Langley Research Center

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ENVIRONMENTAL AND ENERGY PROGRAM MANUAL

National Aeronautics and Space Administration

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Responsible Office: Standard Practice and Environmental Engineering Branch, Center Operations Directorate

TABLE OF CONTENTS

PREFACE 1-4
P.1 PURPOSE 1-4
P.2 APPLICABILITY 1-4
P.3 AUTHORITY 1-4
P.4 APPLICABLE DOCUMENTS AND FORMS 1-7
P.5 MEASUREMENT/VERIFICATION 1-8
P.6 CANCELLATION 1-8
1 INTRODUCTION 1-9
1.1 RESPONSIBILITY 1-9
1.2 COMPLIANCE 1-10
2 ENVIRONMENTAL MANAGEMENT SYSTEM 2-1
2.1 GENERAL 2-1
2.2 REQUIREMENTS 2-1
2.3 RESPONSIBILITIES 2-3
3 ENERGY EFFICIENCY AND WATER CONSERVATION 3-1
3.1 GENERAL 3-1
3.2 REQUIREMENTS 3-1
3.3 RESPONSIBILITIES 3-2
4 PROJECT/PROGRAM PLANNING AND IMPLEMENTATION 4-1
4.1 GENERAL 4-1
4.2 REQUIREMENTS 4-1
4.3 ENVIRONMENTAL PROJECT REVIEW AND DOCUMENTATION 4-2
4.4 RESPONSIBILITIES 4-4
5 WATER QUALITY 5-1
5.1 GENERAL 5-1
5.2 REQUIREMENTS 5-2
5.3 RESPONSIBILITIES 5-6
6 AIR QUALITY 6-1
6.1 GENERAL 6-1

6.2 REQUIREMENTS 6-1
6.3 RESPONSIBILITIES 6-3
7 WASTE MANAGEMENT & MINIMIZATION 7-1
7.1 GENERAL 7-1
7.2 REQUIREMENTS 7-1
7.3 RESPONSIBILITIES 7-8
8 POLYCHLORINATED BIPHENYL (PCB) MANAGEMENT 8-1
8.1 GENERAL 8-1
8.2 REQUIREMENTS 8-1
8.3 RESPONSIBILITIES 8-1
9 ASBESTOS 9-1
9.1 GENERAL 9-1
9.2 REQUIREMENTS 9-2
9.3 RESPONSIBILITIES 9-2
10 ENVIRONMENTAL NOISE 10-1
10.1 GENERAL 10-1
10.2 REQUIREMENTS 10-1
10.3 RESPONSIBILITIES 10-2
11 RECYCLING 11-1
11.1 GENERAL 11-1
11.2 REQUIREMENTS 11-1
11.3 RESPONSIBILITIES 11-3
12 GREEN PURCHASING 12-1
12.1 GENERAL 12-1
12.2 REQUIREMENTS 12-1
12.3 TRAINING 12-3
12.4 WAIVER/JUSTIFICATION DOCUMENTATION 12-4
12.5 RESPONSIBILITIES 12-4
13 NATURAL RESOURCES MANAGEMENT 13-1
13.1 GENERAL 13-1
13.2 REQUIREMENTS 13-1
13.3 RESPONSIBILITIES 13-5
14 OIL AND HAZARDOUS MATERIAL SPILL CONTROL 14-1
14.1 GENERAL 14-1

14.2 REQUIREMENTS 14-1
14.3 SPILL RESPONSE 14-1
14.4 SPILL CHARACTERIZATION 14-2
14.5 RESPONSIBILITIES 14-3
15 EMERGENCY PLANNING AND COMMUNITY RIGHT TO KNOW ACT 15-1
15.1 GENERAL 15-1
15.2 EMERGENCY PLANNING REQUIREMENTS 15-1
15.3 EMERGENCY RELEASE NOTIFICATION REQUIREMENTS 15-1
15.4 REPORTING REQUIREMENTS 15-2
15.5 RESPONSIBILITIES 15-2
16 UNDERGROUND AND ABOVEGROUND STORAGE TANKS 16-1
16.1 GENERAL 16-1
16.2 REQUIREMENTS 16-1
16.3 RESPONSIBILITIES 16-2
17 HISTORIC AND CULTURAL RESOURCES 17-1
17.1 GENERAL 17-1
17.2 REQUIREMENTS 17-1
17.3 RESPONSIBILITIES 17-3
18 INVENTORY TRACKING OF HAZARDOUS MATERIALS 1
18.1 GENERAL 1
18.2 REQUIREMENTS 1
18.3 RESPONSIBILITIES 3
Appendix A - Glossary of Terms 1
Appendix B - Acronyms and Abbreviations 1

PREFACE

P.1 PURPOSE

a. This Langley Procedural Requirement (LPR) sets forth procedural requirements and responsibilities to ensure that NASA Langley Research Center (LaRC) personnel comply with the Center's environmental and energy management program.

b. LaRC is committed to conducting all operations in a safe, healthful, and environmentally acceptable manner. The Center's environmental and energy policy is to protect and enhance the quality of the environment through compliance with federal, state, and local regulatory authorities; executive orders; and NASA and LaRC policies and directives. Located in the ecologically sensitive Chesapeake Bay watershed, LaRC is committed to fulfill its mission in a manner that promotes environmental stewardship, sustainability, and continual improvement while mitigating environmentally driven mission risks.

P.2 APPLICABILITY

a. This LPR applies to all organizational elements of LaRC and to all personnel working in or visiting areas under the administrative control of LaRC.

b. In this directive, all mandatory actions (i.e., requirements) are denoted by statements containing the term "shall." The terms "may" or "can" denote discretionary privilege or permission; "should" denotes a good practice and is recommended, but not required; "will" denotes expected outcome; and "are/is" denote descriptive material.

c. In this directive, all document citations are assumed to be the latest version, unless otherwise noted.

P.3 AUTHORITY

a. Farm Security and Rural Investment Act of 2002, as amended, 7 U.S.C § 7901 et seq.

b. Toxic Substances Control Act (TSCA), as amended, 15 U.S.C. § 2601 et seq.

c. Archeological Resources Protection Act of 1979, as amended, 16 U.S.C. § 470aa et seq.

d. Marine Mammal Protection Act of 1972, as amended, 16 U.S.C. § 1361 et seq.

e. Coastal Zone Management Act of 1972, as amended, 16 U.S.C. § 1451 et seq.

f. Endangered Species Act of 1973 (ESA), as amended, 16 U.S.C. § 1531 et seq.

g. Rivers and Harbors Appropriation Act of 1899, as amended, 33 U.S.C. § 401 et seq.

h. Clean Water Act (CWA), as amended, 33 U.S.C. § 1251 et seq.

i. Resource Conservation and Recovery Act of 1976 (RCRA), as amended, 42 U.S.C. § 6901 et seq.

j. National Environmental Policy Act of 1969 (NEPA), as amended, 42 U.S.C. § 4321 et seq.

k. Noise Control Act of 1972, as amended, 42 U.S.C. § 4901 et seq.

l. Clean Air Act (CAA), as amended, 42 U.S.C. § 7401 et seq.

m. National Energy Conservation Policy Act of 1978 (NECPA), as amended, 42 U.S.C. § 8251 et seq.

n. Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA or Superfund), as amended, 42 U.S.C. § 9601 et seq.

o. Superfund Amendments and Reauthorization Act of 1986 (SARA), as amended, 42 U.S.C. § 9662 et seq.

p. Emergency Planning & Community Right-To-Know Act of 1986 (EPCRA), 42 U.S.C. § 11001 et seq.

q. Pollution Prevention Act of 1990 (PPA), 42 U.S.C. § 13101 et seq.

r. Energy Policy Act of 2005 (EPACT 2005), as amended, 42 U.S.C. § 15801 et seq.

s. Energy Independence and Security Act of 2007 (EISA), as amended, 42 U.S.C. § 17001 et seq.

t. National Aeronautics and Space Act of 1958, as amended, 51 U.S.C. § 20113 et seq.

u. National Historic Preservation Act, as amended, 54 U.S.C. § 300101 et seq.

v. Executive Order 11593 (Protection and Enhancement of the Cultural Environment), 3 CFR 559-562 (1971).

w. Executive Order 11990 (Protection of Wetlands), as amended by Executive Order 12608, 3 CFR 121 (1977)

x. Executive Order 12114 (Environmental Effects Abroad of Major Federal Actions) 3 CFR 356 (1979)

y. Executive Order 13186 (Responsibilities of Federal Agencies to Protect Migratory Birds) 3 CFR 719-723 (2002)

z. Executive Order 13221 (Energy Efficient Standby Power Devices), 3 CFR 783 (2002).

aa. Executive Order 13287 (Preserve America), 3 CFR 183-186 (2004).

bb. Executive Order 13508 (Chesapeake Bay Protection and Restoration), 3 CFR 235-241 (2010).

cc. Environmental Quality, 14 CFR 1216.

dd. Occupational Safety and Health Standards, 29 CFR 1910.

ee. Basic Program Elements for Federal Employee Occupational Safety and Health Programs and Related Matters, 29 CFR 1960.

ff. National Register of Historic Places, 36 CFR 60.

gg. Protection of Historic Properties, 36 CFR 800.

hh. Environmental Protection Agency (EPA), 40 CFR Chapter I.

ii. Council on Environmental Quality (CEQ), 40 CFR Chapter V.

jj. National Emission Standard for Asbestos, 40 CFR 61 Subpart M

kk. Comprehensive Procurement Guideline for Products Containing Recovered Materials, 40 CFR 247

ll. Federal Acquisition Regulation (FAR), 48 CFR Chapter 1.

mm. NASA FAR Supplement, 48 CFR Chapter 18.

nn. Shippers – General Requirements for Shipments and Packagings, 49 CFR 173.

oo. Endangered and Threatened Wildlife and Plants, 50 CFR 17.

pp. Clean Water Act Section 303(d): Notice for the Establishment of the Total Maximum Daily Load for the Chesapeake Bay, 76 Fed. Reg. 33280 (Jan. 5, 2011).

qq. Executive Order 13693 - Planning for Federal Sustainability in the Next Decade, 80 Fed. Reg. 15869 (Mar. 25, 2015).

rr. NPD 8500.1, NASA Environmental Management.

ss. NPR 4310.1, Identification and Disposition of NASA Artifacts.

tt. NPR 8510.1, NASA Cultural Resources Management.

uu. NPR 8530.1, Affirmative Procurement Program and Plan for Environmentally Preferable Products.

vv. NPR 8553.1, NASA Environmental Management System.

ww. NPR 8570.1, NASA Energy Management Program.

xx. NPR 8580.1, NASA National Environmental Policy Act Management Requirements.

yy. NPR 8820.2, Facility Project Requirements (FPR).

zz. NASA Langley Research Center Annual Standards and Specifications: Erosion and Sediment Control (ESC) & Stormwater Management (SWM).

aaa. Virginia Tidal Wetlands Act, 28.2 Code of Va., Chapter 13.

bbb. State Water Control Law, 62.1 Code of Va., Chapter 3.1.

ccc. Department of Environmental Quality, 9 VAC 15.

ddd. State Water Control Board, 9 VAC 25.

eee. Virginia Regulation Concerning Licensed Asbestos Contractor Notification, Asbestos Project Permits and Permit Fees, 16 VAC 25-20-30.

fff. Noise Ordinance, City of Hampton Municipal Code, § 22-2, 1964.

ggg. Noise Ordinance, City of Poquoson Municipal Code, § 34-31, 1982.

P.4 APPLICABLE DOCUMENTS AND FORMS

a. Guiding Principles for Sustainable Federal Buildings, February 2016. https://www.whitehouse.gov/sites/default/files/docs/guiding_principles_for_sustainable_federal_buildings_and_associated_instructions_february_2016.pdf

b. Unified Facilities Guide Specifications, http://www.wbdg.org/ccb/browse_cat.php?c=3.

c. LAPD 8500.1, LaRC Environmental and Energy Management.

d. LPR 1710.12, Potentially Hazardous Materials – Hazard Communication Standard.

e. LPR 1710.13, Chemical Hygiene Plan.

f. LPR 1740.2, Facility Safety Requirements.

g. LPR 1740.4, Facility System Safety Analysis and Configuration Management.

h. LPR 8715.12, LaRC Integrated Spill Contingency Plan.

i. LMS-CP-4710, Configuration Management for Facilities

j. LMS-CP-4759, Acquisition of Hazardous Materials.

k. LMS-CP-8530, Langley Research Center Facility Multi-Media Environmental Audit Process.

l. LF 44, Hazardous Materials – Procurement, Inventory and Storage Record.

m. LF 163, Waste Material Data Sheet.

n. LF 243, Appointment of Facility Environmental Coordinator(s) (FEC).

o. LF 342, Environmental Finding Tracking Form.

p. LF 408, NASA Langley Research Center Weekly AST Inspection Checklist.

q. LF 410, NASA Langley Research Center Monthly AST Inspection Checklist.

r. LF 461, Environmental Project Planning Form.

s. LF 1707, Langley Special Approvals and Affirmations of Requisitions.

t. LaRC Center Operations Directorate (COD) Facilities Engineering Standards. *(Contact the COD Chief Engineer at extension 46979 for copies of these documents)*

u. LaRC Chesapeake Bay TMDL Action Plan *(Contact the Standard Practice and Environmental Engineering Branch at extension 43500 for a copy of this document)*

v. LaRC Environmental Resource Document (ERD). *(Contact the Standard Practice and Environmental Engineering Branch at extension 43500 for a copy of this document)*

w. LaRC Environmental Specifications Section 01 35 40 00 41. (*Contact the Standard Practice and Environmental Engineering Branch at extension 43500 for a copy of this document)*

x. LaRC Hazardous Material and Hazardous Waste Security Plan. *(Contact the Standard Practice and Environmental Engineering Branch at extension 43500 for a copy of this document)*

y. LaRC Municipal Separate Storm Sewer System (MS4) Program Plan. *(Contact the Standard Practice and Environmental Engineering Branch at extension 43500 for a copy of this document)*

z. LaRC Plug Load Management Plan. *(Contact the Standard Practice and Environmental Engineering Branch at extension 43500 for a copy of this document)*

aa. LaRC Seeding Specifications Section 32 92 19 00 41 *(Contact the Standard Practice and Environmental Engineering Branch at extension 43500 for a copy of this document)*

P.5 MEASUREMENT/VERIFICATION

To verify compliance with this LPR, the Standard Practice and Environmental Engineering Branch performs multimedia environmental audits of LaRC facilities, as described in chapter 1.2. On an annual basis, LaRC conducts a Langley Management System (LMS) Internal Assessment of the LaRC Standard Practice and Environmental Engineering Branch and associated organizations to ensure conformance with this LPR. Every three years NASA Headquarters performs a comprehensive Environmental and Energy Functional Review of the LaRC Environmental program.

P.6 CANCELLATION

LPR 8500.1 E, dated May 21, 2015

/s/ Cathy H. Mangum September 6, 2016
Center Associate Director *Date*

DISTRIBUTION

Approved for public release via the Langley Management System; distribution is unlimited.

1 INTRODUCTION

1.1 RESPONSIBILITY

1.1.1 Conducting operations in an environmentally acceptable manner is each employee's responsibility. The success of LaRC's environmental program depends on cooperation and support from all LaRC personnel.

1.1.2 Langley Policy Directive (LAPD) 8500.1, *"LaRC Environmental and Energy Management*," includes general responsibilities for LaRC management and organizations regarding the Center's environmental and energy program. The directive specifies that:

a. Overall responsibility for LaRC's environmental and energy management program lies with the Center Director.

b. Day-to-day management of the program is the responsibility of the LaRC Standard Practice and Environmental Engineering Branch (SPEEB) within the Center Operations Directorate.

c. Each organizational Director is responsible for appointing, in writing, Facility Environmental Coordinators (FECs) for facilities and operations under their purview. On-site contractors may be appointed as FECs.

d. FEC appointments, updates, and changes shall be made using Langley Form (LF) 243, "*Appointment of Facility Environmental Coordinator(s)*." Additional information on FEC appointments and changes is available at the LaRC Environmental and Energy Management Web site: https://emis.ndc.nasa.gov/fecdb.cfm.

e. FECs are responsible for ensuring proper environmental management and compliance for the activities within their designated facilities, and the SPEEB Environmental staff is responsible for interfacing with the FECs to achieve program objectives.

1.1.3 In addition to the general responsibilities described above, each chapter of this LPR details specific organization and personnel responsibilities according to the various environmental program areas. Any questions concerning the responsibilities or procedural requirements contained in this LPR should be directed to the SPEEB Environmental staff at 4-3500.

1.2 COMPLIANCE

1.2.1 Failure to fully comply with the requirements of this LPR could result in federal or state regulatory action requiring substantial expenditure of NASA resources and possibly criminal prosecution of the individuals responsible for noncompliance. Citations and fines for violations of environmental laws and regulations are dependent upon the applicable law and the nature of the violation. Charges can range from civil fines for noncompliance to federal and state criminal indictments for negligent or willful violations, including the withholding or falsification of information. Penalties can range from an injunction to hefty fines to imprisonment, depending on the nature of the violation.

1.2.2 The Head of the SPEEB is the delegated cease and desist authority for any operations or activities that, in the professional judgment of the SPEEB Environmental staff, have an immediate and negative impact on the environment or that jeopardize the Center's compliance with permit requirements and applicable environmental regulations.

1.2.3 To ensure compliance with federal, state, and local environmental regulations, the SPEEB Environmental staff conducts regular multimedia environmental audits of LaRC facilities. The staff documents the audit findings and follows the procedures in LMS-CP-8530, "*Langley Research Center Facility Multi-Media Environmental Audit Process,"* (https://lms.larc.nasa.gov/admin/view_doc_detail.cfm?docid=2466) to ensure the correction of any noncompliance issues.

1.2.4 SPEEB Environmental staff members will routinely inspect projects to ensure compliance with federal, state, local, and Center regulations and policies; approved project-specific plans and drawings; LF 461 comments; and the most current version of the LaRC Environmental Specifications Section 01 35 40.00 41 and the Environmental and Energy Facilities Engineering Standards. The SPEEB Environmental staff can issue corrective action notices that shall be addressed in a specified timeline. The official SPEEB enforcement policy for projects is in the most current version of 01 35 40.00 41.

1.2.5 When environmental information must be communicated to all Center personnel, the SPEEB Environmental staff will post an article on the LaRC intranet homepage. An email notice will be sent to alert LaRC employees that the article is available for viewing on @LaRC.

2 ENVIRONMENTAL MANAGEMENT SYSTEM

2.1 GENERAL

2.1.1 The purpose of this chapter is to provide information on the applicable requirements and procedures related to the Environmental Management System (EMS) at LaRC. As defined in NASA Procedural Requirement (NPR) 8553.1, "*NASA Environmental Management System*," an EMS is a system that:

a. incorporates people, procedures, and work practices in a formal structure to ensure that the important environmental impacts of the organization are identified and addressed,

b. promotes continual improvement including periodically evaluating environmental performance,

c. involves all members of the organization as appropriate, and

d. actively involves Senior Management in support of the environmental management program.

2.1.2 LaRC's EMS provides a systematic approach for evaluating and addressing the Center's most significant environmental impacts and risks, as well as potential benefits. The focus of the EMS is to improve environmental performance and maintain compliance with applicable environmental legislation and regulations and other requirements to which LaRC subscribes.

2.1.3 LaRC's EMS establishes the necessary personnel structure to facilitate communication throughout all levels of Center management, ensuring the Center's most significant environmental issues receive appropriate attention. Continual improvement is the centerpiece of the EMS approach. Environmental risks are regularly and systematically reevaluated to verify progress toward environmental goals and to ensure consideration of LaRC's changing environmental conditions and evolving mission requirements.

2.1.4 The LaRC EMS provides the mechanism to verify that the environmental procedures in the following chapters of this LPR are being effectively implemented. It also ensures that LaRC's environmental procedures are producing the desired results: facilitating LaRC's mission while also fulfilling LaRC's environmental stewardship responsibilities.

2.2 REQUIREMENTS

2.2.1 Executive Order (EO) 13693, *"Planning for Federal Sustainability in the Next Decade,"* mandates the continued implementation and use of EMS at all appropriate organizational levels. EO 13693 directs federal agencies to increase efficiency and

improve their environmental performance, as well as to lead by example in energy, environmental, water, fleet, buildings, acquisition management, greenhouse gas reductions, and supporting preparations for the impact of climate change.

2.2.2 The NASA Strategic Sustainability Performance Plan (SSPP) establishes NASA's sustainability policy and goals, which are to be addressed by each Center EMS. The Agency Sustainability Policy is to execute NASA's mission without compromising our planet's resources so that future generations can meet their needs. Sustainability involves taking action now to enable a future where the environment and living conditions are protected and enhanced. In implementing sustainability practices, NASA manages risks to mission, risks to the environment, and risks to our communities, all optimized within existing resources.

2.2.3 NPR 8553.1 provides specific guidelines for EMS implementation at NASA Centers and is available in the NASA Online Directives Information System (NODIS) Library at: http://nodis3.gsfc.nasa.gov/main_lib.cfm. The NPR provides specific procedural requirements for establishing the EMS elements, which are outlined below:

a. **Environmental Policy**

b. **Planning**
   (1) Environmental Aspects
   (2) Legal and Other Requirements
   (3) Objectives, Targets, and Programs

c. **Implementation and Operation**
   (1) Resources, Roles, Responsibility, and Authority
   (2) Competence, Training, and Awareness
   (3) Communication
   (4) Documentation
   (5) Control of Documents
   (6) Operational Control
   (7) Emergency Preparedness and Response

d. **Checking and Corrective Action**
   (1) Monitoring and Measurement
   (2) Evaluation of Compliance
   (3) Nonconformance, Corrective Action, and Preventive Action
   (4) Control of Records
   (5) Internal Audit

e. **Management Review**

2.2.4 The program's proponent is the Environmental Management Sponsor, who oversees the implementation and maintenance of the program and reports to Senior Management on LaRC's environmental status.

2.2.5 The Environmental Management Sponsor is assisted by the Environmental Management Committee, consisting of personnel from all relevant Center organizations including the SPEEB. The Committee members act as subject matter experts regarding their organizations' current and future mission/operations.

2.2.6 The SPEEB Environmental staff contributes environmental expertise and provides significant support to the Environmental Management Sponsor and the Environmental Management Committee.

2.3 RESPONSIBILITIES

2.3.1 The Center Director shall:

a. Provide authority, resources, support, and oversight to develop, implement, and maintain the Center EMS in accordance with NPR 8553.1.

b. Ensure that the Center has a designated Environmental Management Sponsor with the authority and responsibility for implementation of the EMS.

c. Annually review and assess the Center EMS and environmental management programs for status and viability.

2.3.2 The Environmental Management Sponsor shall:

a. Provide support and oversight to ensure the development, implementation, and maintenance of the EMS and the Center environmental programs.

b. Act as Senior Management proponent for the Environmental Management Committee and ensure participation of committee members.

c. Ensure the annual assessment of LaRC's environmental programs, progress toward previously established goals, and changes to LaRC's environmental risks.

d. Ensure the development of new environmental goals.

2.3.3 The Standard Practice and Environmental Engineering Branch shall:

a. Serve as support staff to the Environmental Management Sponsor and Environmental Management Committee during the implementation, operation, maintenance, and continual improvement of the EMS.

b. Serve as the Center's technical experts on environmental issues.

c. Ensure that all required EMS elements are addressed and periodically reviewed by the Environmental Management Sponsor/Environmental Management Committee.

d. Maintain and update documentation of the EMS elements.

e. Incorporate the Environmental Management Committee's recommendations and findings into the LaRC Environmental Program.

f. Evaluate opportunities for implementing sustainable practices, operations, and planning.

2.3.4 Environmental Management Committee Members shall:

a. Assist the Environmental Management Sponsor in the implementation, operation, maintenance, and continual improvement of the EMS in accordance with NPR 8553.1.

b. Identify, prioritize, and assist with implementation of the environmental goals established to address LaRC's environmental priorities.

c. Establish cross-functional communication mechanisms to support EMS initiatives.

d. Serve as the organizations' representatives and act as subject matter experts regarding current and future mission/operations.

2.3.5 Center Personnel shall:

a. Adhere to LaRC's environmental requirements and assist in achieving LaRC's EMS goals.

3 ENERGY EFFICIENCY AND WATER CONSERVATION

3.1 GENERAL

3.1.1 The purpose of this chapter is to provide information on the applicable requirements and procedures related to energy efficiency and water conservation at LaRC. Energy efficiency and water conservation management ensure that energy and water are used effectively and judiciously. Conservation is the essence of good stewardship for all the resources NASA controls and reduces the impact of Agency activities on the environment. The Center is focused on achieving energy and water reduction goals while improving the Center's facilities, reducing utility costs, and increasing employee awareness.

3.1.2 It is the objective of LaRC to utilize sound energy and water practices in an effort to provide increased energy and water sustainability and decreased cost. These shall be accomplished in the short and long term through:

a. Utilization of energy and water in an efficient manner throughout all Center operations.

b. Incorporation of all cost-effective energy and water efficiency procedures and upgrades with existing equipment and facilities.

c. Meeting all requirements set by the Federal Government and Agency at the Center Level.

d. Implementing an Energy and Water Management Program to accomplish the above objectives and sustain achievements.

3.2 REQUIREMENTS

3.2.1 The National Energy Conservation Policy Act (NECPA) of 1978 serves as the underlying authority for federal energy management goals and requirements. The NECPA is the foundation of most current energy requirements and is regularly updated and amended by subsequent laws and regulations.

3.2.2 The Energy Policy Act of 2005 (EPACT 2005) updated polices from EPACT 1992 by providing revised annual energy reduction goals for federal facilities and revised renewable energy purchase goals. EPACT 2005 also reauthorized the use of Energy Savings Performance Contracts through 2016. It requires procurement of energy-efficient products and provides updated federal green building standards with emphasis on energy efficiency and sustainable design principles.

3.2.3 The Energy Independence and Security Act of 2007 (EISA) was passed with the goal of moving the United States toward greater energy independence and security; increasing the production of clean renewable fuels; increasing efficiency of products,

buildings, and vehicles; promoting research and development of greenhouse gas capture and storage options; and improving the energy performance of the Federal Government. It requires greater tracking of green initiatives in federal facilities and provides new oversight of federal high performance and green building activities.

3.2.4 Executive Order 13693, *"Planning for Federal Sustainability in the Next Decade,"* establishes various energy and water conservation goals, including expanding upon requirements set by previous EOs, EPACT 2005, and EISA 2007. EO 13693 requires federal agencies to reduce energy intensity by 2.5% annually through FY 2025 relative to a FY 2015 baseline. In addition, the EO mandates a 2% annual reduction in water consumption intensity through FY 2025 in comparison to a FY 2007 baseline. Per the EO, all new federal facilities entering the planning process beginning in FY 2020 are to be designed to achieve net-zero energy, and where feasible, water and waste net-zero by FY 2030. EO 13693 also includes requirements for percentages of total building electric and thermal energy use that must come from clean and renewable sources.

3.2.5 NPR 8570.1, *"NASA Energy Management Program,"* provides procedural requirements for evaluating and implementing cost-effective energy efficiency and renewable energy measures in NASA facilities and operations.

3.3 RESPONSIBILITIES

3.3.1 The Center Director or Designee shall:

a. Ensure that the Center has designated energy/water managers and provide support and oversight of the energy/water management programs in accordance with NASA Policy Directive (NPD) 8500.1, *"NASA Environmental Management."*

b. Provide sufficient qualified staff and resources to perform energy/water conservation activities, including the Environmental Management System and implementation of sustainable practices.

c. Ensure adequate management and financial resources are dedicated to meet energy security requirements.

d. Approve Center energy efficiency and water conservation policy.

e. Approve and submit to the NASA Environmental Management Division (EMD) Director an Energy Conservation Performance Plan (ECPP) prepared according to the Agency-approved template.

f. Establish oversight and evaluation of Center operations through functional reviews, performance metrics, or other means to ascertain that appropriate energy efficiency and water conservation measures are implemented.

g. Ensure contractors, grant recipients, and parties to agreements meet current energy requirements specified in federal laws and regulations, EOs, and NASA NPRs.

h. Appoint the Center Energy Efficiency Team (EET).

i. Ensure the Center implements purchasing procedures in accordance with NPR 8530.1, *"Affirmative Procurement Program and Plan for Environmentally Preferable Products."*

j. Ensure that personnel involved in the initiation and execution of Energy Savings Performance Contracts (ESPC) or Utility Energy Savings Contracts (UESC) are knowledgeable and trained in the process. Specialized training is offered through the Department of Energy (DOE).

k. Ensure that projects utilizing ESPC/UESC follow DOE guidance and contract management tools.

3.3.2 The Management Sponsor shall:

a. Act as the Management Sponsor for the EET.

b. Support the Center Director in fulfilling the responsibilities assigned to that position, as instructed by the Director.

3.3.3 The Center Energy Manager shall:

a. Lead and implement the Center's Energy Efficiency and Water Conservation programs, which shall fulfill all relevant Agency and federal requirements.

b. Lead the EET and represent LaRC on the NASA Energy Efficiency Panel (EEP).

c. Develop energy investment proposals from energy audit results and coordinate implementation through appropriations or alternative financing mechanisms.

d. Prepare the Center energy budget in accordance with the NASA Planning, Programming, Budgeting, and Execution (PPBE) process and guidance.

e. Maintain and update the Center's ECPP as required.

f. Develop and maintain an Energy Security and Conservation Plan as required in NPR 8570.1.

g. Establish and monitor Center-level energy performance objectives, milestones, metrics, and measures.

h. Coordinate with the Center Master Planner to optimize energy efficiency in accordance with NPR 8810.1, *"Master Planning Procedural Requirements,"* and ensure that impacts from installed energy conservation measures are taken into consideration.

i. Report energy and water consumption data for the Center to NASA Headquarters and to other federal agencies as required.

j. Implement an energy awareness program for Center personnel, designed to improve energy use and conservation behaviors including maintaining an Energy and Water Conservation Web site accessible to Center personnel.

k. Communicate appropriate energy conservation requirements to operations and maintenance personnel, such as facility temperature setbacks, hot water temperature requirements, and recommendations for lighting controls.

l. Ensure energy and water audits are conducted on at least 25 percent of the appropriate buildings annually and at least once every 4 years on each building.

m. Determine and conduct all necessary training for Center personnel regarding energy efficiency and water conservation.

n. Support training for Center personnel regarding design, maintenance, and operation of Leadership in Energy and Environmental Design (LEED) certified buildings and other energy-related equipment.

o. Coordinate utility services and commodity procurements in collaboration with Center Procurement officials.

p. Coordinate utilities management involving local utility suppliers and incorporating utility-provided energy audits, metering, fuel switching, load management, rebate programs, rate structuring/switching, and alternative financing options.

q. Review and approve utility bills.

r. Ensure that Contracting Officers (COs) on ESPCs, UESCs or commodity contracts are notified of changes to facilities, such as the addition or removal of buildings, affecting the contracts.

s. Ensure that COs or Contracting Officer's Representatives (CORs) for ESPCs, UESCs or commodity contracts are invited to NASA EEP meetings.

t. Review and ensure that Measurement & Verification (M&V) reports regarding energy conservation measures financed by an ESPC/UESC generate the guaranteed savings throughout the term of the contract, as required by NPR 8570.1.

3.3.4 The Energy Efficiency Team shall:

a. Assist the Center Energy Manager in the implementation of the Energy Management Program in accordance with NPR 8570.1, as well as in the implementation of the Center Water Management Program.

b. Identify, prioritize, and implement the initiatives in the Center's ECPP.

c. Establish cross-functional communication mechanisms to support energy and water conservation initiatives.

d. Recommend and implement energy and water conservation projects and practices in their organizations.

3.3.5 Facility Coordinators shall:

a. Investigate malfunctioning equipment (e.g. water leaks, overflows, drips) that indicate a waste of energy and/or water and initiate repairs to correct the problem so that unnecessary utility consumption is minimized.

b. Investigate and initiate repairs for building envelope degradation or failure, such as drafts, leaks, poor seals, or holes.

c. Turn off all lighting not required for operations or security. Lights that remain on shall be the minimum required for safety and security requirements.

d. Report excess water usage (1000 gallons/day or more above normal usage levels) to LaRC Duty Officer at extension 44927, and investigate building for potential leaks if requested by the appropriate LaRC personnel (e.g. Duty Officer or Energy Manager).

e. Ensure facility temperatures are in accordance with Table 3-1. If temperatures are out of the acceptable temperature range, report anomalies to Energy Management Control System (EMCS) personnel at extension 44930.

Table 3-1

Heating Season (max. settings)	Administrative Spaces and Labs	Occupied: 68-70 degrees F Unoccupied: 60 degrees F
	Shop Spaces	Occupied: 66-68 degrees F Unoccupied: 60 degrees F
	Warehouse Spaces	Not heated unless required for specific needs
Cooling Season (min. settings)	Administrative Spaces and Labs	Occupied: 74-76 degrees F Unoccupied: 82 degrees F
	Shop Spaces	Occupied: 74-76 degrees F Unoccupied: 82 degrees F
	Warehouse Spaces	Not cooled unless required for the storage of perishables

(1) Although climate control systems for mission and communication equipment are exempt from the above settings, energy efficiency shall be considered in the equipment operation.

(2) Unoccupied times apply to nights, weekends, and periods when personnel are not required to be present.

3.3.6 Facility Environmental Coordinators shall:

a. Act as an energy and water conservation liaison between Center personnel and the Center Energy Manager, EET members, and the SPEEB Environmental staff as necessary.

b. Assist the FC in reporting wasteful conditions (e.g. water leaks, exterior lights on during the day, equipment running when not necessary) and ensure that prompt corrective actions are taken to conserve energy and water.

c. Communicate with facility personnel to ensure that energy and water users in the facility understand the procedures to minimize energy and water use at all times.

3.3.7 The Office of Procurement shall:

a. Ensure compliance and implementation of the acquisition requirements of the Federal Acquisition Regulations, Executive Order 13693, *"Planning for Federal Sustainability in the Next Decade,"* and NPR 8530.1, *"Affirmative Procurement Program and Plan for Environmentally Preferable Products."*

b. Ensure conformance with the requirement to procure energy efficient products that are the most life-cycle cost effective.

c. Ensure conformance with the requirements for acquisition of environmentally preferable goods and services including Energy Star, Federal Energy Management Program (FEMP) designated and Water-Sense products.

d. Ensure the requirements of this document are contained in the contracts of all applicable contractors on-site.

e. Ensure that the specific training (e.g. training sponsored by DOE) is completed by the CO, Contracting Specialist (CS), and COR when administering and/or awarding ESPCs or UESCs.

f. Ensure that the CO/CS/COR review M&V reports as required in ESPC/UESC contracts and take appropriate action as needed.

g. Ensure that the CO/CS/COR modify ESPC/UESC contracts based on changes to facilities, such as the addition or removal of buildings, affecting the contracts (per notification from the Center Energy Manager).

3.3.8 The Logistics Management Branch shall:

Ensure compliance with and implementation of the vehicle fleet management requirements of Executive Order 13693, *"Planning for Federal Sustainability in the Next Decade."*

3.3.9 Facility Energy Management Control System Personnel shall:

a. Establish a building heating and cooling schedule designed to minimize the cost of space conditioning.

b. Maintain facility temperatures in accordance with Table 3-1 (section 3.3.5).

c. Establish lighting schedules for buildings with automated lighting controls.

d. Provide energy data to LaRC personnel when requested.

3.3.10 Facility Project Managers shall:

a. Coordinate with the SPEEB Environmental staff early in the project planning stages to ensure project design considers energy and water conservation measures and sustainable design principles. This shall include filling out LF 461 for projects.

b. Ensure **all** project designs for LaRC adhere to energy, water, and sustainability requirements set forth in the LaRC Center Operations Directorate Facilities Engineering Standards, including Civil, Architectural, Mechanical, Electrical, and Environmental Standards.

3.3.11 Center Personnel and On-site Contractors shall:

a. Follow the requirements set forth in the "LaRC Plug Load Management Plan."

b. Contact the Center Energy Manager with ideas or suggestions for energy or water conservation projects.

c. Keep windows and doors closed when buildings/conditioned spaces are being air conditioned or heated.

d. Turn off lighting in unoccupied areas, after working hours/weekends, and when out of the office for more than 15 minutes.

e. Dress for thermal comfort. Approved portable electric space heaters are intended only to temporarily supplement an area's heating needs until a permanent solution can be found to correct the area's heating problem, or as an authorized emergency use measure when a building's normal heating system fails.

(1) Portable electric space heaters are not intended for use as permanent heating appliances.
(2) Use of a portable space heater is permitted only when a space temperature falls below the heating season temperature settings shown in Table 3-1, or unless medically required by the occupant.
(3) Approval for space heaters (both Government purchased and employee-owned) shall be obtained from the LaRC Fire Chief and the Center Energy Manager and comply with established safety requirements and registration procedures.

f. Report wasteful conditions (e.g. water leaks, exterior lights on during the day, equipment running when not necessary) or malfunctioning equipment and ensure that prompt corrective actions are taken to conserve energy and water.

g. Conserve energy by storing food items requiring refrigeration in break room refrigerators rather than using personal compact refrigerators.

(1) All refrigerators are required to have labels indicating their use for either food storage or non-food storage.
(2) Personal refrigerators are acceptable if used to store work-related non-food items or personal medical supplies, but shall be consolidated to the maximum extent possible.
(3) All new refrigerators purchased shall be Energy Star compliant.
(4) Occupants of all New Town buildings are required to store refrigerated food items in break room refrigerators only.

h. Incandescent light bulbs are not permitted in any fixture or desk lamp not explicitly indicated as having no acceptable alternative by the Center Energy Manger. Alternatives for incandescent lighting include induction, compact fluorescent, and light emitting diode (LED) lamps.

i. All adjustment of temperature controls shall be made by the FC and/or Facility EMCS Personnel only, not by Center personnel or on-site contractors.

4 PROJECT/PROGRAM PLANNING AND IMPLEMENTATION

4.1 GENERAL

4.1.1 The purpose of this chapter is to provide information on applicable regulatory requirements and procedures related to environmental impact review of proposed actions at the Center.

4.1.2 Environmental impact review must be performed at the earliest possible stage of a proposed action, well in advance of the start date, to ensure compliance with federal law.

4.1.3 The procedures included in this chapter are applicable to proposed on-site actions to include construction, rehabilitation, demolition, repair and any other activities associated with the Center's land and infrastructure, as well as on-site research, development and testing activities, or where LaRC serves as the lead Center and work will be performed off-site/at other Centers.

4.1.4 The term "project" is used as a general descriptor in this chapter and includes proposed actions, projects, and programs (local, mission-related, multi-Center and international).

4.1.5 The procedures included in this chapter are applicable to all LaRC employees and contractors who participate in the development, implementation, and management of projects at the Center.

4.1.6 LaRC's environmental review process applies to the various phases of both facilities and research projects to include conceptual design, construction, operation, or maintenance.

4.2 REQUIREMENTS

4.2.1 The National Environmental Policy Act of 1969 (NEPA), as amended, requires federal agencies to consider the environmental effects of their actions before beginning a project and to examine the alternative actions that would reduce or eliminate potential threat or harm posed to the environment.

4.2.2 In addition to NEPA, numerous environmental laws, regulations, and policies establish specific requirements that apply to project planning and implementation at LaRC. These documents are listed in Sections P.3 and P.4, and their requirements are described in various chapters of this LPR.

4.2.3 Executive Order (EO) 12114, *"Environmental Effects Abroad of Major Federal Actions,"* requires an environmental analysis for major actions conducted outside the U.S.—the global commons or within the territory of another nation—to determine whether there is a potential for significant environmental harm.

4.3 ENVIRONMENTAL PROJECT REVIEW AND DOCUMENTATION

4.3.1 LaRC personnel or offices initiating projects are responsible for ensuring that the appropriate documentation is prepared in accordance with the requirements of this chapter, NPR 8580.1, "*NASA National Environmental Policy Act Management Requirements,*" and other relevant federal environmental laws, regulations, and Executive Orders.

4.3.2 Figure 4-1 provides a general overview of the environmental project review and documentation process at LaRC.

4.3.3 The first step of the process is for the Project Manager/Initiator to submit the LF 461, "Environmental Project Planning Form" to the LaRC NEPA Manager early in the project planning process.

4.3.4 The LF 461 shall be submitted for all projects at LaRC except those included on the Excluded Activities List. The list is maintained by the LaRC NEPA Manager.

Note: A LF 461 shall be submitted for any project that requires a digging permit. The LF 461 shall be submitted at least 5 working days prior to project startup (does not apply in emergency situations).

4.3.5 In the event of an emergency (defined as a situation requiring a response within 24 hours), the Project Manager/Initiator shall submit a LF 461 to the LaRC NEPA Manager as soon as possible but no more than 2 working days following initiation of response activities.

4.3.6 In addition to submitting the LF461, project documentation shall be submitted, either as an attachment to the LF 461 or provided to the SPEEB Environmental staff during the review process. The size and scope of the project shall determine the type of documentation required.

4.3.6.1 "Small projects" consist of any on-site LaRC projects (not already covered under the current facility operations and SAA) that involve use of hazardous materials or generate waste materials and have the potential to impact the environment, such as: modification to facility operations/infrastructure, release of items to the environment (e.g., balloons, drones, etc.) which will be immediately recovered or returned, payload development, sample return, and adjustments to existing flight operations.

4.3.6.1 "Large projects" consist of on or off-site programs or projects that involve use of large quantities of hazardous materials and generating waste materials (not already covered under the current facility operations and SAA), substantial modifications to facility operations/infrastructure, demolition of existing facilities, release of items to the environment (e.g., balloons, drones, autonomous floats, etc.) which may or may not be immediately recoverable or for which recovery may be uncertain, new flight operations

or substantial changes to existing flight operations, multi-center, and international actions where LaRC may be the lead or participating Center.

4.3.6.2 Documentation required to be submitted with the LF461 shall include:

a. For small projects (as described in 4.3.6.1):
   (1) At a minimum, a detailed scope of work or project plan that references any applicable environmental requirements as specified in this LPR, and
   (2) Maps or floor plans (if applicable).

b. For large projects (as described in 4.3.6.2):
   (1) A detailed scope of work or program/project plan,
   (2) Project design plans to include the most current version of the Center Operations Directorate, Facility Engineering Standards, Environmental and Energy,
   (3) Project specifications to include LaRC Specification Section 01 35 40 00 41, NASA Langley Environmental Requirements, and
   (4) Maps, floor plans and drawings.
   (5) For research and development activities involving launching of objects (UAS, balloons, aircraft, etc.) the maps must show flight trajectory.

Note: The most current version of LaRC's Specification Section 01 35 40 00 41, NASA Langley Environmental Requirements, and the Center Operations Directorate Facilities Engineering Standards – Environmental and Energy shall be used and shall supersede all other environmental specifications and standards (e.g., UFGS, USACE, etc.) that are currently available.

4.3.7 The LaRC NEPA Manager shall determine if additional documentation is needed to perform environmental review of the project, and will notify the Project Manager/Initiator.

4.3.8 If the LaRC NEPA Manager determines that the project is covered by a categorical exclusion (CatEx) as defined in 14 CFR Part 1216.304, a Record of Environmental Consideration (REC) may be prepared to document the decision and the environmental requirements that shall be followed throughout the project. Figure 4-2 provides an example of an REC.

4.3.9 The completed REC shall be signed by the LaRC NEPA Manager and the Project Manager/Initiator, with a copy maintained in the project files along with the completed LF 461.

4.3.10 If the LaRC NEPA Manager determines that the project is covered by a CatEx, or is considered to have minimal or no potential to produce an environmental impact and no further environmental requirements (e.g., permitting, etc.), the SPEEB may issue a CatEx/No REC. This determination reduces paperwork burden and is typically utilized for small, routine projects.

4.3.11 If the LaRC NEPA Manager determines that the project is not covered by a CatEx and has the potential to produce environmental impacts, an Environmental Assessment (EA) will be required.

4.3.12 In some cases during the impact review process, it will become apparent that the action will produce a significant environmental impact. In these cases, an Environmental Impact Statement (EIS) may be required.

4.3.13 Following completion of the LF 461 review, and if applicable EA or EIS, additional project documentation might be required prior to project startup. See Section 4.4.2(d).

4.3.14 Early coordination with the SPEEB Environmental staff is critical to ensuring timely completion of the environmental review and documentation process. The following provides a general time estimate to complete the various levels of documentation:

a. Completion of LF 461 review and signed REC: 2 to 3 weeks (may take longer for large projects)

b. Preparation of EA and publishing Finding of No Significant Impact: up to 1 year

c. Preparation of EIS and issuing Record of Decision: more than 1 year

4.4 RESPONSIBILITIES

4.4.1 The Center Director shall:

a. Provide authority, resources, support, and oversight to develop, implement, and maintain LaRC's NEPA Program in accordance with NPR 8580.1.

b. Ensure that the Center has a designated NEPA Manager with the authority, resources and training to implement their responsibilities.

4.4.2 The Standard Practice and Environmental Engineering Branch shall:

a. Assist the LaRC NEPA Manager in managing the Center's NEPA Program.

b. Review completed LF 461 forms, project designs, and specification documentation for environmental impact issues.

c. Follow up with Project Managers/Initiators to ensure environmental requirements, such as obtaining permits, employing Best Management Practices (BMPs), performing mitigation, etc. are carried out in accordance with the requirements included in the LF 461, REC, and if applicable, the EA or EIS.

d. In the case of a design-build project, ensure the detailed set of requirements and restrictions (bridging document) includes environmental requirements and that all environmental requirements are addressed at the appropriate design milestone.

e. Participate in project planning and design reviews/meetings as needed.

f. Serve as the point of contact for off-Center environmental compliance coordination activities related to LaRC's projects.

g. Assist with the preparation of environmental surveys and documentation as needed.

4.4.3 The LaRC NEPA Manager shall:

a. Coordinate SPEEB review of completed LF 461 forms and associated project documentation and provide requirements to the Project Managers/Initiators to ensure the project complies with all applicable federal, state, local, and LaRC environmental laws, regulations, and policies.

b. Coordinate with program/project managers to develop budget for any mitigation and/or monitoring requirements.

c. Determine the appropriate level of NEPA documentation required for proposed actions.

d. Ensure NEPA documentation is prepared in accordance with NEPA, the Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA (40 CFR 1500-1508), NASA's regulations (14 CFR 1216.3), and NPR 8580.1.

e. Publish notices in local papers and coordinate review and distribution of NEPA documents to NASA HQ, federal, state, and local agencies, organizations, interested parties, and the public.

f. Serve as the Center point of contact on NEPA-related interactions with state and local governments and regional offices of the Federal Government.

g. Prepare and maintain the LaRC Environmental Resource Document (ERD) as prescribed in NPR 8580.1, as this will serve as the baseline information for environmental impact review.

h. Maintain and update the NASA Environmental Tracking System (NETS) NEPA module for LaRC projects.

i. Comply with additional responsibilities listed in Section 1.2.7 of NPR 8580.1.

4.4.4 Project Managers/Initiators shall:

a. As early as possible in the conceptual design phase of the project, submit the LF 461, "Environmental Project Planning Form," to the SPEEB Environmental staff for review.

b. Ensure that all mitigation and/or monitoring budget requirements are included within the project's programmed budget prior to formal submission of programming documents.

c. Submit project documentation to the SPEEB Environmental staff as specified in Section 4.3.

d. Ensure that SPEEB Environmental staff are included in project planning and design reviews/meetings, as needed.

e. Coordinate with the SPEEB Environmental staff to ensure that all environmental requirements specified in the LF 461, REC, and if applicable EA or EIS (e.g., obtaining permits, submitting a Waste Management Plan [WMP], Stormwater Pollution Prevention Plan [SWPPP], etc.) are satisfied prior to project startup.

   Note: No work shall begin until all required documentation has been submitted to and approved by the SPEEB Environmental staff.

f. Ensure that all work performed at the project site, to include work performed by contractors/subcontractors, complies with the environmental requirements specified on the LF 461 and/or REC.

g. Ensure that all requested environmental project data (e.g., recycling data, project materials usage, permit close out letters, etc.) are submitted to SPEEB Environmental staff as specified on the LF461 and/or REC.

h. In the event that the project scope or location changes during the planning or construction phases of the project, notify the LaRC NEPA Manager.

i. In the event that the project will require preparation of an EA or EIS, ensure project schedule and budget includes preparation of the documentation.

j. In the event that mitigation and/or monitoring is required to reduce environmental impacts associated with the project, ensure project schedule and budget includes carrying out the mitigation.

4.4.5 The Office of Chief Counsel shall:

Provide reviews for legal sufficiency of EAs, Findings of No Significant Impact (FONSIs), EISs, and Records of Decision (RODs). Legal Reviews are obtained prior to submittal to NASA HQ for internal review, prior to submittal to State or Federal agencies, and prior to distribution to the public.

4.4.6 The Office of Communications shall:

a. Assist the LaRC NEPA Manager and Project Manager/Initiator, as needed, with informing the public about activities and undertakings that may impact the environment and require review through the NEPA process.

b. Serve as liaison between the LaRC NEPA Manager and media outlets, as needed, to ensure public disclosure of the NEPA process.

Figure 4-1

Overview of the Environmental Project Review and Documentation Process

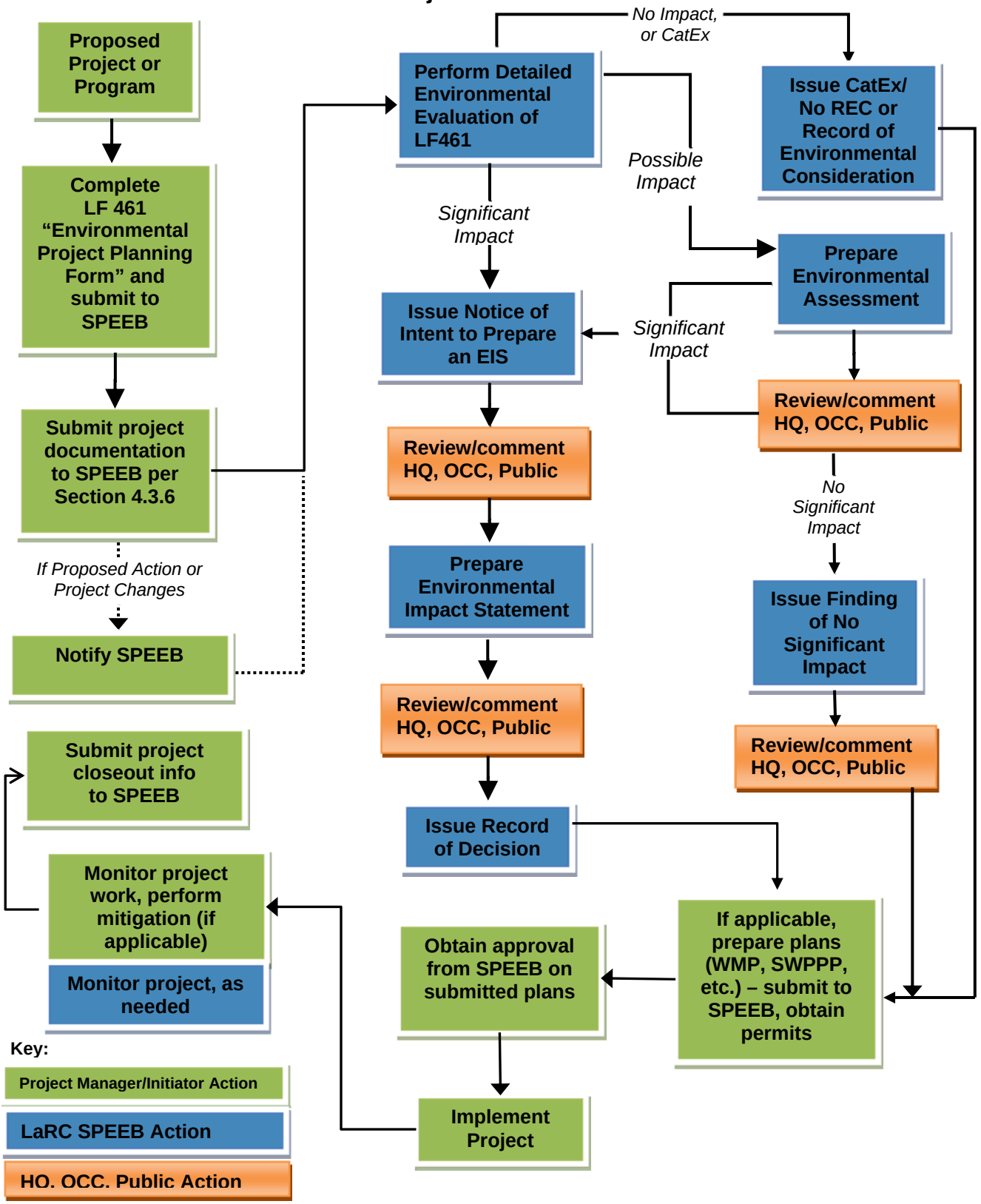

Figure 4-2
NASA Langley Research Center
Record of Environmental Consideration (Example)

Project:

Description and location of the proposed action:

Anticipated date and/or duration of proposed action:

It has been determined that the above action:

☐ Does not involve any extraordinary circumstances as described in 14 CFR 1216 and qualifies for Categorical Exclusion # ___ as prescribed in 14 CFR 1216.304(d) which prescribes NASA's criteria for determining if an environmental assessment under NEPA is needed.

☐ Is adequately covered in an existing EA or EIS entitled:

_____ and dated _____.

☐ Will require an Environmental Assessment ☐ or Environmental Impact Statement ☐

Other Environmental Considerations/Requirements (*List permits, documentation, actions that must be taken prior to or during project implementation):*

This does not release the Project Manager/Technical Point of Contact from following other environmental requirements that may apply as specified in LaRC Environmental Specs, Section 01 35 40 00 41 and LPR 8500.1. If the location or scope of the project as provided above should change, please contact the SPEEB at 47762. This REC is valid for one year from final execution (may be extended if project remains unchanged and environmental requirements remain the same).

_____ _____
Project Manager Date

_____ _____
LaRC NEPA Manager Date

5 WATER QUALITY

5.1 GENERAL

5.1.1 The purpose of this chapter is to provide information on applicable regulatory requirements and procedures related to water quality standards and permitted water discharges at LaRC.

5.1.2 The Clean Water Act is the primary federal law in the United States governing water pollution. The principal body of law currently in effect is based on the Federal Water Pollution Control Amendments of 1972 and was significantly expanded from the Federal Water Pollution Control Amendments of 1948. Major amendments were enacted in the Clean Water Act of 1977 and the Water Quality Act of 1987. The 1972 amendments prohibit the discharge of any pollutant to U.S. waters from a point source discharge unless authorized by a National Pollutant Discharge Elimination System (NPDES) permit.

5.1.3 Under section 303(d) of the Clean Water Act, states, territories, and authorized tribes are required to develop lists of impaired waters. These are waters that are too polluted or otherwise degraded to meet the water quality standards set by states, territories, or authorized tribes. The law requires that these jurisdictions establish priority rankings for waters on the lists and develop Total Maximum Daily Loads (TMDLs) for these waters. A TMDL is a calculation of the maximum amount of a pollutant that a water body can receive and still meet water quality standards, and an allocation of that load among the various sources of that pollutant. Permitted point sources can receive a waste load allocation to meet an established TMDL.

5.1.4 The Federal Water Pollution Control Act and its amendments were passed requiring a uniform permit program nationwide, allowing all states to uniformly control industrial and municipal wastewater discharges. In 1975, Virginia was delegated the authority to administer the Virginia Pollutant Discharge Elimination System (VPDES) permit program. The VPDES permit program was designed in conformance with the applicable NPDES regulations, 40 CFR Section 122.26(d)(2) and 40 CFR Section 122.34(b)(5). The VPDES Permit Regulation, 9 VAC 25-31, establishes the procedures and requirements for this Program to manage industrial and municipal wastewater discharges. The Virginia Department of Environmental Quality (DEQ) is responsible for the VPDES permitting program.

5.1.5 The Virginia DEQ implements the *Virginia Erosion and Sediment Regulations*. Regulations are found at Section 9 VAC 25-840, and certification regulations are found at Section 9 VAC 25-850 of the Virginia Administrative Code. The Erosion and Sediment Control Program's goal is to control soil erosion, sedimentation, and nonagricultural runoff from regulated "land-disturbing activities" to prevent degradation of property and natural resources. The regulations specify "Minimum Standards," which include criteria, techniques, and policies that must be followed on all regulated activities.

5.1.6 DEQ is responsible for the issuance, denial, revocation, termination, and enforcement of individual and general Virginia Stormwater Management Program (VSMP) permits for the control of stormwater discharges from municipal separate storm sewer systems (MS4) and construction activities. DEQ administers these programs through Virginia Stormwater Management Program (VSMP) Regulation (9 VAC 25-870), authorized by the Virginia Stormwater Management Act (62.1-44.15:24 of the Code of Virginia).

5.1.7 NASA Langley has approval from DEQ to administer its own stormwater program through the submission of Annual Stormwater Management and Erosion and Sediment Control Standards and Specifications. This document, "NASA Langley Research Center Annual Standards and Specifications: Erosion and Sediment Control (ESC) & Stormwater Management (SWM)" (hereafter referred to as the "LaRC SWM Annual Standards and Specs"), outlines the requirements for Stormwater Management and Erosion and Sediment Control for construction and demolition activities on Center and provides the authority for enforcement of requirements by SPEEB Environmental staff. SPEEB evaluates projects under these standards and specs and determines the need for registration for permit coverage with DEQ based on the size of the land disturbance.

5.1.8 The Hampton Roads Sanitation District (HRSD), a political subdivision of the Commonwealth of Virginia, was created by public referendum in 1940 to eliminate sewage pollution in the tidal waters of the Chesapeake Bay. LaRC's sanitary wastes are treated by HRSD. This is a permitted, fee-based service.

5.2 REQUIREMENTS

5.2.1 Center Discharge Permits

5.2.1.1 NASA LaRC operates under four water discharge permits that limit the types and quantities of pollutants discharged and establish monitoring and recordkeeping requirements. Any discharge not allowed under these permits is a violation. To assess compliance with permit conditions, regulatory agencies conduct periodic inspections at the Center. Copies of LaRC's water discharge permits can be viewed on the LaRC Environmental and Energy Management Web site at https://emis.ndc.nasa.gov/water.cfm. The four permits are:

a. *VPDES Permit No. 0024741*, which is administered by DEQ, allows LaRC to discharge effluent to surface waters and specifies allowable discharges, pollutant limitations, and monitoring requirements. NASA LaRC has 16 outfalls that are permitted to discharge industrial process wastewater and stormwater runoff. The permit's Operations and Maintenance Manual (O&M Manual) describes NASA LaRC's policies and procedures put in place to ensure compliance with the Center's VPDES Permit. The O&M Manual references requirements for Center personnel, sampling procedures, and outfall inspection frequencies. Additional information regarding monitoring locations and the permit-authorized discharges can be obtained by contacting the SPEEB Environmental staff.

b. *VPDES Permit No. VAG750198,* which is administered by DEQ, allows LaRC to discharge effluent to surface waters from vehicle wash facilities. NASA LaRC has three vehicle wash facilities that are permitted to discharge to surface waters: Exchange Car Wash (B1216), Fire Station (B1248), and Vehicle Maintenance (B1199). The permit's O&M Manual references requirements for Center personnel, sampling procedures, and inspection frequency for permitted vehicle wash facilities.

c. *Virginia Stormwater Management Program MS4 Permit No. VAR040092*, which is administered by DEQ, requires that NASA LaRC develop, implement, and enforce a stormwater management program to reduce the discharge of pollutants from the Center to the maximum extent practicable. LaRC's stormwater management program must include minimum control measures as specified in the permit, and best management practices must be implemented to meet the control measures. This permit is also used to address any applicable TMDLs.

d. *Hampton Roads Sanitation District (HRSD) Permit 0085*, which is administered by HRSD, allows LaRC to discharge nonhazardous industrial wastewater and sanitary sewage to the HRSD sanitary sewer system. HRSD does not provide treatment for hazardous wastes. The HRSD Permit specifies the allowable discharges, pollutant limitations, and monitoring requirements.

5.2.2 Construction/Land Disturbing/Demolition Activities

5.2.2.1 It is LaRC policy that all land-disturbing activities, as defined in 62.1-44.15:51 of the Code of Virginia, shall apply erosion and sediment control practices and stormwater best management practices, regardless of the size of disturbance. These practices shall ensure that there is no discharge of sediment from a project and that a project does not adversely affect water quality. Projects not in compliance with these requirements are subject to enforcement action.

5.2.2.2 Land-disturbing activities over 2,500 square feet are subject to the following:

a. Each land-disturbing activity over 2,500 square feet, or when deemed necessary by SPEEB Environmental staff, shall prepare a site-specific Erosion and Sediment Control (ESC) Plan that is compliant with the Virginia Erosion and Sediment Control Regulations (9 VAC 25-840). This plan shall be approved by the SPEEB Environmental staff prior to any land disturbing work commencing.

b. Each land-disturbing activity over 2,500 square feet, or when deemed necessary by the SPEEB Environmental staff, shall prepare a site-specific Stormwater Management (SWM) Plan that is compliant with the VSMP Regulations (9 VAC 25-870). This plan shall be approved by the SPEEB Environmental staff prior to any land disturbing work commencing.

5.2.2.3 Land-disturbing activities over 1 acre are subject to permitting and require the following:

a. Each land-disturbing activity over one acre of land requires coverage under VA DEQ General Permit No. VAR10, the General VPDES Permit for Discharges of Stormwater from Construction Activities. It is the responsibility of the Contractor to apply for the Construction General Permit (CGP) coverage. The Permit will be issued in their name as the construction site operator and the contractor is responsible for all fees.

b. Each land-disturbing activity over one acre of land requires a site-specific ESC Plan and SWM Plan, as specified in Section 5.2.2.2.a and b. The ESC Plan and SWM Plan shall be approved by the SPEEB Environmental staff prior to any land disturbing work commencing or application for CGP coverage.

c. Each land-disturbing activity over one acre of land requires a SWPPP as required by VSMP Regulations (9 VAC 25-870). Operators of such activities are required to submit a SWPPP to the SPEEB Environmental staff for review and approval prior to submitting a registration statement for permit coverage to DEQ and prior to the commencement of any land disturbance activities. The requirements for SWPPP contents are outlined in the LaRC SWM Annual Standards and Specs. The SWPPP is to be retained at the construction site, along with a copy of the permit and permit coverage letter. The operator has the lead in developing, implementing, and maintaining the SWPPP and committing the resources necessary to prevent pollution. Detailed information as well as the appropriate forms can be found at the following link: http://www.deq.virginia.gov/Programs/Water/StormwaterManagement/VSMPPermits/ConstructionGeneralPermit.aspx

5.2.3 Additional Stormwater Management

5.2.3.1 The “Illicit Discharge Detection and Elimination” minimum control measure of Virginia’s General MS4 Permit requires the Center to effectively prohibit non-stormwater discharges into the storm sewer system and implement appropriate enforcement procedures and actions. LaRC defines an illicit discharge as any discharge to the MS4 that is not composed entirely of stormwater, except for discharges allowed under the Center’s VPDES permit, a discharge approved by DEQ in writing as a de minimis discharge that does not contain a significant amount of pollutants, waters used for firefighting operations/line flushing, and A/C condensate. Illicit discharges are not allowed on the Center and are subject to an array of enforcement actions.

5.2.3.2 Executive Order 13693, *“Federal Leadership in Environmental, Energy, and Economic Performance,”* requires that each agency install appropriate green infrastructure features on federally owned property to help with stormwater and wastewater management.

5.2.3.3 42 U.S.C. § 17094 requires facilities to preserve the existing site hydrology for any development or redevelopment project involving a Federal facility with a footprint that exceeds 5,000 square feet.

5.2.3.4 Stormwater design regulations must follow VSMP Regulations Part II B – Technical Criteria for Regulated Land-Disturbing Activities (9 VAC 25-870-32 through 9 VAC 25-870-92).

5.2.3.5 The Virginia Stormwater Management Handbook *(Volumes 1 and 2, First Edition, 1999, and Second Edition, 2013)* is the primary guidance for basic hydrology and hydraulics, stormwater best management practice design, and efficiency. This shall be used when designing projects that affect stormwater runoff, especially projects that feature permanent stormwater management facilities such as grass swales, bio-retention, sand filters, etc. Stormwater management guidance materials, including the Virginia Stormwater Management Handbook and BMP Standards and Specifications, can be found online at http://www.deq.virginia.gov/Programs/Water/StormwaterManagement/Publications.aspx

5.2.3.6 LaRC COD Facilities Engineering Standards – Environmental and Energy shall be incorporated to meet stormwater design requirements where applicable.

5.2.4 Total Maximum Daily Loads (TMDLs) and the Chesapeake Bay

5.2.4.1 VPDES and MS4 permit requirements require LaRC to comply with all applicable TMDLs approved by the State Water Control Board for waterways into which LaRC discharges. Currently, LaRC is subject to the Chesapeake Bay TMDL with a waste load allocation (WLA). LaRC is also referenced in the Back River TMDL, but is not subject to a WLA.

5.2.4.2 The Clean Water Act requires federal agencies that own or operate a facility in the Chesapeake Bay watershed to participate in regional and sub-watershed planning and restoration programs (section 117(f)(1)). It also requires federal agencies that own or occupy real property in the Chesapeake Bay watershed to ensure that the property, and actions taken by the agency with respect to the property, comply with the Chesapeake Bay Agreement and any subsequent agreements and plans (section 117(f)(2)). It is LaRC policy to participate in TMDL-related planning efforts and ensure that actions taken on Center comply with all agreements and plans, including LaRC's Chesapeake Bay Action Plan as required by the MS4 permit.

5.2.4.3 Section 10.4 of the Chesapeake Bay TMDL states that "the federal sector is like other sectors in that the EPA expects federal land owners to be responsible for achieving load allocations (LAs) and WLAs through actions, programs, and policies that will reduce the release of nitrogen, phosphorus, and sediment (CWA Section 313, 33 U.S.C. 1323)." LaRC is subject to Level 2 scoping run reductions for implementation as defined in the Chesapeake Bay TMDL Watershed Implementation Plans. Level 2 implementation equates to an average reduction of 9% of nitrogen loads, 16% of phosphorus loads, and 20% of sediment loads from impervious regulated acres, as well

as an average reduction of 6% of nitrogen loads, 7.25% of phosphorus loads and 8.75% of sediment loads from pervious regulated acres beyond 2009 progress loads and beyond urban nutrient management reductions for pervious regulated acreage.

5.2.4.4 The Chesapeake Bay Preservation Act was enacted to improve water quality in the Chesapeake Bay and other waters of the state by requiring the use of effective land management and land use planning, in order to minimize negative impacts on water quality. LaRC is subject to requirements established in Chesapeake Bay Preservation Area Designation and Management Regulations (9 VAC 25-830).

5.2.4.5 Executive Order 13508, *"Strategy for Restoring and Protecting the Chesapeake Bay Watershed,"* directs federal agencies with property in the watershed to reduce loadings of nitrogen, phosphorus, and sediment from federal lands and facilities and to contribute to the jurisdictions' watershed implementation plans.

5.2.4.6 It is LaRC's policy to reduce pollutant loadings to meet the WLA to the maximum extent practicable.

5.3 RESPONSIBILITIES

5.3.1 Facility Environmental Coordinators shall:

a. Have knowledge of facility operations under their control that may result in potential release of water pollutants.

b. Be aware of applicable permit requirements and act to prevent unpermitted discharges.

c. Assist the SPEEB Environmental staff by providing information and data required to comply with water permit requirements and compliance inspections.

d. Contact the SPEEB Environmental staff to determine alternative disposal options in situations where surface water or sanitary discharge is not permissible. If unsure of whether discharge is covered under LaRC water permit, contact the SPEEB Environmental staff for guidance.

e. In the event of a permit violation or spill, participate in the investigation to determine the cause of the discharge and recommend remedial action to prevent reoccurrence.

f. Proactively seek out illicit discharges to the stormwater system and notify the SPEEB Environmental staff if any are found and/or eliminated.

g. Proactively seek out any pollutant discharges to the stormwater system, including nitrogen, phosphorous, sediment, and bacterial loadings. Notify the SPEEB Environmental staff if any are found and/or eliminated.

h. Participate with the SPEEB Environmental staff in conducting water quality and water quantity pollution prevention (P2) opportunity assessments.

i. Identify, develop and implement P2 projects.

5.3.2 The Standard Practice and Environmental Engineering Branch shall:

a. Monitor and report as required by the permits, maintain all related files, and prepare permit applications.

b. Serve as the point of contact for LaRC with regulatory agencies. In the event of a permit violation, coordinate the investigation and submit findings to the permitting agency, as necessary.

c. Approve or disapprove discharges from operations not included on the Center's water discharge permits (i.e., decontamination shower water, closed-loop cooling systems, water tanks), to include on-site contractor operations. Determine what analytical testing, if any, is required for the water discharge to ensure compliance with environmental regulations.

d. Perform outfall reconnaissance and MS4 illicit discharge inspections as outlined in the MS4 Program Plan.

e. Serve as the lead on developing programs and procedures necessary to address any TMDLs.

f. Monitor implementation of TMDL Action Plans for effectiveness in reducing WLA pollutants, and assess and update plans annually.

g. Manage and update the Center's MS4 Program Plan to ensure General Permit requirements are met and to ensure BMP implementation on existing developed regulated lands to achieve pollutant reductions equivalent to Chesapeake Bay TMDL Level 3 scoping run reductions by 2025.

h. Ensure compliance with LaRC SWM Annual Standards and Specs by reviewing SWPPP submissions for all projects and overseeing and enforcing these standards and specifications through procedures as outlined in the document.

i. Oversee appropriate permitting of land-disturbing activities, including review of projects, permit determinations, permit submittals (SWPPPs, Plans), and inspections.

j. Ensure that stormwater best management practices are included in new construction designs and that these designs follow the guidance of the Virginia Stormwater Management Handbook, meet any Technical Criteria from 9 VAC 25-870, and satisfy the requirements of EISA Section 438, if applicable.

k. Coordinate with Program Managers/Project Initiators to ensure any required long-term maintenance of required stormwater best management practices on projects meets Virginia VSMP or EISA requirements.

5.3.3 Program Managers/Project Initiators shall:

a. Ensure that LaRC Environmental and Energy Design Standards are incorporated in projects and contracts where applicable.

b. Obtain approval from the SPEEB prior to beginning any projects or operations that have water discharges not covered under the Center's water permits. If unsure of whether a discharge is covered under a water permit, contact the SPEEB Environmental staff for guidance. Staff will determine what analytical testing, if any, is required for the water discharge to ensure compliance with environmental regulations.

c. Work closely with SPEEB if permitting is involved on a project to ensure permit compliance at all times.

5.3.4 Contracting Officer's Representatives shall:

Ensure that contractors:

a. Comply with Center's water discharge permit requirements.

b. Perform operations in a manner that prevents unpermitted water discharges.

c. Comply with applicable state and federal laws, regulations, permits, SPEEB policies, procedures, and inspection findings related to land-disturbing activities.

5.3.5 Center Personnel and On-site Contractors shall:

a. Perform operations in a manner that prevents unpermitted water discharges.

b. Obtain approval from the SPEEB before the start of any operations that have discharges not covered under the Center's water permits. If unsure whether a discharge is covered under a LaRC water permit, contact the SPEEB Environmental staff for guidance.

c. In the event of an illicit discharge, immediately contact the LaRC Emergency Dispatcher at 911 (from land line on Center) or at 864-5500 (business phone) or 864-2222 (cell phone). Provide as much information as possible to the dispatcher regarding the nature of the discharge.

d. Car wash personnel shall adhere to the VPDES Car Wash Permit conditions. This includes using the permitted wash products, using the correct wash locations, etc. Any changes shall be requested for approval by SPEEB Environmental staff.

6 AIR QUALITY

6.1 GENERAL

The purpose of this chapter is to provide information on applicable regulatory requirements and procedures related to air quality at NASA LaRC. Federal and state laws regulate air pollutant emissions from NASA LaRC facilities and operations. The Clean Air Act (CAA) sets forth the requirements for air quality control programs. The objective of air quality control programs is "to protect and enhance the quality of the Nation's air resources so as to promote public health and welfare and the productive capacity of its population." The U.S. Environmental Protection Agency (EPA) has granted the Virginia DEQ authority for oversight and enforcement of Clean Air Act provisions.

6.2 REQUIREMENTS

6.2.1 NASA LaRC Air Operating Permit

6.2.1.1 The Center has a federally enforceable state operating permit for its stationary sources of air pollution. The permit limits emissions from specific sources of air pollution as well as from the entire research facility. It also specifies operating, monitoring, and recordkeeping requirements. To assess compliance with the permit conditions, DEQ conducts periodic air inspections at the Center. A list of equipment regulated under the LaRC air permit is maintained by the SPEEB. A copy of the current LaRC air permit is posted on the LaRC Environmental and Energy Management Web site at https://emis.ndc.nasa.gov/air.cfm.

6.2.1.2 The list of currently permitted sources at LaRC is included in the following Table.

LaRC PERMITTED AIR EMISSION SOURCES

Air Emission Source	Building Location(s)
Babcock & Wilcox Boilers, Nebraska Boiler	1215
Cleaver Brooks Boilers	647
Space Heaters/Furnaces (#2 fuel oil-fired)	1228, 1258, 1297, 1297C
Space Heaters/Furnaces (natural gas-fired)	644, 1122, 1187-1191, 1197-1199, 1206, 1245, 1256C, 1275
CF_4 Tunnel Heater System	1275
Kaiser Marquardt Sudden Expansion Burners	1221B
Burners at the National Transonic Facility	1236
Emergency Generators and Fire Pumps	641, 1201, 1211, 1213, 1215, 1223B, 1236, 1244A, 1247E, 1248, 1250, 1268A-C, 1297G, 2101, 2102
Arc-Heated Scramjet Test Facility	1247B
HyMETS Facility	1148
Direct-Connect Supersonic Combustion Test Facility	1221D
Combustion Heated Scramjet Test Facility	1221D
8-Foot High Temperature Tunnel	1265
Degreaser/Parts Washing Units	1199, 1236, 1238B, 1244, 1267A, 1296
Paint Booths	1148, 1230A, 1232A, 1238B, 1244D, 1268D 1202 – conformal coating booth 1230 – plasma arc booth
Dust Collectors	1225
Investment Casting Wax Burn-Out Furnace	1237A
Underground Gasoline Storage Tanks	1199
Tape Prepregging Machine	1267A

6.2.2 Compliance Requirements of the Air Operating Permit

The air permit contains legally enforceable conditions that limit the quantity of air pollutants that NASA LaRC facilities and operations may emit. Specific permit requirements vary according to the air pollution source but they generally fall into one of four categories:

a. Physical:
   (1) Requirement for air pollution controls to limit emissions. Examples include low nitrogen oxide (NOx) burners on boilers and filters on paint booths.
   (2) Requirement for monitoring equipment to measure emissions or process rates.

b. Operational:
   (1) Limits on the amount of fuel burned or materials processed.
   (2) Limits on the frequency and duration of operations.
   (3) Limits on the types and amounts of product that can be used, such as paints and solvents.

c. Recordkeeping:
   (1) Documents that physical and operational requirements are met.
   (2) Documents the quantity of products, fuel, and materials used.
   (3) Documents the frequency and duration of operations.

d. Reporting and Inspections:
   (1) Requirement for periodic reports to regulatory agencies.
   (2) Requirement for Annual Inventory and Emissions Statement.
   (3) Allowance for periodic compliance inspections by DEQ.

6.3 RESPONSIBILITIES

6.3.1 Facility Environmental Coordinators shall:

a. Know the facilities and operations under their responsibility that are, or have the potential to be, sources of air pollution.

b. Be familiar with the permitted sources of air pollution and with the applicable permit requirements for those sources.

c. Notify the SPEEB Environmental staff prior to moving, changing, modifying, removing, or installing an air emission source.

d. Consult with the SPEEB Environmental staff to evaluate operations of concern and to ensure compliance with air pollution regulations and permit requirements.

e. Provide data, as required by the LaRC air permit, to the SPEEB Environmental staff in a timely manner for air emissions monitoring and inventory.

f. Participate with the SPEEB Environmental staff in conducting air quality P2 opportunity assessments.

g. Minimize or eliminate sources of air pollution through the use of feasible engineering and administrative controls. Substitute non-polluting materials when practical to use them.

6.3.2 The Standard Practice and Environmental Engineering Branch shall:

a. Monitor and report air pollutant emissions and prepare air permit applications as required by regulatory agencies.

b. Serve as the point of contact at LaRC for communications with regulatory agencies regarding air emissions and permitting issues.

c. In the event of discovering a potential permit violation, contact the appropriate facility personnel and develop a solution/plan for correcting the problem. The solution/plan may include establishing a temporary fix and/or procuring the necessary funds to achieve full compliance.

d. Prepare and maintain emission inventories, summary reports, and a list of permitted air sources.

6.3.3 The Logistics Management Branch shall:

a. Provide the SPEEB Environmental staff with monthly reports documenting the quantity of fuel issued from stock.

b. Provide the SPEEB Environmental staff with monthly data on parts washer solvent throughput.

6.3.4 Program Managers/Project Initiators shall:

Notify the SPEEB Environmental staff prior to moving, changing, modifying, removing, or installing an air emission source.

6.3.5 Center Personnel and On-site Contractors shall:

a. Be aware of and comply with the LaRC air permit requirements.

b. As necessary, assist FECs with preparation of the required information necessary for permit compliance, monthly monitoring and recordkeeping, and annual updates.

6.3.6 The On-site Maintenance Contractor shall:

a. Comply with all applicable EPA regulatory requirements under 40 CFR 82 (Protection of Stratospheric Ozone) that have been established under the CAA.

b. Utilize the Refrigerant Compliance Manager database and software and maintain all records necessary for compliance with these regulations.

6.3.7 The Safety and Facility Assurance Branch shall:

Ensure that demolition and renovation activities at LaRC are performed in compliance with 40 CFR Part 61 Subpart M - National Emission Standard for Asbestos (also see Chapter 9).

7 WASTE MANAGEMENT & MINIMIZATION

7.1 GENERAL

The purpose of this chapter is to provide information on the regulatory requirements and procedures regarding proper management of various hazardous and nonhazardous wastes at NASA LaRC. The procedures comply with regulations and policies established by the EPA, the Occupational Safety and Health Administration (OSHA), the Virginia DEQ, and the LaRC SPEEB.

7.2 REQUIREMENTS

7.2.1 The disposal of waste is strictly regulated under the Resource Conservation and Recovery Act (RCRA) of 1976. RCRA gives EPA the authority to control hazardous waste (HW) from "cradle to grave," which includes the generation, transportation, treatment, storage, and disposal of HW. Under this concept, the HW generator is ultimately responsible for the waste from the time it becomes a waste until it is properly disposed of and no longer poses a threat to human health or to the environment. RCRA also sets forth a framework for the management of nonhazardous wastes. In 1984, the Federal Hazardous and Solid Waste Amendments to RCRA increased the EPA's enforcement authority and established a more stringent HW management standard.

7.2.2 RCRA regulations prohibit a wide variety of materials and substances from disposal in the municipal trash system. LaRC manages several categories of these prohibited wastes, and each category is subject to specific requirements and management procedures. The types of prohibited wastes that LaRC manages are outlined below:

a. Hazardous Waste - HW is a waste with properties that make it dangerous or potentially harmful to human health or the environment. Although the criteria for identifying and classifying HW are complex, HW often exhibits at least one of four characteristics – ignitability, corrosivity, reactivity, or toxicity. Common LaRC wastes that may be classified as HW include, but are not limited to, acids/caustics, adhesives, cylinders, fuels, paints, lead solder, and solvents. At LaRC, HW is accumulated by generating facilities at Satellite Accumulation Areas (SAAs) and collected for disposal by the SPEEB Environmental staff. Management and disposal procedures are described in Section 7.2.4.

b. Universal Waste - Universal Waste is a subcategory of HW that is subject to less stringent management requirements than other HW. Universal Waste consists of certain batteries, pesticides, mercury-containing equipment, and lamps (e.g., fluorescent light bulbs). Section 7.2.10 describes Universal Waste management procedures.

c. Oils - Oil, lubricants, oily water, and oily debris are prohibited from trash disposal although they are categorized as "nonhazardous waste" under RCRA. Procedures for the management of oils are described in Section 7.2.11.

d. Metals - Many metals naturally contain trace amounts of hazardous constituents that may leach into the environment if disposed in a landfill. Lead solder is considered a HW and shall be managed according to the requirements in Section 7.2.4. Other metals are recycled following procedures described in Section 11.2.6.1.

e. Polychlorinated Biphenyls (PCBs) - Materials containing PCBs are prohibited from trash disposal, as described in Chapter 8.

f. Asbestos – Asbestos-containing materials are prohibited from trash disposal as described in Chapter 9.

g. Regulated, Non-Hazardous Waste - A non-hazardous waste that does not fall into one of the above categories may be classified as a Regulated, Non-Hazardous Waste. This type of waste may have specific disposal restrictions or prohibitions that apply. If unsure about disposal requirements for a waste stream, contact the SPEEB Environmental staff for guidance.

7.2.3 **Solid Waste Management**

7.2.3.1 Solid waste refers to nonhazardous, non-liquid wastes that do not fall into any of the above categories. The Center manages solid waste through an integrated approach incorporating recycling, composting, energy recovery, and landfilling. LaRC strives to implement projects and business practices that minimize the amount of solid waste generated and disposed.

7.2.3.2 The preferred hierarchy of solid waste reduction and disposal is source reduction, reuse, recycling, incineration, and finally landfilling.

7.2.3.3 LaRC collects numerous items for recycling, as described in Chapter 11. Executive Order 13693, "*Planning for Federal Sustainability in the Next Decade*," requires that federal agencies advance waste prevention and pollution prevention by diverting at least 50 percent of non-hazardous solid waste, including food and compostable materials from the landfill annually.

7.2.4 **Hazardous Waste Management**

7.2.4.1 RCRA dictates specific HW management requirements based on the total amount of HW generated. LaRC is categorized as a Large Quantity Generator, which makes it subject to the following RCRA requirements:

a. LaRC shall store HW at its central HW Storage Area for no more than 90 days.

b. LaRC shall have a contingency plan for handling emergencies.

c. LaRC shall submit a biennial HW report.

d. LaRC shall have in place a waste minimization program to reduce the volume and toxicity of waste generated.

e. LaRC shall not transport HW offsite or dispose of HW on-site – these functions shall only be performed by permitted contractors.

7.2.4.2 Certain Department of Transportation (DOT) security requirements enacted after September 11, 2001, also affect LaRC as a generator of HW. DOT has worked closely with federal, state, and local government agencies to improve the security of hazardous substances in the transportation system. DOT requires that shippers and carriers of certain highly hazardous items develop and implement security plans. In accordance with these requirements, LaRC has developed a Hazardous Material and Hazardous Waste (HM/HW) Security Plan. The plan includes measures to verify background information for personnel with access to hazardous materials and wastes, measures to address unauthorized access to hazardous substances, and measures to address the security risks of shipments while in transit. The plan is available by contacting the SPEEB Environmental staff.

7.2.4.3 RCRA dictates the specific HW procedures as described below in Section 7.2.5 through 7.2.8

7.2.5 **Waste Minimization**

7.2.5.1 Waste minimization is required by RCRA, and LaRC strives to minimize the volume and toxicity of wastes generated at the Center. Source reduction, reuse, and recycling shall be utilized to the maximum extent practicable.

7.2.5.2 The Pollution Prevention Act of 1990 established pollution prevention as the preferred approach to environmental protection, waste management and minimization. The Act specifies a hierarchical strategy as follows:

a. Pollution should be prevented or reduced at the source whenever feasible;

b. Pollution that cannot be prevented should be recycled in an environmentally safe manner whenever feasible;

c. Pollution that cannot be prevented or recycled should be treated in an environmentally safe manner whenever feasible; and

d. Disposal or other releases into the environment should be employed only as a last resort and should be conducted in an environmentally safe manner.

e. Source reduction includes equipment or technology changes; process or procedure modifications; reformation or redesign of products; substitution of materials; and improvements in housekeeping, maintenance, training, or inventory control.

7.2.5.3 One avoidable source of HW results from the poor management of hazardous materials. LaRC requires hazardous materials to be managed in accordance with federal, state and local regulations and Langley Procedural Requirements such as LPRs 1710.12 and 1710.13, and Chapter 18 of this LPR.

7.2.5.4 Poorly managed hazardous materials may result in expired, spoiled, or contaminated materials that are unsuitable for their intended purpose. In these cases, the items would require disposal as HW, resulting in additional disposal costs. If an organization fails to follow the above requirements, resulting in unnecessary HW disposal costs, the responsible organization may be charged for the disposal.

7.2.6 **Training**

7.2.6.1 All personnel who use, handle, or request disposal of hazardous materials, oil, or HW shall attend training on management procedures relevant to the tasks they are performing. The training also includes emergency response procedures and familiarization with equipment and systems where applicable.

7.2.6.2 Training is mandatory and shall be attended annually or whenever new or different hazards are introduced into the workplace. The Waste Management Training course is offered by the SPEEB Environmental staff.

7.2.7 **Facility Accumulation Procedures**

A SAA is a specific location at a facility that is designated to accumulate HW. Below are specific requirements for managing SAAs:

a. SAAs shall be located at or near the point of waste generation.

b. SAAs shall be under the control of the operator of the process generating the waste. HW from one SAA may not be moved to another SAA.

c. Pre-labeled drums/containers with unique identification numbers are issued by the SPEEB Environmental staff for accumulating waste and are available by calling 5-DRUM.

d. The use of product containers for accumulating waste is prohibited.

e. The drums issued shall stay at the receiving facility and contain only the waste for which they were issued.

f. Each HW container located at an SAA shall be marked with the words “Hazardous Waste” and the identity of the waste.

g. Each container at an SAA shall be closed at all times (unless adding waste).

h. Each container at an SAA shall be maintained in good condition (non-leaking).

i. SAA inspections shall be performed weekly and documented. An example inspection sheet is available at: https://emis.ndc.nasa.gov/cmts/HazWaste/SAA_UWA-insp.pdf.

j. A one-page Spill Response Plan shall be posted at each SAA.

(1) Where appropriate, there shall be adequate spill supplies to clean up small spills or contain large spills. (Facilities must purchase their own supplies.)
(2) A facility-specific Spill Response Plan can be generated at https://emis.ndc.nasa.gov/cmts/hazwaste/spill/spill_response.htm.
(3) Accumulation of solvent rags, aerosol cans, and solder debris are exempt from this requirement.

k. No more than 55 gallons TOTAL of HW or 1 quart of acute HW shall be accumulated at an SAA. Acute wastes are specifically listed by the EPA. A copy of the list is available by contacting the SPEEB Environmental staff. Users shall leave headroom (3 inches for a 55-gallon drum, 1 inch for a 5-gallon container) in containers to allow for expansion.

7.2.8 **Facility Disposal Procedures**

7.2.8.1 A HW container shall be removed from an SAA within 3 days of when the 55-gallon limit is reached.

7.2.8.2 The Accumulation Start Date on the HW label shall be filled in when the container is full or when the 55-gallon limit of HW is reached.

7.2.8.3 HW generators shall use the Waste Disposal Tracking System available at https://emis.ndc.nasa.gov/hazwaste_sys/hazwaste_welcome_scr.cfm to request the removal of HW by the SPEEB Environmental staff. The Waste Disposal Tracking System contains the electronic Waste Material Data Sheet (LF 163) which is filled out for each HW that requires pickup and disposal.

7.2.8.4 Pickup of aerosol cans may also be requested using the simplified electronic form at https://emis.ndc.nasa.gov/rapp/bflac.htm or by calling 5-DRUM.

7.2.9 **Disposal Cost Responsibilities**

7.2.9.1 The safe use and storage of hazardous materials are discussed in LPRs 1710.12 and 1710.13. Hazardous material tracking requirements are discussed in Chapter 18 of this LPR, and proper procedures for managing a hazardous material that becomes a hazardous waste are provided in Chapter 7 of this LPR.

7.2.9.2 The SPEEB Environmental staff is responsible for the disposal of non-hazardous/hazardous waste generated by LaRC personnel and on-site contractors that has been managed properly in accordance with this LPR. However, in the event that the SPEEB Environmental staff determines that hazardous material has been improperly managed or requires special handling outside normal disposal operations, the responsible organization may be charged for all disposal-related costs.

7.2.10 **Universal Waste Management**

7.2.10.1 Universal Waste is a subset of HW, so the accumulation and disposal procedures are similar. The requirements for Universal Waste management differ from requirements for other HW in the following respects:

a. Containers are labeled with a “Universal Waste” label and identifies the contents. For example, Universal Waste – Used Batteries.

b. The start date is filled in when the *waste accumulation begins* (as opposed to the HW requirement of when the container is full).

c. Universal Waste can be accumulated at LaRC for up to 1 year, at which point it must be shipped off-Center for disposal. For LaRC to meet this requirement, generators shall have their Universal Waste picked up by the SPEEB Environmental staff within 270 days (9 months) of the start date to allow staff sufficient time to ship it off-site for disposal.

d. Universal waste containers shall be inspected weekly.

e. Inspections shall be documented on the SAA inspection sheet. An example SAA inspection sheet is available at https://emis.ndc.nasa.gov/cmts/HazWaste/SAA_UWA-insp.pdf

f. Battery terminals shall be taped to prevent fire/sparks and accumulated in non-metallic containers. Generators may request pickup electronically at https://emis.ndc.nasa.gov/rapp/bflac.htm or by calling 5-DRUM.

g. Facilities’ fluorescent light bulb accumulation areas are exempt from SAA requirements to maintain spill plans and spill materials. In most cases, the LaRC lighting contractor replaces bulbs at Center facilities.

h. Facilities that change their own bulbs shall accumulate them in the original box (to prevent breakage) and label it as “Universal Waste – Used Lamps.” Generators may request pickup electronically at https://emis.ndc.nasa.gov/rapp/bflac.htm.

7.2.10.2 Aside from these differences, all other HW management requirements apply to Universal Wastes (e.g., annual training, labeling, maintaining closed containers).

7.2.11 **Used Oil Management**

7.2.11.1 Used oils, used lubricants, oily debris, and oily water are accumulated at locations convenient to the generating facility and stored in containers labeled with “Nonhazardous Waste” and the identity of the substance.

7.2.11.2 Accumulation containers can be requested from the SPEEB Environmental staff by calling 5-DRUM. Used oils are not subject to the SAA requirements in Section 7.2.7, but the following requirements apply:

a. Containers shall be kept closed and in good condition.

b. Outdoor oil or hazardous material storage areas shall include adequate spill containment (e.g., spill containment pallets) and be in compliance with EPA Spill Prevention, Control, and Countermeasure Plan (SPCC) regulatory requirements. See Chapter 14 for more information.

c. Generators and handlers of used oils are required to attend Waste Management Training as described in Section 7.2.6.

d. To dispose of used oils, generators shall request pickup electronically through the Waste Disposal Tracking System at https://emis.ndc.nasa.gov/hazwaste_sys/hazwaste_welcome_scr.cfm.

7.2.12 **Soil Excavation**

7.2.12.1 If a proposed LaRC project will involve the excavation or removal of soil, the project initiator shall coordinate with the SPEEB Environmental staff to ensure that appropriate sampling is performed in accordance with NASA LaRC SpecsIntact Section 01 35 40.00 41, “NASA Langley Environmental Requirements,” prior to project startup.

7.2.12.2 The number of samples and the sample parameters shall be determined according to the volume of soil excavated and the requirements of the facility to be used for disposal (e.g., local landfill).

7.2.12.3 Soil that has not been sampled shall not be removed from LaRC without written approval from the SPEEB Environmental staff.

7.2.12.4 Soil piles shall be coordinated with the SPEEB Environmental staff. Depending on the size of the pile and length of time it is needed, permitting and compliance requirements may be triggered.

7.3 RESPONSIBILITIES

7.3.1 Facility Environmental Coordinators shall:

a. Ensure that facility personnel follow the waste management and disposal procedures outlined in this chapter.

b. Notify the SPEEB Environmental staff prior to establishing or modifying an SAA.

c. Review and approve completed Waste Material Data Sheets (LF 163s) in the Waste Disposal Tracking System.

d. Assist supervisors in ensuring that all personnel who use, handle, or request disposal of HW, oil, or hazardous materials attend the mandatory annual training.

e. Assist facility personnel in minimizing HW and review operations to ensure that they are conducted efficiently and reduce hazardous material use.

f. Participate with the SPEEB Environmental staff in conducting waste minimization P2 opportunity assessments.

g. Identify, develop, and implement P2 opportunities to minimize or eliminate the generation of wastes.

h. Contact the SPEEB Environmental staff as early as possible, but at least 2 weeks prior to starting work on large waste-generating projects (e.g., lead paint removal, wash-down of tunnel walls, maintenance activity that will generate oil discharges). Failure to do so could result in work stoppage or additional costs.

7.3.2 The Standard Practice and Environmental Engineering Branch shall:

a. Oversee the Center's HW management operations, including issuing labeled waste accumulation containers and removing full HW containers within the 72-hour notification time limit.

b. Prepare the HW Generators Biennial Report.

c. Dispose of waste through a qualified off-site contractor in accordance with all federal, state, and local requirements. Review audit information for Transfer, Storage, and Disposal Facilities used for HW disposal.

d. Provide periodic HW Management training to FECs and facility personnel.

e. Coordinate with Program Manager/Initiator or COTR to determine if environmental sampling will be required for any proposed projects.

f. Proactively seek out and implement opportunities to reduce or eliminate waste generation through P2 methodologies and the EMS.

7.3.3 Directors and Supervisors shall:

a. Ensure that facility personnel follow the waste management and disposal procedures outlined in this chapter. If mismanaged hazardous materials result in additional HW disposal costs, the responsible organization may be charged for the disposal.

b. Ensure that all personnel that use, handle, or request disposal of HW, oil, or hazardous materials attend the mandatory annual training.

7.3.4 Program Managers/Project Initiators shall:

a. Contact the SPEEB Environmental staff as early as possible prior to starting work on in-house, large waste-generating projects (e.g. lead paint removal, wash-down of tunnel walls, etc.). Failure to do so could result in work stoppage or additional costs.

b. Ensure that all projects include provisions for compliance with the waste management requirements described in this chapter.

c. Ensure compliance with the requirements outlined in Section 4.4.4 of this document.

7.3.5 Center Personnel and On-Site Contractors shall:

a. Minimize the volume and toxicity of generated waste to the maximum extent technically possible and economically feasible.

b. Attend mandatory Waste Management Training at least annually if job requires use or handling of HW, oil, or hazardous materials.

c. Call the LaRC Emergency Dispatcher at 911 (from land line on Center) or at 757-864-2222 (cell phone) in the event of a spill or leak of HW or oil.

d. Comply with all applicable waste management requirements and procedures as outlined in this chapter. As a reminder, the following list contains some common examples (not all-inclusive) of LaRC wastes that require special consideration and/or management procedures for disposal, as described in this chapter. If unsure of proper disposal procedures, personnel should contact the SPEEB Environmental staff.

Acids/caustics
Adhesives
Aerosol cans
Asbestos-containing materials
Automotive fluids
Batteries
Capacitors
Chemicals
Cleaners
Cylinders
Fluorescent light bulbs
Fuels
Light ballasts
Mercury-containing equipment
Metals
Oils/lubricants
Oily debris
Oily water
Paints
Paint cans
PCBs
Pesticides
Photographic fluids
Recyclable items
Spill debris
Solder
Solvents
Solvent wipes/swabs

8 POLYCHLORINATED BIPHENYL (PCB) MANAGEMENT

8.1 GENERAL

8.1.1 The purpose of this chapter is to provide information on applicable regulatory requirements and procedures regarding PCBs and PCB-containing equipment. It also outlines LaRC procedures for proper identification, management, and disposal of PCB and PCB-containing items.

8.1.2 PCBs are a class of chlorinated hydrocarbons that were developed in the 1940s and used in a variety of applications because of their chemical stability, low flammability, and low electrical conductivity. Use as a coolant in transformers, capacitors, and ballasts has been a major application. PCB fluids have been sold under various trade names, such as “Askeral,” “Inerteen,” “Chlorexol,” “Noflama,” and “Pyranol.” Because of their extreme stability, they do not break down in the environment and tend to bioaccumulate through the food chain. Manufacturing of PCBs in the United States was discontinued in 1977.

8.2 REQUIREMENTS

8.2.1 PCBs are regulated under the EPA’s Toxic Substances Control Act (TSCA). The regulations include procedures for proper labeling, storage, use, servicing, decontamination, and disposal of all fluids containing greater than 50 parts per million (ppm) PCBs; electrical equipment containing such fluids; and cleanup debris from spillage or leakage of such fluids.

8.2.2 Items containing fluids that have a PCB concentration between 2 ppm and 50 ppm are considered “non-PCB” and are excluded from certain federal regulations with the exception of disposal practices.

8.2.3 Some facilities at the Center may still have PCB light ballasts or capacitors that have high levels of PCBs, or older electrical equipment that has very low levels of PCBs. Limited-access areas containing large high-voltage PCB capacitors (2,000 volts or greater) and individual PCB items must be posted with a large PCB sign. All PCB storage areas must also be posted.

8.2.4 Items that have been retrofilled (fluids containing PCBs are removed and replaced with non-PCB fluid) shall be labeled with a non-PCB label. PCB signs and labels can be obtained by contacting the SPEEB Environmental staff.

8.3 RESPONSIBILITIES

8.3.1 Facility Environmental Coordinators shall:

a. Label and post signs on each PCB item and area in the facility. A list of items that require labeling can be obtained by contacting the SPEEB Environmental staff.

b. Contact the SPEEB Environmental staff for sampling of possible PCB items or for removing PCB items for disposal.

c. In the event of a PCB spill, immediately call the LaRC Emergency Dispatcher at 911 (from land line on Center) or at 757-864-2222 (cell phone). Also, notify the SPEEB Environmental staff.

8.3.2 The Standard Practice and Environmental Engineering Branch shall:

a. Provide PCB labels and signs to LaRC operators and custodians.

b. In the event of a spill, serve as the PCB Spill Coordinator and follow the procedures outlined in LPR 8715.12, *"LaRC Integrated Spill Contingency Plan."*

c. Review/approve disposal requests and sign PCB shipping documents.

d. Approve or reject the use of PCB disposal facilities.

e. Manage the Center's PCB Storage Facility, Facility 1167, in accordance with LaRC waste management and TSCA requirements.

f. Inspect all PCB items to ensure proper labeling and packaging prior to being placed in storage at Facility 1167.

8.3.3 Program Managers/Project Initiators shall:

a. Notify the SPEEB Environmental staff prior to work that will involve the removal of equipment and/or items containing fluids with any concentration of PCBs.

b. Ensure that contracts for the removal of PCBs include requirements for complying with all PCB removal procedures outlined in 8.3.4.

8.3.4 Contracting Officer's Representatives shall:

a. Ensure that contractors/subcontractors performing PCB removal operations comply with the following requirements:

   (1) Conduct all PCB operations, including storage, disposal, and record-keeping, in accordance with applicable provisions of 40 CFR 761.

   (2) Temporarily store PCB items (e.g., transformers, capacitors), for a period not to exceed 30 days from the date of removal from service.

      (a) Storage shall be coordinated with the SPEEB Environmental staff to ensure proper storage practices.

      (b) A notation shall be attached to the PCB item or PCB container housing that indicates the date of removal from service, its weight, and PCB content.

   (3) Package all PCB items for transportation according to applicable DOT regulations.

   (4) Perform sampling and analyses of PCB items as needed.

(5) Include an Emergency Spill Plan in any operational procedures that include the handling of PCBs.

Note: All transformers and electrical equipment that have fluids containing any concentration of PCBs shall be drained before being transported off the Center for disposal. The only exceptions to this are transformers or capacitors that can be contained without modification in a drum or other leak-proof container. The SPEEB Environmental staff shall be notified prior to draining any equipment to ensure that proper accumulation containers are used.

(6) At least 5 working days prior to transporting any PCB items or transformer oil off LaRC property, the following information shall be submitted to the SPEEB:

(a) Name and location of the ultimate disposal facility. Only LaRC-approved facilities may be used for the disposal of PCB items.

(b) A completed manifest that fulfills all statutory and regulatory requirements. The SPEEB Environmental staff will review the manifest prior to approval and signature.

Note: Oil containing between 2-50 ppm PCBs shall be marketed to incinerators or burners defined in 40 CFR 761 or an EPA-approved chemical treatment facility.

(7) In the event of a spill:

(a) Immediately call the LaRC Emergency Dispatcher at 911 (from land line on Center) or at 757-864-2222 (cell phone). Also, notify the SPEEB Environmental staff.

(b) Perform cleanup as required under 40 CFR 761.

(8) All personnel, including supervisors, involved with PCB spill prevention and cleanup shall be trained in accordance with federal/state regulations.

(9) No PCB site operations shall be performed if spill materials and qualified personnel defined under the Emergency Spill Plan are not at the site prior to starting any PCB operations.

8.3.5 Center Personnel and On-site Contractors shall:

If a spill or leak of PCBs is detected, immediately call the LaRC Emergency Dispatcher at 911 (from land line on Center) or at 757-864-2222 (cell phone). Also, notify the SPEEB Environmental staff.

9 ASBESTOS

9.1 GENERAL

9.1.1 This chapter provides information and establishes procedures at LaRC for proper identification, management, and disposal of asbestos. The information is to be used in conjunction with the procedures contained in LPR 1740.2, "*Facility Safety Requirements"* (Chapter 4.5, "*Asbestos"*), applicable Unified Facilities Guidance Specifications (UFGS); and NASA LaRC SpecsIntact Section 01 35 40.00 41, "NASA Langley Environmental Requirements."

9.1.2 Asbestos is a naturally occurring family of fibrous mineral silicates. Prior to 1980, asbestos materials were incorporated into a variety of building materials (asbestos-containing building materials, or ACBM) because they exhibit commercially desirable properties such as fire resistance; insulation against heat, cold, noise and electricity; high tensile strength; and acid resistance. Examples of ACBM include:

Sprayed or troweled on surfacing material	Ceiling tile
Pipe insulation	Roofing felts
Textiles	Floor tile and mastic
Concrete-like materials	Caulking putty and spackle

9.1.3 Since the late 1970s, manufacture and distribution of many types of asbestos-containing materials have either been banned or fallen under more stringent regulation, although asbestos has been detected in building materials installed in the 1980s and 1990s.

9.1.4 ACBM can be divided into friable and non-friable categories. Friable materials can be crumbled, pulverized, or reduced to powder by hand pressure and are therefore more likely to release fibers when disturbed or damaged. Non-friable materials can also be a source of fiber release when cut, sanded, or drilled.

9.1.5 The presence of asbestos in a facility does not necessarily mean the health of the occupants is endangered. If asbestos-containing material remains in good condition and is unlikely to be disturbed, exposure will be negligible; however, when ACBM is damaged or disturbed, asbestos fibers can be released and present a potential health hazard to facility occupants.

9.1.6 LaRC does not remove or implement other abatement techniques simply because asbestos is present in a facility. Removal or other abatement is undertaken only if the condition of the asbestos is such that the health of facility occupants is jeopardized or the material will be disturbed by renovation or maintenance activities.

9.2 REQUIREMENTS

9.2.1 Regulations

9.2.1.1 The EPA regulates the emission of asbestos into the environment primarily under the Clean Air Act and the Toxic Substances Control Act.

9.2.1.2 OSHA regulates the exposure of personnel to asbestos in general and construction industries involving renovation and demolition operations.

9.2.1.3 Commonwealth of Virginia regulations parallel federal regulations but are more restrictive with regards to renovation notification requirements. State licensing of personnel involved with asbestos work (e.g., inspectors, abatement workers) is required for LaRC asbestos operations. Landfills that accept asbestos-containing material must also be licensed by the State.

9.2.2 Asbestos Disposal

9.2.2.1 Disposal of friable asbestos waste is regulated under 40 CFR Part 61, and shall be managed in accordance with NASA LaRC SpecsIntact Section 01 35 40.00 41, “NASA Langley Environmental Requirements.”

9.2.2.2 Disposal is permissible only in State-licensed landfills.

9.2.2.3 Transportation of open containers of asbestos waste is prohibited under Department of Transportation regulations (49 CFR 173). Disposal of asbestos waste is the responsibility of the contractor performing the removal/abatement activity.

9.2.3 Posting and Labeling

9.2.4.1 Warning signs and labels are required to inform facility occupants of the presence of ACBM.

9.2.4.2 Labeling and posting procedures can be found in OSHA’s regulation 29 CFR 1910.1101. Signs and labels are available from the LaRC Safety and Facility Assurance Branch at extension 4-SAFE (47233).

9.3 RESPONSIBILITIES

9.3.1 The Standard Practice and Environmental Engineering Branch shall:

a. Review work requests involving asbestos removal and remediation.

b. Arrange for asbestos disposal when appropriate.

c. Review and sign asbestos manifests for both contractor and LaRC disposal.
d. Track manifests and submit exception reports, if necessary, to ensure compliance with regulatory requirements.

9.3.2 Facility Safety Heads shall:

a. Ensure asbestos materials/areas are properly labeled and facility personnel are properly trained.

b. Notify the LaRC Safety and Facility Assurance Branch (SFAB) of changes to the facility's ACBM inventory or condition.

9.3.3 The Safety and Facility Assurance Branch shall:

a. Ensure that demolition and renovation activities at LaRC are performed in compliance with 40 CFR Part 61 Subpart M - National Emission Standard for Asbestos. Review work requests, facility renovation/demolition plans, and other projects for asbestos involvement.

b. Conduct inspections to identify ACBM and assess condition.

c. Recommend remedial action as necessary; periodically re-inspect and reassess. Notify FSHs of changes of ACBM inventory and condition.

d. Provide signs and labels to facility personnel.

e. Approve Asbestos Safety Permits and contractor removal procedures.

f. Monitor and inspect abatement operations.

g. Ensure that Abatement Contractor notifies the appropriate regulatory agencies in accordance with 16 VAC 25-20-30 and 40 CFR 61.145 and receives verification of receipt of notification.

h. Retain copies of all notifications submitted to regulatory agencies for demolition and renovation projects and obtain and file the return receipts from all notifications submitted. Retain the notifications and return receipts with project files indefinitely.

i. Prepare annual predictions of planned renovation operations according to 40 CFR 61.145 and submit predictive notifications to EPA. Submit a copy of the predictive notifications to the SPEEB Environmental staff annually.

9.3.4 Jacobs LLC, pursuant to the LaRC CMOE Contract, shall:

a. Handle and package all asbestos generated in the performance of work under the contract for pickup and disposal by the Government.

b. Utilize an Asbestos Project Designer for design work involving asbestos removal and document changes to asbestos in accordance with LPR 1740.4, *"Facility System Safety Analysis and Configuration Management"* and LMS-CP-4710, *"Configuration Management for Facilities."*

c. Provide configuration management services to update existing documents or incorporate new documents for the asbestos program as described in LPR 1740.4.

9.3.5 Program Managers/Project Initiators shall:

Ensure that contracts involving asbestos removal/abatement include requirements for the contractors to comply with the procedures outlined in Section 9.3.6 below.

9.3.6 Contracting Officer's Representatives shall:

Ensure that contractors/subcontractors performing work involving asbestos follow the requirements listed below:

a. Perform work in accordance with LPR 1740.2, "*Facility Safety Requirements*," and with LaRC SpecsIntact Section 01 35 40.00 41, "NASA Langley Environmental Requirements."

b. Submit job-specific procedures to the SPEEB before starting work. No work shall begin without prior approval from the SPEEB Environmental staff.

c. Provide to the SPEEB Environmental staff the name and physical location of the disposal site. Only facilities approved by the Commonwealth of Virginia may be used for asbestos disposal.

d. At least 2 days prior to shipment of asbestos off LaRC property, submit a completed asbestos waste manifest to the SPEEB at Mail Stop 133, Building 1195. Staff signs only complete manifests.

   Note: Asbestos removed from LaRC removal/abatement sites remains Government property throughout the removal activity and shall be processed as such on the Waste Shipment Manifest.

e. Transport the asbestos material off site in accordance with 49 CFR 173.216.

f. Dispose of the asbestos in accordance with 40 CFR 61 and State regulations.

g. Provide the SPEEB Environmental staff with the waste shipment record signed by the owner of the disposal facility indicating receipt of the asbestos waste from the transporter. This record shall be received by the SPEEB Environmental staff within 35 days from the date the transporter accepted the asbestos waste.

10 ENVIRONMENTAL NOISE

10.1 GENERAL

10.1.1 The purpose of this chapter is to provide information on applicable regulatory requirements and procedures related to environmental noise abatement. Noise can be defined as any loud or undesirable sound. The loudness of a sound is measured using a logarithmic scale expressed in decibels (dB) and the measurement is further refined by using an A-weighted decibel (dBA) scale that emphasizes the range of sound frequencies that are most audible to humans. Zero on the decibel scale represents the lowest limit of human audible perception of sound. The level of normal conversation is approximately 60 dBA. Studies have shown that exposure to excessive and even moderate noise intensities for extended periods of time can cause irreparable damage to the human ear.

10.1.2 The aircraft operating from Langley Air Force Base (LAFB) are the dominant and most widespread noise source at the Center. Noise levels at LaRC resulting from the LAFB flyovers typically range from 65 to 85 dBA. Primary environmental noise sources located at LaRC include wind tunnels, compressor stations, and substations. Most of the wind tunnels are closed-loop, meaning the noise generated is contained largely within the facilities, and many operate intermittently for short periods of time. Noise level surveys conducted on the various wind tunnels at LaRC during peak operating mode have identified noise levels ranging from 45 to 80 dBA.

10.2 REQUIREMENTS

10.2.1 Under the Clean Air Act, the EPA administrator established the Office of Noise Abatement and Control (ONAC) to carry out investigations and studies on noise and its effect on the public health and welfare. Through the ONAC, the EPA coordinated all federal noise control activities, but in 1981 the Administration concluded that noise issues were best handled at the state and local levels. As a result, ONAC was closed and primary responsibility for addressing noise issues was transferred to state and local governments. However, the EPA retains authority to investigate and study noise and its effects, disseminate information to the public regarding noise pollution and its adverse health effects, respond to inquiries on matters related to noise, and evaluate the effectiveness of existing regulations for protecting the public health and welfare, pursuant to the Noise Control Act of 1972 and the Quiet Communities Act of 1978.

10.2.2 The EPA identifies a 24-hour exposure level of 70 decibels as the level of environmental noise that will prevent any measurable hearing loss over a lifetime. Likewise, levels of 55 decibels outdoors and 45 decibels indoors are identified as preventing activity interference and annoyance. These levels of noise are considered those that permit spoken conversation and other activities such as sleeping, working, and recreation. The levels are not single-event or “peak” levels. Instead, they represent averages of acoustic energy over periods of time such as 8 hours or 24 hours, and over long periods of time, such as years. For example, occasional higher noise levels would

be consistent with a 24-hour energy average of 70 decibels, so long as a sufficient amount of relative quiet is experienced for the remaining period of time. Noise levels for various areas are identified according to the use of the area. Levels of 45 decibels are associated with indoor residential areas, hospitals, and schools, whereas 55 decibels is identified for certain outdoor areas where human activity takes place. The level of 70 decibels is identified for all areas to prevent hearing loss.

10.2.3 The OSHA Noise Standards establish regulations and guidelines for workplace noise exposure limits. The OSHA standards are 90 dB measured for a duration of 8 hours, 95 dB for 4 hours, 100 dB for 2 hours, and 140 dB maximum for impulse noises.

10.2.4 The City of Hampton and the City of Poquoson have enacted Noise Ordinances that prohibit creating any unreasonably loud or disturbing noise of such character, intensity, or duration that may be detrimental to the life or health of any individual or disturb the public peace and welfare.

10.3 RESPONSIBILITIES

10.3.1 Facility Environmental Coordinators shall:

a. Know the facilities and operations in their areas of responsibility that are, or have the potential to be, sources of high noise levels.

b. Notify the SPEEB Environmental staff of operations that generate, or have the potential to generate, high noise levels.

10.3.2 The Standard Practice and Environmental Engineering Branch shall:

a. Provide guidance and feedback to Center personnel as needed regarding the control and abatement of environmental noise at LaRC.

b. Serve as a point of contact for regulatory agencies for projects or issues related to environmental noise control and abatement.

10.3.3 The Safety and Facility Assurance Branch shall:

Provide assistance to the SPEEB Environmental staff regarding environmental noise issues at the Center.

10.3.4 Center Personnel and On-site Contractors shall:

a. Submit an LF 461 to the SPEEB for any new project or activity that may generate noise levels over 70 decibels.

b. Maintain noise levels at an acceptable level.

c. Address concerns about environmental noise levels to the SPEEB Environmental staff.

11 RECYCLING

11.1 GENERAL

11.1.1 This chapter provides information, procedures, and responsibilities regarding the recycling program at NASA LaRC. The SPEEB Environmental staff keeps metrics on the quantity of materials collected, funds recovered, or disposal costs associated with recycling. Funds collected from the sale of recycled goods are reinvested in the recycling program or used to support the pollution prevention program. The LaRC recycling information Web site is located at https://emis.ndc.nasa.gov/recycling.cfm.

11.1.2 The LaRC recycling program began in 1991 with the collection of mixed paper and scrap metal. LaRC currently recycles white and mixed paper, cardboard, toner cartridges, aluminum cans, plastic bottles, scrap metal, used oil, batteries, fluorescent light bulbs, and used tires. Section 7.2.10 of this LPR describes the procedures for handling batteries and fluorescent light bulbs, and Section 7.2.11 describes the management procedures for used oil. Used tires are collected for recycling by the Logistics Management Branch. The procedures for handling other recyclable items are described below in Section 11.2.

11.1.3 The requirements of this chapter apply to all personnel and contractors performing work at LaRC.

11.2 REQUIREMENTS

11.2.1 Executive Order 13693, "*Planning for Federal Sustainability in the Next Decade*," requires that federal agencies advance waste prevention and pollution prevention by diverting at least 50 percent of non-hazardous solid waste, including food and compostable materials, from the landfill annually. The Agency set a solid waste diversion rate goal of 50 percent through 2025.

11.2.2 **Management of Recyclable Items: White Paper**

11.2.2.1 White paper is collected in facilities throughout the Center in small blue containers provided by the SPEEB Environmental staff. When an individual container is full, it is emptied into a large blue recycling container located at the facility's central collection area. Central collection containers are emptied by the SPEEB Environmental staff on a regular schedule or on a call-in basis, based on the facility's generation rate. Personnel may call 5-DRUM to schedule a pickup.

11.2.2.2 The following characterizes which paper items can be recycled as white paper:

Recyclable White Paper Items:	Items Not Recyclable as White Paper:
Computer Paper	Food Wrappers or Cups
White Letterhead	Laser Print Labels
White Typing Paper	Overheads
White Photocopy Paper	Paper of any color other than white
Fax Paper	
White Memos	
White Paper with colored ink	

11.2.3 **Management of Recyclable Items: Mixed Paper**

11.2.3.1 The SPEEB Environmental staff also collects and recycles "mixed paper," i.e. paper of mixed colors other than white. Center personnel designate individual containers in their facilities for the collection of mixed paper. When the container is full, it is emptied into a large green container located at the facility's central collection area. These containers are provided by the SPEEB Environmental staff and are emptied on a regular schedule or on a call-in basis, based on the facility's generation rate. Personnel may call 5-DRUM to schedule a pickup.

11.2.3.2 The following characterizes which paper items can be recycled as mixed paper:

Recyclable Mixed Paper Items:	Items Not Recyclable as Mixed Paper:
Colored Paper	Food Wrappers or Cups
Glossy Paper	Laser Print Labels
Post-it Notes	Carbon Paper
Manila Folders	Overheads
Catalogs/ Magazines (Glue and Staple-bound)	Newspaper

11.2.4 **Management of Recyclable Items: Cardboard**

11.2.4.1 Large generators of cardboard have special collection bins to accommodate the larger volume of cardboard. Personnel break down the cardboard and place it in the large collection bins for pickup by the SPEEB Environmental staff. FECs can make arrangements for a facility to receive a large generator collection bin or establish regular pickups by calling 5-DRUM.

11.2.4.2 Small or infrequent generators of cardboard break down the cardboard and place it next to the recyclable paper collection bins. It is picked up when the SPEEB Environmental staff collects paper for recycling. Personnel may also call 5-Drum to schedule a special cardboard pickup.

11.2.4.3 The following characterizes which items can be recycled as cardboard:

Recyclable Cardboard Items:	Items Not Recyclable as Cardboard:
Corrugated Cardboard (any color or thickness)	Paperboard (e.g., cereal boxes) Cardboard with food contamination (e.g., pizza boxes)

11.2.5 **Management of Recyclable Items: Toner Cartridges**

11.2.5.1 The SPEEB Environmental staff collects and recycles toner cartridges used in printers. Used toner cartridges are placed inside the bag and the box that the new replacement cartridge came in. The box is taped closed and placed next to the paper bins at the facility's central collection area. Small laser jet ink cartridges are also

recycled. They shall be placed in a plastic bag/container and placed at the same site as the toner cartridges.

11.2.5.2 For facilities with weekly paper pickup, cartridges are picked up when the paper is collected. For facilities that are on an on-call basis for paper pickup, personnel may call 5-DRUM to schedule a toner cartridge pickup.

11.2.6 **Management of Recyclable Items: Scrap Metal**

11.2.6.1 Scrap metal includes all metal bars, frames, mounting brackets, models, metal chips, shavings, and grindings generated from any metal-cutting operations. Scrap metal is collected in separate containers (where practicable) designated as aluminum, copper and copper wire, and mixed metals (including steel).

11.2.6.2 Personnel shall call the Property Disposal Warehouse at extension 46339 to request pickups or a scrap metal recycling container. Facilities that generate small amounts of scrap metal may use any type of collection container labeled as “Scrap Metal for Recycling.” Disposal of scrap metal in the trash is strictly prohibited.

11.2.7 **Management of Recyclable Items: Aluminum Cans**

11.2.7.1 Aluminum Cans are collected in facilities throughout the Center in designated bins. These designated bins for aluminum cans are identified with the words “Aluminum Cans Only” on the top of the container. Make sure the cans are empty of excess liquid. The empty aluminum cans do not need to be crushed before being placed in the bins.

11.2.7.2 The collection containers are emptied by the SPEEB Environmental staff on a regular schedule. Personnel may call 5-DRUM to schedule a pickup.

11.2.8 **Management of Recyclable Items: Plastic Bottles**

11.2.8.1 Plastic Bottles are collected in facilities throughout the Center in designated bins. These designated bins for plastic bottles are identified with the words “Plastic Bottles Only” on the top of the container. Make sure the plastic bottles are empty of excess liquids. The caps on the plastic bottles do not need to be removed.

11.2.8.2 The collection containers are emptied by the SPEEB Environmental staff on a regular schedule. Personnel may call 5-DRUM to schedule a pickup.

11.3 RESPONSIBILITIES

11.3.1 Facility Environmental Coordinators shall:

a. Ensure facility personnel follow established recycling procedures.

b. Post copies of the relevant recycling procedures and updates in a prominent location and/or near recyclable material collection areas.

c. Monitor recycling collection areas and arrange for pickup, if necessary.

d. Ensure collection containers are not contaminated with non-recyclable materials.

e. Educate facility employees about the recycling program or contact the SPEEB Environmental staff to arrange for specific training.

f. Inform the SPEEB Environmental staff of additional items that could be recycled or suggest improvements for the Center's recycling program.

11.3.2 The Standard Practice and Environmental Engineering Branch shall:

a. Manage and oversee the Center's recycling program.

b. Collect recyclable items in a timely manner throughout the Center.

c. Prepare and mail monthly billing invoices to recycling contractors.

d. Act as the Center's official representative with government and private parties on recycling related matters.

e. Track the Center's progress in meeting established goals.

f. Provide support, guidance, training, and assistance to organizations in implementing the recycling program to meet or exceed established goals.

g. Collect monthly metrics on the recycling program and make these available to Center personnel on the LaRC Environmental and Energy Management Web site.

h. Seek out new items to recycle and new commodity markets to maximize proceeds to LaRC from the sale of LaRC recyclable materials.

11.3.3 The Logistics Management Branch shall:

a. Provide day-to-day management of the collection of scrap metal and tires.

b. Remove scrap metal from facilities in a timely manner.

c. Provide the SPEEB Environmental staff with monthly detailed estimates of usage categories for each metal collected.

d. Monitor recycling activities to ensure compliance with established recycling procedures.

e. Maximize the collection of these recyclable materials, and maximize the proceeds to LaRC from the sale of the recyclable materials.

11.3.4 Program Managers/Project Initiators shall:

Ensure that contracts for construction, renovation, demolition, or deconstruction projects include:

a. Requirements for the reuse, recycling, or composting of construction and demolition (C&D) debris, and

b. Requirements for contractors to provide the SPEEB Environmental staff with a monthly report of the type and quantity of C&D debris that is reused, recycled, or composted.

11.3.5 Contracting Officer's Representatives shall:

Ensure that contractors performing construction, renovation, demolition, or deconstruction projects:

a. Maximize the reuse, recycling, or composting of C&D debris, and

b. Provide the SPEEB Environmental staff with a monthly report of the type and quantity of C&D debris that is reused, recycled, or composted.

11.3.6 Center Personnel and On-site Contractors shall:

a. Participate in the LaRC recycling program.

b. Keep abreast of the Center's recycling program information distributed by the FEC or available on the LaRC Environmental and Energy Management Web site: https://emis.ndc.nasa.gov/recycling.cfm.

c. Ensure collection containers are not contaminated with non-recyclable materials.

d. Inform the FEC or the SPEEB Environmental staff of additional items that could be recycled or suggest improvements to the Center's recycling program.

12 GREEN PURCHASING

12.1 GENERAL

12.1.1 This chapter provides information, procedures, and responsibilities regarding green purchasing at NASA LaRC. Green purchasing, also known as sustainable acquisition or affirmative procurement, is the process of purchasing environmentally preferable products. Environmentally preferable products are products and services having a lesser or reduced effect on human health and the environment when compared to competing products or services serving the same purpose.

12.1.2 Green purchasing procedural requirements emphasize that the government and its contractors shall give preference in their procurement and acquisition programs to the purchase of:

a. Recycled content products designated in EPA's Comprehensive Procurement Guidelines.
b. Biobased products designated by the U.S. Department of Agriculture (USDA) in the BioPreferred program.
c. Energy Star products identified by DOE and EPA, as well as FEMP-designated, energy-efficient products.
d. Water-efficient products, including those meeting EPA's WaterSense standards.
e. Environmentally preferable products and services, including Electronic Product Environmental Assessment Tool (EPEAT)-registered electronic products.
f. Non-ozone depleting substances, as identified in EPA's Significant New Alternatives Policy (SNAP) Program.
g. Alternative fuel vehicles and alternative fuels, including SmartWay Transport partners and SmartWay products.
h. Safer Choice labeled products with low or no toxic or hazardous constituents.

12.1.3 The SPEEB Environmental staff compiles information for purchases of EPA-designated recovered material items and UDSA designated biobased products annually. The LaRC green purchasing information Web site is located at https://emis.ndc.nasa.gov/ap.cfm.

12.1.4 The requirements of this chapter apply to all personnel and contractors performing work at LaRC.

12.2 REQUIREMENTS

12.2.1 NPR 8530.1, "*Affirmative Procurement Program and Plan for Environmentally Preferable Products*," establishes the framework for NASA's Affirmative Procurement (i.e. Green Purchasing) program. It requires each Center to develop and implement a program in conformance with 42 U.S.C. § 6962 and other applicable requirements. The NPR assigns responsibilities and describes implementation and reporting requirements.

12.2.2 NASA FAR Supplement, section 1804.7301, requires procurement initiators to obtain and document certain request coordinations before a requisition can be acted upon and completed. LaRC utilizes LF 1707, "*Langley Special Approvals and Affirmations of Requisitions,"* to meet this requirement. The form contains multiple sections for which specific requirements or approvals must be certified based on the nature of the item or service being acquired. Green purchasing requirements are covered in the "Environmental" section of the form. A LF 1707 must be completed for all new requirements for supplies and services. It will not be accepted until all required coordinations and approvals have been documented.

12.2.3 In 42 U.S.C. § 6962, Congress directed the Federal Government to promote recycling by increasing its purchases of products containing recovered materials. RCRA requires EPA to designate products that can be made with recovered materials and to recommend practices for buying these products. EPA promotes this initiative through the EPA Comprehensive Procurement Guidelines (CPG) available at http://www.epa.gov/epawaste/conserve/tools/cpg/index.htm.

12.2.4 The Farm Security and Rural Investment Act (Farm Bill) of 2002 requires federal agencies to establish procurement programs for the purchase of biobased products. Under the Farm Bill, a biobased product is defined as a commercial or industrial product (other than food or feed) that is composed, in whole or in significant part, of biological products or renewable domestic agricultural materials (including plant, animal, and marine materials) or forestry materials. The Farm Bill instructs federal agencies that procure designated items to give preference to such items composed of the highest percentage of biobased material practicable.

12.2.5 The Energy Policy Act of 2005 requires agencies to purchase Energy Star-qualified or FEMP-designated products when procuring energy-consuming products. The requirement applies to products and equipment purchased through any agency procurement action, including those products purchased:

a. Directly by agencies from federal supply agencies and commercial sources.
b. Indirectly through acquisitions carried out under construction, renovation, or services contracts.
c. Individually through any purchases using Government credit cards.

Exceptions to these requirements are allowed only if no Energy Star or FEMP-designated product is cost-effective over the life of the product or reasonably available.

12.2.6 The Energy Independence and Security Act of 2007 sets several mandates regarding the procurement of energy-efficient products. It requires federal agencies to minimize standby energy use in purchases of energy-using equipment, and to buy products with one watt or less of standby power when possible. It also requires federal procurement to focus on Energy Star qualified and FEMP-designated products.

12.2.7 Executive Order 13693, "*Planning for Federal Sustainability in the Next Decade*," requires agencies to promote sustainable acquisition and procurement by ensuring that

the following environmental performance and sustainability factors are included to the maximum extent practicable for all applicable procurements in the planning, award, and execution phases of the acquisition:

a. statutory mandates that require purchase preference for recycled content products, energy and water efficient products and services, and biobased products;
b. sustainable products and services identified by EPA programs, such as SNAP, WaterSense, Safer Choice, and SmartWay; and
c. environmentally preferable products or services that meet or exceed EPA specifications, standards, or labels, or criteria developed or adopted by voluntary consensus standards bodies.

It also requires agencies to reduce copier and printing paper use and acquire uncoated printing or writing paper containing at least 30% postconsumer recycled content or higher.

12.2.8 The Federal Acquisition Regulation (FAR) imposes uniform policies and procedures for federal acquisition, as well as federal contract formation and administration. The FAR includes numerous sections that encompass green purchasing policies and contain requirements for sustainable acquisition:

a. Subpart 23.2, *"Energy and Water Efficiency and Renewable Energy"*
b. Subpart 23.4, *"Use of Recovered Materials and Biobased Products"*
c. Subpart 23.7, *"Contracting for Environmentally Preferable Products and Services"*
d. Subpart 23.8, *"Ozone-Depleting Substances"*

12.2.9 The Council on Environmental Quality's *Guiding Principles for Sustainable Federal Buildings* sets forth overarching environmental performance goals for new construction and modernization, as well as existing buildings. The guidance charges projects to reduce the environmental impact of materials by maximizing the use of environmentally preferable products, using products that meet or exceed the EPA-designated recycled content or USDA-designated biobased content, and optimizing the use of energy-efficient and water-efficient products. LaRC incorporates these principles in its Facilities Engineering Standards.

12.3 TRAINING

12.3.1 All personnel who initiate or approve purchases, as well as personnel who oversee government-issued contracts, shall complete triennial training on management procedures relevant to green purchasing.

12.3.2 Training is mandatory and shall include guidelines documented in federal and NPR requirements.

12.4 EXEMPTION REQUESTS AND JUSTIFICATION DOCUMENTATION

12.4.1 Products meeting sustainable acquisition requirements as listed in one of the federal environmental programs and meeting NASA's preference standards shall be purchased unless the following exceptions apply and are documented with appropriate justification documentation:

a. Products meeting environmental guidelines are available only at an unreasonable price, based on life cycle cost analysis.
b. Products meeting environmental guidelines do not meet quality/performance specifications or standards.
c. Products meeting environmental guidelines are not available within a reasonable timeframe.

12.4.2 Purchases of products or services listed in the federal sustainable acquisition programs that will not meet the programs' environmental requirements shall require justification that clearly identifies and documents the factors supporting the requested exemption.

12.4.2.1 This justification documentation shall be submitted with the applicable LF 1707 (with respect to "Section 2 – Environmental/Sustainable Acquisition") before the LF 1707 can be completed and approved.

12.4.3 Procurement of products or services designated under Energy Star or FEMP that will not meet the Energy Star or FEMP-designated efficiency requirements shall require written approval by LaRC's Energy Manager.

12.4.3.1 This approval shall be submitted with the applicable LF 1707 (with respect to "Section 2 – Environmental/Sustainable Acquisition") before the LF 1707 can be completed and approved.

12.4.4 Purchases at or under the micro-purchase threshold are not subject to exemption documentation requirements, but the purchases shall either meet the sustainable acquisition requirements or the justification for not purchasing the sustainable products shall be noted in the purchase card order log.

12.5 RESPONSIBILITIES

12.5.1 The Standard Practice and Environmental Engineering Branch shall:

a. Assist the Office of Procurement with implementing the requirements of NPR 8530.1.
b. Upon request, assist the Office of Procurement with reviewing justification documentation.
c. Compile the Center's annual Green Purchasing Report.
d. Provide support, guidance, and assistance to the Office of Procurement and Center personnel in determining the applicability of sustainable products and services.

12.5.2 The Center Energy Manager shall:

Approve or deny requests for exemption regarding the procurement of Energy Star or FEMP-designated products or services.

12.5.3 Program Managers/Project Initiators shall:

a. Understand the requirements of NPR 8530.1.

b. Be knowledgeable of the federal sustainable acquisition programs and the Justification Documentation process, as well as other requirements covered in this chapter.

c. Attend mandatory training on green purchasing guidelines and requirements.

d. Consult with appropriate parties (e.g., environmental specialists, contract specialists) early in the procurement process to facilitate the process of procurement planning.

e. Utilize design standards, statements of work, and clauses that include elimination of virgin material requirements, reuse of products, use of recovered materials, energy and water efficiency, recyclability, use of biobased products, and the use of other environmentally preferable products or services.

12.5.4 Contracting Officer's Representatives shall:

a. Ensure contractors collect the necessary information for the annual Green Purchasing Report or other sustainable acquisition requirements and provide the information to the SPEEB Environmental staff in a timely manner.

b. Attend mandatory training on green purchasing guidelines and requirements.

12.5.5 Directors shall:

a. Collect the necessary information for the annual Green Purchasing Report or other sustainable acquisition requirements and provide the information to the SPEEB Environmental staff in a timely manner.

b. Review and amend specifications to encourage green purchasing.

12.5.6 The Office of Procurement shall:

a. Implement the requirements of NPR 8530.1.

b. Be knowledgeable of and promote the federal sustainable acquisition programs and the Justification Documentation process, as well as other requirements covered in this chapter.

c. Ensure that the acquisition of products and services covered by applicable federal guidelines are conducted in accordance with the requirements of statutory mandates, the FAR, and NASA.

d. Ensure statements of work or specifications include: elimination of virgin material requirements, use of recovered materials, reuse of products, life cycle analysis, energy and water efficiency, recyclability, and the use of EPA and USDA-designated items or other environmentally preferable products. These factors shall be considered in acquisition planning for all procurements and in the evaluation and award of contracts.

e. Consult early with purchase initiators in the acquisition process to determine how best to integrate green purchasing into the purchase requirement and provide assistance with the development of LF 1707, *"Langley Special Approvals and Affirmations of Requisitions."*

f. Collect the necessary information for the annual Green Purchasing Report or other sustainable acquisition requirements and provide the information to the SPEEB Environmental staff in a timely manner.

g. Provide guidance and facilitate acquisition planning with respect to environmentally preferable goods and services, including those available through federal sources of supply.

h. Assist in any market research necessary to determine the availability of environmentally preferable goods and services.

i. Ensure that solicitations and contracts contain the appropriate provisions and FAR Part 23 clauses to implement green purchasing and report compliance.

j. Ensure applicable employees complete green purchasing training in order to receive and maintain procurement privileges.

12.5.7 Purchase Request Initiators, Acquisition Planning Teams, and Credit Card Holders shall:

a. Understand the requirements of NPR 8530.1.
b. Be knowledgeable of the federal sustainable acquisition programs and the Justification Documentation process, as well as other requirements covered in this chapter.
c. Consult with the Office of Procurement early in the acquisition process to determine how best to integrate green purchasing into purchase requirements.
d. Complete the Environmental section of LF 1707s, *"Langley Special Approvals and Affirmations of Requisitions"* and/or purchase card order logs as required by NASA and LaRC purchasing policies.
e. Attend mandatory training on green purchasing guidelines and requirements.

12.5.8 Center Personnel and On-site Contractors shall:

Be knowledgeable of the categories and products in the various sustainable procurement programs and utilize these items whenever practical.

13 NATURAL RESOURCES MANAGEMENT

13.1 GENERAL

The purpose of this chapter is to provide information on applicable regulatory requirements and procedures related to natural resources management at NASA LaRC. Natural resource management refers to the management of resources such as land, water, soil, wetlands, plants, and animals, with a particular focus on how management affects the quality of life for both present and future generations. Natural resource management is congruent with the concept of sustainable development, a scientific principle that forms a basis for sustainable land management and environmental governance to conserve and preserve natural resources.

13.2 REQUIREMENTS

13.2.1 Endangered Species

13.2.1.1 The Endangered Species Act of 1973 (ESA) was enacted "to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved and to provide a program for the conservation of such endangered species and threatened species." The Act states, "All Federal departments and agencies shall seek to conserve endangered species and threatened species and utilize their authorities in furtherance of this Act." In addition, 50 CFR 17.11-12, which was implemented in 1983, addresses endangered and threatened wildlife and plants and provides a listing by species name.

13.2.1.2 Section 7 of the ESA requires all federal agencies to consult with the U.S. Fish and Wildlife Service (USFWS) on all actions that may affect a threatened and endangered species or its habitat. This process usually begins as informal consultation. A Federal agency, in the early stages of project planning, approaches the Service and requests informal consultation. Discussions between the two agencies may include what types of listed species may occur in the proposed action area, and what effect the proposed action may have on those species. If the Federal agency, after discussions with the Service, determines that the proposed action is not likely to affect any listed species in the project area, and if the Service concurs, the informal consultation is complete and the proposed project moves ahead. If it appears that the agency's action may affect a listed species, that agency may then prepare a biological assessment to assist in its determination of the project's effect on a species.

13.2.1.3 The Act also requires the implementation of steps to protect migratory birds and restore or enhance their habitat whenever possible. This includes preventing or abating pollution or detrimental alteration of the environment, as practicable, and incorporating migratory bird conservation into planning processes whenever possible.

13.2.2 Migratory Birds

13.2.2.1 The Migratory Bird Treaty Act (MBTA), 16 U.S.C. § 703, makes it illegal for people to "take" migratory birds, their eggs, feathers, or nests. "Take" is defined in the

MBTA to include by any means or in any manner, any attempt at hunting, pursuing, wounding, killing, possessing, or transporting any migratory bird, nest, egg, or part thereof. The statute does not discriminate between live or dead birds and also grants full protection to any bird parts, including feathers.

13.2.2.2 Executive Order 13186, "*Responsibilities of Federal Agencies to Protect Migratory Birds,*" requires that each federal agency taking actions that have, or are likely to have, a measurable negative effect on migratory bird populations, develop and implement a Memorandum of Understanding with the USFWS that shall promote the conservation of migratory bird populations.

13.2.3 Other Wildlife

13.2.3.1 The Marine Mammal Protection Act of 1972 requires protection of marine animals, their critical habitat, and migratory routes. Any action taken on NASA property or utilizing NASA funds, including activities that generate noise or release objects into the air, must assess impacts on marine animals prior to project startup.

13.2.3.2 For issues associated with nuisance and emergency wildlife control, the following guidelines shall be observed:

a. Minks, muskrats, opossums, raccoons, skunks, weasels, snakes, otters, or mice and other rodents can be trapped without coordination with SPEEB Environmental staff.

b. The capture of beavers, bobcats, coyotes, foxes, nutrias, and birds requires SPEEB coordination.

c. The SPEEB Environmental staff shall be responsible for contacting the appropriate agencies as soon as practicable and coordinating responses.

13.2.4 Wetlands

13.2.4.1 Wetlands Management in Virginia consists of a comprehensive set of laws and regulations, including permit requirements from the Federal Clean Water Act, Virginia Tidal Wetlands Act (1972), and Non-Tidal Wetlands Act (2000). The State Water Control Law provides statutory authority for the Virginia Water Protection (VWP) Permit Program (DEQ), which serves as §401 certification for federal §404 permits and as a state permit regardless of federal permit requirements in both tidal and nontidal wetlands.

13.2.4.2 The VWP Permit Program serves as Virginia's certification program in compliance with 33 U.S.C. § 1341 for permits issued under the authority of the Clean Water Act. Generally, activities requiring a permit include dredging, filling, or discharging any pollutant into or adjacent to surface waters, or otherwise altering the physical, chemical, or biological properties of surface waters, excavating in wetlands, or conducting the following activities in a wetland:

a. Filling or dumping.

b. Permanent flooding or impounding.

c. New activities that cause significant alteration or degradation of existing wetland acreage or functions.

13.2.4.3 A permit from the Virginia Marine Resources Commission (VMRC), Clean Water Act Section 404 permit, a Rivers and Harbors Act Section 10 permit, and/or a Federal Energy Regulatory Commission license or license re-issuance may be required in addition to a VWP permit.

13.2.4.4 Pursuant to 33 U.S.C. § 1344, a permit is required from the U.S. Army Corps of Engineers (ACOE) for all activities involving dredging or filling of U.S. waters, including wetlands. The EPA is the permitting authority and the USFWS is a reviewing agency.

13.2.4.5 Executive Order 11990, "*Protection of Wetlands*," requires each federal agency to "take action to minimize the destruction, loss, or degradation of wetlands, unless there is no practicable alternative, and then the proposed action must include all practicable measures to minimize harm to wetlands." Federal agencies must provide an opportunity for early public review of any plans or proposals for new construction in wetlands.

13.2.4.6 NASA regulations on wetlands management specified in 14 CFR 1216.2 require NASA Centers to include wetland protection in their master planning activities and consult with the ACOE, USFWS, and the Federal Emergency Management Agency (FEMA).

13.2.4.7 The Virginia Tidal Wetlands Act requires a permit from the VMRC for any activity that would use or develop a tidal wetland.

13.2.5 Coastal Zone Management

13.2.5.1 The Coastal Zone Management Act of 1972 requires that federal actions that will have reasonably foreseeable effects on the land or water uses or natural resources of a state's coastal zone must be consistent with federally approved state coastal management programs. These "coastal effects" include direct effects, as well as cumulative and secondary effects, resulting from the federal actions.

13.2.5.2 Virginia has an approved Coastal Zone Management (CZM) Program which is administered by the DEQ. Virginia's program includes the following core programs: Coastal Land Management, Dunes Management, Fisheries Management, Non-point Source Water Pollution Control, Point Source Water Pollution Control, Shoreline Management, Subaqueous Lands Management, and Wetlands Management. Since LaRC is located within the coastal zone, activities and projects must be carried out in a manner consistent to the maximum extent practicable with Virginia's applicable

enforceable policies. All federal actions are subject to this consistency requirement if they could affect natural resources, land uses, or water uses in the coastal zone.

13.2.6 Chesapeake Bay Preservation Act

13.2.6.1 The Chesapeake Bay Preservation Act (Bay Act) was enacted by the Virginia General Assembly in 1988 as a critical element of Virginia's non-point source management program. The program is designed to improve water quality in the Chesapeake Bay and other waters of the State by requiring the use of effective land management and land use planning, but still allow reasonable development to continue.

13.2.6.2 The Bay Act establishes authority for the oversight of activities in the Chesapeake Bay Resource Protection Areas (RPAs) and Resource Management Areas (RMAs). RPAs include tidal shores, tidal wetlands, and non-tidal wetlands that are contiguous to and connected by surface flow to tidal wetlands and perennial streams, and a 30-meter (100-foot) buffer located landward of these features. RMAs include floodplains, highly erodible soils, highly permeable soils, steep slopes, and areas 30 meters (100 feet) landward of an RPA. Certain development activities within these zones are restricted to protect the quality of state waters.

13.2.7 Vegetation and Landscaping

13.2.7.1 Vegetation, particularly trees, plays a major role in habitat and structure temperatures; reducing excess amounts of sediments, nutrients, and chemical surface runoff; providing flood protection; and increasing carbon storage. Therefore, vegetation shall be protected to the maximum extent technically feasible.

13.2.7.2 LaRC is dedicated to the preservation and management of its natural resources. Projects shall adhere to Hampton's City Code and Zoning Ordinance Section 9-168 as much as practical, including replacement of trees, installation of new trees, and screening and protection of features such as storage areas and parking.

13.2.7.3 LaRC has a Tree City USA designation. Construction and demolition projects shall include landscape plans that meet guidelines for retaining this designation.

13.2.7.4 The SPEEB Environmental staff shall be consulted on planting, pruning (other than regular maintenance), and removing trees within LaRC as may be necessary to ensure safety or to preserve or enhance the natural environment. Pruning shall adhere to the most current versions of ANSI A300 and ANSI Z133.

13.2.7.5 New landscaping shall include low impact design and xeriscape principles and shall be designed to minimize adverse effects on natural habitats and reduce maintenance in terms of energy, water, manpower, and equipment. Plant materials shall be chosen that are adapted to local environmental conditions to reduce the need for irrigation, fertilization, or pesticides to maintain a healthy condition.

13.2.7.6 Vegetated areas shall comply with VSMP Regulations Part II B-Technical Criteria for Regulated Land-Disturbing Activities (9 VAC 25-870-32 through 9 VAC 25-870-92).

13.2.7.7 Grass clippings shall not be blown or swept into the street and into storm drains. This would constitute an illicit discharge to the stormwater system, per Section 5.2.3.1 of this document.

13.2.7.8 Executive Order 13112, "*Invasive Species*," requires all federal agencies to prevent the introduction of invasive species, provide for their control, and minimize their economic, ecological, and human health impacts. Projects shall be reviewed for the introduction or spread of invasive species. Invasive species management goals are to control invasive species whenever practicable, and promote the restoration of native species.

13.2.7.9 All trees within, or with a dripline within, an excavation or construction site shall be properly guarded. Per DEQ's Virginia ESC Handbook Chapter 3.38, the limits of clearing shall at a minimum be located outside the drip line of any tree to be retained and, in no case, closer than 5 feet to the trunk of any tree. All building materials, equipment, dirt, or other debris shall be kept outside the protection zone.

13.2.7.10 During the period of an emergency, appropriate measures may be taken to restore lost or damaged utilities or damage to structures that can adversely impact the safety and health of personnel. The SPEEB Environmental staff shall be notified of actions as soon as practicable.

13.2.7.11 Disturbed turf areas shall be restored to the condition that is equal to or improved from the predevelopment condition. The restored area shall reach final stabilization with established permanent cover.

13.3 RESPONSIBILITIES

13.3.1 Facility Environmental Coordinators shall:

a. Be familiar with the natural resources around their facility and understand how the facility's actions can affect those natural resources.

b. Notify the SPEEB Environmental staff of potential threats or projects that may adversely affect natural resources, such as birds and other wildlife and trees.

13.3.2 The Standard Practice and Environmental Engineering Branch shall:

a. Review projects for adverse impacts to natural resources and to ensure that proper management is coordinated.

b. Validate the need for permit applications.

c. For work occurring in wetlands, complete a Joint Permit Application and submit to the VMRC. Maintain permit files.

d. Determine if work is planned within a RPA and notify appropriate regulatory agencies.

e. Monitor projects for environmental compliance.

f. Ensure that sustainable design and building practices are utilized to minimize impacts on natural resources.

g. Monitor updates and/or changes to endangered and threatened wildlife and plant listings to determine if LaRC is impacted and update findings in the LaRC Environmental Resources Document.

h. Serve as the point of contact with external regulatory agencies regarding natural resource issues at LaRC.

i. Make final decisions on the care, preservation, replanting, or removal of trees and shrubs on Center.

j. Maintain an accurate inventory of all Center natural resources, including Geographic Information System (GIS) maps and appropriate descriptions.

k. Ensure natural resources are included in the Center Master Plan.

l. Conduct Section 7 consultation under the Endangered Species Act.

13.3.3 Program Managers/Project Initiators shall:

a. Complete an LF 461 for each proposed action that may affect natural resources.

b. Coordinate with the SPEEB Environmental staff for wetland permit applications, if applicable.

c. Coordinate with the SPEEB Environmental staff early in the project development for activities that could potentially affect natural resources.

d. Notify the SPEEB Environmental staff if tree protection, removal, or alteration is anticipated in a project design.

e. Notify the SPEEB Environmental staff if work is within an RPA.

13.3.4 Grounds Maintenance Personnel shall:

a. Protect and minimize the disturbance of natural resources and ecosystems while performing grounds maintenance work.

b. Minimize the use of pesticides, herbicides, and fertilizers to the maximum extent practicable and use only EPA approved products. Pesticide applications shall be done by a certified pesticide applicator and in accordance with the law.

c. Notify the SPEEB Environmental staff if trees or shrubs need to be significantly pruned, removed, or altered.

d. Follow manufacturer's application guidelines for pesticides, herbicides, and fertilizers to ensure that there are no adverse effects on natural resources.

e. Notify the SPEEB Environmental staff if any disease or other general health problems are observed related to LaRC's natural resources.

f. Provide data to SPEEB related to the maintenance of the storm sewer system (amounts of leaf collection, ditch maintenance, sediment removal from catch basins, street sweeping, etc.) as required by the contract.

14 OIL AND HAZARDOUS MATERIAL SPILL CONTROL

14.1 GENERAL

14.1.1 The purpose of this chapter is to provide information on applicable regulatory requirements and procedures related to oil and hazardous material spill control at LaRC. Implementing engineering and administrative controls to minimize spill potential is an important goal for the Center. The Center's Hazardous Materials Spill Contingency Plan, Oil Discharge Contingency Plan, and Oil Spill Prevention Control and Countermeasure (SPCC) Plan have been combined into one document called the NASA LaRC Integrated Spill Contingency Plan (ISCP). The plan is available in the LaRC LMS as LPR 8715.12 and is also available by contacting the SPEEB Environmental staff.

14.1.2 A number of spills may be caused by equipment failure or operational errors. The occurrence of spills can be minimized by implementing good engineering practices and practicable measures, such as proper equipment selection, regular equipment maintenance and inspection, and employee training programs.

14.2 REQUIREMENTS

Spill prevention, control, and contingency plans are required by several laws and regulations, including:

a. EPA's Oil Pollution Prevention Regulation (40 CFR 112)

b. EPA's Resource Conservation and Recovery Act Contingency Planning Requirements (40 CFR 265.50-56)

c. National Oil and Hazardous Substance Pollution Contingency Plan (40 CFR 300)

d. EPA's Emergency Planning and Notification (40 CFR 355)

e. OSHA's Hazardous Waste Operations Emergency Response (HAZWOPER) Regulations (29 CFR 1910.120)

f. Virginia State Water Control Board Facility and Aboveground Storage Tank Regulations (9 VAC 25-91-10 et. seq.)

14.3 SPILL RESPONSE

14.3.1 A spill may be detected by visual inspection by personnel or by automated detection systems such as with underground storage tanks. Immediate action is necessary in the event of an oil or hazardous material spill of any size.

14.3.2 Any LaRC personnel or on-site contractors who discover a release of material from a container, tank, or operating equipment shall respond by calling the LaRC Emergency Dispatcher at 911 (from land line phone on Center). Alternate phone numbers for the Emergency Dispatcher are: 757-864-2222 (Cell Phone) or 757-864-5500 (Business Number). The LaRC Emergency Dispatcher will initiate spill response with the LaRC Fire Department.

14.3.3 More detailed spill response procedures are described in the LaRC ISCP (LPR 8715.12).

14.4 SPILL CHARACTERIZATION

14.4.1 Class I Spills

Class I spills are relatively small in volume (i.e. < 5 gallons), do not result in discharge to the water or to the environment, present low hazard potential to personnel, and can be contained and cleaned up easily. A Class I spill results in:

a. No discharge to the environment (i.e. spill contained completely inside building structure).

b. No discharge of oil or hazardous materials to adjacent waters at LaRC and no violation of applicable water quality standards.

c. No sheen upon or discoloration of surface waters at LaRC.

d. A release of material *below* the Hazardous Substance Reportable Quantity.

e. Little risk of personnel injury.

14.4.2 Class II Spills

Class II spills involve larger volumes of material and may present significant hazard to personnel or the environment. A Class II spill results in <u>any</u> of the following:

a. Release of oil or hazardous materials to the environment.

b. Discharge of oil or hazardous materials to adjacent waters at LaRC and/or a violation of applicable water quality standards.

c. Discoloration of or sheen upon surface waters at LaRC.

d. A release of material *above* the Hazardous Substance Reportable Quantity.

e. Risk of personnel injury.

14.5 RESPONSIBILITIES

14.5.1 Facility Environmental Coordinators shall:

a. Oversee proper management of their facility's oil and/or hazardous materials storage sites.

b. Ensure that personnel are aware of the facility's oil and/or hazardous materials storage areas and that appropriate personnel are familiar with spill control and response procedures. Spill control and response procedures are presented during the annual Waste Management Training classes (see Section 7.2.6) presented by the SPEEB Environmental staff.

14.5.2 The Standard Practice and Environmental Engineering Branch shall:

a. Notify appropriate regulatory agencies of spills as required in accordance with the LaRC ISCP.

b. Maintain complete documentation for all Class I and Class II spills in accordance with the LaRC ISCP.

c. Conduct investigations into the causes of the incident and submit recommendations to prevent reoccurrence.

d. Coordinate disposal of HW generated by spills.

e. Maintain/update the NASA LaRC ISCP as needed and submit to applicable regulatory agencies for approval.

f. Participate in spill events as specified in the ISCP.

14.5.3 Contracting Officer's Representatives shall:

Ensure that contractors:

a. Properly manage oil and/or hazardous materials storage sites.

b. Make personnel aware of oil and/or hazardous materials storage areas and familiarize appropriate personnel with spill control and response procedures.

c. Provide a means of spill containment for any oil or hazardous materials stored outside that is compliant with EPA SPCC regulatory requirements.

d. Dispose of spill debris properly (See Chapter 7, Waste Management and Minimization).

14.5.4 Center Personnel and On-site Contractors shall:

a. In the event of a spill, call the LaRC Emergency Dispatcher at 911 (from land line phone on Center) or at 864-2222 (Cell phone). Provide initial information about the spill if known (location, substance spilled, approximate quantity, etc.).

b. Follow the procedures below if working with oil or hazardous materials:

(1) Ensure that all drains located near indoor oil or hazardous material storage areas are plugged or covered with a spill mat. This includes Hazardous Waste Satellite Accumulation Areas (SAAs).
(2) Ensure that adequate spill containment equipment (e.g., spill containment pallets) is provided for any oil or hazardous materials stored outside of the facility in compliance with EPA SPCC regulatory requirements.
(3) Ensure that adequate spill absorbent materials (e.g. spill kits) are available and located near oil and hazardous material storage areas.
(4) Ensure that spill debris is managed properly (See Chapter 7, Waste Management and Minimization).

15 EMERGENCY PLANNING AND COMMUNITY RIGHT TO KNOW ACT

15.1 GENERAL

The purpose of this chapter is to provide information to LaRC personnel on the regulatory requirements and procedures of the Emergency Planning and Community Right-To-Know Act (EPCRA). EPCRA was enacted in October 1986 in response to a growing concern about the effect of chemical releases on communities. EPCRA encourages and supports emergency planning efforts at the state and local level, and provides citizens and local governments with information concerning potential chemical hazards present in their communities.

15.2 EMERGENCY PLANNING REQUIREMENTS

15.2.1 The Emergency Planning section of EPCRA is designed to help communities prepare for and respond to emergencies involving hazardous substances. Under 42 U.S.C. § 11001-11003, NASA LaRC is required to notify the State Emergency Response Commission (SERC) and Local Emergency Planning Committee (LEPC) if the Center has on site, at any given time, a quantity of an Extremely Hazardous Substance (EHS) that is equal to or greater than its threshold planning quantity (TPQ). The Center must notify the SERC and LEPC within 60 days of first meeting this qualification. The list of EHSs and TPQ information can be found as an appendix to 40 CFR 355 or in the consolidated "List of Lists" at http://www.epa.gov/epcra/consolidated-list-lists.

15.2.2 The Center must designate an emergency response coordinator and provide the name of that individual to the LEPC. NASA LaRC must also notify the LEPC of any changes occurring at the Center that may be relevant to emergency planning within 30 days of such changes.

15.3 EMERGENCY RELEASE NOTIFICATION REQUIREMENTS

15.3.1 42 U.S.C. § 11004 requires NASA LaRC to notify the LEPC and SERC if there is a release into the environment of an EHS or CERCLA-defined hazardous substance equal to or greater than its reportable quantity (RQ) within any 24-hour period. The consolidated chemical list that includes chemicals subject to reporting requirements under EPCRA is available at the following Web site: http://www.epa.gov/epcra/consolidated-list-lists. This notification must be made immediately by the owner or designated representative.

15.3.2 As soon as practical after the release, EPCRA requires a written follow-up report to be submitted to the SERC and the LEPC. The follow-up notice must update information included in the initial notice and provide information on actual response actions taken, as well as any known or anticipated health risks associated with the release.

15.4 REPORTING REQUIREMENTS

15.4.1 Hazardous Chemical Storage Reporting

15.4.1.1 Hazardous chemicals are any substance for which a facility must maintain a (Material) Safety Data Sheet ((M)SDS) under the OSHA Hazard Communication Standard.

15.4.1.2 Facilities that have hazardous chemicals held above certain thresholds are required by the reporting requirements at 42 U.S.C. § 11021-11022 to:

a. Submit copies of their (M)SDSs or a list of these chemicals to the SERC, LEPC, and local Fire Department within 90 days after the facility first has on hand the hazardous chemicals in amounts equal to or greater than their thresholds, and

b. Submit annually an emergency and hazardous chemical inventory form (Tier II report) by March 1 to the SERC, LEPC, and to the local fire department that has jurisdiction over the facility.

15.4.2 Toxics Release Inventory

15.4.2.1 The Toxics Release Inventory section of EPCRA tracks the use and management of certain listed chemicals that pose a threat to human health and the environment.

15.4.2.2 Facilities that manufacture, process, import, or otherwise use a listed toxic chemical in excess of specific threshold quantities must complete the EPA's Toxics Release Inventory (TRI) Form annually, as required by 42 U.S.C. § 11023.

15.4.2.3 The TRI Form must be submitted by July 1 to the appropriate federal (the EPCRA Reporting Center), state (VA DEQ), and local organizations (Fire Department and HRSD) and must cover releases and other waste management of the listed toxic chemicals that occurred during the preceding calendar year.

15.5 RESPONSIBILITIES

15.5.1 Facility Environmental Coordinators shall:

a. Maintain a hazardous chemicals inventory for the facility.

b. Submit and update the hazardous chemicals inventory through the Chemical Material Tracking System (CMTS) (see Chapter 18).

c. Report spills as described in Chapter 14 (Oil and Hazardous Material Spill Control).

15.5.2 The Standard Practice and Environmental Engineering Branch shall:

a. Notify the SERC and LEPC within 60 days of meeting the criteria for reporting under 42 U.S.C. § 11001-11003.

b. Ensure the name of LaRC's emergency response coordinator is provided to the LEPC.

c. Document and report spills of EPCRA regulated materials as required to the SERC, LEPC, and the National Response Center.

d. Prepare the annual Tier II Inventory report for LaRC and submit report to the SERC, LEPC, and Fire Department by March 1.

e. Prepare the TRI report for LaRC based on inventories submitted by FECs.

f. Submit the TRI report annually by July 1 to the appropriate federal, state and local organizations.

15.5.3 Directors and Supervisors shall:

Ensure facilities/functions have appropriate personnel assigned to maintain hazardous chemicals inventories in CMTS (see Chapter 18).

15.5.4 The Safety and Facility Assurance Branch shall:

Ensure appropriate safety personnel participate in emergency planning with the LEPC and SERC as necessary to comply with the EPCRA regulations.

15.5.5 Facility Safety Heads shall:

a. Ensure that facility personnel who purchase hazardous chemicals follow the procedures outlined in LMS-CP-4759, LPR 1710.12 and LPR 1710.13, and maintain quantities at the lowest level consistent with needs.

b. Ensure that (M)SDSs are obtained for any hazardous material stored or used at the facility (see Chapter 18).

15.5.6 Program Managers/Project Initiators shall:

a. Ensure that contracts for projects involving the use of hazardous materials include the requirements in NASA LaRC SpecsIntact Section 01 35 40.00 41, "NASA Langley Environmental Requirements," for the contractor to provide project material usage data to the SPEEB Environmental staff by the end of the project if short-term, or an annual basis by January 31 if long-term.

   Note: Project materials to be tracked include, but are not limited to: metals, asphalt, lead-acid batteries, lead-containing products, paints, fuels and oils, coolants and refrigerants, and other chemicals and products.

b. Ensure that contracts for projects that generate waste from or are contaminated by a TRI-listed chemical, in order to comply with the waste management provisions of 42 U.S.C. § 11023, include requirements for the contractor to submit waste generation data to the SPEEB Environmental staff by the end of the project if short-term, or on an annual basis by January 31 if long-term.

c. Ensure that contracts for construction, renovation, demolition, or deconstruction projects include requirements for the contractor to provide recycling and diversion data to the SPEEB Environmental staff as stated in Section 11.3.4 of this document.

15.5.7 Contracting Officer's Representatives shall:

Ensure that contractors:

a. Submit usage data to the SPEEB Environmental staff by January 31 of each year listing all chemicals and hazardous materials used on-site during the previous calendar year but not recorded in CMTS. This includes materials used by subcontractors, as well as those project materials not customarily tracked in CMTS and required in accordance with NASA LaRC SpecsIntact Section 01 35 40.00 41, "NASA Langley Environmental Requirements."

b. Submit waste generation data to the SPEEB Environmental staff by January 31 of each year for projects that generate waste from or are contaminated with a TRI-listed chemical.

c. Submit recycling and diversion reports from construction, renovation, demolition, or deconstruction projects to SPEEB Environmental staff as stated in Section 11.3.5 of this document.

16 UNDERGROUND AND ABOVEGROUND STORAGE TANKS

16.1 GENERAL

16.1.1 This chapter sets forth NASA LaRC policies and requirements for the design, construction, operation, maintenance, monitoring, and reporting of underground and aboveground petroleum storage tanks.

16.1.2 As an owner and operator of Underground Storage Tanks (USTs) and Aboveground Storage Tanks (ASTs), LaRC must comply with all federal and state regulations to ensure protection of health and the environment. The policies and requirements of this chapter apply to all LaRC personnel and on-site contractors involved in the installation and use of USTs and ASTs at the Center.

16.2 REQUIREMENTS

16.2.1 EPA Regulations

16.2.1.1 The EPA regulations regarding USTs are contained in 40 CFR Part 280 (Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks).

16.2.1.2 The EPA regulations regarding ASTs are contained in 40 CFR Part 112 (Oil Pollution Prevention) and 40 CFR Part 122 (The National Pollutant Discharge Elimination System).

16.2.2 State Regulations

16.2.1.3 The Commonwealth of Virginia has EPA-approved regulations for USTs and ASTs. The Virginia DEQ is the implementing agency for petroleum storage tank activities in the state. Many of Virginia's requirements exceed the stringency or scope of the federal regulations. The Virginia storage tank program and regulations can be found at:
http://www.deq.state.va.us/Programs/LandProtectionRevitalization/PetroleumProgram/StorageTanks.aspx.

16.2.3 LaRC Requirements

All petroleum storage tank systems shall meet the following requirements:

a. All petroleum storage tank systems shall meet the current regulatory requirements.

b. Tanks shall be designed, constructed, and installed using nationally recognized standards and industry codes.

c. Regulatory notifications and/or registrations are required for new tank installations, changes to existing tanks, and certain changes in operation.

d. There are specific regulatory requirements that shall be met for tank closure and/or removal:

(1) USTs shall be closed by either removing them from the ground or leaving them in place after being drained, cleaned, and filled with inert material.
(2) ASTs shall be completely drained of material prior to removal.

e. Regulations require that tanks be inspected and/or monitored regularly for signs of product releases. Any suspected releases shall be investigated by tank owners/operators. Call the LaRC Emergency Dispatcher at 911 (from land line phone on the Center) or at 864-2222 (Cell phone) to report leaks and spills.

f. Owners and operators of UST systems are required to designate Class A, Class B, and Class C operators for each UST system. UST Operators shall be trained in accordance with regulatory requirements.

16.3 RESPONSIBILITIES

16.3.1 Facility Environmental Coordinators shall:

a. Ensure all mandatory weekly and/or monthly aboveground storage tank inspections are performed as required and that inspections are documented using the appropriate inspection checklist (LF 408 for weekly inspections; LF 410 for monthly inspections). A copy of the completed checklist can be submitted to the LaRC Standard Practice and Environmental Engineering Branch Head at Mail Stop 133 or Fax 864-6657.

b. Ensure all personnel who operate tank systems at their facilities are trained in filling, dispensing, and monitoring procedures.

c. Notify the SPEEB Environmental staff if any USTs or ASTs will be installed, removed, or closed at their facility.

d. Notify the SPEEB Environmental staff if there are any changes in service or changes to the products to be stored in the tanks.

16.3.2 The Standard Practice and Environmental Engineering Branch shall:

a. Report leaks or releases to appropriate state and/or federal agencies, as required.

b. Maintain and update, when necessary, storage tank registration and notification forms and submit forms to regulatory agencies as required.

c. Review design of storage tank systems to ensure compliance with current regulatory requirements.

d. Ensure that Class A, Class B, and Class C operators are designated for each UST system and that the operators are trained in accordance with the regulatory requirements.

e. Oversee the AST inspection program to ensure that AST inspections are being performed as required and provide training to new AST inspectors.

16.3.3 Program Managers/Project Initiators shall:

a. Submit design and construction specifications to the SPEEB Environmental staff prior to installation of any petroleum storage tank system.

b. Design or oversee the design of all petroleum storage tank systems to ensure compliance with the latest regulatory requirements.

16.3.4 Center Personnel and On-Site Contractors shall:

a. Report any releases from petroleum storage tanks by calling the LaRC Emergency Dispatcher at 911 (from land line phone on the Center) or at 864-2222 (Cell phone).

b. If handling or storing petroleum products, attend training in spill prevention. Spill control and response procedures are presented during the annual Waste Management Training classes (see Section 7.2.6) that are presented by the SPEEB Environmental staff.

c. If operating tank systems, follow the guidelines below:

(1) Acquire training and demonstrate proficiency in filling, dispensing, and monitoring procedures.
(2) In the event of a spill or leak, immediately call the LaRC Emergency Dispatcher at 911 (from land line phone on the Center) or at 864-2222 (Cell phone).
(3) Monitor leak detection devices (where installed) and take corrective action if leakage is indicated.
(4) Ensure that adequate maintenance is performed on each tank to ensure satisfactory performance.
(5) As assigned, perform periodic inspections of petroleum tanks and maintain inspections on file.
(6) Monitor filling of tanks to prevent spills and overflows.
(7) Comply with the Center’s Integrated Spill Contingency Plan, LPR 8715.12.

17 HISTORIC AND CULTURAL RESOURCES

17.1 GENERAL

17.1.1 The purpose of this chapter is to provide information on applicable regulatory requirements and procedures related to historic and cultural resources at NASA LaRC. As a federal facility, LaRC is required to ensure the protection and proper management of its cultural resources, including historic and prehistoric properties. The Center must have a program in place that includes surveying its properties to determine their significance, nominating eligible properties to the National Register of Historic Places (National Register), and consulting with the State Historic Preservation Officer (SHPO) and the Advisory Council on Historic Preservation (ACHP), if a proposed or ongoing "undertaking" may affect such properties.

17.1.2 NASA LaRC has three facilities and/or structures that are National Historic Landmarks and 165 facilities or structures eligible for listing in the National Register of Historic Places (National Register). Additionally, the entire West Area and three small portions of the East Area have been identified as the LaRC Historic District. The inventory of LaRC's historic properties is maintained by the Center's Historic Preservation Officer (HPO).

17.1.3 NASA LaRC has one archaeological site listed in the National Register and 11 sites eligible for listing. The inventory of LaRC's archaeological sites is maintained by the LaRC HPO.

17.1.4 Maps of historic and cultural resources, including some interactive maps, are available at: http://crgis.ndc.nasa.gov/historic/Langley_Maps.

17.2 REQUIREMENTS

17.2.1 The National Historic Preservation Act of 1966 (NHPA) requires federal agencies to establish cultural resource preservation programs and to consider the effects of their actions on cultural resources that are listed or are eligible for listing on the National Register. To evaluate the possible effects of proposed actions, Section 106 of the NHPA requires an agency to identify and evaluate historic properties, assess the effects of the project on the properties, consult with the SHPO, and in some cases, solicit comments from the ACHP.

17.2.2 Executive Order 11593, "*Protection and Enhancement of the Cultural Environment*," directs federal agencies to identify cultural resources, nominate qualifying resources to the National Register, and avoid damaging resources that might be eligible for the National Register. It also mandates that federal agencies comply with the requirements of the NHPA.

17.2.3 Executive Order 13287, "*Preserve America*," directs federal agencies to actively advance the protection, enhancement, and contemporary use of the historic properties

owned by the Federal Government, and to promote intergovernmental cooperation and partnerships for the preservation and use of historic properties.

17.2.4 The Archaeological Resources Protection Act (ARPA) of 1979 protects archaeological sites on federal land, and the Archaeological and Historic Preservation Act requires the preservation of data with respect to historic properties.

17.2.5 36 CFR 60, "*National Register of Historic Places*," sets forth the criteria for evaluating the significance of resources and their eligibility to the National Register.

17.2.6 36 CFR 800, "*Protection of Historic Properties*," includes procedures for federal agencies to meet their obligations under the NHPA and Executive Order 11593. The regulations define the requirements of the Section 106 process and establish procedures for determining the eligibility of a resource and defining possible adverse effects.

17.2.7 The *Programmatic Agreement among NASA, the National Conference of State Historic Preservation Officers, and the ACHP for Management and Use of NASA's National Historic Landmarks* stipulates that NASA will consult with and obtain approval from the SHPO prior to dismantling or significantly affecting designated National Historic Landmarks.

17.2.8 The *Programmatic Agreement Among the National Aeronautics and Space Administration, the Virginia State Historic Preservation Office, and the Advisory Council on Historic Preservation for the Management Facilities, Infrastructure, and Sites at the National Aeronautics and Space Administration's Langley Research Center, Hampton, Virginia,* includes legally binding requirements for LaRC's management of its historic properties.

17.2.9 NPR 4310.1, "*Identification and Disposition of NASA Artifacts*," provides procedures and guidance for the identification, reporting, transfer, or disposal of NASA articles, equipment and hardware of historical interest. It specifies that the National Air and Space Museum (NASM) shall be responsible for the custody, protection, preservation, exhibition, and loan of artifacts received from NASA. Artifacts are offered to the NASM when programmatic utility to NASA has been exhausted.

17.2.10 The Virginia Department of Historic Resources (VDHR) is the SHPO. The SHPO assists federal agencies and others carrying out federal undertakings to meet their responsibilities under Section 106 of the NHPA. As a federal agency, LaRC must consult with the SHPO regarding actions that may affect its cultural and historic resources. Additional information on Virginia's historic preservation program is available at: http://www.dhr.virginia.gov/.

17.2.11 For Center projects involving facilities that are listed in or eligible for listing in the National Register or projects involving digging greater than 6 inches, early coordination between the LaRC HPO and the appropriate regulatory agencies is

essential. The Center's National Environmental Policy Act (NEPA) program, which is explained in Chapter 4 of this LPR, also requires this coordination early in the planning process.

17.2.12 The NHPA and ARPA specifically restrict the disclosure of certain types of sensitive information regarding cultural resources. Information about LaRC's archaeological site location and information shall not be distributed internally or externally without coordinating with the LaRC Historic Preservation Officer. This includes but is not limited to GIS layers and maps of LaRC's archaeological sites.

17.3 RESPONSIBILITIES

17.3.1 The Center Director shall:

a. Provide authority, resources, support, and oversight to develop, implement, and maintain LaRC's Cultural Resource Management (CRM) Program in accordance with NPR 8510.1.

b. Appoint a Historic Preservation Officer (HPO) for the Center and notify, in writing, the HQ CRM Program Manager and the respective SHPO of the appointment.

17.3.2 The Standard Practice and Environmental Engineering Branch shall:

a. Assist the LaRC HPO in managing the Center's historic and cultural resource management program.

b. Review project design and specification documentation for issues related to cultural and historic resources.

c. Assist with the preparation of historic and cultural resource surveys and documentation as needed.

17.3.3 The LaRC Historic Preservation Officer shall:

a. Maintain overall responsibility for the Center's cultural resource management program.

b. Identify historic properties and administer them in accordance with applicable regulations.

c. Ensure LaRC complies with the provisions of the Programmatic Agreements.

d. Complete and submit appropriate forms and project review packages to the SHPO and other agencies as required.

e. Prepare and maintain cultural and historic surveys and documentation as needed to ensure LaRC's historic resources are maintained in accordance with the NHPA.

f. Maintain LaRC's Cultural Resource Management Plan (CRMP) and ensure it is updated at least every 5 years.

g. Review projects and consider the impact of actions and decisions on the Center's historic resources, and where feasible, take steps to avoid or reduce any adverse effects.

h. Serve as the Technical Advisor on the Source Selection Evaluation Board (SSEB) on design-build projects.

i. Utilize LaRC's GIS and NETS to manage cultural resources and respond to NASA HQ data calls in a timely manner.

j. Ensure that artifacts recovered during archaeological survey work are properly curated and sent to VDHR for archiving.

k. Work with the LaRC property disposal and records management offices to identify and determine retention/disposition of historic artifacts and records.

l. Comply with additional responsibilities listed in Section 1.3.2 of NPR 8510.1.

17.3.4 The Logistics Management Branch shall:

a. Ensure that disposition of LaRC property is carried out in accordance with NPR 4310.1.

b. Notify the LaRC HPO regarding potential historic artifacts that are turned in for disposal.

17.3.5 Program Managers/Project Initiators shall:

a. Submit an LF 461 to SPEEB Environmental staff for any project not listed on the Excluded Activities List (available at: https://gis-www.larc.nasa.gov/LF461).

Note: An LF 461 shall be submitted for any project requiring a digging permit. The LF 461 shall be submitted at least 5 working days prior to project startup (does not apply in emergency situations).

b. Ensure project design plans are submitted to SPEEB Environmental staff at the 35, 60, 90 and 100 percent phases.

Note: The most current version of LaRC's Specification Section 01 35 40 00 41, NASA Langley Environmental Requirements, and the Center Operations Directorate Facilities Engineering Standards – Environmental and Energy shall be used and shall supersede all other environmental specifications and standards (e.g., UFGS, USACE, etc.) that are currently available.

c. In the case of a design-build project, ensure the detailed set of requirements and restrictions for construction projects and requests for proposals include architectural requirements consistent with the PA and in line with LaRC's historic district and that all requirements are addressed at the appropriate design milestone.

d. Ensure that the HPO is included as a Technical Advisor on the SSEB.

e. Ensure funding is available to perform surveys and/or mitigation for those projects that may impact historic properties or cultural resources.

f. Notify the HPO immediately if an activity results in discovery of archaeological resources or human remains.

18 INVENTORY TRACKING OF HAZARDOUS MATERIALS

18.1 GENERAL

18.1.1 The purpose of this chapter is to provide information on applicable regulatory requirements and procedures related to hazardous material inventory tracking at NASA LaRC. As part of its mission, LaRC uses a wide variety of hazardous materials and chemicals. This chapter includes information on chemical inventory management, storage, and transportation security requirements. The requirements of this chapter apply to all personnel performing work on site at LaRC.

18.1.2 Hazardous materials include any substance that is a "physical hazard or a health hazard, a simple asphyxiant, combustible dust, pyrophoric gas, or hazard not otherwise classified" as defined by OSHA in 29 CFR 1910.1200. Any item reportable under the Emergency Planning and Community Right-to-Know Act is also considered a hazardous material (See Chapter 15). Additionally, the Clean Air Act requires the Center to keep a current air emissions inventory for activities conducted at the Center (see Chapter 6).

18.1.3 All Center personnel and on-site contractors are required to use the Web-based Chemical Material Tracking System when managing their hazardous material inventories. Proper use of CMTS provides the SPEEB Environmental staff with significant data necessary for environmental regulatory reporting. Improved record keeping and better management of hazardous materials help avoid compliance problems, reduce waste generation, and cut costs from raw material purchases and disposal activities. The CMTS also has an online (M)SDS library to allow employees to understand the hazards of materials they handle or encounter at the Center. The information in the CMTS inventories provides the SPEEB Environmental staff with a master list of hazardous material storage sites. This information is available to the local fire department to aid in identifying the storage location of hazardous chemicals in the event of a fire emergency.

18.1.4 DOT's Pipeline and Hazardous Materials Safety Administration (PHMSA) is responsible for regulating the safe and secure transportation of hazardous materials. PHMSA requires that shippers and carriers of certain types or quantities of hazardous materials develop and implement security plans. In accordance with the PHMSA requirements, LaRC has developed a HM/HW Security Plan, as described in Section 7.2.4.2. The plan is available by contacting the SPEEB Environmental staff.

18.2 REQUIREMENTS

18.2.1 The CMTS provides most of the pertinent data necessary for LaRC to generate the necessary environmental reports required by various regulations. The CMTS shall be used by all LaRC and contractor personnel to comply with inventory requirements in this chapter, environmental reporting statutes, LPR 1710.12, "*Potentially Hazardous Materials – Hazard Communication Standard,"* and LPR 1710.3, *"Chemical Hygiene Plan."*

18.2.2 LaRC's requirements for the safe use, handling, storage, and labeling of hazardous materials are found in LPR 1710.12 and LPR 1710.13, which are available in LMS.

18.2.3 **Inventory Management**

18.2.3.1 Inventory tracking of hazardous materials at LaRC originates with the submittal and approval of an LF 44, *Hazardous Material - Procurement, Inventory, and Storage Record*. The LF 44 is detailed in LMS-CP-4759, "*Acquisition of Hazardous Materials*," (https://lms.larc.nasa.gov/admin/view_doc_detail.cfm?docid=168) which shall be followed for the acquisition of all hazardous materials before they are brought on site.

18.2.3.2 Per LMS-CP-4759, all hazardous materials shall be added from the LF 44 to the CMTS inventory of the facility that will have ultimate control (storage and/or usage) over the materials.

18.2.3.3 Each container added to a CMTS inventory shall be identified by a unique CMTS container ID number generated by the system for tracking purposes.

18.2.3.4 When hazardous materials are used, expended, or disposed of for any reason, the electronic CMTS record for the materials shall be consumed from the CMTS inventory.

18.2.3.5 Per LMS-CP-4759 and LPR 1710.12, CMTS shall be utilized to record the transfer of hazardous material containers to other facilities onsite or to offsite locations by submitting a Hazardous Materials Transfer Approval Form (Transfer LF 44).

18.2.3.6 The shipping and transporting of hazardous materials onsite or offsite during transfer shall be conducted in accordance with the requirements of LPR 1710.12.

18.2.4 **Labeling**

18.2.4.1 All hazardous material containers used by LaRC employees and stored on Center shall be affixed with a CMTS label, which are generated by the system after a hazardous material is added to a CMTS inventory.

18.2.4.2 Secondary containers shall be labeled in accordance with the requirements of LPR 1710.12.

18.2.5 **(Material) Safety Data Sheets**

18.2.5.1 The (M)SDS library is a key component in the generation of environmental compliance reports. (M)SDSs for materials currently used at the Center are maintained and available through the CMTS (M)SDS Library.

18.2.5.2 In accordance with LMS-CP-4759 and LPR 1710.12, (M)SDSs shall be required for all hazardous materials on the Center, and the (M)SDSs shall be submitted to the CMTS online library to ensure proper calculations for environmental reporting, as well as to have important health and safety information available.

18.2.6 Additional information regarding environmental and safety requirements for managing hazardous materials can be found in the following regulations:

a. 29 CFR 1910.1200, *Hazard Communication*
b. 29 CFR 1960 *Basic Program Elements for Federal Occupational Safety and Health*
c. 40 CFR 355, *Emergency Planning and Notification*
d. 40 CFR 370, *Hazardous Chemical Reporting; Community Right-To-Know*
e. 40 CFR 372, *Toxic Chemical Release Reporting; Community Right-To-Know*

18.2.7 Executive Order 13693, "*Planning for Federal Sustainability in the Next Decade*," requires federal agencies to reduce or minimize the quantity of toxic and hazardous chemicals and materials acquired, used, or disposed of, particularly where such reduction will assist the agencies in pursuing greenhouse gas emission reduction targets.

18.2.8 If hazardous materials are poorly managed, they may have to be disposed of as HW (see Chapter 7). If mismanaged hazardous materials result in additional HW disposal costs, the responsible organization may be charged for the disposal.

18.2.9 All personnel who use, handle, or request disposal of hazardous materials shall attend mandatory Waste Management Training, as specified in Section 7.2.6 of this document.

18.3 RESPONSIBILITIES

18.3.1 Facility Environmental Coordinators shall:

a. Function as their facility's CMTS inventory manager and perform duties as specified in Section 18.3.8 of this chapter, or ensure other CMTS inventory managers assigned to the facility are performing the duties specified in Section 18.3.8.

b. Assist the Facility Safety Head in ensuring their facility stores all hazardous materials in accordance with LPR 1710.12 and LPR 1710.13.

c. Ensure that facility personnel responsible for hazardous material tracking understand the policies and procedures related to CMTS and receive appropriate training.

d. Assist facility personnel in minimizing hazardous material usage and review operations to ensure that they are conducted efficiently.

e. Participate with the SPEEB Environmental staff in conducting hazardous material minimization or substitution P2 opportunity assessments.

f. Identify, develop, and implement P2 projects. Substitute less toxic materials when practical to use them.

g. Notify their Branch Head when transferring, retiring, or other changes affecting FEC assignment occur.

18.3.2 The Standard Practice and Environmental Engineering Branch shall:

a. Ensure that hazardous material tracking at the Center is carried out in an environmentally responsible manner. The SPEEB is the functional proponent of the CMTS database and has primary responsibility to update and maintain the CMTS system.

b. Review and approve Langley Form 44s (Hazardous Materials – Procurement, Inventory and Storage Records).

c. Provide support, guidance, policies and procedures, training, and assistance to LaRC personnel using the CMTS.

d. Send all CMTS users quarterly notifications indicating due dates for the inventory certifications.

e. Use the CMTS capability to help compile the annual required regulatory reports.

f. Ensure internal compliance with the LaRC HM/HW Security Plan and update as necessary.

18.3.3 Directors and Supervisors shall:

a. Ensure facility personnel follow the inventory tracking procedures outlined in this chapter.

b. Assign the necessary personnel to function as CMTS inventory managers to perform the duties specified in 18.3.8 of this chapter.

Note: A FEC, assigned by a Director per LAPD 8500.1, functions as a facility's CMTS inventory manager. However, additional personnel may also be assigned to perform CMTS inventory manager duties in collaboration with the assigned FEC.

18.3.4 Program Managers/Project Initiators shall:

Ensure that contracts for projects involving the use of hazardous materials include the requirements in NASA LaRC SpecsIntact Section 01 35 40.00 41, "NASA Langley Environmental Requirements" for the contractor to provide project material usage data to the SPEEB Environmental staff by the end of the project if short-term, or on an annual basis by January 31 if long-term.

Note: Project materials to be tracked include, but are not limited to: metals, asphalt, lead-acid batteries, lead-containing products, paints, fuels and oils, coolants and refrigerants, and other chemicals and products.

18.3.5 Contracting Officer's Representatives shall:

Ensure that contractors provide the SPEEB Environmental staff with a list of chemicals and hazardous materials used on-site but not recorded in CMTS (e.g., materials used by subcontractors or project materials not customarily tracked in CMTS) at the end of the project if short-term or by January 31 of each year if long-term.

18.3.6 Facility Safety Heads shall:

a. Review and approve or reject Langley Form 44s.

b. Ensure that hazardous materials are purchased in accordance with procedures established in LPR 1710.12, to include using the electronic LF 44 approval process as outlined in LMS-CP-4759.

c. Ensure that facility personnel are trained in proper hazardous material management practices.

d. Ensure that (M)SDSs are obtained for all hazardous materials prior to purchasing or receiving the items.

e. Assist facility CMTS inventory managers in maintaining an accurate inventory of hazardous materials.

f. Ensure hazardous materials are stored in accordance with LPR 1710.12 and LPR 1710.13.

18.3.7 The Logistics Management Branch shall:

a. Provide the following information to the SPEEB Environmental staff on an annual basis for all materials requiring (M)SDSs issued from stock:

(1) National Stock Number (NSN)
(2) Customer
(3) Date of issue
(4) Unit description
(5) Quantity on-hand, maximum quantity on-hand, and re-order point
(6) Unit of issue
(7) Unit conversion code or other description of the unit of issue
(8) Total quantity (unit of issue) issued for each NSN

b. Maintain demurrage cylinder data within the CMTS Cylinder Module.

c. Maintain facility inventory using CMTS and following the policies and procedures within this chapter.

d. Adhere to LaRC's transportation security policies and procedures outlined in the HM/HW Security Plan.

18.3.8 CMTS Inventory Managers shall:

a. Track hazardous materials in accordance with the CMTS policies and procedures.

b. Certify accuracy of chemical inventories by submitting Quarterly Inventory Update Certifications, found in CMTS Inventory Maintenance.

(1) To properly and accurately certify the inventory, the hazardous materials in the facility shall be physically compared to the items listed in the CMTS inventory and reconciled accordingly.
(2) At a minimum, reconcile the physical inventory with the CMTS inventory quarterly (March 31, June 30, September 30, and December 31).

c. Facilities with no hazardous materials shall submit an annual No Hazardous Materials Certification by January 1 of each year. The form can be found at https://emis.ndc.nasa.gov/cmts/instruct/manuals/ under the Inventory Update Guide.

d. Ensure that each hazardous material is properly identified and labeled with a CMTS label.

e. Ensure that bulk containers have been correctly identified in CMTS by verifying that the container identification numbers begin with "b."

f. Ensure that each hazardous item in the CMTS inventory has a corresponding (M)SDS and that a copy of the (M)SDS has been submitted to the SPEEB Environmental staff for entry into the online (M)SDS library.

g. Manage the chemical inventory stored or used at the facility in accordance with all applicable health, safety, and environmental regulations found in this LPR, LPR 1710.12, and LPR 1710.13.

h. Manage the chemical inventory to reduce waste from shelf-life expiration.

(1) Where possible, and in accordance with all health and safety requirements, transfer unused or excess chemicals to other facilities where they can be used prior to reaching shelf-life expiration date.
(2) The cost of disposing of expired chemicals as HW may become the responsibility of the organization.

i. Attend mandatory training on proper disposal of hazardous materials. These procedures are presented during the annual Waste Management Training classes (see Section 7.2.6).

18.3.9 The Safety and Facility Assurance Branch shall:

a. Review and approve or reject Langley Form 44s.

b. Notify the SPEEB Environmental staff of concerns that pertain to hazardous material tracking.

c. Provide technical expertise and administrative guidance to LaRC personnel for the safe use, storage, and handling of hazardous materials.

d. Ensure that hazardous material management at the Center is carried out in accordance with OSHA and other health and safety requirements.

e. Assist personnel in the interpretation of (M)SDS technical data.

f. Supply (M)SDSs, if available, from (M)SDS databases or assist in the acquisition and technical interpretation of proprietary or trade secret (M)SDS information.

g. Perform the following duties as the Langley Form 44 Coordinator:

(1) Review Langley Form 44 to ensure the electronic (M)SDSs in CMTS correspond to the hazardous materials being requested, and that the (M)SDSs are accurate and current.
(2) Add new (M)SDSs to the CMTS library.
(3) Notify the SPEEB Environmental staff of concerns that pertain to the (M)SDS library in CMTS.

18.3.10 Center Personnel and On-site Contractors shall:

a. Ensure that the FEC, FSH, and facility CMTS inventory managers are notified when hazardous materials are brought into a facility, including Purchase Requisition (PR), credit card purchase, or vendor samples.

b. Ensure that the FEC and facility CMTS inventory managers are notified when hazardous materials are expended or require disposal so the materials can be tracked in CMTS.

c. Use the electronic LF 44 approval process, in accordance with LPR 1710.12 and LMS-CP-4759, to purchase hazardous materials and for sample products received from vendors.

d. If using, handling, or requesting disposal of hazardous materials, attend mandatory training on proper disposal procedures. These procedures are presented during the annual Waste Management Training classes (see Section 7.2.6 of this document).

e. Identify and substitute less toxic materials when practical to use them.

Appendix A - Glossary of Terms

Archeological Resources Protection Act. Protects archeological resources and sites on public lands and Indian lands.

Biobased. Commercial or industrial products (other than food or feed) that are composed in whole, or in significant part, of biological products, renewable agricultural materials (including plant, animal, and marine materials), or forestry materials.

BioPreferred. Program managed by the USDA to increase the purchase and use of biobased products. The USDA designates categories of biobased products that are required for purchase by federal agencies and their contractors. As a part of this process, minimum biobased content for each category is specified.

Categorical Exclusion (CatEx). "Categorical Exclusion" means a category of actions that do not individually or cumulatively have a significant effect on the human environment and that have been found to have no such effect in procedures adopted by a federal agency in implementation of these regulations and for which, therefore, neither an EA or EIS is required.

Chemical Material Tracking System (CMTS). LaRC's online hazardous material inventory approval and tracking database. CMTS is also used to maintain an online library of Material Safety Data Sheets.

Clean Air Act. Requires prevention, control, and abatement of air pollution from stationary and mobile sources (also includes asbestos removal and disposal regulations, and regulates the use of ozone depleting substances.)

Clean Water Act. Regulates discharge of pollutants into waters of the U.S. from any point source including industrial facilities and sewage treatment plants. Regulates storm water runoff from certain industrial sources. Requires reporting and cleanup of oil and hazardous substance spills in waterways. Protects waterways. Requires a permit to dredge, fill, or disturb wetlands. Requires spill prevention plans for sites that store petroleum products.

Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986. Regulates cleanup of abandoned HW sites. CERCLA also known as "Superfund" regulates releases of hazardous substances into the environment.

Construction of Facilities (CoF). Those activities directed toward construction of new facilities; repair, rehabilitation, and modification of existing facilities; acquisition of related facility equipment; design of facilities projects; and advance planning related to future facilities needs.

Electronic Product Environmental Assessment Tool (EPEAT). A global registry for electronics managed by the Green Electronics Council. The Council evaluates equipment on 51 environmental criteria - 23 required and 28 optional - that measure a product's efficiency and sustainability attributes. Products in the registry are rated Gold, Silver, or Bronze, depending on how many optional criteria they meet.

Emergency Planning and Community Right-to Know Act of 1986 (EPCRA). Provides local governments with information concerning possible chemical hazards in the community. Requires emergency planning for releases of extremely hazardous substances. Requires facilities to publicly report releases of toxic chemicals into the environment.

Endangered Species Act of 1973 (ESA). Requires that all actions not jeopardize, threaten, destroy, or adversely impact critical habitats or the existence of endangered species.

Energy Independence and Security Act of 2007 (EISA). Promotes the goal of moving the United States toward greater energy independence and security. Increases the production of clean renewable fuels; increases the efficiency of products, buildings, and vehicles; promotes research and development of greenhouse gas capture and storage options; and improves the energy performance of the Federal Government.

Energy Policy Act of 2005 (EPACT 2005). Provides annual energy reduction and renewable energy purchase goals for federal facilities. Requires procurement of energy-efficient products and provides updated federal green building standards with emphasis on energy efficiency and sustainable design principles.

Environmental evaluation. The analysis of the environmental effects of proposed actions, including alternative proposals. The analyses are carried out from the very earliest of planning studies for the action in question, and are the materials from which the more formal environmental assessments, environmental impact statements, and public record of decisions are made.

Environmental Assessment (EA). A concise public document prepared by a federal agency to determine the environmental impact of a proposed action and alternatives. An EA briefly provides sufficient evidence and analysis for determining whether to prepare an EIS or a FONSI.

Environmental Impact Statement (EIS). A document that is prepared for an action that may have significant impact on the quality of the human environment or that has the potential for controversy in environmental effects. The primary purpose of an EIS is to serve as a device for use by officials to plan actions and make decisions. It provides information that must be considered throughout the decision process. An EIS is filed with the EPA and published and distributed widely for public comment.

Executive Order 11593 (May 13, 1971). ***Protection and Enhancement of the Cultural Environment.*** Mandates that Executive agencies, bureaus, and offices compile an inventory of cultural resources; nominate eligible government properties to the National Register of Historic Places; protect their cultural resources; and ensure that agency activities contribute to the preservation of non-federally owned cultural resources.

Executive Order 11990 (May 24, 1974). ***Protection of Wetlands.*** Directs all federal agencies to minimize the destruction, loss, or degradation of wetlands; and to preserve and enhance the natural beneficial values of wetlands.

Executive Order 13221 (August 2, 2001). ***Energy Efficient Standby Power Devices.*** Directs federal agencies to purchase products that use minimal standby power when possible.

Executive Order 13287 (March 3, 2003). ***Preserve America.*** Establishes a leadership role for the Federal Government in preserving America's heritage by actively advancing the protection, enhancement, and contemporary use of historic properties owned by the Federal Government.

Executive Order 13508 (May 15, 2009). ***Chesapeake Bay Protection and Restoration*****.** Recognizes the Chesapeake Bay as a national treasure and calls on the Federal Government to lead a renewed effort to restore and protect the health, heritage, natural resources, and social and economic value of the nation's largest estuarine ecosystem and the natural sustainability of its watershed.

Executive Order 13693 (March 25, 2015). ***Planning for Federal Sustainability in the Next Decade*****.** Directs federal agencies to increase efficiency and improve their environmental performance, as well as to lead by example in energy, environmental water, fleet, buildings, acquisition management, greenhouse gas reductions, and preparing for the impacts of climate change. Emphasizes the need to prioritize reductions in energy use and cost, as well as finding renewable or alternative energy solutions. Expands upon and revokes several previous environmental and sustainability Executive Orders.

EPA Comprehensive Procurement Guidelines (CPG). Part of EPA's effort to promote the use of materials recovered from solid waste. Buying recycled-content products ensures that the materials collected in recycling programs will be used again in the manufacture of new products. EPA is required to designate products that are or can be made with recovered materials, and to recommend practices for buying these products. Once a product is designated, procuring agencies are required to purchase it with the highest recovered material content level practicable

Farm Security and Rural Investment Act of 2002. Requires federal agencies to establish procurement programs for the purchase of biobased products.

Federal Acquisition Regulation (FAR). Establishes requirements for executive agencies when acquiring goods and services.

Finding of No Significant Impact (FONSI). A document prepared by LaRC staff which presents the reasons an action will not have a significant effect on the human environment and for which an EIS will not be prepared. It is typically published in a local newspaper and coordinated with a state point of contact.

Hazardous and Solid Waste Amendments to RCRA. Requires the phasing out of land disposal of hazardous waste. Mandates increased enforcement authority for EPA, more stringent hazardous waste management standards, and a comprehensive underground storage tank program.

National Environmental Policy Act of 1969 (NEPA). Mandates federal agencies to "utilize a systematic, interdisciplinary approach to ensure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision making which may have an impact on man's environment." Requires detailed statements on the potential environmental impacts of major federal actions to be included in every recommendation or report on proposals to legislation.

National Historic Preservation Act (NHPA) Requires federal agencies to establish cultural resource preservation programs and to consider the effects of their proposed actions (e.g., construction, leasing, and land transactions) on cultural and historic resources.

Noise Control Act of 1972. Establishes noise standards and regulates noise emissions from commercial products, such as transportation and construction equipment.

Notice of Intent. A notice that an EIS will be prepared and considered. It summarizes issues uncovered in the EA, if one was completed. The notice shall briefly describe the proposed action and possible alternatives, describe the agency's proposed scoping process including whether, when, and where any scoping meeting will be held, and state the name and address of a person within the agency who can answer questions about the proposed action and the EIS. This notice is required by law to allow interested parties to participate in the EIS development or to review it upon completion.

Pollution Prevention Act of 1990. Mandates a national policy creating a hierarchy of preferred waste management approaches: source reduction, recycling, treatment, and disposal, all to be conducted in an environmentally safe manner.

Quiet Communities Act of 1978. Established a nationwide "Quiet Communities Program," and tightened aircraft noise regulations, setting specific decibel limits for civil aircraft.

Record of Decision (RoD). A document that describes how environmental considerations, and the EIS itself, entered into the decision. It is not published in the Federal Register, but made available upon request.

Resource Conservation and Recovery Act of 1976 (RCRA). Establishes guidelines and standards for solid and nonhazardous waste generation, transportation, treatment, storage, and disposal. Requires management of underground storage tanks (USTs) and cleanup of hydrocarbon contamination. Establishes a national policy to minimize the generation of HW and the land disposal of HW by encouraging process substitution, materials recovery, properly conducted recycling and reuse, and treatment. Mandates that HW generators and treatment, storage, and disposal facilities have a HW minimization program in place.

Rivers and Harbors Appropriation Act of 1899. First federal water pollution regulation in the United States. It focuses on protecting navigation, protecting waters from pollution, and acted as a precursor to the Clean Water Act. The Act makes it illegal to discharge refuse matter of any kind into the navigable waters, or tributaries thereof, of the United States without a permit. It also makes it illegal to excavate, fill, or alter the course, condition, or capacity of any harbor, channel or other specified areas without a permit. This Act is administered by the U.S. Army Corps of Engineers.

Significant New Alternatives Policy (SNAP). The program the EPA uses to evaluate and regulate substitutes for the ozone-depleting chemicals that are being phased out under the stratospheric ozone protection provisions of the Clean Air Act.

Total Maximum Daily Load (TMDL). A TMDL is a calculation of the maximum amount of a pollutant that a waterbody can receive and still safely meet water quality standards.

Toxic Substances Control Act (TSCA). Prohibits or limits the manufacture, process, distribution in commerce, use, or disposal, of a chemical substance. Regulates the management, disposal, and labeling of materials such as asbestos and PCBs.

Appendix B - Acronyms and Abbreviations

ACBM	Asbestos containing building materials
ACOE	Army Corps of Engineers
AST	Aboveground Storage Tank
BMP	Best Management Practice
C&D	Construction and Demolition
CAA	Clean Air Act
CatEx	Categorical Exclusion
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CMTS	Chemical Material Tracking System
CO	Contracting Officer
COR	Contracting Officer's Representative
CGP	Construction General Permit
CP	Center Procedures
CPG	Comprehensive Procurement Guidelines
CRMP	Cultural Resource Management Plan
CWA	Clean Water Act
CS	Contracting Specialist
dB	Decibels
dBA	A-weighted decibels
DEQ	Department of Environmental Quality
DOE	Department of Energy
DOT	Department of Transportation
EA	Environmental Assessment
ECPP	Energy Conservation Performance Plan
EEP	Energy Efficiency Panel
EET	Energy Efficiency Team
EHS	Extremely Hazardous Substance
EIS	Environmental Impact Statement
EISA	Energy Independence and Security Act
EMCS	Energy Management Control System
EMD	Environmental Management Division
EMS	Environmental Management System
EPA	Environmental Protection Agency
EPACT	Energy Policy Act
EPEAT	Electronic Product Environmental Assessment Tool
EPCRA	Emergency Planning and Community Right-To-Know Act
ERD	Environmental Resource Document
ESPC	Energy Savings Performance Contract
FAR	Federal Acquisition Regulation
FEC	Facility Environmental Coordinator

FEMA	Federal Emergency Management Agency
FEMP	Federal Energy Management Program
FONSI	Finding of No Significant Impact
FSH	Facility Safety Head
GIS	Geographic Information System
HAZWOPER	Hazardous Waste Operations Emergency Response
HM/HW	Hazardous Material and Hazardous Waste
HPO	Historic Preservation Officer
HRSD	Hampton Roads Sanitation District
HW	Hazardous Waste
ISCP	Integrated Spill Contingency Plan
LAFB	Langley Air Force Base
LAPD	Langley Policy Directive
LaRC	Langley Research Center
LED	Light Emitting Diode
LEED	Leadership in Energy and Environmental Design
LEPC	Local Emergency Planning Committee
LF	Langley Form
LMB	Logistics Management Branch
LMS	Langley Management System
LPR	Langley Procedural Requirement
M&V	Measurement & Verification
MBTA	Migratory Bird Treaty Act
MS4	Small Municipal Separate Storm Sewer Systems
(M)SDS	(Material) Safety Data Sheet
NASA	National Aeronautics and Space Administration
NASM	National Air and Space Museum
NECPA	National Energy Conservation Policy Act
NEPA	National Environmental Policy Act
NF	NASA Form
NHPA	National Historic Preservation Act
NOx	Nitrogen Oxides
NPD	NASA Policy Directive
NPR	NASA Procedural Requirement
NSN	National Stock Number
O&M	Operations and Maintenance
OCC	Office of Chief Counsel
OSHA	Occupational Safety and Health Administration
P2	Pollution Prevention
PCB	Polychlorinated Biphenyl
PHMSA	Pipeline and Hazardous Materials Safety Administration
PPBE	Planning, Programming, Budgeting, and Execution
ppm	Parts per million
PR	Purchase Requisition
RCRA	Resource Conservation and Recovery Act

REC	Record of Environmental Consideration
RMA	Resource Management Area
RPA	Resource Protection Area
RQ	Reportable Quantity
SAA	Satellite Accumulation Area
SERC	State Emergency Response Commission
SFAB	Safety and Facility Assurance Branch
SHPO	State Historic Preservation Officer
SPCC	Spill Prevention, Control and Countermeasures
SpecsIntact	Specifications Kept Intact
SPEEB	Standard Practice and Environmental Engineering Branch
SSEB	Source Selection Evaluation Board
SWPPP	Stormwater Pollution Prevention Plan
TMDL	Total Maximum Daily Load
TPQ	Threshold Planning Quantity
TRI	Toxics Release Inventory
TSCA	Toxic Substances Control Act
UESC	Utility Energy Savings Contract
UFGS	Unified Facilities Guide Specifications
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
UST	Underground Storage Tank
VDHR	Virginia Department of Historic Resources
VMRC	Virginia Marine Resources Commission
VPDES	Virginia Pollutant Discharge Elimination System
VSMP	Virginia Stormwater Management Program
VWP	Virginia Water Protection
WLA	Waste Load Allocation
WMP	Waste Management Plan