the alternative selected have been adopted and, if not, why they were not. A monitoring and enforcement program will be adopted and summarized where FAA determined the designated mitigation measures were necessary for approval of the EIS (40 CFR §1505.3).

As previously discussed, until a ROD is signed, FAA and the applicant for a launch operator license should not take any action which would have an adverse environmental impact or limit the choice of reasonable alternatives (40 CFR §1506.1(a)(1) and (2)).

3.13 Supplemental NEPA documentation

Agencies are required to prepare supplements to draft EISs or final EISs if substantive changes are made in the proposed action that are relevant to environmental concerns or there are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts (40 CFR §1502.9(c)). Supplemental NEPA documentation is prepared, approved, circulated, and filed in the same fashion as a regular draft or final EIS; however, scoping is not required for a supplement (40 CFR §1502.9(c)(4)).

3.14 Tiering

CEQ encourages agencies to tier their EISs to eliminate repetitive discussions of the same issues and to focus on the actual issues ripe for decision at each level of environmental review (40 CFR §1508.28). When a broad EIS has been prepared, such as a programmatic EIS, subsequent EISs or EAs related to the program need only summarize the issues discussed in the broader EIS, incorporate discussions from the broader EIS by reference, and therefore concentrate on issues specific to the subsequent action.

3.15 Time Limitations

A draft EIS may be assumed to be valid for three years. If the final impact statement is not submitted to the approving official within three years from the date the draft statement was circulated, a written reevaluation of the draft shall be prepared by or for FAA to determine whether the consideration of alternatives, impacts, existing environment, and mitigation measures in the draft statement remain applicable, accurate and valid. If there have been changes in these facts or issues which would be significant in the consideration of the proposal, a supplement or new environmental document shall be prepared and circulated.

With regard to time limitations on final EISs,

- If major steps toward implementation of the proposed action (such as the start of construction or substantial acquisition) have not commenced within 3 years from the date of approval of the final statement, a written reevaluation of the adequacy, accuracy and significant changes in the proposed action, affected environment, anticipated impacts or proposed mitigation measures, a new or supplemental EIS shall be prepared;
- If the proposed action is to be implemented in stages or requires successive federal approvals, a written reevaluation of the continued adequacy, accuracy and validity of the final statement shall be made at each major approval point which occurs more than 3 years after approval of the final statement and a new or supplemental statement prepared if necessary; and
- If the proposed action has been restrained or enjoined by court order or legislative process after approval of the final statement, the 3-year period may be extended by the time equal to the duration of the injunction, restraining order or legislative delay.

3.16 Written Reevaluations

In addition to the previously discussed requirements for written reevaluations, FAA will exercise judgment on when a written reevaluation is appropriate in other circumstances to evaluate the continued validity of environmental documents. The preparation of a new EIS, FONSI or supplement is not necessary when it can be documented that:

- The proposed action conforms to plans or projects for which a prior EIS or FONSI has been filed;
- The data and analyses in the previous EIS or FONSI are still substantially valid; and
- All pertinent conditions and requirements of the prior approval have been or will be met in the current action.

This evaluation, signed by FAA, will either conclude the contents of previously prepared environmental documents remain valid or that significant changes require the preparation of a supplement to existing environmental documents or the preparation of new documents. The written reevaluation has no standard format and no circulation or publication requirements. It becomes part of FAA's file and may be made available on request.

4.0 SOURCES FOR FURTHER GUIDANCE

Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act (40 CFR §1500-1508).

Procedures for Considering Environmental Impacts, DOT Order 5610.IC, Department of Transportation, Office of the Secretary, September 18, 1979; as revised on July 13, 1982 and July 30, 1985.

Guidance for Preparing and Processing Environmental and Section 4(f) Documents (T6640.8A), U.S. Department of Transportation, Federal Highway Administration, October 30, 1987.

Policies and Procedures for Considering Environmental Impacts, FAA Order 1050.1D, Federal Aviation Administration, December 5, 1986.

Airport Environmental Handbook, FAA ORDER 5050.4A, Department of Transportation, Federal Aviation Administration, October 8, 1985.

Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations, Council on Environmental Quality, *Federal Register*, Volume 46, Number 55, March 23, 1981.

Considering Cumulative Effects Under the National Environmental Policy Act, Council on Environmental Quality, April 1997.

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APPENDICES

Appendices A, B, C, D, and E present an EA checklist, a matrix for the preparation of EISs, a master checklist for EISs, a detailed checklist for EISs, and applicable federal regulations for use in the preparation or review of EAs and EISs, respectively.

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APPENDIX A
ENVIRONMENTAL ASSESSMENT CHECKLIST

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APPENDIX A
ENVIRONMENTAL ASSESSMENT CHECKLIST[1]

List 1: General	Yes	No	N/A	Page	Adequacy Evaluation and Comments
1.1.0 Summary (optional in EAs)					
1.1.1 Does the summary address the entire EA?					
1.1.2 Is the summary consistent with information in the document?					
1.1.3 Does the summary highlight key differences among the alternatives?					
1.1.4 Does the summary describe:					
The underlying purpose and need for FAA action;					
The proposed action;					
Each of the alternatives;					
The principal environmental issues, results, mitigation measures?					
1.2.0 PURPOSE AND NEED FOR ACTION					
1.2.1 Does the statement of purpose and need define the need for FAA action?					
1.2.2 Does the statement of purpose and need relate to the broad requirement or desire for FAA action, and not to the need for one specific proposal?					
1.2.3 Is the statement of purpose and need written so that is does not inappropriately narrow the range or reasonable alternatives?					
1.2.4 Does the statement of purpose and need identify the problem or opportunity to which FAA is responding?					

[1] Source: Adapted from U.S. Department of Energy, Environmental Assessment Checklist, 1994.

List 1: General	Yes	No	N/A	Page	Adequacy Evaluation and Comments
1.3.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES					
1.3.1 Is the proposed action described in sufficient detail so that potential impacts can be identified? Are all phases described (e.g., construction, operation, maintenance, and decommissioning)?					
1.3.2 Are environmental releases associated with the proposed action quantified, including both the rate and duration?					
1.3.3 As appropriate, are mitigation measures included in the description of the proposed action?					
1.3.4 Is the project description written broadly enough to encompass future modifications?					
1.3.5 Does the proposed action exclude elements that are more appropriate to the statement of purpose and need?					
1.3.6 Is the proposed action described in terms of the FAA action to be taken (even a private action that has been federalized)?					
1.3.7 Does the EA address a range of reasonable alternatives that satisfy the FAA's purpose and need, including reasonable alternatives outside FAA's jurisdiction?					
1.3.8 If there are alternatives that appear obvious or have been identified by the public, but are not analyzed, does the EA explain why they were excluded?					
1.3.9 Does the EA include the no action alternative?					
1.3.10 Is the no action alternative described in sufficient detail so that its scope is clear and potential impacts can be identified?					
1.3.11 Does the no action alternative include a discussion of the legal ramifications of no action, if appropriate?					
1.3.12 Does the EA take into account relationships between the proposed action and other actions to be taken by FAA in order to avoid improper segmentation?					
1.3.13 Does the proposed action comply with CEQ regulations for limitations on actions during NEPA process or interim actions?					

List 1: General	Yes	No	N/A	Page	Adequacy Evaluation and Comments
1.4.0 DESCRIPTION OF THE AFFECTED ENVIRONMENT					
1.4.1 Does the proposed action present potential for impacts on water resources or water quality?			If yes, complete questions in Section 1.9.0.		
1.4.2 Does the proposed action present potential for impacts related to geology or soils?			If yes, complete questions in Section 1.10.0.		
1.4.3 Does the proposed action present potential for impacts on air quality?			If yes, complete questions in Section 1.11.0.		
1.4.4. Does the proposed action present potential for impacts on wildlife or habitat?			If yes, complete questions in Section 1.12.0.		
1.4.5. Does the proposed action present potential for effects on human health?			If yes, complete questions in Section 1.13.0.		
1.4.6 Does the proposed action involve transportation?			If yes, complete questions in Section 1.14.0.		
1.4.7 Does the proposed action involve waste management?			If yes, complete questions in Section 1.15.0.		
1.4.8. Does the proposed action present potential for impacts on socioeconomic conditions?			If yes, complete questions in Section 1.16.0.		
1.4.9 Does the proposed action present potential for impacts to historic, archaeological, or other cultural sites or properties?			If yes, complete questions in Section 1.17.0.		
1.4.10 Does the EA identify either the presence or absence of the following within the area potentially affected by the proposed action and alternatives:					
Floodplains, floodways [EO 11988]?					
Wetlands [EO 11990; 40 CFR §1508.27 (b)(3)]?					
Threatened, endangered, or candidate species and/or their critical habitat, and other special status (e.g., state-listed) species [16 U.S.C. 1531; 40 CFR §1508.27(b)(3)]?					
Prime or unique farmland or other land uses in the vicinity of the launch site [7 U.S.C. 4201; 7 CFR § 658; 40 CFR § 1508.27(b)(3)]?					
State or national parks, forests, conservation areas, or other areas of recreational, ecological, scenic, or aesthetic importance?					
Wild and scenic rivers [16 U.S.C. 1271; 40 CFR §1508.27(b)(3)]?					
Natural resources (e.g., timber, range, soils, minerals, fish, wildlife, water bodies, aquifers), marine sanctuaries, coral reefs, coastlines?					
Property of historic, archaeological, or architectural significance (including sites on or eligible for the National Register of historic Places and the National Registry of Natural Landmarks, including 4(f) properties)					

[16 U.S.C. 470; 36 CFR §800; 40 CFR §1508.27(b)(3)]?					
Native Americans' concerns [16 U.S.C. 470; 42 U.S.C. 1996]?					
Minority and low-income populations (including a description of their use and consumption of environmental resources) [EO 12898]?					
1.4.11 Does the description of the affected environment provide the necessary information to support the impact analysis, including cumulative impact analysis?					
1.4.12 Does the EA appropriately use incorporation by reference? Is/are the incorporated document(s) up-to-date?					
1.4.13 If this EA adopts, in whole or in part, a NEPA document prepared by another federal agency, has FAA independently evaluated the information?					
1.5.0 ENVIRONMENTAL EFFECTS					
1.5.1 Does the EA identify the potential effects (including cumulative effects) to the following, as identified in question 1.4.1:					
Floodplains and floodways[EO 11988]?					
Wetlands [EO 11990; 40 CFR §1508.27 (b)(3)]?					
Threatened, endangered, or candidate species and/or their critical habitat, and other special status (e.g., state-listed) species [16 U.S.C. 1531; 40 CFR §1508.27(b)(3)]?					
Prime or unique farmland [7 U.S.C. 4201; 7 CFR 658; 40 CFR §1508.27(b)(3)]?					
State or national parks, forests, conservation areas, or other areas of recreational, ecological, scenic, or aesthetic importance including 4(f) properties?					
Wild and scenic rivers [16 U.S.C. 1271; 40 CFR §1508.27(b)(3)]?					
Natural resources (e.g., timber, range, soils, minerals, fish, wildlife, water bodies, and aquifers)?					
Property of historic, archaeological, or architectural significance (including sites on or eligible for the National Register of historic Places and the National Registry of Natural Landmarks) [16 U.S.C. 470; 36 CFR §800; 40 CFR §1508.27(b)(3)]?					
Native Americans' concerns [16 U.S.C. 470; 42 U.S.C. 1996]?					
Minority and low-income populations (including a description of their use and consumption of environmental resources) [EO 12898]?					

1.5.2 Does the EA analyze the proposed action for both:					
Short-term and long-term effects [40 CFR §1508.27(a)]?					
Beneficial and adverse impacts [40 CFR §1508.27(b)(1)]?					
1.5.3 Do the discussions of environmental impacts include (as appropriate) human health effects, effects of accidents, and transportation effects?					
1.5.4 As appropriate, does the EA address the degree to which the possible effects on the human environment may be highly uncertain or involve unique or unknown risks [40 CFR §1508.27(b)(5)]?					
1.5.5 Do the discussions of environmental impacts identify possible direct, indirect and cumulative impacts?					
1.5.6 Does the EA quantify environmental impacts where possible?					
1.5.7 Are all potentially non-trivial impacts identified? Are impacts analyzed using a graded approach – i.e., proportional to their potential significance?					
1.5.8 Does the EA identify all reasonably foreseeable impacts [40 CFR §1508.8]?					
1.5.9 If information related to potential impacts is incomplete or unavailable, does the EA indicate that such information is lacking [40 CFR §1502.22]?					
1.5.10 Are sufficient data and references presented to allow review of the validity of analysis methods and results?					
1.6.0 OVERALL CONSIDERATIONS/INCORPORATION OF NEPA VALUES					
1.6.1 Because conclusions of overall significance will be made in a FONSI or determination to prepare an EIS, are the words “significant” or “insignificant” absent from conclusory statements in the EA?					
1.6.2 Do the conclusions regarding potential impacts follow from the information and analyses presented in the EA?					
1.6.3 Does the EA avoid the implication that compliance with regulatory requirements demonstrates the absence of significant environmental effects?					
1.6.4 Are mitigation measures appropriate to the potential impacts identified in the EA [40 CFR §1500.2(f)]?					
1.6.5 Does the EA show that FAA “has taken a ‘hard look’ at environmental consequences” [Kleppe v. Sierra Club, 427 US 390, 410 (1976)]?					
1.7.0 PROCEDURAL CONSIDERATIONS					

1.7.1 Were host states and tribes and, when applicable, the public notified of FAA's determination to prepare the EA? Does the EA address issues known to be of concern to the states, tribes, local and regional governments, and public?					
1.7.2 Has the EA been made available to the agencies, states, tribes, local and regional governments, and the public?					
1.7.3 Have stakeholders including the public been involved in the extent practicable during the preparation of the EA [CEQ (46 FR 18037); 40 CFR §1506.6; 40 CFR §1501.4(b)]? Has the involvement of minority and low-income communities been proactively sought in the review and preparation process [EO 12898]?					
1.7.4 Have comments from host states and tribes and, when applicable, the public been addressed?					
1.7.5 Is a Floodplain/Wetlands Assessment required and, if so has one been completed? If necessary and applicable has a Coastal Zone Consistency determination been obtained? If required, has a Public Notice been published in the *Federal Register*?					
1.7.6 Does the EA demonstrate adequate consultation with appropriate agencies to ensure compliance with sensitive resource laws and regulations? Are letters of consultation (e.g., SHPO, USFWS) appended [16 U.S.C. 1531; 36 CFR 800]?					
1.7.7 Does the EA include a listing of agencies and persons consulted [40 CFR §1508.9(b)]?					
1.8.0 FORMAT, GENERAL DOCUMENT QUALITY, USER FRIENDLINESS					
1.8.1 Is the EA written precisely and concisely, using plain language, and without jargon?					
1.8.2 Is FAA listed as the preparer on the title page of the EA?					
1.8.3 Are technical terms defined where necessary?					
1.8.4 Are the units of measure consistent throughout the document?					
1.8.5 If regulatory terms are used, are they consistent with their regulatory definitions?					
1.8.6 Are visual aids use whenever possible to simplify the EA?					
1.8.7 Are abbreviations and acronyms defined the first time there are used?					
1.8.8 Is the use of abbreviations minimized to the extent practical?					
1.8.9 Do the appendices support the content and conclusions contained in the main body of the EA? Is information in the appendix consistent with information in the main body of the EA?					
1.8.10 Is information in tables and figures					

consistent with information in the text and appendices?					
1.9.0 WATER RESOURCES AND WATER QUALITY					
1.9.1 Does the EA identify potential effects of the proposed action and alternatives on surface water quality and quality under both normal operations and accident conditions?					
1.9.2 Does the EA evaluate whether the proposed action or alternatives would be subject to:					
Water quality or effluent standards?					
National Interim Primary Drinking Water regulations?					
National Secondary Drinking Water regulations?					
1.9.3 Does the EA state whether the proposed action or alternatives:					
Would include work in, under, over, or having an effect on navigable waters of the United States?					
Would include the discharge of degraded or fill material into waters of the United States?					
Would include the deposit of fill material or an excavation that alters or modifies the course, location, condition, or capacity of any navigable waters of the United States?					
Would require a Rivers and Harbors Act Section 10 permit or a Clean Water Act (Section 403 or Section 404) permit?					
1.9.4 Does the EA identify potential effects on the proposed action and alternatives on groundwater quality and quality (including aquifers) under both normal operations and accident conditions?					
1.9.5 Does the EA consider whether the proposed action or alternatives may affect any municipal or private drinking water supplies?					
1.10.0 GEOLOGY AND SOILS					
1.10.1 Does the EA describe and quantify the land are proposed to be altered, excavated, or otherwise disturbed? Is this description consistent with other sections (e.g., land use, habitat area)?					
1.10.2 Are issues related to seismicity sufficiently characterized. Quantified, and analyzed?					
1.10.3 If the action involves the disturbance of surface soils, are erosion control measures addressed?					
1.11.0 AIR QUALITY					
1.11.1 Does the EA identify potential effects of the proposed action on ambient air quality under both normal and accident conditions?					
1.11.2 Are potential emissions quantified to the extent practicable (amount and rate of release)?					

1.11.3 Does the EA evaluate potential effects to human health and the environment from exposure to radiation and hazardous chemicals in emissions?					
1.11.4 Does the EA evaluate whether the proposed action and alternatives would:					
Be in compliance with National Ambient Air Quality Standards?					
Be in compliance with the State Implementation Plan? If applicable, conformity analysis complete?					
Potentially affect any area designated as Class I under the Clean Air Act?					
Be subject to New Source Performance Standards?					
Be subject to National Emissions Standards for Hazardous Air Pollutants?					
Be subject to emissions limitations in an Air Quality Control Region?					
1.12.0 WILDLIFE AND HABITAT					
1.12.1 If the EA identifies potential effects of the proposed action and alternatives on threatened or endangered species and/or critical habitat, has consultation with USFWS or NMFS been concluded? Does the EA address candidate species?					
1.12.2 Are state-listed species identified, and, if so, are results of state consultation documented?					
1.12.3 Are potential effects (including cumulative effects) analyzed for fish and wildlife other than threatened and endangered species and for habitats other than critical habitat?					
1.12.4 Does the EA analyze the impacts of the proposed action on the biodiversity of the affected ecosystem, including genetic diversity and species diversity?					
1.12.5 Are habitat types identified and estimates provided by type for the amount of habitat lost or adversely affected?					
1.13.0 SAFETY AND HEALTH					
1.13.1 Does the EA identify a spectrum of potential accident scenarios that could occur over the life of the proposed action?					
1.13.2 Are chemical and radiological exposures addressed for both routine and accident conditions?					
1.14.0 TRANSPORTATION					
1.14.1 If transport of hazardous waste or materials is part of the proposed action, or if transport is a major factor, are the potential effects analyzed (including to a site, on-site, and from a site)?					
1.14.2 Does the EA analyze all reasonably					

foreseeable transportation links (e.g., overland transport, port transport, marine transport, global commons) [EO 12114]?					
1.14.3 Does the EA avoid relying exclusively on statements that transportation will be in accordance with all applicable state and federal regulations and requirements?					
1.14.4 Does the EA address both routine transportation as well as reasonably foreseeable accidents?					
1.14.5 Does the EA address the annual, total, and cumulative impacts of all FAA and non-FAA transportation on specific routes associated with the proposed action?					
1.15.0 WASTE MANAGEMENT AND WASTE MINIMIZATION					
1.15.1 Are pollution prevention and waste minimization practices applied in the proposed action and alternatives (e.g., is pollution prevented or reduced at the source when feasible; would waste products be recycled when feasible; are by-products that cannot be prevented or recycled treated in an environmentally safe manner when feasible; is disposal only used as a last resort)?					
1.15.2 If waste would be generated, does the EA examine the human health effects and environmental impacts of managing that waste, including waste generated during decontaminating and decommissioning?					
1.15.3 Are waste materials characterized by type and estimated quantity, where possible?					
1.15.4 Does the EA identify RCRA issues related to the proposed action and alternatives (i.e., generation of hazardous waste)?					
1.15.5 Does the EA establish whether the proposed action and alternatives would be in compliance with federal or state laws and guidelines affecting the generation, transportation, treatment, storage, or disposal of hazardous and other waste?					
1.16.0 SOCIOECONOMIC CONSIDERATIONS					
1.16.1 Does the EA consider potential effects on land use patterns, consistency with applicable land use plans, and compatibility of nearby uses?					
1.16.2 Does the EA consider possible changes in the local population due to the proposed action?					
1.16.3 Does the EA consider potential economic impacts such as effects on jobs and housing,					

particularly in regard to disproportionate adverse effects on minority and low-income communities?					
1.16.4 Does the EA consider potential effects on public water and wastewater services, stormwater management, community services, and utilities?					
1.16.5 Does the EA evaluate potential noise effects of the proposed action and the application of community noise level standards?					
1.17.0 CULTURAL RESOURCES					
1.17.1 Was the SHPO consulted?					
1.17.2 Was an archaeological survey conducted?					
1.17.3 Does the EA include a provision for mitigation in the event unanticipated archaeological materials are encountered?					

APPENDIX B
MATRIX FOR EIS PREPARATION AND REVIEW AND PROCESS FLOW CHARTS

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APPENDIX B
MATRIX FOR EIS PREPARATION AND REVIEW

A matrix, such as the one that follows, should be developed for each launch facility alternative prior to preparation of the EA or EIS. This matrix is to be used as an aid to develop alternatives and examine their respective potential impacts. Listed at the top of the matrix along the horizontal axis are construction and operation procedures for a launch facility. Down the vertical axis are listed environmental conditions in various categories that might be affected. The matrix shown encompasses only major actions and those environmental factors that are most likely to be involved. However, not all of those will apply to every project proposal, and more detailed ones may be added as appropriate.

Each of the actions on the horizontal axis is evaluated for likely magnitude of its effect on environmental characteristics (down the vertical axis). To indicate that a significant degree of impact may exist, a slash is placed diagonally (upper right to lower left) across each intersecting block.

In marking the boxes, unnecessary duplication can be avoided by concentrating on first-order effects of specific actions. After all the boxes where possible impact exists have been marked with the diagonal line, the most important ones are then evaluated individually. In doing this, a number from 1 to 10 should be placed in the upper left-hand corner to indicate the relative magnitude of impact (10 = greatest magnitude). In the lower right-hand corner of the box, a number from 1 to 10 is placed to indicate the relative importance of the impact.

No two boxes on any one matrix are precisely equitable. Rather, the significance of high or low numbers for any one box only indicates the degree of impact one type of action may have on one part of the environment. If alternative actions are under consideration, and a separate matrix is prepared for each action, identical boxes in the two matrices will provide a numerical comparison of the environmental impact for the alternatives considered.

Figure B-1 describes the NEPA process in the form of a flow chart. This chart outlines the steps that should be taken by the action proponent and by the agency. Figure B-2 describes the environmental compliance process.

APPENDIX B
ENVIRONMENTAL IMPACT STATEMENT MATRIX

INSTRUCTIONS

1. Identify all actions (located across the top of the matrix) that are part of the proposed project.

2. Under each of the proposed actions, place a ___at the intersection with each item on the side of the matrix if an impact is possible.

3. Having completed the matrix, in the upper left-hand corner of each box with a ___, place a number from 1 to 10 which indicates the MAGNITUDE of the possible impact; 10 represents the greatest magnitude of impact and 1, the least (no zeros). Before eac

4.The text which accompanies the matrix shoul dbe a discussion of the significant impacts, those colums and rows with large numbers of boxes and individual boxes with the larger numbers.

			Construction of Access Including Ports	Construction of Operating Facility	Construction of Support Facilities	Transport of Stages, Payloads, Fuels, etc	Storage of Equipment and Materials	Launch Operations	Abort Operation	Post Launch Operations
PHYSICAL AND CHEMICAL CHARACTERISTICS	EARTH	Mineral Resources								
		Construction Material								
		Soils								
		Land Form								
		Force Fields and Background Radiation								
		Unique Physical Features								
	WATER	Surface								
		Ocean								
		Underground								
		Quality								
		Temperature								
		Recharge								
		Snow, Ice, and Permafrost								
	ATMOSPH ERE	Quality (Gases, Particulates)								
		Climate (Micro, Macro)								
		Temperature								
	PROCESSES	Floods								
		Erosion								
		Deposition (Sedimentation, Precipitation)								
		Solution								
		Sorption (ion Exchange, Complexing)								
		Compaction and Settling								
		Stability (Slides, Slumps)								
		Stress-Strain (earthquake)								
		Air Monitoring								
BIOLOGICAL CONDITIONS	FLORA	Trees								
		Shrubs								
		Grass								
		Crops								
		Microflora								
		Aquatic Plants								
		Endangered Species								
		Berries								
		Corridors								

APPENDIX B
ENVIRONMENTAL IMPACT STATEMENT MATRIX

ECOLOGICAL RELATIONSHIPS SUCH AS				CULTURAL FACTORS																																BIOLOGICAL CONDITIONS								
				MAN-MADE FACILITIES AND ACTIVITIES						CULTURAL STATUS				ESTHETICS AND HUMAN INTEREST									RECREATION						LAND USE								FAUNA								
Brush Encroachment	Sanitization of Surficial Material	Food Chains	Disease Insect Vectors	Corridors	Barriers	Utility Networks	Waste Disposal	Transportation Network	Structures	Population Density	Employment	Health and Safety	Cultural Patterns (Life Styles)	Historical Sites and Objects	Rare Species or Ecosystems	Monuments	Parks and Reserves	Unique Physical Features	Landscape Design	Open Space Qualities	Wilerness Qualities	Scenic Views and Vistas	Resorts	Picnicking	Camping and Riding	Swimming	Boating	Fishing	Hunting	Mining and Quarrying	Industrial	Commercial	Residential	Agriculture	Grazing	Forestry	Wetlands	Corridors	Barriers	Endangered Species	Microfauna	Insects	Benthic Organisms	Fish and Shellfish	Land Animans and Reptiles	Birds

FIGURE B-1
NEPA PROCESS FLOW CHART

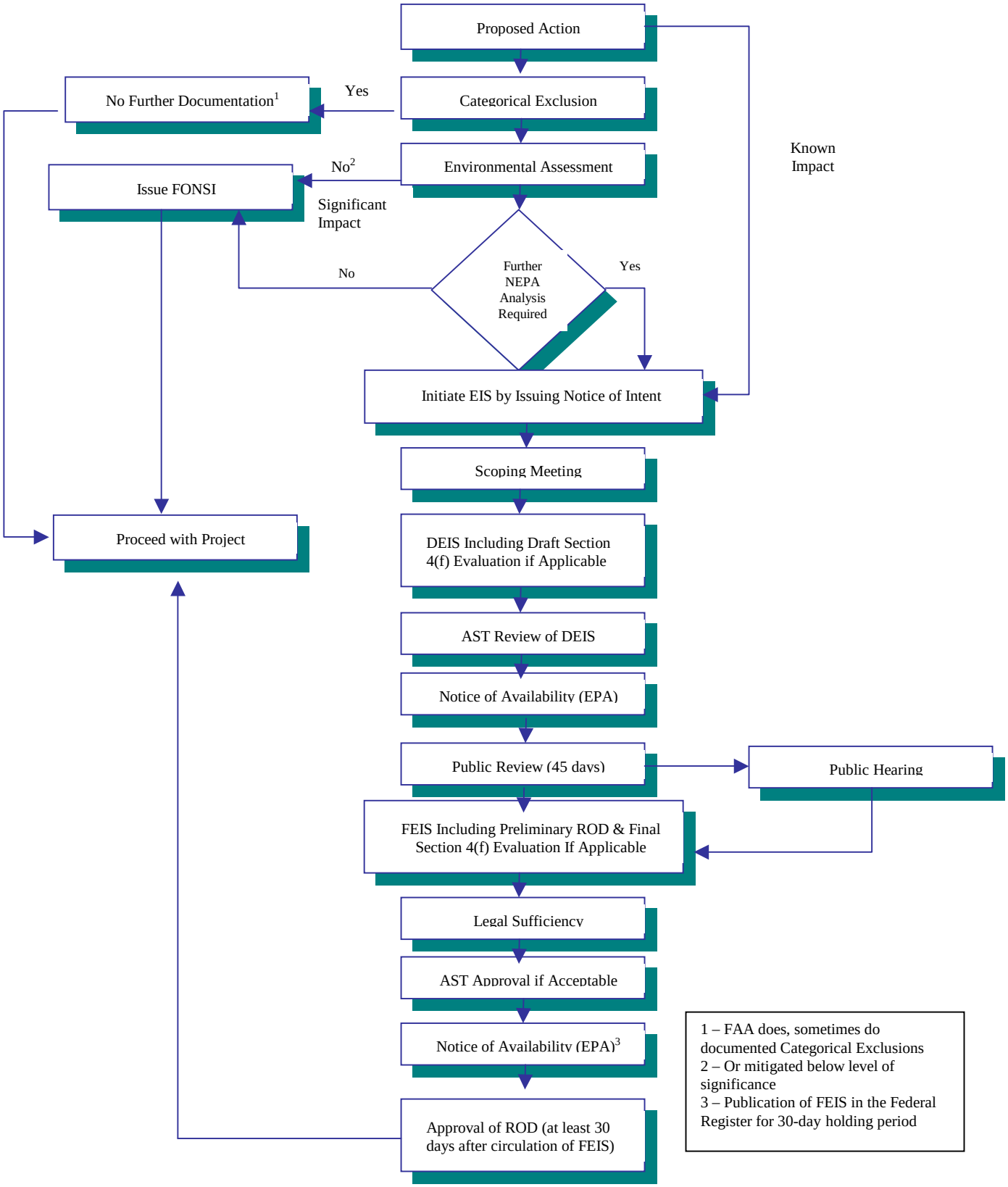
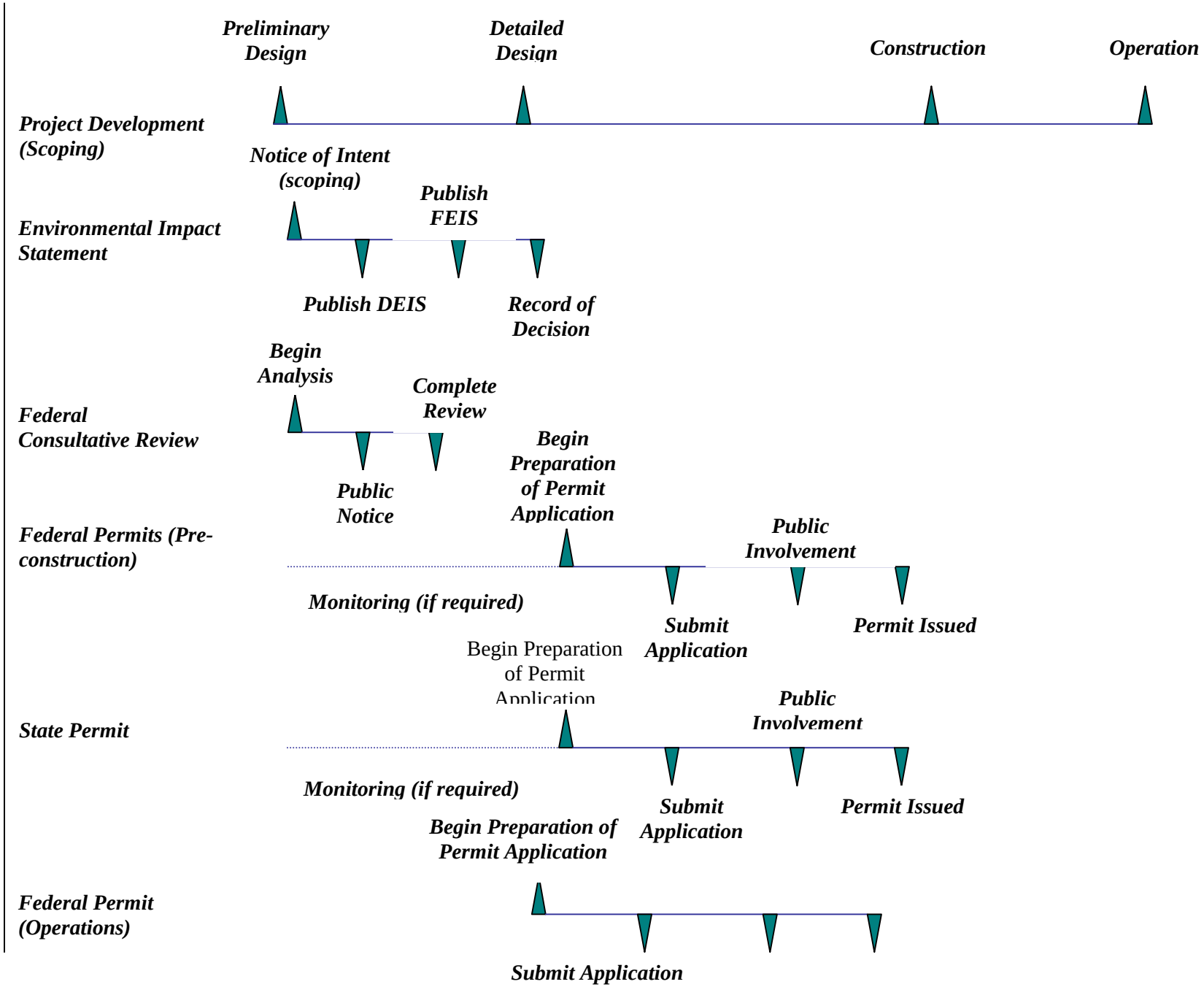


FIGURE B-2
PROJECT ENVIRONMENTAL COMPLIANCE-PHASED COMPLIANCE PROCESS



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APPENDIX C
MASTER CHECKLIST FOR THE PREPARATION AND REVIEW OF ENVIRONMENTAL IMPACTS STATEMENTS

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APPENDIX C
MASTER CHECKLIST FOR THE PREPARATION AND REVIEW OF ENVIRONMENTAL IMPACT STATEMENTS

- ❑ I. COVERSHEET
- ❑ II. SUMMARY
- ❑ III. TABLE OF CONTENTS (AS REQUIRED BY CEQ REGULATIONS)
- ❑ IV. PURPOSE OF AND NEED FOR ACTION
- ❑ V. ALTERNATIVES INCLUDING PROPOSED ACTION AND NO ACTION
- ❑ VI. AFFECTED ENVIRONMENT
- ❑ VII. ENVIRONMENTAL CONSEQUENCES
- ❑ VIII. LIST OF PREPARERS
- ❑ IX. LIST OF AGENCIES, ORGANIZATIONS, AND PERSONS TO WHOM COPIES OF THE DEIS/FEIS ARE SENT
- ❑ X. INDEX
- ❑ XI. COMMENTS AND COORDINATION[2]
- ❑ APPENDIX

[2] Either scoping or comments on the DEIS depending upon whether this is a Final EIS or a Draft EIS.

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APPENDIX D
DETAILED CHECKLIST FOR THE PREPARATION AND REVIEW OF ENVIRONMENTAL IMPACT STATEMENTS

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APPENDIX D
DETAILED CHECKLIST FOR THE PREPARATION AND REVIEW OF ENVIRONMENTAL IMPACT STATEMENTS

- ❑ I. COVER SHEET
  - ❍ A. Contains title of proposed action (include location and designation of the statement (i.e., draft, final, etc.)
  - ❍ B. Identifies date
  - ❍ C. Names responsible Agency(ies)
  - ❍ D. Identifies cooperating Agency(ies)
  - ❍ E. Provides address to obtain further information: (include name, address, and telephone number of person at the agency)
  - ❍ F. Names the company responsibility for assisting FAA in drafting the EIS
  - ❍ G. Names the license applicant

- ❑ II. SUMMARY
  - ❍ A. Describes alternatives, including the proposed action and no action
  - ❍ B. Describes any significant action proposed in the vicinity of FAA proposed action
  - ❍ C. Summarizes significant environmental impacts
  - ❍ D. Summarizes controversial and unresolved issues
  - ❍ E. Identifies the preferred alternative and summarize the basis for its selection.
  - ❍ F. Identifies mitigation measures, if any

- ❑ III. TABLE OF CONTENTS (AS REQUIRED BY CEQ REGULATIONS)
  - ❍ A. Cover Sheet
  - ❍ B. Summary
  - ❍ C. Table of Contents
  - ❍ D. Purpose of and Need for Action
  - ❍ E. Alternatives Including Proposed Action
  - ❍ F. Affected Environment
  - ❍ G. Environmental Consequences
  - ❍ H. List of Preparers
  - ❍ I. List of Agencies, Organizations, and Persons to Whom Copies of the DEIS/FEIS Are Sent
  - ❍ J. Index
  - ❍ K. Comments and Coordination
  - ❍ L. Appendix(ces)

- ❑ IV. PURPOSE OF AND NEED FOR ACTION
  - ❍ A. Identifies the proposed federal action
  - ❍ B. Identifies and describe the situation(s) that the proposed action is designed to address
  - ❍ C. Demonstrates that a need for the proposed action exists

❑ V. ALTERNATIVES, INCLUDING PROPOSED ACTION AND NO ACTION

❍ A. Discusses though use of appropriate graphics and data all alternatives, including the no action alternative

❍ B. Discusses how the alternatives were selected; it will give the basis, or objective screening criteria, for elimination of alternatives determined not reasonable and not carried through detailed analysis

❍ C. Identifies the desired alternative for the proposed action; the FEIS identifies which alternative for the proposed action is preferred

❑ VI. AFFECTED ENVIRONMENT

❍ A. Provides a concise description of the existing social, economic, and environmental setting for the area affected (including accident hazard zone) by the alternatives, when applicable

( ) 1. Social Environment

[ ] a. population (levels and trends)
[ ] b. housing
[ ] c. transportation facilities
[ ] d. recreation
[ ] e. cultural aspects
[ ] f. public institutions
[ ] g. aesthetics
[ ] h. community facilities
[ ] i. neighborhoods

( ) 2. Economic Setting

[ ] a. land and improvements
[ ] b. tax base
[ ] c. income
[ ] d. labor force
[ ] e. industry and services

( ) 3. Natural Environment - all environmentally sensitive locations or features will be identified

[ ] a. topography
[ ] b. geology
[ ] c. soils
[ ] d. meteorology and climatology
[ ] e. hydrology
[ ] f. vegetation
[ ] g. fish and wildlife
[ ] h. visual
[ ] i. wetlands/floodplains
[ ] j. marine environment (coral reefs and coastlines)

❍ B. Describes other ongoing or planned projects for the area that may impact or be impacted by the alternatives being considered

❑ VII. ENVIRONMENTAL CONSEQUENCES

❍ A. Discusses the probable social, economic, and environmental effects of the alternatives and mitigating measures.

❍ B. Analyzes the following types of impacts as applicable:

1. Direct impacts and their significance
2. Indirect (secondary) impacts and their significance, connected impacts and cumulative impacts
3. Adverse environmental effects which cannot be avoided
4. The relationship between short-term uses of man's environment and the maintenance and enhancement of long-term productivity (i.e., recoverable, recyclable, and renewable resources)

❍ C. Discusses impacts and mitigation measures associated with the selected alternative will be discussed in more detail in the FEIS than the DEIS

( ) 1. Urban and Community Impacts

[ ] a. Social and Economic Impacts

(1) Discusses impacts on neighborhoods and community cohesion
(2) Describes regional economic impacts
(3) Strives to use the alternatives to support both public and private development plans
(4) Describes impact on existing business districts
(5) Identifies social groups significantly impacted

[ ] b. Relocation Impacts summarized in sufficient detail for each alternative

[ ] c. Land Use Impacts

(1) Describes state/local plans and policies regarding land use and growth
(2) Assesses the consistency of the alternatives with the plans and policies and the potential growth of each alternative
(3) Identifies transportation impacts resulting in improved highways and shipping ports
(4) Identifies safety zones and any land acquisition needs

[ ] d. Visual Impacts

(1) Assesses the temporary and permanent visual impacts of the alternatives

( ) 2. Physical Impacts

[ ] a. Air Quality Impacts

(1) Describes present air quality
(2) Identifies air pollutants including criteria pollutants, VOCs, and air toxics generated by each alternative
(3) Discusses whether applicable state air quality standards will be violated including secondary impacts

(4) Discusses conformity to State Implementation Plan in accordance with Section 176 of the Clean Air Act, as applicable to project impacts
(5) Discusses atmospheric Impacts (stratospheric ozone, orbital debris)

[ ] b. Water Quality Impacts

(1) Describes the general water quality parameters
(2) Coordinates with EPA, Corps of Engineers and Department of Interior and state regulatory programs (where applicable)
(3) Discusses impacts due to the alternatives
(4) Documents EPA concurrence that the proposed project will not contaminate any principal or sole-source aquifer (where applicable)

[ ] c. Noise Impacts

(1) Identifies existing receptors which may be impacted
(2) Identifies extent of the impact
(3) Identifies practical mitigating measures
(4) Discusses unavoidable impacts
(5) Documents sonic and subsonic noise impacts

[ ] d. Energy Impacts

(1) Describes energy impacts of each alternative
(2) Discusses indirect energy impacts of each alternative
(3) Presents mitigating measures
(4) Identifies which energy conservation measures will be implemented as part of the selected alternative

[ ] e. Wild and Scenic Rivers

(1) Identifies impacts on wild and scenic rivers or rivers with potential for inclusion in the National Wild and Scenic Rivers System (NWSRS)
(2) Identifies potential of foreclosing options to include the river in the NWSRS
(3) Indicates measures, which will be included to avoid or mitigate impacts on wild and scenic rivers
(4) Documents contacts with Department of Interior

[ ] f. Floodplain and Floodways

(1) Identifies floodplain areas using Federal Insurance Administration (FIA) maps
(2) Determines if project encroaches federally identified floodplains
(2) Documents significant floodplain encroachment that requires implementation of DOT Order 5650.2

[ ] g. Coastal Zone Impacts

(1) Engages the state/local process, as applicable, to determine that the alternative will be in compliance with the State Coastal Zone Management Program, a consistency certificate may be required

[ ] h. Wetlands Impacts

(1) Identifies type of wetlands (use Department of the Interior classification system)
(2) Describes specific impacts
(3) Identifies alternatives to avoid wetlands or to minimize harm to wetlands
(4) Determines if new construction in wetlands is unavoidable, the FEIS will contain the finding required by Executive Order 11990 in a separate section or exhibit titled "Wetlands Finding"
(5) Determines if a Corps of Engineer permit is required

[ ] i. Threatened or Endangered Species

(1) Determines and identify presence of federal threatened or endangered species; identify species of state or local significance
(2) Documents consultation and coordination with the USFWS or the NMFS

[ ] j. Prime and Unique Agricultural Lands

(1) Identifies these lands
(2) Directs and indirect impacts will be described
(3) Identifies specific actions to avoid or mitigate direct and indirect effects will be identified

[ ] k. Construction Impact

(1) Discuss the significant impacts associated with construction of each of the alternatives

[ ] l. Safety

(1) Discusses in-flight operations
(2) Discusses launch operations
(3) Discusses airspace issues.

( ) 3. Historic and Archeological Preservation Effects

[ ] a. Discusses the source or survey required by 36 CFR 800.4 for each alternative
[ ] b. Documents consultation and coordination with the State Historic Preservation Officer or Tribal Historic Preservation Officer

( ) 4. Section 4(f) Impacts
[ ] a. Description of section 4(f) resource (publicly owned parks, recreation areas, wildlife/waterfowl refuges and all historic sites)

(1) Describes resources in detail including maps, type of property, etc.

(3) Identifies unusual characteristics of the Resource to include severe hydrologic events, terrain conditions or other features that either reduce or increase the value of parts or all of the Resource

[ ] b. Description of Impacts

(1) Describes acerage of facilities impacted or acquired
(2) Describes noise or visible impacts
(4) Coordinates under Section 106 of National Historic Preservation Act of 1966
(5) Identifies impacts which substantially impair resource, even if not acquired

[ ] c. Avoidance alternatives and their impacts

(1) Describes all alternatives to avoid impact on the resource and impacts of those alternatives

[ ] d. Mitigation measures

(1) Describes reasonable and practicable measures to minimize the impacts

[ ] e. Coordination

(1) Documents and coordinates with agencies having jurisdiction
(2) Coordinates under draft Section 4(f) statement with the Department of Interior and agencies having jurisdiction

[ ] f. Includes information to support a finding of feasible and prudent alternatives and all possible planning to minimize harm

❑ VIII. LIST OF PREPARERS
❍ A. Identifies state and local agency personnel responsible for preparing the DEIS/FEIS
❍ B. Identifies FAA personnel primarily responsible for preparation or review of the DEIS/FEIS
❍ C. Lists contractors responsible for preparing the DEIS/FEIS
❍ D. Identifies areas of DEIS/FEIS responsibility for each preparer.

❑ IX. LIST OF AGENCIES, ORGANIZATIONS, AND PERSONS TO WHOM COPIES OF THE DEIS/FEIS ARE SENT

❑ X. INDEX
❍ A. Identifies major subjects and areas of significant impacts

❑ XI. COMMENTS AND COORDINATION
❍ A. Summarizes of early coordination process
❍ B. Contains copies of all substantive comments and responses
❍ C. Contains document compliance with all applicable environmental requirements
❍ D. Contains summary and disposition of all substantive comments

❑ XII. APPENDIX

APPENDIX E
COORDINATION WITH RELATED FEDERAL ENVIRONMENTAL STATUTES AND REGULATIONS

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APPENDIX E
COORDINATION WITH RELATED FEDERAL ENVIRONMENTAL STATUTES AND REGULATIONS[6]

The CEQ regulations state that agencies shall integrate the requirements of NEPA and other planning and environmental review procedures required by law or agency practice so that the procedures can run concurrently rather than consecutively (40 CFR § 1500.2). This appendix describes many of the federal statutes, executive orders and regulations that a proposed action might trigger. These descriptions are not intended to eliminate the need to become familiar with the contents of the statutes or implementing regulations, but rather to assist in rapid understanding of the pertinent points of each. Applicants should consult frequently the current implementing regulations in all cases to ensure proper compliance.

BIOTA

Endangered Species Act of 1973, as amended 16 U.S.C. § 1531 *et seq*., protects proposed and listed threatened or endangered species. Formal consultation with the USFWS is required under section 7 of the Act for federal projects and all projects that require federal permits (e.g., Corps of Engineers permits) where such actions could directly or indirectly affect any proposed or listed species, and federal agencies are required to ensure that proposed actions are not likely to jeopardize the continued existence of a listed species (50 CFR § 402).

Sikes Act Amendments of 1974 PL 93-452. The Sikes Act and various amendments authorizes States to prepare statewide wildlife conservation plans and the Department of Defense (DOD) to prepare similar plans for resources under its jurisdiction. Actions should be checked for consistency with the State Wildlife Conservation Plans and DOD plans where such plans exist.

Fish and Wildlife Conservation Act of 1980 16 U.S.C. §§ 2901-2912 PL 96-366, provides for financial and technical assistance to States to develop conservation plans, subject to approval by the Department of the interior, and implement State programs for fish and wildlife resources. The Act also encourages all federal departments and agencies to utilize their statutory and administrative authority, to the maximum extent practicable and consistent with each agency's statutory responsibilities, to conserve and to promote conservation of non-game fish and wildlife and their habitats, in furtherance of the provisions of this Act.

Executive Order 13112, Invasive Species 64 *FR* 6183, February 8, 1999. The Executive Order 13112 and the DOT Policy on Invasive Species require FAA to identify proposed actions that may involve risks of introducing invasive species on native habitat and populations.

Section 2 of the Executive Order spells out federal agency duties. Where such an action has been identified, FAA may not authorize, fund, or carry out actions that the FAA believes are likely to cause or promote the introduction or spread of invasive species in the United States or elsewhere unless, pursuant to guidelines that it has prescribed, the agency has determined that the benefits of such actions clearly outweigh the potential harm caused by invasive species; and that all feasible and prudent measures to minimize risk of harm will be taken in conjunction with the actions.

[6] Extracted from Draft Environmental Impact Statement for the Mineral Resource Management Plan. Department of the Air Force, June 1987 and updated in September 1994.

Presidential Memorandum on Economically and Environmentally Beneficial Landscaping Practices on Federally Landscaped Grounds April 26, 1994. The memorandum encourages the use of native plants at federal facilities and in federally funded landscaping projects.

Clean Water Act of 1977 33 U.S.C. § 1251 *et seq*. - See Water.

Executive Order 12088, Federal Compliance with Pollution Control Standards, requires the head of each executive agency to be responsible for ensuring that all necessary actions are taken for the prevention, control, and abatement of environmental pollution with respect to federal facilities and activities under the control of the agency.

Executive Order 11990, Protection of Wetlands, requires that governmental agencies, in carrying out their responsibilities, provide leadership and take action to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands. Each agency is to consider factors relevant to a project proposal's effect on the survival and quality of the wetlands by maintenance of natural systems, including conservation and long-term productivity of existing flora and fauna, species and habitat diversity and stability, hydrologic utility, fish, and wildlife. Agencies are required to provide for early public review of any plans or proposals for new construction in wetlands. Implemented by DOT Order 5660.1A.

Executive Order 11988, Floodplain Management, requires that governmental agencies, in carrying out their responsibilities, provide leadership and take action to restore and preserve the natural and beneficial values served by floodplains. This order requires each federal agency to determine whether the project will occur in a floodplain and to consider alternatives. If no practical alternative is found, it requires minimizing harm and notifying the public if the project must be located in the floodplain, and it provides for public review and comment. Implemented by DOT Order 5650.2.

Federal Coastal Zone Management Act of 1972 16 U.S.C. § 1451 *et seq*., authorizes the National Oceanic and Atmospheric Administration (NOAA) to make grants to states to develop coastal zone management programs in order "to preserve, protect, develop and where possible, to restore or enhance the resources of the nation's coastal zone." An applicant for a federal license is required to certify that the proposed action complies with the state's approved program, and to obtain the state's concurrence with the certification.

Fish and Wildlife Coordination Act 16 U.S.C. § 661 *et seq*., requires federal agencies to consult with the USFWS and state wildlife agency (or agencies) where any water body or wetlands under Corps jurisdiction is proposed to be modified by a federal agency or an applicant for a federal permit.

Marine Mammal Protection Act of 1972 16 U.S.C. § 1361 *et seq*., prohibits taking or harassment of any marine mammals except incidental take during commercial fishing, capture under scientific research and public display permits, harvest by native Americans for subsistence purposes, and any other take authorized on a case-by-case basis as set forth in the Act. The Department of the Interior, USFWS, is responsible for the polar bear, sea otter, marine otter, walrus, manatees, and dugong, while the Department of Commerce, NMFS, is responsible for all other marine mammals.

Migratory Bird Treaty of 1972 16 U.S.C. §§ 703-711, protects migratory waterfowl and all seabirds by limiting the transportation, importation, killing, or possession of these birds.

Executive Order 12114, Environmental Effects Abroad of Major Federal Actions, furthers the purposes of NEPA with respect to the environment outside the United States and enables federal agencies to be informed of pertinent environmental considerations regarding major federal actions abroad.

Bald and Golden Eagle Protection Act (16 U.S.C. § 688 *et seq.*), makes it illegal to take pursue, or disturb American bald and golden eagles, their nests, or their eggs. Consultation with the Department of Interior is required if a nest is found in a project area.

Executive Order 13089 Coral Reef Protection, requires federal agencies to: identify actions that may affect existing U.S. coral reef ecosystems, use their resources to protect and enhance the coral reefs, and insure that their actions will not adversely affect the quality of the coral reef ecosystem. This order establishes a U.S. Coral Reef Task Force that will work with fishery management officials, affected states, and other relevant agencies to reduce the effects of pollution, sedimentation, and fishing on the reef ecosystem.

Coastal Barrier Resources Act of 1982 as amended by the Coastal Barrier Improvement Act of 1990 16 U.S.C §§ 3501-3510. The Coastal Barrier Resources Act prohibits, with some exceptions, federal financial assistance for development within the Coastal Barrier Resources System that contains undeveloped coastal barriers along the Atlantic and Gulf coasts and Great Lakes. If the proposed action would occur on land within the Coastal Barrier Resources Act system and involve funding for development, the action must receive an USFWS exemption from the provisions of the Coastal Barrier Resources Act.

AIR

Executive Order 12088, Federal Compliance with Pollution Control Standards (see discussion above under biota)

Clean Air Act (CAA), implemented in part by Title 40 Code of Federal Regulations (CFR) part 50 states that all applicable state and federal ambient air quality standards must be maintained during the operation of any emission source. The NAAQS include both primary and secondary standards for various pollutants. Primary standards are mandated by the Clean Air Act to protect public health, including that of sensitive subgroups of the population, with an adequate margin of safety. Secondary standards are intended to protect the public welfare from adverse impacts of pollution, such as materials soiling, vegetation damage, and visibility impairment. Section 176(c) of this act provides that no federal agency shall engage in, provide financial assistance for, license or permit, or approve an activity which does not conform to an approved state implementation plan for attainment of air quality standard.

The CAA was amended, on November 5, 1990, to include a phase-out of Class I Ozone Depleting Chemicals, including chlorofluorocarbons (CFCs), halons, carbon tet rachloride, and hydrochlorofluorocarbons (HCFCs).

Title V of the CAA requires covered facilities to obtain permits to release regulated air pollutants.

Prevention of Significant Deterioration (PSD) Title 40 CFR 51.24 and 40 CFR 52.21, regulations were established to provide for the review of new major stationary (as opposed to mobile) sources of air pollution and modifications to major stationary sources to enable large sources to be constructed without significant adverse deterioration of clean air areas. PSD requirements apply only to attainment pollutants emitted from these stationary sources. A pollutant is considered in non-attainment if its federal primary standard has been exceeded in a geographic area more than once a year.

The CAA conformity regulations for non-transportation federal projects apply to federal projects in non-attainment areas. The objective of the program is to assure that emissions from federal projects and programs do not hinder a State's progress toward attaining the NAAQS. A conformity analysis is required for projects that might significantly impact air quality. The regulations require analyses for projects exceeding the emissions levels for major sources in non-attainment areas. The thresholds for conformity analysis are the same as the definition of major source under Title V operating permits.

Executive Order 12114, Environmental Effects Abroad of Major Federal Actions (See discussion under Biota).

Montreal Protocol on Substances that Deplete the Ozone layer Title VI of the Clean Air Act Amendments of 1990, was developed under the guidance of the United Nations Environmental Programme in September 1987. As amended in 1990 and 1992, and as ratified by 149 countries as of May 1996, the Protocol identifies the main ozone depleting substances (ODSs) and specifies a timetable for phasing out the consumption and production of ODSs. Title VI of the CAA Amendments of 1990 establishes phaseout requirements for ODSs consistent with the Montreal Protocol.

WATER

Clean Water Act 33 U.S.C. §1251 *et seq*., requires a NPDES permit to reduce water pollution from all discharges including storm water discharges from industrial area. Section 404 of this act regulates discharge of dredged or fill material in waters of the U.S. and wetlands, and requires a permit from the U.S. Army Corps of Engineers.

Safe Drinking Water Act 42 U.S.C. § 300f *et seq*., requires the EPA to establish a program which provides for the safety of the nation's drinking water. Regulations under this act can be found in 40 CFR, § 141 *et seq*.

Underground Injection Control (UIC) Program 40 CFR 146. As part of the Safe Drinking Water Act, the UIC program establishes regulations for the injection of fluids into wells for storage or disposal, which are designed to protect underground sources of drinking water. Wells which inject fluids which are produced in conjunction with oil or gas, or for storage of hydrocarbons, are Class I injection wells under the program.

Rivers and Harbors Act of 1899, §§ 9 and 10, 33 U.S.C. § 1344, regulates all types of development in or over navigable waters, including bridges, dams, dikes, piers, wharfs, booms, weirs, jetties, dredging, and filling by requiring a Corps of Engineers permit for such actions. Navigable waters are defined in Title 33 CFR section 329 to include past, present, and potential

future use in transporting commerce. Court decisions have expanded protection to estuaries and wetlands (Dedrick 1984).

Wild and Scenic Rivers Act of 1968 16 U.S.C. §§ 1271-1287, PL 90-542 as amended by PL 96-487. The Wild and Scenic Rivers Act, as amended, describes those river segments designated or eligible to be included in the Wild and Scenic Rivers System. Federal agencies are directed to avoid or mitigate adverse effects on rivers identified in the Nationwide Rivers Inventory as having potential for designation under the Wild and Scenic Rivers Act.

Marine Protection, Research and Sanctuaries Act of 1972 33 U.S.C. § 1401 *et seq*. Also known as the Ocean Dumping Act, this act regulates the dumping of materials at sea by preventing or limiting the dumping of materials, which would have adverse effects. The Army Corps of Engineers is authorized to issue permits for transporting dredged materials for ocean disposal and for disposal of other materials in the territorial sea or waters contiguous to the territorial sea.

Executive Order 12088, Federal Compliance with Pollution Control Standards, requires the head of each executive agency to be responsible for ensuring that all necessary actions are taken for the prevention, control, and abatement of environmental pollution with respect to federal facilities and activities under the control of the agency.

Oil Pollution Act of 1990 (OPA) is a comprehensive statute designed to expand oil spill prevention activities, establish new federal authority to direct responses to oil spills, and improve spill preparedness and response capabilities. The OPA requires the federal government to "ensure effective and immediate removal of a discharge, and mitigation or prevention of a substantial threat of a discharge, of oil or a hazardous substance" into the navigable waters of the U.S., adjoining shorelines, and the exclusive economic zone. For spills large enough to pose a substantial threat to the public health or welfare, the federal government is now required to direct all public and private efforts to remove the discharge or to mitigate or prevent the threat of the discharge.

Executive Order 11988, Floodplain Management (See discussion under Biota).

Executive Order 11990, Protection of Wetlands (See discussion under Biota).

Executive Order 12114, Environmental Effects Abroad of Major Federal Actions (See discussion under Biota).

GEOLOGY

Coastal Zone Management Act of 1972 (See discussion under Biota).

CULTURAL

Section 4(f) of the Department of Transportation Act 49 U.S.C. 303 (See discussion under land use).

Antiquities Act of 1906 16 U.S.C. §§ 431-433, is the first piece of historic-preservation legislation. It was approved in reaction to the destruction of important historic and archaeological sites, and it established a system of permits for conducting archaeological investigations on federal land. This act also specified penalties for noncompliance. Some antiquity permits issued under this law are still in effect, though new permits are now being issued under the Archaeological Resources Protection Act of 1979 (16 U.S.C. § 470aa-mm) and its implementing regulations (43 CFR 7).

Historic Sites Act of 1935 16 U.S.C. §§ 461-467, declares that it is national policy to "preserve for public use historic sites, buildings, and objects of national significance."

Reservoir Salvage Act of 1960 16 U.S.C. § 469-469c (Pub. L. 86-523), authorizes the expenditure of federal funds for archaeological salvage at federally funded reservoir projects. After World War II, dam construction took place throughout the United States, and numerous archaeological excavations were conducted in conjunction with this construction, leading to the passage of the act.

National Historic Preservation Act of 1966 16 U.S.C. § 470-470m, provides a broad base for the implementation of preservation goals. The act establishes a National Register of Historic Places (National Register) and the Advisory Council on Historic Preservation (Advisory Council). Section 106 (36 CFR 800) of this act requires that federal agencies consult with the Advisory Council prior to any undertaking that would affect a property on or eligible for the National Register. Section 106 specifically states that federal agencies "must take into account the effect of the undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register."

Determination of eligibility is a process conducted by a federal agency, the SHPO, and the National Park Service, with input from archaeologists, Native Americans, and other concerned parties. The procedures for eligibility determination and for determination of possible adverse effects (36 CFR 800) include the submission of a preliminary case report identifying possible eligible sites to the SHPO or Tribal Historic Preservation Officer (THPO). The ultimate determination of "no effect," "no adverse effect," or "adverse effect" is made through ongoing consultation with local experts and the SHPO or THPO.

Executive Order 11593 directs federal agencies to identify and nominate historic properties to the National Register and requires that these agencies should avoid damaging historic properties that might be eligible for the National Register.

Archaeological and Historical Preservation Act of 1974 16 U.S.C. § 469a-469c, which amends the Reservoir Salvage Act of 1960, deals only with the preservation of data, not of historic properties as physical entities.

Archaeological Resources Protection Act (ARPA) of 1979 16 U.S.C. § 470aa-470mm, ensures the protection and preservation of archaeological sites on federal land. ARPA requires that

federal permits be obtained before cultural resource investigations begin at sites on federal land. This act also requires that investigators consult with the appropriate Native American groups prior to initiating archaeological studies on sites of Native American origin.

American Indian Religious Freedom Act 42 U.S.C. § 1996, states that it is the policy of the United States to protect and preserve for American Indians their inherent right of freedom to believe, express, and exercise the traditional religions including but not limited to access to sites, use and possession of sacred objects, and the freedom to worship through ceremonial and traditional rites.

Native American Graves Protection and Repatriation Act of 1990 25 U.S.C. 3001, PL 101-601 (1990), is triggered by the possession of human remains or cultural items by a federally funded repository or by the discovery of human remains or cultural items on federal or tribal lands and provides for the inventory, protection, and return of cultural items to affiliated Native American groups. Permits are required for intentional excavation and removal of Native American cultural items from federal or tribal lands. The Act includes provisions that, upon inadvertent discovery of remains, the action will cease in the area where the remains were discovered, and the FAA official will protect the materials and notify the appropriate land management agency.

Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, 42 U.S.C. 4601 PL 91-528 amended by the Surface Transportation and Uniform Relocation Act Amendments of 1987, PL 100-117. If acquisition of real property or displacement of persons is involved, 49 CFR part 24 implementing the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended must be met. Otherwise, the FAA, to the fullest extent possible, observes all local and State laws, regulations, and ordinances concerning zoning, transportation, economic development, housing, etc. when planning, assessing, or implementing the proposed action.

Public Building Cooperative Use Act of 1976 40 U.S.C. 601(a)(1), 606, 611(c), 612(a)(4), PL 94-541. The Public Building Cooperative Use Act of 1976, along with NEPA and National Historic Properties Act, encourages the acquisition and use of space in suitable buildings of historic, architectural, or cultural significance.

Executive Order 13006, Locating Federal Facilities on Historic Properties in Our Nation's Central Cities 61 *FR* 26071, May 24, 1996, requires federal agencies, when operationally appropriate and economically prudent, to use and maintain historic properties and districts, especially those located in central business areas and to give first consideration when locating federal facilities to historic districts, the developed or undeveloped sites within historic districts, and lastly to historic properties outside of historic districts. Any rehabilitation or construction that is undertaken must be architecturally compatible with the character of the surrounding historic district or properties.

Executive Order 13007, Indian Sacred Sites 61 *FR* 26771, May 29, 1996, requires federal agencies that manage federal lands, defined as any land or interests in land owned or leased by the United States, except Indian trust lands, to the extent practicable, permitted by law, and not clearly inconsistent with essential agency functions, to: (1) accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners, and (2) avoid adversely affecting the physical integrity of such sacred sites.

Executive Order 12898 Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires each federal agency to the greatest extent practicable and permitted by law, and consistent with the National Performance Review, to achieve environmental justice as part of its mission. Agencies must identify and address as appropriate, disproportionately high and adverse human health or environmental effects, including interrelated social and economic effects, of their programs, policies, and activities on minority populations and low-income populations.

Department of Transportation Order 5610.2 Environmental Justice in Low-Income Populations and Minority Populations, ensure that DOT will use the principles of NEPA, Title VI of the Civil Rights Act of 1964, the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA).

Native American Graves Protection and Repatriation Act (NAGPRA) 25 U.S.C. 3001 *et seq*. directs consultation with tribes in the event of inadvertent discovery of Native American items or intentional excavation. Makes trafficking in Native American items subject to sanction and requires museums to repatriate Native American items.

Presidential Memorandum dated April 29, 1994 requires consultation with recognized Native American groups to be given government-to-government status.

LAND USE

Executive Order 12372, Intergovernmental Review of Federal Programs, directs federal agencies to "make efforts to accommodate state and local elected officials' concerns with proposed direct federal development." It further states, "for those cases where the concerns cannot be accommodated, federal officials shall explain the bases for their decision in a timely manner." The executive order requires federal agencies to provide state and local officials the opportunity to comment on actions that could affect their jurisdictions, using state-established consultation processes when possible.

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires each federal agency to make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations. The executive order requires each agency to develop procedures for the implementation of these requirements.

Coastal Zone Management Act of 1972 16 U.S.C. § 1451 *et seq*. (See discussion under Biota).

Farmland Protection Policy Act 7 U.S.C. § 4201 *et seq*., and 7 CFR § 658, provides for federal agencies to identify and take into account the adverse effects of their programs on the preservation of farmland, including prime and unique farmlands and farmlands of statewide or local importance, and to consider alternative actions, as appropriate, that could lessen adverse effects. The Act does not authorize the federal government, in any way, to regulate the use of private or non-federal land, nor does it affect the property rights of owners of such lands.

Section 4(f) of the Department of Transportation Act 49 U.S.C. 303, states that it is national policy to preserve the natural beauty of the countryside, parklands, refuges, and historic sites. The Secretary of Transportation "may approve a transportation program or project requiring the use of publicly owned land of a public park, recreation area, or wildlife or waterfowl refuge, or land of an historic site of national, state or local significance only if 1) there is no feasible or prudent alternative to using that land and 2) the program or project includes all possible planning to minimize harms."

Executive Order 11988, Floodplain Management (See discussion under Biota). Ensuring that proper consideration is given to the avoidance and mitigation of adverse floodplain impacts in agency actions, planning programs, and budget requests.

Executive Order 11990, Protection of Wetlands (See discussion under Biota).

Executive Order 12114, Environmental Effects Abroad of Major Federal Actions (See discussion under Biota).

Executive Order 13123, Greening the Government Through Efficient Energy Management 64 *FR* 30851, June 8, 1999, encourages each federal agency to expand the use of renewable energy within its facilities and in its activities. The Executive Order also requires each federal agency to reduce petroleum use, total energy use and associated air emissions, and water consumption in its facilities. It is also the policy of the FAA, consistent with NEPA and the CEQ regulations, to encourage the development of facilities that exemplify the highest standards of design including principles of sustainability.

TRANSPORTATION

Transportation is regulated on the federal level by the establishment of plans, policies, guidelines, and regulations, generally, by the United States Department of Transportation. The Federal Highway Administration has established highway design criteria and standards for traffic control devices for use in planning and design of federally funded highway projects. The Federal Aviation Administration maintains jurisdiction over flight patterns for all aircraft.

Executive Order 12465, Commercial Expendable Launch Vehicle Activities, establishes the responsibilities of lead and other agencies and stipulates that the Department of Transportation is the federal government's lead agency for encouraging and facilitating commercial expendable launch vehicle activities by the private sector. The order establishes an interagency group composed of the Department of State, the Department of Defense, the Department of Commerce, the Federal Communications Commission, and the National Aeronautics and Space Administration.

49 U.S.C. Subtitle IX, ch. 701, Commercial Space Launch Activities 49 U.S.C. § 70101 *et seq*., (formerly the Commercial Space Launch Act of 1984) implemented by the Commercial Space Transportation Licensing Regulations 14 C.F.R. Ch. III, authorize the Secretary of Transportation to license, oversee and coordinate United States commercial launch activities, issue and transfer commercial launch licenses authorizing those operations, and in doing so, protect the public health and safety, safety of property, and national security and foreign policy interests of the United States.

Hazardous Materials Transportation Act 49 U.S.C. 1801 *et seq*. (HMTA), governs transportation of substances and materials in quantities and forms that the Secretary of Transportation has found may pose an unreasonable risk to health and safety or to property when transported in commerce. Regulations implementing the Act are found in 49 CFR Parts 171 through 179. Hazardous substances and wastes are defined in legislation and regulated for purposes of transportation by DOT. Hazardous substances are defined and regulated in the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 U.S.C. 9601), as amended by Superfund Amendments and Reauthorization Act (PL 99-499), and Clean Water Act (39 U.S.C. 1251 *et seq*.). Hazardous wastes are defined and regulated by the Resource Conservation and Recovery Act (42 U.S.C. 6901 *et seq*.). Transportation and handling of radioactive materials are regulated by the Nuclear Regulatory Commission and by DOT.

Hazardous Materials Transportation Uniform Safety Act of 1990 (HMTUSA) amends the Hazardous Materials Transportation Act of 1975, attempting to create consistent federal laws and regulations, as necessary and desirable, to reduce the maze of conflicting State, local, and federal regulations. HMTUSA requires that the DOT promulgate standards to be used by the states when designating highway routes for hazardous materials transportation. These standards must enhance overall public safety, provide for consultation with affected jurisdictions, offer an opportunity for public comment, and must not unreasonably burden commerce. The statute also enumerates twelve factors that states must consider when they establish routes. If a conflict arises between jurisdictions over routing restrictions, any affected state may petition the Secretary of Transportation to implement dispute resolution provisions.

NOISE

Noise Control Act of 1972 PL 92-574, 49 U.S.C. 44715, provides for aircraft noise standards to protect public health and welfare. The standards assist in assessing the effectiveness of noise regulations and land use policies.

WASTE MANAGEMENT

Resource Conservation and Recovery Act (RCRA) 42 U.S.C. 6901 *et seq*., sets forth definitions of hazardous wastes and associated testing protocols; requires a Hazardous Waste Generator ID to track hazardous wastes generated at the facility; sets standards for hazardous waste generators to properly manage their wastes; requires compliance with performance standards for hazardous waste Treatment, Storage and Disposal (TSD) facilities; and establishes an Underground Storage Tank (UST) program to protect underground sources of drinking water.

Emergency Planning and Community Right –to-Know Act (EPCRA)
(40 CFR Parts 355-372) requires that facilities managing toxic chemicals exceeding the "threshold planning quantity" report annually on toxic chemical releases and offsite transfers and prepare/submit an emergency response plan to appropriate authorities and local community.

Pollution Prevention Act of 1990 (PPA) (42 U.S.C. § 13101 *et seq*.), establishes pollution prevention as a national objective and specifies a hierarchy of practices led by pollution prevention. The Act defines pollution prevention as source reduction and other practices that reduce or eliminate the creation of pollutants. It requires firms that prepare toxic chemical release forms under the Emergency Planning and Community Right to Know Act to provide information on pollution prevention and recycling activities.

Executive Order 12856, Federal Facility Compliance with Right-to-Know Laws and Pollution Prevention Requirements, requires federal facilities to comply with EPCRA.

Toxic Substances Control Act (TSCA) (15 U.S.C. § 2601 *et seq*.), authorizes the EPA to administer a toxic substances control program by requiring information about the production, use, and health and environmental effects of existing chemicals as well as new chemicals proposed for manufacture. The Act gives EPA the authority to require manufacturers to conduct tests, evaluate the potential risks of a chemical, and prohibit its manufacture if an unreasonable risk to health or the environment is found. Section 6 of the Act specifically regulates, among others, polychlorinated biphenyls (PCBs) and asbestos.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) (42 U.S.C. § 9601 *et seq*.), also known as Superfund, creates authority and procedures for the federal government to conduct or oversee emergency responses, removal and remediation actions at sites requiring a cleanup of releases of hazardous substances. The Act establishes a federal fund, based on taxes on petroleum and chemical feedstocks, to pay for cleaning up sites containing hazardous substances if the parties responsible for the sites do not pay. The Act also specifies standards of liability, and provides rules or procedures for determining compensation, reportable quantities of releases of hazardous substances, penalties, employee protection, claims procedures, and cleanup standards. The Superfund Amendment and Reauthorization Act of 2986 (SARA) revised and extended CERCLA in 1986. SARA Title III, the Emergency Planning and Community Right-to-Know Act, provides for emergency planning and preparedness, community right-to-know reporting, and toxic chemical release reporting, and toxic chemical release reporting. The Act requires that information about hazardous materials be provided to state and local authorities. Such information includes material safety data sheets, emergency and hazardous chemical inventory forms, and toxic chemical release reports.

Executive Order 12580, Superfund Implementation, amended by Executive Orders 13016 and 12777, delegates most response authorities to EPA and U.S. Coast Guard for abatement. Agencies must participate in response teams with opportunity for public comment before removal action is taken.

GENERAL

National Environmental Policy Act (NEPA) (42 U.S.C. §§ 4321-4370c), requires federal agencies, early in the agency's planning process, to assess the potential environmental impacts of implementing major federal actions so that this information can be used in the decision-making

process. The Act requires analysis of effects from the full range of project alternatives, along with public comment and review. NEPA specifies several levels of environmental review, ranging from a Categorical Exclusion for actions with no potentially significant impact, to Environmental Impact Statements for major, unprecedented, or controversial actions having potentially significant environmental impacts. NEPA is implemented through Council on Environmental Quality regulations.

Council on Environmental Quality (CEQ) Regulations Implementing NEPA (40 CFR Parts 1500-1508), defines the procedures for completing the environmental review and analysis called for in NEPA. The regulations outline the principles to be followed in the environmental impact analysis process, including incorporating environmental review early in the project planning, preparing an action-forcing environmental document to assist in project decisions rather than one that document decisions previously made, and ensuring public involvement throughout the process. The regulations also include guidelines for determining what level of environmental review is required; the contents of environmental documents; procedures for comments by the public and federal agencies; and schedules. The regulations specify that notices will be published in the *Federal Register* prior to preparation of an EIS, and require all EISs to be filed with EPA's Office of Federal Activities upon completion.

FAA Order 1050.1D Policies and Procedures for Considering Environmental Impacts, establishes FAA policies and procedures for assuring agency compliance with environmental procedures as set forth in the Council of Environmental Quality regulation for implementation of NEPA. Specifically, this includes procedures for the preparation of Environmental Impact Statements and Finding of No Significant Impact and for preparing and processing environmental assessments of major federal FAA actions. This order implements NEPA, Order DOT 5610.1C, Procedures for Considering Environmental Impacts, and other statutes, directives, and orders.

FEDERAL COMMERCIAL SPACE LEGISLATION AND ORDERS

Commercial Space Launch Act of 1984 (49 U.S.C. App. §§ 2601-2623 as codified at 49 U.S.C. Subtitle IX ch. 701 Commercial Space Launch Activities 49 U.S.C. §§ 70101-70119), authorizes the Secretary of Transportation to license, oversee, and coordinate commercial launch activities and to issue and transfer commercial launch licenses. This authority has been delegated to the FAA's Office of the Associate Administrator for Commercial Space Transportation. The Act charges the Secretary with the responsibility to protect the public health and safety, safety of property, and national and foreign policy interests of the U.S. In 1998, FAA's role increased to include licensing of reentry vehicles and reentry sites.

Executive Order 12465, Commercial Expendable Launch Vehicle Activities, establishes the responsibilities of the lead agency and other agencies and states that the Department of Transportation is the lead agency for encouraging and facilitating commercial expendable launch vehicle activities by the private sector. The Order establishes an interagency group composed of the Department of State, Department of Defense, Department of Commerce, Federal Communications Commission, and the National Aeronautics and Space Administration.

The Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, Article VII "Each State Party to the Treaty that launches or procures the launching of an object into outer space, including the moon and other celestial bodies, and each State Party from whose territory or facility an object is

launched, is internationally liable for damage to another State Party to the Treaty or its natural or judicial persons by such object or its component parts on Earth, in airspace or in outer space, including the moon and other celestial bodies."

Part Three: International Activities, Legal Issues, and Regulations (Interagency Report on Orbital Debris – 1995), Section II specifies that the Commercial Space Launch Act gives DOT the legal right to "proscribe such requirements, with respect to launches and operation of launches and operation of launch sites, necessary to protect the public health and safety, safety of property, national security interests and foreign policy interests of the United States." Section III (paragraph 5) states: "The Convention (Convention on International Liability for Damage Caused by Space Objects – September 1, 1972) imposes upon a launching state absolute liability for damage caused by its space object on the Earth or to aircraft in light." (Space Object is defined as "component parts of a space object as well as it launch vehicle and parts thereof." The "Launching State" is defined as "the party on whose registry a space object is launched into outer space (and who) retains jurisdiction and control over such objects while it is in outer space." Section III, (Paragraph 9) clarifies the point that all Objects Launched into space must be registered with the United Nations. (Convention on Registration of Objects Launched into Outer Space – September 15, 1976)

Convention on International Liability for Damage Caused by Space Objects (United Nations Document), Article 1, the term "Launching State"' refers to: "A State which launches or procures launching of a space object" or "A State from whose territory or facility a space object is launched." Article IV, explains that all parties are equally liable – the launching State, the geographical launch location State, and any third parties involved in the launch.

DOT Order 5610.1C Procedures for Considering Environmental Impacts, establishes procedures for consideration of environmental impacts in decision making on proposed Department of Transportation actions. The Order provides that information on environmental impacts of proposed actions will be made available to public officials and citizens through environmental impact statements, environmental assessments or findings of no significant impact (currently being updated).