Langley Research Center

LPR 8500.1

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# ENVIRONMENTAL AND ENERGY PROGRAM MANUAL

National Aeronautics and Space Administration

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**Responsible Office: Environmental Management Branch, Center Operations Directorate**

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# PREFACE

## P.1 PURPOSE

a. This Langley Procedural Requirements (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

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

## 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. National Historic Preservation Act, as amended, 16 U.S.C. § 470 et seq.
e. Endangered Species Act of 1973 (ESA), as amended, 16 U.S.C. § 1531 et seq.
f. Rivers and Harbors Appropriation Act of 1899, as amended, 33 U.S.C. § 401 et seq.
g. Clean Water Act (CWA), as amended, 33 U.S.C. § 1251 et seq.
h. Resource Conservation and Recovery Act of 1976 (RCRA), as amended, 42 U.S.C. § 6901 et seq.
i. National Environmental Policy Act of 1969 (NEPA), as amended, 42 U.S.C. § 4321 et seq.
j. Noise Control Act of 1972, as amended, 42 U.S.C. § 4901 et seq.
k. Clean Air Act (CAA), as amended, 42 U.S.C. § 7401 et seq.
l. Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA or Superfund), as amended, 42 U.S.C. § 9601 et seq.
m. Superfund Amendments and Reauthorization Act of 1986 (SARA), as amended, 42 U.S.C. § 9662 et seq.

n. Emergency Planning & Community Right-To-Know Act of 1986 (EPCRA), 42 U.S.C. § 11001 et seq.
o. Pollution Prevention Act of 1990 (PPA), 42 U.S.C. § 13101 et seq.
p. Energy Policy Act of 2005 (EPACT 2005), as amended, 42 U.S.C. § 15801 et seq.
q. Energy Independence and Security Act of 2007 (EISA), as amended, 42 U.S.C. § 17001 et seq.
r. National Aeronautics and Space Act of 1958, as amended, 51 U.S.C. § 20113 et seq.
s. Executive Order 11593 (Protection and Enhancement of the Cultural Environment), 3 CFR 559-562 (1971).
t. Executive Order 11990 (Protection of Wetlands), as amended by Executive Order 12608, 3 CFR 121 (1977).
u. Executive Order 13186 (Responsibilities of Federal Agencies to Protect Migratory Birds) 3 CFR 719-723 (2002)
v. Executive Order 13221 (Energy Efficient Standby Power Devices), 3 CFR 783 (2002).
w. Executive Order 13287 (Preserve America), 3 CFR 183-186 (2004).
x. Executive Order 13423 (Strengthening Federal Environmental, Energy, and Transportation Management), 3 CFR 193-199 (2008).
y. Executive Order 13508 (Chesapeake Bay Protection and Restoration), 74 Fed. Reg. 23099 (May 15, 2009).
z. Executive Order 13514 (Federal Leadership in Environmental, Energy, and Economic Performance), 74 Fed. Reg. 52117 (Oct. 8, 2009).
aa. Environmental Quality, 14 CFR 1216.
bb. Occupational Safety and Health Standards, 29 CFR 1910.
cc. Basic Program Elements for Federal Employee Occupational Safety and Health Programs and Related Matters, 29 CFR 1960.
dd. National Register of Historic Places, 36 CFR 60.
ee. Protection of Historic Properties, 36 CFR 800.
ff. Environmental Protection Agency (EPA), 40 CFR Chapter I.
gg. Council on Environmental Quality (CEQ), 40 CFR Chapter V.
hh. Federal Acquisition Regulation (FAR) 48 CFR Chapter I.
ii. Shippers – General Requirements for Shipments and Packagings, 49 CFR 173.
jj. Endangered and Threatened Wildlife and Plants, 50 CFR 17.
kk. NF 1707, Special Approvals and Affirmations of Requisitions.
ll. NPD 8500.1, NASA Environmental Management.
mm. NPR 4310.1, Identification and Disposition of NASA Artifacts.
nn. NPR 8530.1, Affirmative Procurement Program and Plan for Environmentally Preferable Products.
oo. NPR 8553.1, NASA Environmental Management System.
pp. NPR 8570.1, Energy Efficiency and Water Conservation.
qq. NPR 8580.1, Implementing the National Environmental Policy Act and Executive Order 12114.

## P.4 APPLICABLE DOCUMENTS

a. Chesapeake Bay Total Maximum Daily Load for Nitrogen, Phosphorus and Sediment, December 29, 2010, http://www.epa.gov/reg3wapd/tmdl/ChesapeakeBay/tmdlexec.html
b. EPA Regulations at 40 CFR 247, Comprehensive Procurement Guideline for Products Containing Recovered Materials, (CPG) http://www.epa.gov/epawaste/conserve/tools/cpg/index.htm.
c. Unified Facilities Guide Specifications, http://www.wbdg.org/ccb/browse_org.php?o=70.
d. LAPD 8500.1, LaRC Environmental and Energy Management.
e. LPR 1710.12, Potentially Hazardous Materials – Hazard Communication Standard.
f. LPR 1710.13, Chemical Hygiene Plan.
g. LPR 1740.2, Facility Safety Requirements.
h. LPR 1740.4, Facility System Safety Analysis and Configuration Management.
i. LPR 2710.1, Langley Research Center Noise Control and Hearing Conservation Program.
j. LPR 8715.12, LaRC Integrated Spill Contingency Plan
k. LMS-CP-4759, Acquisition of Hazardous Materials.
l. LMS-CP-8530, Langley Research Center Environmental Management Team Facility Multi-Media Environmental Audit Process.
m. LF 44, Hazardous Materials – Procurement, Inventory and Storage Record.
n. LF 163, Waste Material Data Sheet.
o. LF 243, Appointment of Facility Environmental Coordinator(s) (FEC).
p. LF 342, Environmental Finding Tracking Form.
q. LF 408, NASA Langley Research Center Weekly AST Inspection Checklist.
r. LF 410, NASA Langley Research Center Monthly AST Inspection Checklist.
s. LF 461, Environmental Project Planning Form.
t. LaRC Environmental Resource Document (ERD). *(Contact the Environmental Management Branch at extension 43500 for a copy of this document)*
u. LaRC Hazardous Material and Hazardous Waste Security Plan. *(Contact the Environmental Management Branch at extension 43500 for a copy of this document)*
v. LaRC MS4 Program Plan. *(Contact the Environmental Management Branch at extension 43500 for a copy of this document)*
w. LaRC Specifications Kept Intact (SpecsIntact). (*Contact the Environmental Management Branch at extension 43500 for a copy of this document)*
x. Chesapeake Bay Preservation Act, 10.1 Code of Va., Chapter 21.
y. Virginia Tidal Wetlands Act, 28.2 Code of Va., Chapter 13.
z. State Air Pollution Control Board, 9 Virginia Administrative Code (VAC) 5.
aa. Department of Environmental Quality, 9 VAC 15.
bb. Virginia Waste Management Board, 9 VAC 20.
cc. State Water Control Board, 9 VAC 25.
dd. Virginia Regulation Concerning Licensed Asbestos Contractor Notification, Asbestos Project Permits And Permit Fees, 16 VAC 25-20-30.

ee. Noise Ordinance, City of Hampton Municipal Code, § 22-2, 1964.
ff. Noise Ordinance, City of Poquoson Municipal Code, § 34-31, 1982.

## P.5 MEASUREMENT/VERIFICATION

To verify compliance with this LPR the Environmental Management Branch performs multi-media environmental audits of LaRC facilities, as described in chapter 1.2. On an annual basis, the Systems Management Office conducts an internal audit of the LaRC Environmental Management 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 8800.1, dated February 22, 2011

*Original signed on file*

David E. Bowles
Associate Director

DISTRIBUTION

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# 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 Environmental Management Branch (EMB) within the Center Operations Directorate.

c. Each Organizational Unit Manager is responsible for appointing, in writing, Facility Environmental Coordinators (FECs) for facilities and operations under their purview. Onsite 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 EMB website: http://emis/fecdb.cfm.

e. FECs are responsible for ensuring proper environmental management and compliance for the activities within their designated facilities, and EMB 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 EMB 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 charges for noncompliance to criminal charges for willful violation and/or withheld or

falsified information. Penalties can range from an injunction to hefty fines to prison time, depending on the nature of the violation.

1.2.2 The Head of EMB is the delegated cease and desist authority for any operations that, in the professional judgment of EMB 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, EMB conducts regular multi-media environmental audits of LaRC facilities. EMB documents the audit findings and follows the procedures in LMS-CP-8530, "*Langley Research Center Environmental Management Team Facility Multi-Media Environmental Audit Process,"* (https://lms.larc.nasa.gov/admin/documents/8530.pdf) to ensure the correction of any noncompliance issues.

a. A completed Audit Report is forwarded to the FEC.

b. If the facility receives noncompliance findings, an Environmental Finding Tracking Form (LF 342) is sent with the Audit Report. Facilities have 30 days to correct the findings and return the LF 342 to the EMB. The LF 342 documents the finding, the actions taken by the facility to close the finding, and requires the FEC to complete a root cause analysis.

c. If the FEC cannot correct the findings within the 30-day deadline, the FEC shall prepare a corrective action plan including a timeframe for completion and shall submit the plan to EMB.

d. If the FEC fails to correct the findings and return the Environmental Finding Tracking Forms by the deadline, EMB notifies the FEC's Organizational Unit Manager (OUM) of the outstanding compliance issue(s) and sets a 30-day compliance deadline.

e. If the compliance issue is still unresolved after the 30-day deadline and EMB decides that all reasonable efforts to achieve compliance have been unsuccessful, then EMB may notify the Center Director of the violation and request that he/she intervene to resolve the issue. The decision by EMB to alert LaRC's senior management is dependent upon the nature of the noncompliance finding.

1.2.4 When information affecting environmental compliance matters at the Center must be communicated to all personnel, EMB 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, sustainable practices and pollution prevention (P2) opportunities. P2, which is reducing or eliminating waste at the source by modifying production processes, promoting the use of non-toxic or less-toxic substances, implementing conservation techniques, and re-using materials rather than putting them into the waste stream, is the cornerstone of environmental management and sustainability.

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) 13423, *"Strengthening Federal Environmental, Energy and Transportation Management,"* and EO 13514, "*Federal Leadership in Environmental, Energy, and Economic Performance*," mandate the implementation of EMS at all appropriate organizational levels. EO 13423 directs Federal Agencies to conduct their environmental, transportation, and energy-related activities in an environmentally and fiscally sound, integrated, continuously improving, efficient, and sustainable manner. EO 13514 expands the energy reduction and environmental requirements of EO 13423.

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 at: http://nodis3.gsfc.nasa.gov/displayDir.cfm?t=NPR&c=8553&s=1A. 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 EMB. The Committee members act as subject matter experts regarding their organizations' current and future mission/ operations.

2.2.6 EMB contributes their 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 as applicable.

### 2.3.3 The Environmental Management Branch (EMB) 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.

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

### 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.

b. Understand the concepts of P2 and sustainability.

# 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 Executive Order 13423, *"Strengthening Federal Environmental, Energy, and Transportation Management,"* requires that each agency improve energy efficiency and reduce greenhouse gas emissions of the agency, through reduction of energy intensity by 3 percent annually through the end of FY 2015, or 30 percent by the end of FY 2015, relative to the baseline of the agency's energy use in FY 2003. Although this is an agency goal, LaRC is committed to meeting this energy goal at the Center level.

3.2.2 Executive Order 13514, "*Federal Leadership in Environmental, Energy, and Economic Performance,"* requires that each agency reduce water consumption intensity by 2% annually or 26% total by FY 2020 (relative to a FY 2007 baseline) by implementing water management strategies including water-efficient and low-flow fixtures and efficient cooling towers. Agencies are also required to identify, promote, and implement water reuse strategies that reduce water consumption. Although this is an agency goal, LaRC is committed to meeting this water conservation goal at the Center level.

3.2.3 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.

3.2.4 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.

3.2.5 NPR 8570. 1, *"Energy Efficiency and Water Conservation,"* provides procedural requirements for evaluating and implementing cost-effective energy efficiency, renewable energy, and water conservation measures in NASA facilities and operations.

## 3.3 RESPONSIBILITIES

### 3.3.1 The Center Director 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. 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.

### 3.3.2 The Management Sponsor shall:

a. Provide support and oversight of the energy/water management programs in accordance with 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. 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.

d. Act as the Management Sponsor for the Energy and Water Efficiency Committee (EWEC).

### 3.3.3 The Center Energy Manager shall:

a. Lead the Center's Energy Efficiency and Water Conservation programs.

b. Lead the EWEC.

c. Maintain an Energy and Water Conservation website accessible to Center personnel.

d. Maintain and update the Center's comprehensive Energy Efficiency & Water Conservation 5-Year Plan as required.

e. Report energy and water consumption data for the Center to NASA Headquarters as required.

f. Provide information on Center energy and water consumption to LaRC personnel.

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

h. Consolidate and record all energy efficiency and water conservation projects and initiatives taking place on Center as reported by the EWEC.

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

### 3.3.4 The Energy and Water Efficiency Committee (EWEC) shall:

a. Assist the Center Energy Manager on the operation of the Energy Efficiency and Water Conservation Program in accordance with NPR 8570.1.

b. Identify, prioritize, and implement the initiatives in the Center's comprehensive Energy and Water Management 5-Year Plan.

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 (FC) 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. Turn off all lighting not required for operations or security. Lights that remain on should be the minimum required for safety and security requirements.

c. Ensure domestic hot water systems are maintained at or below a temperature of 120°F with the exception of systems in buildings containing food preparation.

d. Ensure facility temperatures are in accordance with Table 3-1.

*Table 3-1*

| | | |
|---|---|---|
| **Heating Season (max. settings)** | Administrative Spaces and Labs | Occupied: 66-68 degrees F<br>Unoccupied: 60 degrees F |
| | Shop Spaces | Occupied: 66-68 degrees F<br>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<br>Unoccupied: 82 degrees F |
| | Shop Spaces | Occupied: 74-76 degrees F<br>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 should be considered in the equipment operation.
(2) Unoccupied times apply to nights, weekends, and periods when personnel are not required to be present.

e. Investigate and report instances of building envelope degradation or failure such as drafts, leaks, poor seals, or holes.

f. Prioritize maintenance items involving energy and water conservation and facilitate completion in the least amount of time possible.

g. Provide permission for and maintain records of personal climate control equipment as outlined in 3.3.11.e.

### 3.3.6 Facility Environmental Coordinators (FECs) shall:

a. Act as an energy and water conservation liaison between Center personnel and the Center Energy Manager, EWEC Members, and the EMB 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. Establish a list of procedures for reducing energy and water use at the facility during unoccupied and energy intensive periods, including any processes unique to your facility. These should be published to all facility personnel and posted near all building exits.

d. Communicate with facility personnel to ensure that the largest 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 13423, *"Strengthening Federal Environmental, Energy, and Transportation Management,"* Executive Order 13514, "*Federal Leadership in Environmental, Energy, and Economic Performance,"* 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.

### 3.3.8 The Logistics Management Branch (LMB) shall:

Ensure compliance with and implementation of the vehicle fleet management requirements of Executive Order 13423, *"Strengthening Federal Environmental, Energy, and Transportation Management,"* and Executive Order 13514, "*Federal Leadership in Environmental, Energy, and Economic Performance."*

### 3.3.9 Facility Energy Management Control System Personnel shall:

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

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

### 3.3.10 Facility Project Managers shall:

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

b. Ensure **all** project designs for LaRC adhere to the following:

(1) For buildings that meet the Agency's capital planning threshold, ensure that new building designs are 30% more efficient than the most current American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Standard 90.1, if life-cycle cost effective.
(2) In accordance with Executive Order 13423, ensure that new construction and major renovation of buildings comply with the Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings set forth in the *Federal Leadership in High Performance and Sustainable Buildings Memorandum of Understanding* (2006).
(3) Incorporate energy and water conservation measures and sustainable design principles into project design when feasible as determined by life-cycle cost analysis. Life-cycle cost should be used in place of initial project cost for the project in addition to all products within the design. To obtain proper life-cycle costing of project alternatives the Building Life-Cycle Costing program (or equivalent) should be used. The program can be found for free at: http://www1.eere.energy.gov/femp/information/download_blcc.html
(4) Utilize only non-potable water sources for landscape irrigation. Potable water use for irrigation is prohibited in any new construction or renovation. Drought-tolerant and native landscaping should be used to reduce irrigation requirements.
(5) Install and connect advanced meters to the LaRC Energy Management Control System (EMCS) on all new construction and renovation projects. Advanced meters are required and cannot be removed from a project due to budgeting/funding restrictions or issues. Advanced metering must be included for all utilities delivered on demand such as electricity, steam, natural gas and water.

(6) Set lighting levels and controls to recommended values and settings found in the most current ASHRAE Standard 90.1 as set by the Illuminating Engineering Society of North America. This includes controlling applicable areas with occupancy/motion sensors or timers including but not limited to:

(a) Hallways
(b) Break Rooms
(c) Conference Rooms
(d) Restrooms

(7) Lighting occupancy sensors shall be specified in all new construction or renovations.
(8) Meet or exceed U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) Silver Certification for New Construction or renovations exceeding $500,000.
(9) Meet or exceed Federal purchasing requirements for all project equipment. A detailed listing can be found at: http://www1.eere.energy.gov/femp/technologies/eep_purchasingspecs.html

Current product categories for which FEMP designated products must be purchased include:

(a) Lighting
(b) Appliances
(c) Commercial and Industrial Equipment
(d) Food Service Equipment
(e) Plumbing
(f) Construction Products
(g) Office Equipment.

(10) All new exterior lighting shall be light emitting diode (LED) lights where practical and be equipped with on/off control by photo sensor unless an approved exception is made by the Center Energy Manager (CEM).
(11) Eliminate window air conditioning units during renovations or rehabilitations of buildings where possible. No new window air conditioning units are permitted to be installed or accommodations made for future installation in renovations or new construction unless directly approved by the CEM.

**3.3.11 Center Personnel and On-site Contractors shall:**

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

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

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

d. Configure computers and supporting office equipment to minimize energy consumption, including:

(1) Monitors (and peripherals) should be turned off at the end of the work day; during the work day, the lowest brightness settings comfortable for the user should be used.
(2) Computers should be configured to use the least amount of power possible as determined by NASA IT regulations.
(3) Printers, copiers, scanners, etc. should enable energy saving functions and be turned off during non-working hours.

e. Dress for thermal comfort. Approved portable electric space heaters are only intended 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 should 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 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 THE NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)

## 4.1 GENERAL

4.1.1 The purpose of this chapter is to provide information on applicable regulatory requirements and procedures related to reviewing and assessing the environmental impacts of proposed actions, projects and programs at the Center. Environmental impact analysis must be performed at the earliest possible stage of a proposed action or project in order to ensure compliance with Federal law.

4.1.2 The procedures included in this chapter are applicable to all LaRC employees and contractors who participate in the development of projects and programs or the management of operations or activities that may have an impact on the environment.

4.1.3 LaRC's planning processes should follow sound environmental protection practices throughout the various phases of activities, projects and programs to include conceptual design, construction, operation, and 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 Through NEPA, the environmental impacts of proposed actions must be made available to the public as well as to other Federal, State, and local agencies. While NEPA does not require that the proposed action or activity be free of environmental impacts, it requires that the Federal agency considers environmental impacts as one factor in the decision to implement an action, project, or program.

4.2.3 Projects involving construction and renovation shall include sustainable design and green building principles in accordance with Executive Order 13423, Executive Order 13514 and the 2006 "*Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings"* Memorandum of Understanding. Sustainable design and green building principles call for facilities that are designed, constructed, renovated, operated and reused in a resource and energy efficient manner.

4.2.4 As mandated by NASA in 2006, construction and renovation projects shall meet at a minimum a Silver rating under the LEED program developed by the U.S. Green Building Council.

## 4.3 ENVIRONMENTAL PROJECT REVIEW AND DOCUMENTATION

4.3.1 LaRC personnel or offices initiating actions are responsible for ensuring that the appropriate documentation is prepared in accordance with the requirements of this chapter, NPR 8580.1, and other relevant Federal environmental laws, regulations, and Executive Orders.

4.3.1.1 Preparation of these documents shall be coordinated with EMB early in the process. Figure 4-1 provides a general overview of the environmental project review and documentation process at LaRC.

4.3.1.2 The first step of the process is for the Program Manager/Project Initiator to complete the LF 461, “Environmental Project Planning Form.” The form is accessible as a web-based form in LMS at https://lms.larc.nasa.gov/admin/view_doc_detail.cfm?docid=2245. In addition to requiring a detailed description of the proposed action or project, it includes a series of "YES-NO" questions spanning various environmental media areas. Depending on the type of project, maps or floor plans may be required as an attachment to the form. Completed forms must be submitted electronically to the EMB.

**NOTE:** In the event that the project changes during the planning phases, the Program Manager/Project Initiator shall ensure that the LF 461 is revised accordingly and re-submitted to the EMB.

4.3.1.3 The EMB will use the form to perform environmental impact analysis and to determine the level of required documentation to comply with NEPA.

4.3.1.4 If the EMB determines that the project or proposed action is covered by a categorical exclusion (CatEx) as defined in 14 CFR Part 1216, or is considered to have minimal or no potential to produce an environmental impact, a Record of Environmental Consideration (REC) may be prepared to document the decision. Figure 4-2 provides an example of a REC.

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

**NOTE:** Although no further NEPA documentation is normally required following completion of the REC, additional environmental requirements may apply to the proposed action or project. These requirements, such as obtaining permits, following waste disposal procedures, etc. will be listed on the REC.

4.3.1.6 If the EMB determines that the project or proposed action 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, waste disposal), the EMB may issue a CatEX/No REC. This determination reduces paperwork burden and is typically utilized for small, routine projects.

4.3.1.7 It is the responsibility of the Program Manager/Project Initiator to coordinate with the EMB to ensure compliance with all applicable Federal, State, local and LaRC environmental requirements.

4.3.1.8 If the EMB determines that the project or proposed action has the potential to produce environmental impacts, an Environmental Assessment (EA) will be required.

4.3.1.9 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. The Program Manager/Project Initiator will be responsible for ensuring that the project schedule and budget includes preparation of the appropriate NEPA documentation.

4.3.2 Early coordination with the EMB is critical to ensuring timely completion of the NEPA review and documentation process. The following provides a general time estimate to complete the NEPA process, depending on the proposed action and level of required documentation:

a. Completion of LF 461 review and signed REC: 2 to 3 weeks

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 Environmental Management Branch (EMB) shall:

a. Coordinate with the Program Manager/Project Initiator and provide feedback, recommendations, and comments on the environmental requirements that will be associated with their proposed activities/projects.

b. Assist the Program Manager/Project Initiator as needed to ensure NEPA requirements are met for Center activities/projects.

c. Prepare and maintain the LaRC Environmental Resource Document (ERD) as prescribed in NPR 8580.1, "*Implementing the National Environmental Policy Act and Executive Order 12114,*" as this will serve as the baseline information for environmental impact analysis.

d. Review completed Form 461 documentation for environmental impacts and take action as necessary to ensure NEPA requirements are met.

e. Prepare and sign RECs and submit copies to Program Managers/Project Initiators.

f. Follow up with Program Managers/Project Initiators to ensure environmental requirements, such as obtaining permits, employing Best Management Practices

(BMPs), performing mitigation, etc. are carried out in accordance with the LF461 and/or REC.

g. Serve as the point of contact for all required off-Center coordination related to NEPA actions (NASA Headquarters, other Federal, State, and local agencies, and the public).

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

i. Ensure the EA or EIS 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.

j. Coordinate internal review of the EA or EIS with LaRC staff and NASA Headquarters (HQ).

k. Publish notices in local papers and coordinate distribution of NEPA documents to Federal, State, and local agencies, organizations, interested parties and the public.

l. Prepare responses to any comments received on the EA or EIS.

m. Prepare Findings of No Significant Impact (FONSIs) and Records of Decisions (RODs), as applicable, and coordinate approval through the LaRC Center Director and NASA HQ.

### 4.4.2 Program Managers/Project Initiators shall:

a. As early as possible in the conceptual design phase, coordinate with EMB in identifying programs and projects that may affect the environment and activities related to environmental quality.

b. Complete the LF 461, "Environmental Project Planning Form", and submit to EMB for review.

c. In the event that the proposed project activities or location changes during the planning phases, submit a revised LF 461 to the EMB.

d. Provide information for, and fund the preparation of, the required NEPA documentation as described in this chapter.

e. Maintain environmental documentation in the project file.

f. Ensure the NEPA process is complete before taking any action that would have an adverse environmental impact or limit the choice of reasonable alternatives.

g. Following completion of the NEPA process, coordinate with the EMB to ensure that any additional requirements are satisfied to ensure compliance with all applicable Federal, State, local and LaRC requirements prior to project startup.

### 4.4.3 The Office of Chief Council (OCC) shall:

Review EAs, FONSIs, EISs and RODs prior to submittal to NASA HQ for internal review and distribution to the public.

### 4.4.4 The Strategic Relations Office shall:

a. Assist the EMB and Program Manager/Project 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 EMB 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**

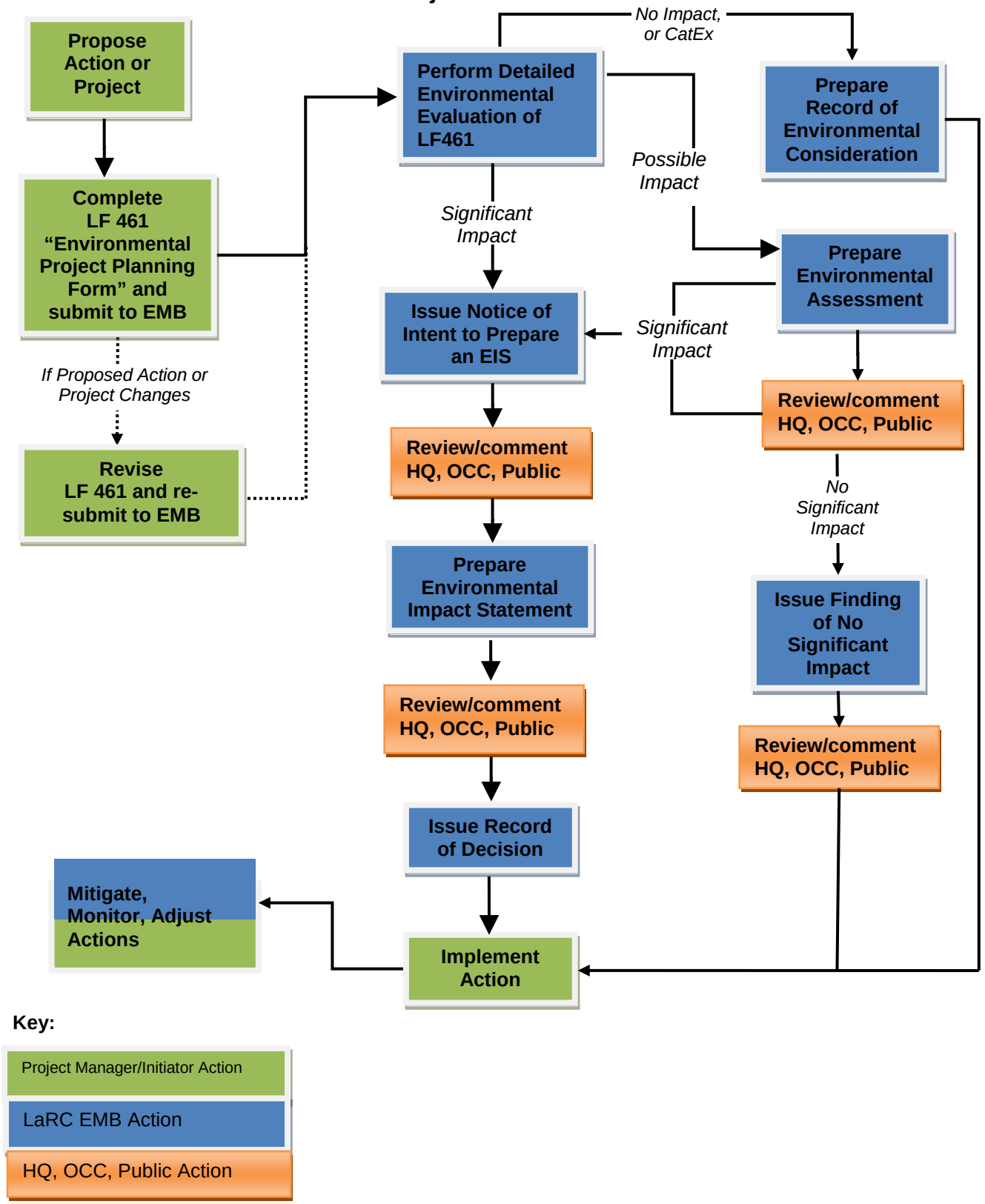

Figure 4-2
**Record of Environmental Consideration (Example)**

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NASA Langley Research Center
RECORD OF ENVIRONMENTAL CONSIDERATION

**Project:**

**Description and location of the proposed action:**

**Anticipated date and/or duration of proposed action:**

**It has been determined that the above action:**

☐ 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 LPR 8500.1. If the location or scope of the project as provided above should change, please contact the EMB at 43500.*

_____ _____
Project Manager Date

_____ _____
Environmental Management Branch 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 waters of the U.S. 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.

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. Some states elected to have the Federal government manage their permit program. Virginia requested delegation of authority from EPA to administer its own permit program in conformance with the NPDES regulations (40 C.F.R. Section 122.26(d)(2) and 40 C.F.R. Section 122.34(b)(5)). In 1975, Virginia was delegated the authority to administer the Virginia Pollutant Discharge Elimination System (VPDES) permit program. The VPDES Permit Regulation, 9 VAC 25-31, establishes the procedures and requirements for this Program.

5.1.5 The 2004 Virginia General Assembly adopted legislation that transferred the VPDES construction activity and municipal separate storm sewer system (MS4) stormwater permitting responsibilities from the Department of Environmental Quality (DEQ) to the Department of Conservation and Recreation (DCR). MS4s are regulated under the Virginia Stormwater Management Program (VSMP) permitting regulations.

## 5.2 REQUIREMENTS

5.2.1 NASA LaRC operates under three water discharge permits which limit the types and quantities of pollutants discharged, and establish monitoring and record keeping requirements. Any discharge not allowed under these permits is a violation. To assess

compliance with permit conditions the regulatory agencies conduct periodic inspections at the Center. Copies of LaRC's water discharge permits can be viewed at EMB's Water Program website located at http://emis/water.htm. The three permits are:

a. VPDES Permit No. 0024741, which is administered by DEQ, allows LaRC to discharge effluent to surface waters and specifies the allowable discharges, the pollutant limitations, and the monitoring requirements. NASA LaRC has ten outfalls that are permitted to discharge industrial process waste water and storm water runoff. Information regarding monitoring locations and the permit-authorized discharges can be obtained by contacting EMB.

b. Virginia Stormwater Management Program MS4 Permit No. VAR040092, which is administered by the DCR, 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.

c. 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 Section II, 3(c) of the State's General MS4 Permit requires the Center to effectively prohibit, through ordinance, or other regulatory mechanism, 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 VPDES permit or waters used for firefighting operations. Illicit discharges are not allowed on the Center.

5.2.3 Executive Order 13514, "*Federal Leadership in Environmental, Energy, and Economic Performance*," requires that each agency implement and achieve objectives identified in the EPA Stormwater Management Guidance.

5.2.4 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.

5.2.5 VPDES and MS4 permit requirements require LaRC to comply will 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.

### 5.2.6 **Chesapeake Bay TMDL**

5.2.6.1 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.

5.2.6.2 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 waste load allocations (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 3 scoping run reductions implementation which equates to an average reduction of 18 percent of nitrogen loads, 32 percent of phosphorus loads and 40 percent of sediment loads from impervious regulated acres and 12 percent of nitrogen loads, 14.5 percent of phosphorus loads and 17.5 percent of sediment loads for pervious regulated acreage.

5.2.6.3 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.

5.2.6.4 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 (FECs) 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 EMB by providing information and data required to comply with water permit requirements and compliance inspections.

d. Contact EMB 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 EMB 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 EMB 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 EMB if any are found and/or eliminated.

h. Participate with EMB in conducting water quality and water quantity P2 opportunity assessments.

i. Identify, develop and implement P2 projects.

### 5.3.2 The Environmental Management Branch (EMB) 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 (ex. 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. Manage and update the Center's MS4 Program Plan to ensure BMP implementation on existing developed regulated lands to achieve nutrient and sediment reductions equivalent to Chesapeake Bay TMDL Level 3 scoping run reductions by 2025.

### 5.3.3 Program Managers/Project Initiators shall:

Obtain approval from EMB 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 EMB for guidance. EMB will determine what analytical testing, if any, is required for the water discharge to ensure compliance with environmental regulations.

### 5.3.4 Contracting Officer's Technical Representatives (COTRs) shall:

Ensure that contractors:

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

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

### 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 EMB before the start of any operations that have discharges not covered under the Center's water permits. If unsure of whether a discharge is covered under a LaRC water permit, contact EMB for guidance.

c. In the event of an unpermitted 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.

# 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 EMB. A copy of the current LaRC air permit is posted on the EMB website at http://emis/air.htm.

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 and English Boiler | 1215 |
| Cleaver Brooks Boilers | 647 |
| Space Heaters/Furnaces (#2 fuel oil-fired) | 1228, 1258, 1297, 1297C |
| Space Heaters/Furnaces (natural gas-fired) | 644, 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, 1236, 1244A, 1248, 1250, 1268A-C, 1297G, 1223B, 2101 |
| 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, 1261, 1267A, 1296 |
| Paint Booths | 1148, 1230A, 1232A, 1238B, 1244D, 1268D<br><br>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. Record Keeping:
(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 (FECs) 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 EMB prior to moving, changing, modifying, removing or installing an air emission source.

d. Consult with EMB 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 EMB in a timely manner for air emissions monitoring and inventory.

f. Participate with EMB in conducting air quality P2 opportunity assessments.

g. Whenever possible, 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 Environmental Management Branch (EMB) 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 (LMB) shall:

Provide EMB with monthly reports documenting the quantity of fuel issued from stock.

### 6.3.4 Program Managers/Project Initiators shall:

Notify EMB 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 HVAC Shop 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.

# 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 EMB.

## 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, corrosively, 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 EMB. 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 11.2.6.1. Completely empty aerosol cans or spray paint cans may be recycled, with prior approval from EMB. However, if any product remains in the metal cans, they shall be managed as HW.

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, EMB should be contacted 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. Recyclables should not be disposed as trash. Executive Order 13423, "*Strengthening Federal Environmental, Energy and Transportation Management*," requires that Federal agencies maintain waste prevention and recycling programs in their facilities.

### 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 may only store HW at its central HW Storage Area for 90 days.

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

c. LaRC must submit a biennial HW report.

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

e. LaRC may not transport HW offsite or dispose of HW onsite - these functions can 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 EMB.

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 whenever possible.

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 LPR 1710.12 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 handle HW or oil) 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 EMB.

### 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 EMB for accumulating waste and are available by calling 5-DRUM.

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

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

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

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

h. Each container at a 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: http://emis/wastemgt.htm.

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: http://emis/wastemgt.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 can be accumulated at a SAA. Acute wastes are specifically listed by the EPA. A copy of the list is available at http://emis/cmts/hazwaste/acute.htm or by contacting EMB. Users should leave headroom (3 inches for 55-gallon drum, 1 inch for 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 a 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 must use the Waste Disposal Tracking System available at http://hazwaste/ to request the removal of HW by EMB. 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: http://emis/rapp/bflac.htm or by calling 5-DRUM.

### 7.2.9 **Disposal Cost Responsibilities**

7.2.9.1 Hazardous material management is 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 EMB is responsible for the disposal of 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 EMB determines that hazardous material has not been properly managed, 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 the requirements for other HW in the following respects:

a. Containers are labeled with a “Universal Waste” label.

b. The start date is filled in when the waste *begins to be accumulated* (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. In order for LaRC to meet this requirement, generators must have their Universal Waste picked up by EMB within 270 days of the start date to allow EMB sufficient time to ship it off-site for disposal.

d. Facilities’ battery accumulation areas are exempt from the SAA requirement for weekly inspections, spill plans and spill materials.

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

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

g. Facilities that change their own bulbs should accumulate them in the original box (to prevent breakage) and label it as “Universal Waste.” Generators may request pickup electronically at: http://emis/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 EMB. 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 storage areas shall include adequate spill containment (e.g., spill containment pallets).

c. Outdoor oil storage areas shall have a spill response plan posted if the storage area contains more than 220 gallons (e.g., four 55-gallon drums).

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

e. To dispose of used oils, generators should request pickup electronically through the Waste Disposal Tracking System at http://hazwaste/ or call 5-DRUM.

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 EMB to ensure that appropriate sampling is performed 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 EMB.

## 7.3 RESPONSIBILITIES

### 7.3.1 Facility Environmental Coordinators (FECs) shall:

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

b. Notify EMB prior to establishing or modifying an SAA.

c. Review and approve completed Waste Material Data Sheets in the Waste Disposal Tracking System.

d. Ensure that all personnel who handle HW or oil attend the mandatory annual training.

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

f. Participate with EMB in conducting waste minimization P2 opportunity assessments.

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

h. Contact EMB 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 Environmental Management Branch (EMB) 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 seeks out and implements opportunities to reduce or eliminate waste generation through P2 methodologies and the EMS.

### 7.3.3 Organizational Unit Managers shall:

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.

### 7.3.4 Program Managers/Project Initiators shall:

a. Contact EMB 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.

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

### 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 the mandatory Waste Management Training at least annually if job requires handling of HW or oil.

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 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 EMB.

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
Oil/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 have 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 LaRC EMB.

## 8.3 RESPONSIBILITIES

### 8.3.1 Facility Environmental Coordinator (FECs) 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 EMB.

b. Contact EMB 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 EMB.

### 8.3.2 The Environmental Management Branch (EMB) 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 EMB 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 Technical Representatives (COTRs) 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 of time, not to exceed 30 days, from the date of removal from service.

(a) Storage shall be coordinated with EMB to ensure proper storage practices.
(b) A notation shall be attached to the PCB item or PCB container housing which 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 must be drained before being transported off the Center for disposal. The only exception to this is transformers or capacitors that can be contained without modification in a drum or other leak proof container. EMB must 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 EMB:

(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. EMB will review the manifest prior to approval and signature.

**NOTE:** Oil containing greater than 2 ppm PCBs shall be disposed of at incinerators or burners or at 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 EMB.
(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 EMB.

# 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 23.00 41, "Langley Safety and 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 The Commonwealth of Virginia regulations parallel the 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 61, and should be managed in accordance with NASA LaRC SpecsIntact Section 01 35 23.00 41, "Langley Safety and 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 Configuration Management On-Line (CMOL)

9.2.3.1 Records of LaRC facilities that have friable ACBM are included in the Center's Configuration Management On-Line (CMOL) system (https://cmol.ndc.nasa.gov/), in the form of Asbestos Configuration Management Reports.

9.2.3.2 The CMOL system is used by LaRC's Safety and Industrial Hygiene personnel, as well as by FECs and FSHs. Access to CMOL requires a user identification and password to obtain any documentation. The Asbestos Configuration Management Reports are used to document changes in ACBM condition, asbestos removal projects, and overall, to minimize exposure of facility occupants to asbestos. Additional information can be found in LPR 1740.4, "*Facility System Safety Analysis and Configuration Management*."

### 9.2.4 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 Environmental Management Branch (EMB) 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.

### 9.3.2 Facility Safety Heads (FSH) shall:

a. Have access to the CMOL system if the facility has ACBM.

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

c. 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 (SFAB) shall:

a. Conduct inspections to identify ACBM and assess condition.

b. Recommend remedial action as necessary; periodically re-inspect and reassess.

c. Provide signs and labels to facility personnel.

d. Approve Asbestos Safety Permits and contractor removal procedures.

e. Monitor and inspect abatement operations as appropriate.

### 9.3.4 Research Operations, Maintenance, and Engineering (ROME) shall:

a. Use the CMOL system to maintain/access LaRC's ACBM location inventory.

b. Review work requests, facility renovation/demolition plans, and other projects for asbestos involvement. Refer to SFAB as appropriate.

c. Prepare Asbestos Safety Permits for asbestos work and forward to SFAB.

d. Notify SFAB and FSHs of changes of ACBM inventory and condition.

### 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 Technical Representatives (COTRs) 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 23.00 41, "Langley Safety and Environmental Requirements."

b. Submit job-specific procedures to EMB before starting work. No work shall begin without prior approval from EMB.

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

d. Notify the appropriate regulatory agencies in accordance with 16 VAC 25-20-30. Notification is required as follows:

   (1) Twenty days prior to beginning work, notify the Virginia Department of Labor and Industry for operations that involve removal of 10 or more linear feet of friable thermal insulation or any other ACBM that becomes friable during handling.
   (2) Ten days prior to beginning work, notify the EPA for operations that involve the removal of 160 or more square feet of ACBM or 260 or more linear feet of ACBM.

e. At least 2 days prior to shipment of asbestos off LaRC property, submit a completed asbestos waste manifest to EMB at Mail Stop 133 , Facility 1195. EMB only signs 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.

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

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

h. Provide EMB 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 EMB within 35 days from the date the transporter accepted the asbestos waste.

# 10 ENVIRONMENTAL NOISE ABATEMENT

## 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 noise sources located at LaRC include wind tunnels, compressor stations, and substations. Most of the wind tunnels are closed-loop, the noise generated is contained largely within the facility, 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 The goal of the Noise Control Act of 1972 is to protect all Americans from noise that jeopardizes their health and welfare. This legislation was designed to establish noise standards and to regulate noise emissions caused by commercial products such as transportation and construction equipment. The Act also specifies that Federal agencies should comply with Federal, State, and local requirements regarding the control and abatement of noise. Military weapons and combat-use equipment are exempt from regulation.

10.2.2 Many State and local governments have developed their own environmental noise regulations as a result of the Quiet Communities Act of 1978. This statute amended the Noise Control Act by providing State and local governments with funds to promote the development of noise control programs on a local level, as long as the actions at the local level are consistent with Federal regulations.

10.2.3 The City of Hampton and the City of Poquoson have enacted Noise Ordinances which 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 which disturbs the public peace and welfare. NASA LaRC's Industrial Hygiene staff monitors noise levels both inside and outside of the Center facilities to ensure excessive noise does not harm human health or the environment.

10.2.4 The OSHA Noise Standards establish regulations and guidelines for workplace noise pollution. 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.

## 10.3 RESPONSIBILITIES

### 10.3.1 Facility Environmental Coordinators (FECs) 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. Consult with the LaRC Safety and Facility Assurance Branch (SFAB) and, as needed, EMB regarding operations that generate, or have the potential to generate, high noise levels.

### 10.3.2 The Environmental Management Branch (EMB) shall:

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

b. Serve as 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 (SFAB) shall:

a. Provide assistance as needed to EMB regarding environmental noise issues at the Center.

b. Perform additional responsibilities as defined in LPR 2710.1, "*Langley Research Center Noise Control and Hearing Conservation Program*."

### 10.3.4 Center Personnel and On-site Contractors shall:

a. Maintain noise levels at an acceptable level.

b. Address concerns about environmental noise levels to EMB.

# 11 RECYCLING

## 11.1 GENERAL

11.1.1 This chapter provides information, procedures, and responsibilities regarding the recycling program at NASA LaRC. EMB keeps metrics on the quantity of materials collected, the 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 webpage is located at http://emis/recycling.htm.

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 the 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 Recycling at Federal facilities is mandated by Executive Order 13423, "*Strengthening Federal Environmental, Energy, and Transportation Management*." LaRC is committed to reducing solid waste and diverting waste from landfills. The agency set a solid waste diversion rate goal of 50 percent by 2015.

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 EMB. When an individual container is full it is emptied into the large blue recycling container located at the facility's central collection area. Central collection containers are emptied by EMB on a regular schedule or on a call-in basis, based on the facility's generation rate (the schedule is available on the EMB website: http://emis/recycling.htm). Personnel may call EMB at extension 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 EMB also collects and recycles "mixed paper," i.e. paper of mixed colors other than white. Center personnel designate and label containers in their facilities for the collection of mixed paper. When a container is full it is emptied into the large green container located at the facility's central collection area. These containers are provided by EMB and are emptied on a regular schedule or on a call-in basis, based on the facility's generation rate (the schedule is available on the EMB website: http://emis/recycling.htm). Personnel may call EMB at 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 Stapled 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 EMB. 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 EMB collects paper for recycling (the schedule is available on EMB website: http://emis/recycling.htm). Personnel may also call EMB at 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)<br>Cardboard with food contamination (e.g., pizza boxes) |

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

11.2.5.1 EMB 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 should 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 EMB at 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 should call the Property Disposal Warehouse at extension 46339 to request pickups or a recycling container. Facilities that generate small amounts of scrap metal may use any type of collection container that is 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 EMB on a regular schedule. Personnel may call EMB at 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 EMB on a regular schedule. Personnel may call EMB at 5-DRUM to schedule a pickup.

11.2.9 **Management of Recyclable Items: Tyvek Suits**

11.2.9.1 EMB collects and recycles Tyvek suits (see item 11.2.9.2 below for exceptions). Facilities that use Tyvek suits may collect used suits in a cardboard box. Once the box is full, personnel may call EMB at 5-DRUM to schedule a pickup.

11.2.9.2 Suits that are completely ripped are not recyclable. Suits used for asbestos, heavy metals, or lead-based paint work are not recyclable and must be managed as a potential regulated waste.

## 11.3 RESPONSIBILITIES

### 11.3.1 Facility Environmental Coordinators (FECs) 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 EMB to arrange for specific training.

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

### 11.3.2 The Environmental Management Branch (EMB) 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 Organizational Units in implementing the recycling program in order to meet or exceed established goals.

g. Collect monthly metrics on the recycling program and make these available to Center personnel on the EMB website.

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 (LMB) 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 EMB with monthly detailed estimates of usage categories for each metal collected.

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

e. Provide copies of the scrap metal delivery order tickets to EMB within 3 working days of the end of each month.

f. 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 EMB with a quarterly report of the type and quantity of C&D debris that is reused, recycled, or composted.

**11.3.5 Contracting Officer's Technical Representatives (COTRs) 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 EMB with a quarterly 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 that is distributed by the FEC or available on the EMB recycling website: http://emis/recycling.htm.

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

d. Inform the FEC or EMB 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.
h. Products with low or no toxic or hazardous constituents.

12.1.3 EMB compiles information for purchases of EPA-designated recovered material items and UDSA designated biobased products annually. The LaRC green purchasing information webpage is located at http://emis/ap.htm.

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 Form (NF) 1707, *"Special Approvals and Affirmations of Requisitions,"* is required by NASA FAR Supplement, section 1804.7301, to document procurement request coordination. 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 under the "Environmental" section of the form. A NF 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 13423, "*Strengthening Federal Environmental, Energy and Transportation Management*," requires in agency acquisitions of goods and services:

a. use of sustainable environmental practices, including acquisition of biobased, environmentally preferable, energy-efficient, water-efficient, and recycled-content products, and
b. use of paper of at least 30 percent post-consumer fiber content.

It also requires agencies to acquire EPEAT-registered electronic products for at least 95% of electronic product acquisitions, unless there is no EPEAT standard for the product.

12.2.8 Executive Order 13514, "*Federal Leadership in Environmental, Energy, and Economic Performance*," requires that 95% of new contract actions, such as task and delivery orders, are for products and services that meet the agency's performance requirements and are: energy efficient; water-efficient; biobased; environmentally preferable; non-ozone depleting; contain recycled content; non-toxic or less toxic. It also directs agencies to promote electronics stewardship by ensuring procurement of Energy Star and FEMP-designated electronic equipment and procurement preference for EPEAT-registered electronic products. EO 13514 instructs facilities to reduce printing paper use and acquire uncoated printing and writing paper containing at least 30 percent post-consumer fiber content.

12.2.9 The Federal Acquisition Regulation (FAR) imposes the 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."*

## 12.3 TRAINING

12.3.1 All personnel that 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 REQUEST FOR WAIVER

12.4.1 Direct procurement of EPA-designated (CPG) materials that do not meet the designated minimum recovered material standards require a waiver, which must be approved by the EMB prior to purchase. Electronic waivers are found on the EMB website at http://emis/apwaiver.htm.

12.4.2 Products containing the designated recovered material content and meeting NASA's preference standards for EPA-designated products must be purchased unless the following exceptions apply and are documented in the Request for Waiver process:

a. Use of minimum content standards would result in inadequate competition.
b. Products meeting EPA guidelines are only available at an unreasonable price, based on Life Cycle Cost Analysis.
c. Products meeting EPA guidelines do not meet quality/performance specifications or standards.
d. Products meeting EPA guidelines are not available within a reasonable timeframe.

12.4.3 Micropurchases (purchase card purchases below the $3,000 threshold) are not subject to waiver documentation requirements, but the purchases must meet the EPA-designated requirements regarding minimum recovered content.

12.4.4 On applicable NF 1707s (with respect to the "EPA-Designated/Recovered Materials" subsection), approved waivers must be included as part of the documented coordination before the NF 1707 can be completed.

12.4.5 Refer to NPR 8530.1, section 3.2.3 for more information and a complete description of the waiver process.

## 12.5 RESPONSIBILITIES

### 12.5.1 The Environmental Management Branch (EMB) shall:

a. Implement the requirements of NPR 8530.1.

b. Maintain a green purchasing awareness program and update the program as necessary to include newly designated items under the EPA CPG and USDA BioPreferred program.

c. Review and approve Request for Waiver documentation.

d. Compile the Center's annual Green Purchasing Report.

e. Provide support, guidance, and assistance to the Office of Procurement and Center personnel in interpreting and implementing green purchasing procedural requirements as covered in applicable Agency guidelines and various federal regulations.

### 12.5.2 Program Managers/Project Initiators shall:

a. Understand the requirements of NPR 8530.1.

b. Be knowledgeable of the EPA-designated materials list and the Request for Waiver process, as well as other green purchasing requirements as covered in Section 12.1 and 12.2 of this LPR.

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 statements of work or specifications which 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.

**12.5.3 Contracting Officer's Technical Representatives (COTRs) shall:**

a. Collect the necessary information for the annual Green Purchasing Report or other required reports and provide the information to EMB in a timely manner.

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

**12.5.4 Organizational Unit Managers shall:**

a. Collect the necessary information for the annual Green Purchasing Report or other required reports and provide the information to EMB in a timely manner.

b. Review specifications and amend specifications, as appropriate, to encourage green purchasing.

**12.5.5 The Office of Procurement shall:**

a. Implement the requirements of NPR 8530.1.

b. Be knowledgeable of the EPA-designated materials list and the Request for Waiver process, as well as other green purchasing requirements as covered in Section 12.1 and 12.2 of this LPR.

c. Ensure that the acquisition of products and services covered by applicable federal guidelines are conducted in accordance with the requirements of RCRA, 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 should be considered in acquisition planning for all procurements and in the evaluation and award of contracts, as appropriate.

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 the NF 1707, *"Special Approvals and Affirmations of Requisitions."*

f. Collect the necessary information for the annual Green Purchasing Report or other required reports and provide the information to EMB 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.

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

**12.5.6 Purchase Request Initiators and Credit Card Holders shall:**

a. Understand the requirements of NPR 8530.1.

b. Be knowledgeable of the EPA-designated materials list and the Request for Waiver process, as well as other green purchasing requirements as covered in Section 12.1 and 12.2 of this LPR.

c. Consult early with the Office of Procurement in the acquisition process to determine how best to integrate green purchasing into the purchase requirement and provide assistance with the development of the NF 1707, *"Special Approvals and Affirmations of Requisitions."*

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

**12.5.7 Center Personnel and On-site Contractors shall:**

a. Be knowledgeable of the EPA-designated materials list and USDA designated biobased categories and utilize these items whenever practical.

b. Prepare Request for Waiver if an EPA-designated item is not available within a reasonable time frame, does not meet appropriate performance standards, or is not available at a reasonable price.

# 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

The Endangered Species Act of 1973 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.

### 13.2.2 Migratory Bird Treaty Act (MBTA)

13.2.2.1 The Migratory Bird Treaty Act 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 is directed to develop and implement a Memorandum of Understanding (MOU) with the U.S. Fish and Wildlife Service (USFWS) that shall promote the conservation of migratory bird populations.

### 13.2.3 Wetlands

13.2.3.1 Virginia Water Protection (VMP) Permit Program

13.2.3.1.1 Wetlands Management in Virginia consists of a comprehensive set of laws and regulations including permit requirements from the Clean Water Act and the Rivers and Harbors Appropriation Act of 1899, which Virginia DEQ administers through the VWP Permit Program.

13.2.3.1.2 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 on or after October 1, 2001, conducting the following activities in a wetland:

a. New activities to cause draining that significantly alters or degrades existing wetland acreage or functions.

b. Filling or dumping.

c. Permanent flooding or impounding.

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

13.2.3.1.3 This includes any project that requires a permit under 33 U.S.C. § 1344, also known as a Clean Water Act "Section 404" permit, or a permit under 33 U.S.C. § 403, also known as the Rivers and Harbors Appropriation Act of 1899 "Section 10" permit.

13.2.3.2 33 U.S.C. § 1344 requires a permit 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.

13.2.3.3 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.

13.2.3.4 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).

13.2.3.5 The Virginia Tidal Wetlands Act requires a permit from the Virginia Marine Resources Commission (VMRC) for any activity that would use or develop a tidal wetland.

### 13.2.4 Chesapeake Bay Preservation Act

13.2.4.1 The Bay Act Program is designed to improve water quality in the Chesapeake Bay and its tributaries by requiring the use of effective conservation planning and pollution prevention practices when using and developing environmentally sensitive lands. At the heart of the Bay Act is the concept that land can be used and developed in ways that minimize negative impacts on water quality. Generally, there are two types of land features: those that protect and benefit water quality (Resource Protection Areas, or RPAs) and those that, without proper management, have the potential to damage water quality (Resource Management Areas, or RMAs). By carefully managing land uses within these areas, local governments help reduce the water quality impacts of nonpoint source pollution and improve the health of the Chesapeake Bay.

13.2.4.2 LaRC has several RPAs. RPAs consist of a 100-foot buffer area landward of any (1) tidal wetland, (2) Nontidal wetlands connected and contiguous to tidal wetlands or water bodies with perennial flow, (3) tidal shoreline, and/or (4) Water bodies with perennial flow (stream, river, creek, etc).

### 13.2.5 Other Natural Resources

13.2.5.1 Trees and shrubs are a precious natural resource and LaRC is dedicated to the preservation and management of these resources. Tree removal or significant pruning activities are prohibited without the consent of EMB.

13.2.5.2 EMB should be consulted on planting, pruning, maintaining and removing trees within LaRC as may be necessary to ensure safety or to preserve or enhance the natural environment.

13.2.5.3 Low impact design and xeriscape principles should be the preferred design techniques when new landscapes are being planned. Any new plantings (trees, shrubs, flowers, etc.) should utilize native species whenever possible.

13.2.5.4 During and after mowing activities, grass clippings should be collected for disposal/composting or left on the grass to decompose. Grass clippings should not be blown or swept into the street and into storm drains. This would constitute an illicit discharge to the stormwater system per Section 5.2.2 of this document.

## 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 EMB of potential threats or projects that may adversely affect natural resources such as birds, trees, wildlife, etc.

**13.3.2 The Environmental Management Branch (EMB) shall:**

a. Review projects for adverse impacts to natural resources.

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

c. Monitor updates and/or changes to endangered and threatened wildlife and plant listings to determine if LaRC is impacted.

d. Update findings in the LaRC Environmental Resources Document.

e. Assist the project initiator as required with issues related to natural resources.

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

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

h. Review projects and actions to ensure that proper tree management is being coordinated.

i. Maintain an accurate inventory of all Center wetlands, including maps and appropriate descriptions.

j. Serve as point of contact with external regulatory agencies regarding wetlands issues at LaRC.

k. Validate the need for permit applications.

l. Prepare wetland permit applications and maintain wetlands permits on file.

m. Ensure wetland inventories are included in the Center Master Plan.

n. Assist ground maintenance personnel with selecting appropriate native species of plants and trees for planting.

o. Determine if work is occurring in a RPA and notify the correct regulators if applicable.

p. For work occurring in wetlands, complete a Joint Permit Application (JPA) and submit to the VMRC.

**13.3.3 Program Managers/Project Initiators shall:**

a. Coordinate with EMB early in the project development for activities that could potentially affect natural resources.

b. Complete a LF 461 for each proposed action that may impact natural resources. Coordinate with EMB for wetland permit applications if applicable.

c. Notify EMB if tree protection, tree removal, or tree alteration are anticipated in a project design.

d. Notify EMB if work is within 100 feet of a waterway (in a 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. Use only EPA approved products. Pesticide applications should be done by a certified pesticide applicator and in accordance with the law.

c. Notify EMB 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 impacts to natural resources.

# 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 in order 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 EMB.

14.1.2 A number of spills may be caused by equipment failure or by 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 that 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 that is *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 is a violation of applicable water quality standards.

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

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

e. Risk of personnel injury.

## 14.5 RESPONSIBILITIES

### 14.5.1 Facility Environmental Coordinators (FECs) 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) that are presented by EMB.

### 14.5.2 The Environmental Management Branch (EMB) 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 Technical Representatives (COTRs) 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.

d. Post a Spill Response Plan at each outside site that contains 220 gallons (4 x 55-gallon drums) or more of oil and/or hazardous materials. A template to generate a

Spill Response Plan can be obtained at http://emis/cmts/hazwaste/spill/spill_response.htm.

e. 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 drain lines 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.
(3) Ensure that adequate spill absorbent materials (e.g. spill kits) are available and are located near oil and hazardous material storage areas.
(4) Post a Spill Response Plan at each outside site that contains 220 gallons (4 x 55-gallon drums) or more of oil and/or hazardous materials. A template to create a Spill Response Plan can be obtained at: http://emis/cmts/hazwaste/spill/spill_response.htm.
(5) 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 obtained at the following website: http://www.epa.gov/ceppo/pubs/title3.pdf.

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 website: http://www.epa.gov/ceppo/pubs/title3.pdf. 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

Facilities that have hazardous chemicals are required by the Occupational Safety and Health Act to maintain Material Safety Data Sheets (MSDSs) for the hazardous chemicals. 42 U.S.C. § 11021-11022 require facilities that have MSDSs for chemicals held above certain quantities to:

a. Submit copies of MSDSs or a list of MSDS chemicals 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 Toxic Release Inventory

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

15.4.2.2 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 (FECs) 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 Environmental Management Branch (EMB) 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 Facility Safety Heads (FSHs) shall:**

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

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

**15.5.4 Program Managers/Project Initiators shall:**

Ensure that contracts for projects involving hazardous materials include requirements for the contractor to provide hazardous material usage data to EMB by the end of the project if short-term, or an annual basis by January 31st if long-term.

**15.5.5 Contracting Officer's Technical Representatives (COTRs) shall:**

Ensure that contractors submit usage data to EMB 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 (e.g., materials used by subcontractors).

# 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 for 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 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 112 (Oil Pollution Prevention) and 40 CFR 122 (The National Pollutant Discharge Elimination System).

### 16.2.2 State Regulations

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/tanks/stortnks.html

### 16.2.3 LaRC Requirements

All petroleum storage tank systems must meet the following design and maintenance specifications:

a. Tanks must retain structural integrity for their operating life.

b. Tanks must be installed and repaired using nationally recognized standards and industry codes.

c. Owners and operators must follow proper tank filling procedures.

d. New and upgraded storage tank systems must use devices that prevent overfills and control or contain spills.

e. USTs must be closed by either removing them from the ground or leaving them in place after being drained, cleaned and filled with inert material.

f. ASTs must be completely drained of material prior to removal.

g. Any suspected releases must 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.

h. All petroleum tank systems must meet the current regulatory requirements.

i. New tanks must be registered with the State and closed tanks must have closure certification from DEQ.

## 16.3 RESPONSIBILITIES

### 16.3.1 Facility Environmental Coordinators (FECs) shall:

a. Ensure all mandatory weekly and/or monthly aboveground storage tank (AST) 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 Environmental Management Branch Head at Mail Stop 133 or Fax 864-7728.

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

c. Notify EMB if any USTs or ASTs will be installed, removed, or closed at their facility.

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

### 16.3.2 The Environmental Management Branch (EMB) 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. 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 EMB 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 EMB.

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 that are 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) and a map showing their location is available at: http://emis/cultural/historic_property.htm.

17.1.3 NASA LaRC has one archaeological site listed in the National Register and 11 sites that are eligible for listing. The inventory of LaRC's archaeological sites is maintained by the LaRC HPO and a mapping showing the location of the sites is available at: http://emis/cultural/historic_property.htm.

## 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 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 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.

## 17.3 RESPONSIBILITIES

### 17.3.1 The Environmental Management Branch (EMB) 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.

### 17.3.2 The LaRC Historic Preservation Officer shall:

a. Maintain overall responsibility for the Center’s historic and 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 nomination 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 five 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. Utilize LaRC’s Geographic Information System (GIS) and NETS to manage LaRC's cultural resources and respond to NASA HQ data calls in a timely manner.

i. Ensure that artifacts recovered during archaeological survey work are properly curated and sent to VDHR for archiving.

**17.3.3 The Logistics Management Branch (LMB) 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.

**17.3.4 Program Managers/Project Initiators shall:**

a. Coordinate with the HPO and EMB for the following:

(1) Projects involving major modification and/or demolition of facilities or structures that are eligible for listing in the National Register.
(2) Projects that involve digging and excavation greater than six inches deep.

b. Complete LF 461 and submit design to the HPO and EMB for any projects that may affect historic and cultural resources at the Center.

# 18 HAZARDOUS MATERIALS MANAGEMENT

## 18.1 GENERAL

18.1.1 The purpose of this chapter is to provide information on applicable regulatory requirements and procedures related to hazardous materials management 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 All Center personnel and on-site contractors are required to use the web-based Chemical Material Tracking System (CMTS) when managing their hazardous material inventories. Proper use of CMTS provides EMB with significant data necessary for 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 Material Safety Data Sheet (MSDS) library to allow employees to understand the hazards of materials they handle or encounter at the Center. The information in the CMTS inventories provides EMB with a master list of hazardous material storage sites. This information is available to the local fire department to aid them in identifying the storage location of hazardous chemicals in the event of a fire emergency.

18.1.3 Since September 11, 2001, the Research and Special Programs Administration (RSPA) of the DOT has worked closely with Federal, State, and local government agencies, to improve the security of hazardous materials in the transportation system. RSPA requires that shippers and carriers of certain highly hazardous materials develop and implement security plans. In accordance with the RSPA requirements, LaRC has developed a Hazardous Material and Hazardous Waste (HM/HW) Security Plan. The plan includes measures to verify background information for employees and contractors with access to hazardous materials and HW; measures to address unauthorized access; and measures to address the assessed security risks of material and waste shipments while in transit. The plan is available by contacting EMB.

## 18.2 REQUIREMENTS

18.2.1 Hazardous materials include any item or chemical that is a “health hazard” or a “chemical hazard” as defined by OSHA in 29 CFR 1910.1200. Any item reportable under the Emergency Planning and Community Right-to-Know Act (EPCRA) would also be considered a hazardous material. Additionally, the Clean Air Act requires the Center to keep a current air emissions inventory for activities conducted at the Center (see Chapter 6). The CMTS provides most of the pertinent data necessary to generate both the EPCRA reports and air emissions inventory. The CMTS is required to be used by all LaRC and contractor personnel to comply with the inventory requirements in both environmental statutes, LPR 1710.12, “*Potentially Hazardous Materials – Hazard Communication Standard,”* and LPR 1710.3, *“Chemical Hygiene Plan.”*

18.2.2 The MSDS library is a key component in the generation of environmental compliance reports. MSDSs for materials currently used at the Center are maintained and available through the CMTS. MSDSs are required for all hazardous materials on the Center and the MSDSs are required to 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. Additional information regarding environmental and safety requirements for managing hazardous materials can be found in the following regulations:

a. 40 CFR 355, *Emergency Planning and Notification*

b. 40 CFR 370, *Hazardous Chemical Reporting; Community Right-To-Know*

c. 40 CFR 372, *Toxic Chemical Release Reporting; Community Right-To-Know*

d. 29 CFR 1910.1200, *Hazard Communication*

*e.* 29 CFR 1960 *Basic Program Elements for Federal Occupational Safety and Health*

18.2.3 Procedures for the approval, acquisition, and management of hazardous material inventories are outlined in LMS-CP-4759, "*Acquisition of Hazardous Materials*," which is available at: https://lms.larc.nasa.gov/admin/documents/4759.pdf.

18.2.4 Additional requirements for chemical management can be found in LPR 1710.12, "*Potentially Hazardous Materials – Hazard Communication Standard*" and LPR 1710.13, "*Chemical Hygiene Plan*," which are available in LMS. If hazardous materials are poorly managed, they may have to be disposed as HW (see Chapter 7). If mismanaged hazardous materials result in additional HW disposal costs, the responsible organization may be charged for the disposal.

18.2.5 Executive Order 13423, "*Strengthening Federal Environmental, Energy and Transportation Management*," requires Federal agencies to reduce the quantity of toxic and hazardous chemicals and materials acquired, used or disposed in order to promote pollution prevention and sustainability.

## 18.3 RESPONSIBILITIES

### 18.3.1 Facility Environmental Coordinators (FECs) shall:

a. Either appoint or serve as their facility's Hazardous Material Inventory Manager and ensure duties are performed as specified in Section 18.3.7 of this chapter.

b. Ensure their facility stores all hazardous materials in accordance with LPR 1710.12 and LPR 1710.13.

c. Ensure that facility personnel responsible for hazardous materials management 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 EMB in conducting hazardous material minimization or substitution P2 opportunity assessments.

h. Identify, develop and implement P2 projects. Substitute less toxic materials when practical to use them.

**18.3.2 The Environmental Management Branch (EMB) shall:**

a. Ensure that hazardous material management at the Center is carried out in an environmentally responsible manner. EMB is the functional proponent of the CMTS and has primary responsibility to update and maintain the CMTS system.

b. Review and approve Langley Form 44s (Hazardous Materials – Procurement, Inventory and Storage Record).

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 Transportation Security Plan and updates as necessary.

**18.3.3 Program Managers/Project Initiators shall:**

Ensure that contracts for projects involving hazardous materials include requirements for the contractor to provide hazardous material usage data to EMB by the end of the project if short-term, or on an annual basis by January 31$^{st}$ if long-term.

**18.3.4 Contracting Officer's Technical Representatives (COTRs) shall:**

Ensure that contractors provide EMB with a list of chemicals and hazardous materials used on-site but not recorded in CMTS (e.g., materials used by subcontractors) at the end of the project (if a short-term project) or by January 31 of each year (if a longer term project).

**18.3.5 Facility Safety Heads (FSHs) 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 Langley Form 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 MSDSs are obtained for all hazardous materials prior to purchasing or receiving the items.

e. Assist the Hazardous Material Inventory Manager in maintaining an accurate inventory of hazardous materials.

f. Ensure hazardous materials are stored in accordance with LPR 1710.12 and LPR 1710.13.

**18.3.6 The Logistics Management Branch (LMB) shall:**

a. Provide the following information to EMB on an annual basis for all materials requiring MSDSs 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.

**18.3.7 Hazardous Material Inventory Managers shall:**

a. Manage 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 http://emis/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 MSDS and that a copy of the MSDS has been submitted to EMB for entry into the online MSDS 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.

**18.3.8 The Safety and Facility Assurance Branch (SFAB) shall:**

a. Review and approve or reject Langley Form 44s.

b. Notify EMB of concerns that pertain to hazardous materials management.

c. Provide technical and administrative guidance to LaRC personnel for the safe use of hazardous materials.

d. Assist personnel in the interpretation of MSDS technical data.

e. Supply MSDSs, if available, from MSDS databases or assist in the acquisition and technical interpretation of proprietary or trade secret MSDS information.

f. Perform the following duties as the Langley Form 44 Coordinator:

(1) Review Langley Form 44s to ensure the electronic MSDSs in CMTS correspond to the hazardous materials being requested, and that the MSDSs are accurate and current.
(2) Add new MSDSs to the CMTS library, as appropriate.
(3) Notify EMB of concerns that pertain to the MSDS library in CMTS.

**18.3.9 Center Personnel and On-site Contractors shall:**

a. Ensure that the FEC, FSH, and Hazardous Material Inventory Manager 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 Hazardous Material Inventory Manager are notified when hazardous materials are expended or require disposal so the materials can be tracked in CMTS.

c. Use the electronic Langley Form 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. Whenever possible, identify and substitute less toxic materials when practical to use them.

## Appendix A - Glossary of Terms

A.1 **Archeological Resources Protection Act.** Protects archeological resources and sites on public lands and Indian lands.

A.2 **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.

A.3 **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.

A.4 **Categorical Exclusion (CatEx).** "Categorical Exclusion" means a category of actions which do not individually or cumulatively have a significant effect on the human environment and which 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.

A.5 **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.

A.6 **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.)

A.7 **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.

A.8 **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.

A.9 **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.

A.10 **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.

A.11 **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.

A.12 **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.

A.13 **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.

A.14 **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.

A.15 **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.

A.16 **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.

A.17 **Environmental Impact Statement (EIS).** A document that is prepared for an action which may have significant impact on the quality of the human environment or which 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.

A.18 **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.

A.19 **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.

A.20 **Executive Order 13221 (August 2, 2001).** ***Energy Efficient Standby Power Devices.*** Directs Federal agencies to purchase products that use minimal standby power when possible.

A.21 **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.

A.22 **Executive Order 13423 (January 24, 2007).** ***Strengthening Federal Environmental, Energy and Transportation Management.*** Requires Federal agencies to conduct their environmental, transportation and energy-related activities under the law in support of their respective missions in an environmentally, economically and fiscally sound, integrated, continuously improving, efficient and sustainable manner.

A.23 **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.

A.24 **Executive Order 13514 (October 5, 2009).** ***Federal Leadership in Environmental, Energy, and Economic Performance*****.** Directs Federal agencies to lead by example in safeguarding the health of the environment and creating and promoting a clean energy economy by establishing an integrated strategy towards sustainability in the Federal Government and making reduction of greenhouse gas emissions a priority. Expands on the energy reduction and environmental performance requirements for Federal agencies identified in Executive Order 13423.

A.25 **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

A.26 **Farm Security and Rural Investment Act of 2002.** Requires Federal agencies to establish procurement programs for the purchase of biobased products.

A.27 **Federal Acquisition Regulation (FAR).** Establishes requirements for executive agencies when acquiring goods and services.

A.28 **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.

A.29 **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.

A.30 **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.

A.31 **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.

A.32 **Noise Control Act of 1972.** Establishes noise standards, and regulates noise emissions from commercial products, such as transportation and construction equipment.

A.33 **Notice of Intent.** A notice that an EIS will be prepared and considered. It summarizes issues uncovered in the EA, if one was done. 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.

A.34 **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.

A.35 **Quiet Communities Act of 1978.** Established a nationwide "Quiet Communities Program," and tightened aircraft noise regulations, setting specific decibel limits for civil aircraft.

A.36 **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.

A.37 **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.

A.38 **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.

A.39 **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.

A.40 **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.

A.41 **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

| | | |
|---|---|---|
| B.1 | ACBM | Asbestos containing building materials |
| B.2 | ACOE | Army Corps of Engineers |
| B.3 | ASHRAE | American Society of Heating, Refrigerating and Air-Conditioning Engineers |
| B.4 | AST | Aboveground Storage Tank |
| B.5 | BMP | Best Management Practice |
| B.6 | C&D | Construction and Demolition |
| B.7 | CAA | Clean Air Act |
| B.8 | CatEx | Categorical Exclusion |
| B.9 | CEQ | Council on Environmental Quality |
| B.10 | CERCLA | Comprehensive Environmental Response, Compensation and Liability Act |
| B.11 | CFR | Code of Federal Regulations |
| B.12 | CMOL | Configuration Management On-Line |
| B.13 | CMTS | Chemical Material Tracking System |
| B.14 | COTR | Contracting Officer's Technical Representative |
| B.15 | CP | Center Procedures |
| B.16 | CPG | Comprehensive Procurement Guidelines |
| B.17 | CRMP | Cultural Resource Management Plan |
| B.18 | CWA | Clean Water Act |
| B.19 | dB | Decibels |
| B.20 | dBA | A-weighted decibels |
| B.21 | DEQ | Department of Environmental Quality |
| B.22 | DOT | Department of Transportation |
| B.23 | EA | Environmental Assessment |
| B.24 | EHS | Extremely Hazardous Substance |
| B.25 | EIS | Environmental Impact Statement |
| B.26 | EISA | Energy Independence and Security Act |
| B.27 | EMCS | Energy Management Control System |
| B.28 | EMS | Environmental Management System |
| B.29 | EMB | Environmental Management Branch |
| B.30 | EPA | Environmental Protection Agency |
| B.31 | EPACT | Energy Policy Act |
| B.32 | EPEAT | Electronic Product Environmental Assessment Tool |
| B.33 | EPCRA | Emergency Planning and Community Right-To-Know Act |
| B.34 | EEPM | Environmental and Energy Program Manual |
| B.35 | ERD | Environmental Resource Document |
| B.36 | EWEC | Energy and Water Efficiency Committee |
| B.37 | FAR | Federal Acquisition Regulation |
| B.38 | FEC | Facility Environmental Coordinator |
| B.39 | FEMA | Federal Emergency Management Agency |
| B.40 | FEMP | Federal Energy Management Program |
| B.41 | FONSI | Finding of No Significant Impact |

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|---|---|---|
| B.42 | FSH | Facility Safety Head |
| B.43 | GIS | Geographic Information System |
| B.44 | HAZWOPER | Hazardous Waste Operations Emergency Response |
| B.45 | HM/HW | Hazardous Material and Hazardous Waste |
| B.46 | HPO | Historic Preservation Officer |
| B.47 | HRSD | Hampton Roads Sanitation District |
| B.48 | HVAC | Heating Ventilating and Air Conditioning |
| B.49 | HW | Hazardous Waste |
| B.50 | ISCP | Integrated Spill Contingency Plan |
| B.51 | JPA | Joint Permit Application |
| B.52 | LAFB | Langley Air Force Base |
| B.53 | LAPD | Langley Policy Directive |
| B.54 | LaRC | Langley Research Center |
| B.55 | LED | Light Emitting Diode |
| B.56 | LEED | Leadership in Energy and Environmental Design |
| B.57 | LEPC | Local Emergency Planning Committee |
| B.58 | LF | Langley Form |
| B.59 | LMB | Logistics Management Branch |
| B.60 | LMS | Langley Management System |
| B.61 | LPR | Langley Procedural Requirement |
| B.62 | MS4 | Small Municipal Separate Storm Sewer Systems |
| B.63 | MSDS | Material Safety Data Sheet |
| B.64 | NASA | National Aeronautics and Space Administration |
| B.65 | NASM | National Air and Space Museum |
| B.66 | NEPA | National Environmental Policy Act |
| B.67 | NF | NASA Form |
| B.68 | NHPA | National Historic Preservation Act |
| B.69 | NOx | Nitrogen Oxides |
| B.70 | NPD | NASA Policy Directive |
| B.71 | NPR | NASA Procedural Requirement |
| B.72 | NSN | National Stock Number |
| B.73 | OCC | Office of Chief Counsel |
| B.74 | OSHA | Occupational Safety and Health Administration |
| B.75 | OUM | Organizational Unit Manager |
| B.76 | P2 | Pollution Prevention |
| B.77 | PCB | Polychlorinated Biphenyl |
| B.78 | ppm | Parts per million |
| B.79 | PR | Purchase Requisition |
| B.80 | R&D | Research and Development |
| B.81 | RCRA | Resource Conservation and Recovery Act |
| B.82 | REC | Record of Environmental Consideration |
| B.83 | RMA | Resource Management Area |
| B.84 | ROME | Research Operations, Maintenance, and Engineering |
| B.85 | RPA | Resource Protection Area |
| B.86 | RQ | Reportable Quantity |

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|---|---|---|
| B.87 | RSPA | Research and Special Programs Administration |
| B.88 | SAA | Satellite Accumulation Area |
| B.89 | SERC | State Emergency Response Commission |
| B.90 | SFAB | Safety and Facility Assurance Branch |
| B.91 | SHPO | State Historic Preservation Officer |
| B.92 | SPCC | Spill Prevention, Control and Countermeasures |
| B.93 | SpecsIntact | Specifications Kept Intact |
| B.94 | TMDL | Total Maximum Daily Load |
| B.95 | TPQ | Threshold Planning Quantity |
| B.96 | TRI | Toxic Release Inventory |
| B.97 | TSCA | Toxic Substances Control Act |
| B.98 | UFGS | Unified Facilities Guide Specifications |
| B.99 | USDA | United States Department of Agriculture |
| B.100 | USFWS | United States Fish and Wildlife Service |
| B.101 | UST | Underground Storage Tank |
| B.102 | VDHR | Virginia Department of Historic Resources |
| B.103 | VMRC | Virginia Marine Resources Commission |
| B.104 | VPDES | Virginia Pollutant Discharge Elimination System |
| B.105 | VSMP | Virginia Stormwater Management Program |
| B.106 | VWP | Virginia Water Protection |
| B.107 | WLA | Waste Load Allocation |